

Cloud Computing Development Plan in ITSC

Information Technology Services Centre, CUHK

Agenda

- **Introduction – What is Cloud Computing?**
 - **Definition**
 - **Concept**
 - **Benefits**
 - **Examples**
- **Services**
 - **Smart Card Application**
 - **Document Management System**
 - **Web & Application Hosting**
 - **E-service: Desktop Management System**
 - **Other Applications**



What is Cloud Computing?

Definition

- **“Clouds are a large pool of easily usable and accessible virtualized resources, such as hardware, development platforms and/or services. These resources can be dynamically assigned to adjust to a variable load, allowing also for an optimum resource utilization. This pool of resources is typically exploited by a pay-per-use model in which guarantees are offered by the Infrastructure Provider by means of customized SLAs.”**

Vaquero, L. M., Rodero-Merino, L., Caceres, J., and Lindner, M.. A break in the clouds: Towards a cloud definition. Strategic Management Journal, 22.2009

Definition

- **“Cloud computing is a term used to describe both a platform and type of application. A cloud computing platform dynamically provisions, configures, reconfigures, and deprovisions servers as needed. It also describes applications that are extended to be accessible through the Internet. These cloud applications use large data centers and powerful servers that host Web applications and Web services. Anyone with a suitable Internet connection and a standard browser can access a cloud application.”**

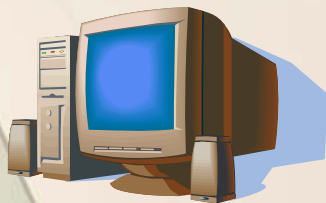
*Greg Boss, Padma Malladi, Dennis Quan, Linda Legregni, Harold Hall.
Cloud Computing, IBM Corporation, 2007*

Definition

- **So Cloud Computing is:**
 - **Using internet to access technology-based services**
 - **Massively scalable and virtualized resources are provided as a service**
 - **A centralized platform (cloud) can be more easily and ubiquitously accessed**
 - **Increasing its value by enabling opportunities for enhanced collaborations, integration and analysis on a shared common platform.**

Concept

- **Key component: the Cloud**



Concept

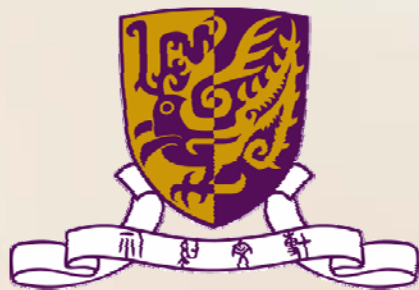
- **Business requires the services**



Concept

- **Internal and External Cloud**

Internal Cloud

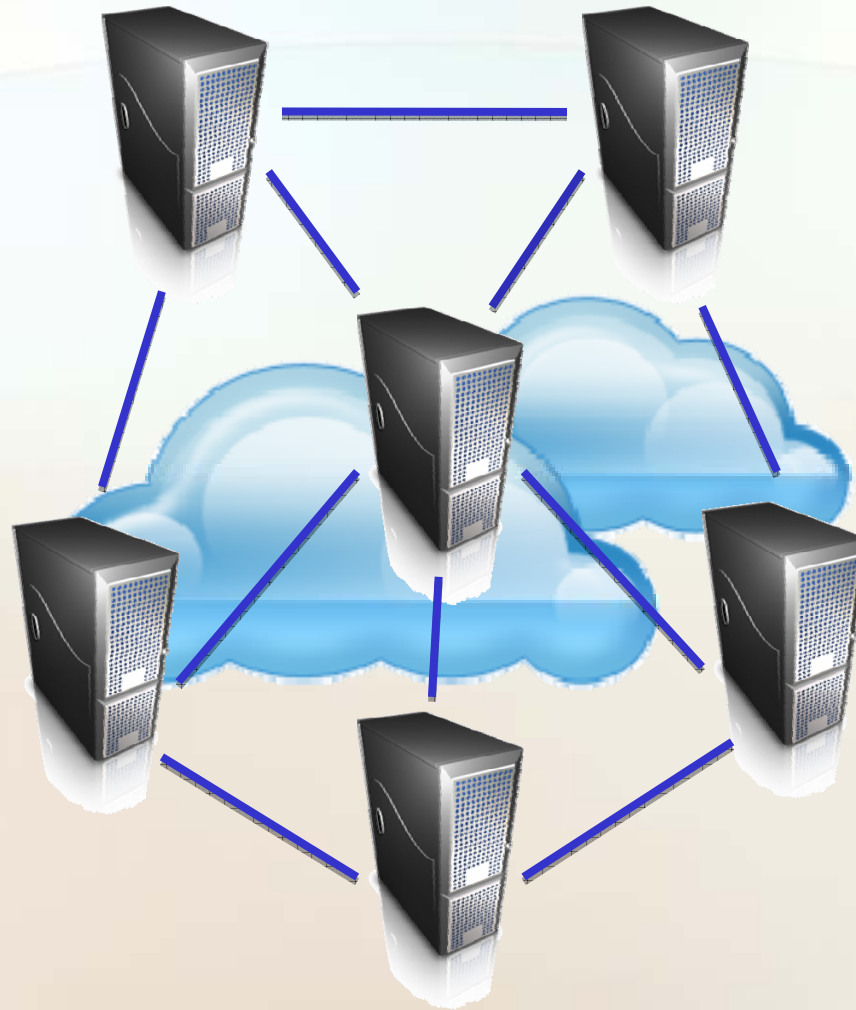


External Cloud



Concept

- **Inside the cloud**



Concept

- The cloud can provide

Application



Processing



Storage



Infrastructure

Concept

- **Simply tell the cloud your needs**



Benefits

- **Reduced Cost**
 - No need to spend expensive initial investment on purchasing expensive equipment and software
 - No need to hire IT staff for system management and maintenance
 - No need to consider the space and physical security of equipment
- **Increased Flexibility**
 - Services are in on-demand model
 - Subscribed and expanded according to needs

Benefits

- **Increased Reliability**
 - **Easier for ITSC staff to manage upgrades, maintenance, backups, disaster recovery and failover functions, etc due to consolidation of hardware and software resources.**
- **Increased Cost-effectiveness**
 - **System resources are dynamically allocated according to the scale of usage thus resources can be better utilized**
 - **Software resources are reusable for applications of similar needs**

Example of Cloud Computing

- **One-stop services**
- **External Cloud**
- **Various software**
 - **Google Doc**
 - **Spyware Doctor**
 - **Picasa**
 - **Adobe Reader**

The Google logo is displayed in its characteristic multi-colored font (blue, red, yellow, blue, green, red) with a trademark symbol (TM) to the right. It is set against a white rectangular background.

Example of Cloud Computing

- **One-stop Services**

Search



[Alerts](#)

Get email updates on the topics of your choice



[Blog Search](#)

Find blogs on your favorite topics



[Google Chrome](#)

A browser built for speed, stability and security



[Directory](#)

Search the web, organized by topic or category



[Images](#)

Search for images on the web



[News](#)

Search thousands of news stories



[Scholar](#)

Search scholarly papers



[Web Search](#)

Search billions of web pages

Explore and innovate



[Code](#)

Developer tools, APIs and resources

Communicate, show & share



[Docs](#)

Create and share your online documents, presentations, and spreadsheets



[Groups](#)

Create mailing lists and discussion groups



[Translate](#)

View web pages in other languages

Go mobile



[Mobile](#)

Get Google products on your mobile phone

Example of Cloud Computing

- **Google Doc**

[Gmail](#) [Calendar](#) [Documents](#) [Reader](#) [Web](#) [more](#) ▼

Google docs

Search Docs

Search Templates

The screenshot displays the Google Docs interface. At the top, there is a navigation bar with links for Gmail, Calendar, Documents, Reader, Web, and more. Below this is the Google Docs logo and two search buttons: 'Search Docs' and 'Search Templates'. The main interface features a blue header with a menu bar containing 'New', 'Upload', 'Share', 'Move to', 'Hide', 'Delete', 'Rename', and 'More actions'. The 'New' menu is open, showing options for Document, Presentation, Spreadsheet, Form, Folder, and 'From template...'. Below the menu is the 'My folders' section, which is currently empty and displays 'No folders.'.

My folders	
Name ↑	Folders / Sharing
No folders.	

Example of Cloud Computing

- **Drawbacks of External Cloud**
 - **Data processed and stored in network outside**
 - **Chances for data to be viewed or used without authorization**
 - **Policy depends on external provider**
 - **Integrity and security of data cannot be ensured**
 - **Services provided may not be stable and continuous**
 - **Standardized functions**
 - **No tailor-made features to cater every needs**

Example of Cloud Computing

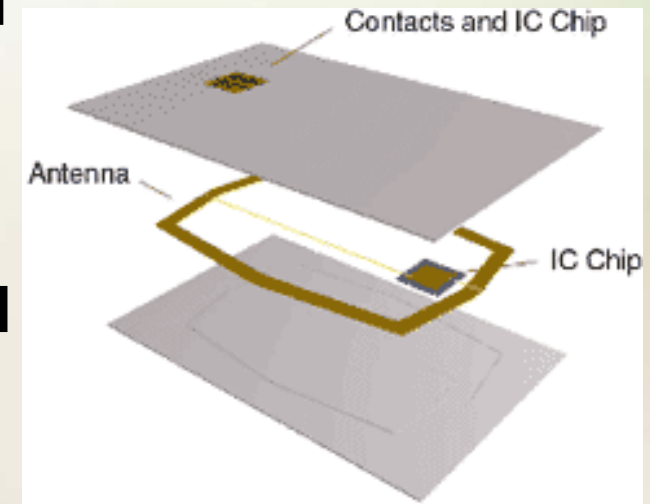
	Internal Cloud	External Cloud
Data Security	Data in ITSC, higher security with strict authorization	Data in outside network, threat to unauthorized view and use
IT Policy	Policy tailored for CUHK, backup and support	Policy depends on outsider, no promise in services
Tailor-made function	Cater needs and characteristics of CUHK, i.e. Collegiate system	Standardized function, cannot cater different needs



Services

Smart Card Application

- **Started in 1999, CU Link with contact chip only**
- **Same technology as the HKID card**
- **Upgrade to hybrid cards in 2009 with two chips in a card**
 - **Contact: Higher security**
 - **Contactless: Faster reaction**
- **With digital certificate issued by CA of ITSC**



Smart Card Application

- **Examples of application**
 - **Door and entrance access control**
 - **Attendance taking for seminars, conferences, activities, etc.**
 - **E-purse for small payment such as laundry and air-con**



Smart Card Application

- **Online Add Value System**

The screenshot shows the 'Online Add Value System' (網上充值系統) interface. At the top, it features the university's name in Chinese and English, and the Information Technology Services Centre logo. Below the header, a purple banner states the system's purpose: depositing for the Print Account, and notes that it currently accepts VISA and Mastercard only. A login form titled 'Please Login' includes fields for 'Student/Staff/Computing ID' and 'CWEM Password', a 'Login' button, and a link for 'Forgot your CWEM Password?'. At the bottom, a 'Notes to the user' box provides important information: a 15-minute timeout, no credit card capture, and a link to the ITSC Electronic HelpDesk.

Online Add Value System
網上充值系統

香港中文大學
The Chinese University of Hong Kong

資訊科技服務處
Information Technology Services Centre

The Online Add Value System serves for the following purpose:

- deposit for the Print Account

We currently accept VISA and Mastercard only.

Please Login

Student/Staff/Computing ID:

CWEM Password:

[Forgot your CWEM Password?](#)

Notes to the user:

- The System will be time out if idle for 15 minutes. Please finish your transaction within this period of time.
- The System will NOT capture any of your credit card information.
- For any enquiries, please go to [ITSC Electronic HelpDesk](#).

Smart Card Application

- **Benefits**
 - **Efficiency**
 - **To handle administrative functions with higher flexibility and less resources**
 - **Security**
 - **Students' identity can be ensured**

Document Management System (DMS)

- **Special features**
 - **Comprehensive document lifecycle and workflow**
 - **Ensuring the data integrity to implement document check-in/check-out function**

Check in/out



Information Lifecycle



Create



Modify



Review



Approve



Publish



Retire

Document Management System (DMS)

- **Special features**
 - **Versioning control and management of documents**
 - **Sophisticated document digital signing and approval processes**
 - **Comprehensive access control**



Document Management System (DMS)

- **Benefits**
 - **Save up office space for storage**
 - **Reduced manpower and time in file management**
 - **Search engine allows efficient searching of documents**
 - **Process from creation to disposal of documents are automated**
 - **Improved document access rights control**
 - **No need to worry about access rights of documents**
 - **Access records are easily to be retrieved**

Web Application Hosting

- **Provides server space to house web-based applications and associated database**
 - **365 x 7 x 24 hours system monitoring**
 - **Daily data backup**
 - **Protected by firewall**
 - **FTP account for web site update**
 - **Database administration**
 - **OS administration**

Web Application Hosting

- **Subscriptions:**
 - **Shared Mode**
 - WebApps hosting on a shared server
 - Transaction volumes: low to medium
 - **Server Mode (upcoming)**
 - A virtual server to your own
 - Transaction volume: large
 - **2-node MS cluster service (upcoming)**
 - Active and Passive Servers
 - For Crucial WebApps (e.g. registration system)
 - Transaction volume: large

Web Application Hosting

- **E-Learning Cluster and Video Cluster**
 - **For all Teaching Development Grant (TDG) and eLearning projects**
 - **A central pool of teaching materials**
 - **eLearning software and applications**
 - **Audio clips for language courses, video tapings of lecture series etc.**
 - **Large volume streaming**
 - **Virtualized servers**

Web Application hosting

- **Benefit: It's better**
 - **Reliability**
 - **365 x 7 x 24 hours system monitoring**
 - **2-node MS SQL Cluster Service**
 - **Security**
 - **Data backup, Firewall Protection**
 - **Database, OS Management**

Web Application Hosting

- **Benefit: It's costs saving**
 - **Saving resources for better services**
 - **Reduced hardware cost**
 - **Servers, Power, Space, etc.**
 - **Reduced maintenance cost**
 - **IT Staff**
 - **Subscription plans tailored-made to needs**
 - **A large expensive server for a small web application?**

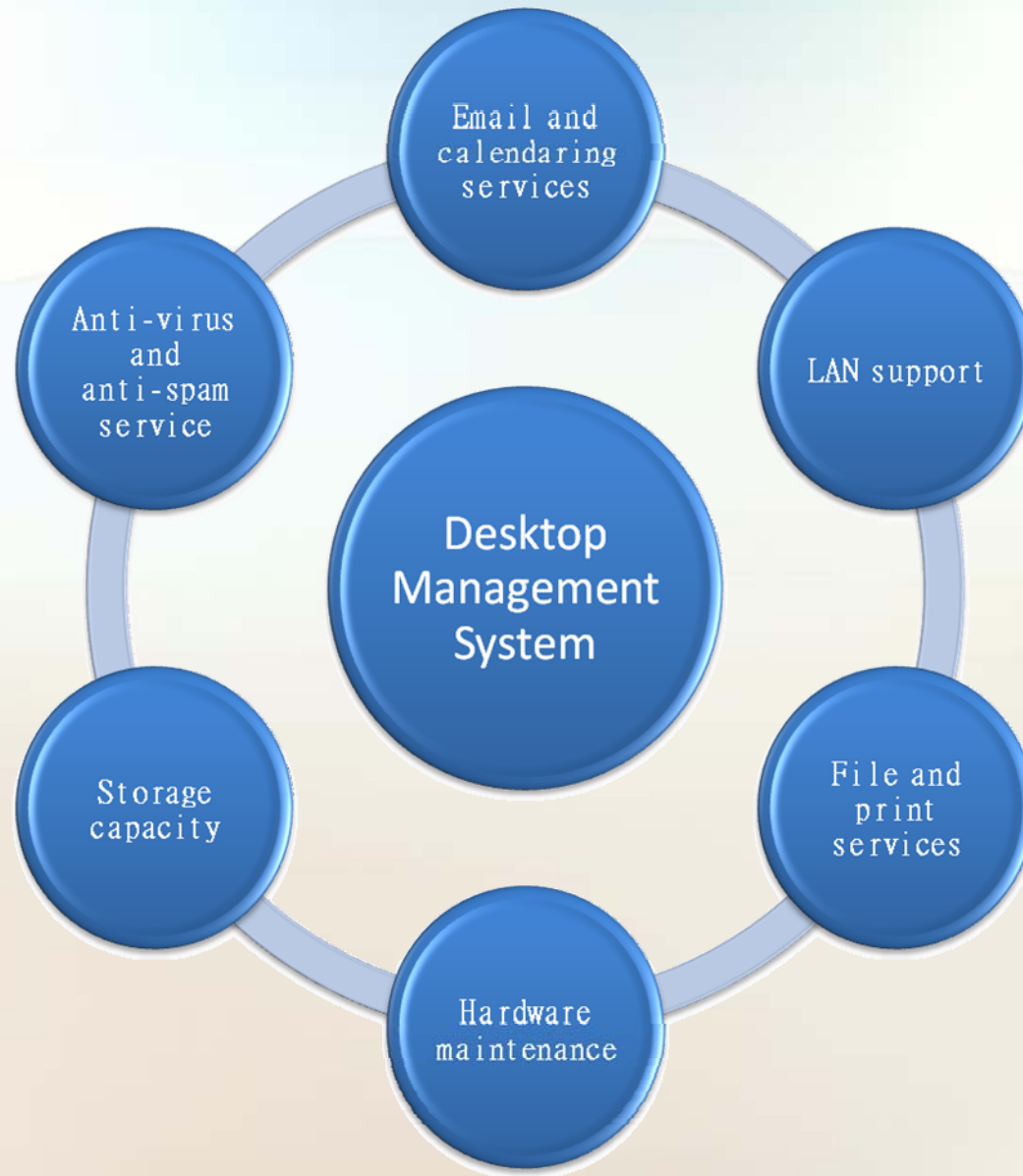
Web Application Hosting

- **Benefit (cont'd): Flexibility**
 - **Changing business needs**
 - **Services on demand**
 - **Accommodating peak transaction volumes**
 - **Accommodating WebApp developed on different platforms**
 - **Windows 2003 Server, RedHat 5**
 - **IIS , MySQL , PHP, .NET, MS SQL Server**

E-services

- **A range of economical and convenient solutions**
- **Tailored for the specific needs of individual departments**
- **Examples of services**
 - **e-mail, collaborative calendaring and scheduling functions using Microsoft Exchange 2003**
 - **File storage and data backup**

E-services: Desktop Management System



Other Applications

- **Content Management System (CMS)**
- **Online Booking Systems**
- **Attendance Taking System**
- **Assembly eTicketing System**
- **Online Event Management System**
- **Online Payment Gateway**
- **Website Development**
- **eNewsletter**
- **eSurvey**
- **Customer Relationship Management (CRM)**

Contact Information

- **For services details**
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 - Carol Chiu, 2609 8823, carol-chiu@cuhk.edu.hk
- **For E-learning Cluster and Video Cluster**
 - elearning@cuhk.edu.hk



Q & A