

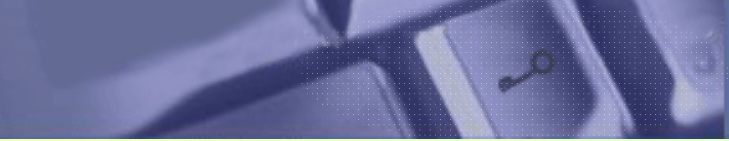


# Security of End User based Cloud Services

**Sang Young**

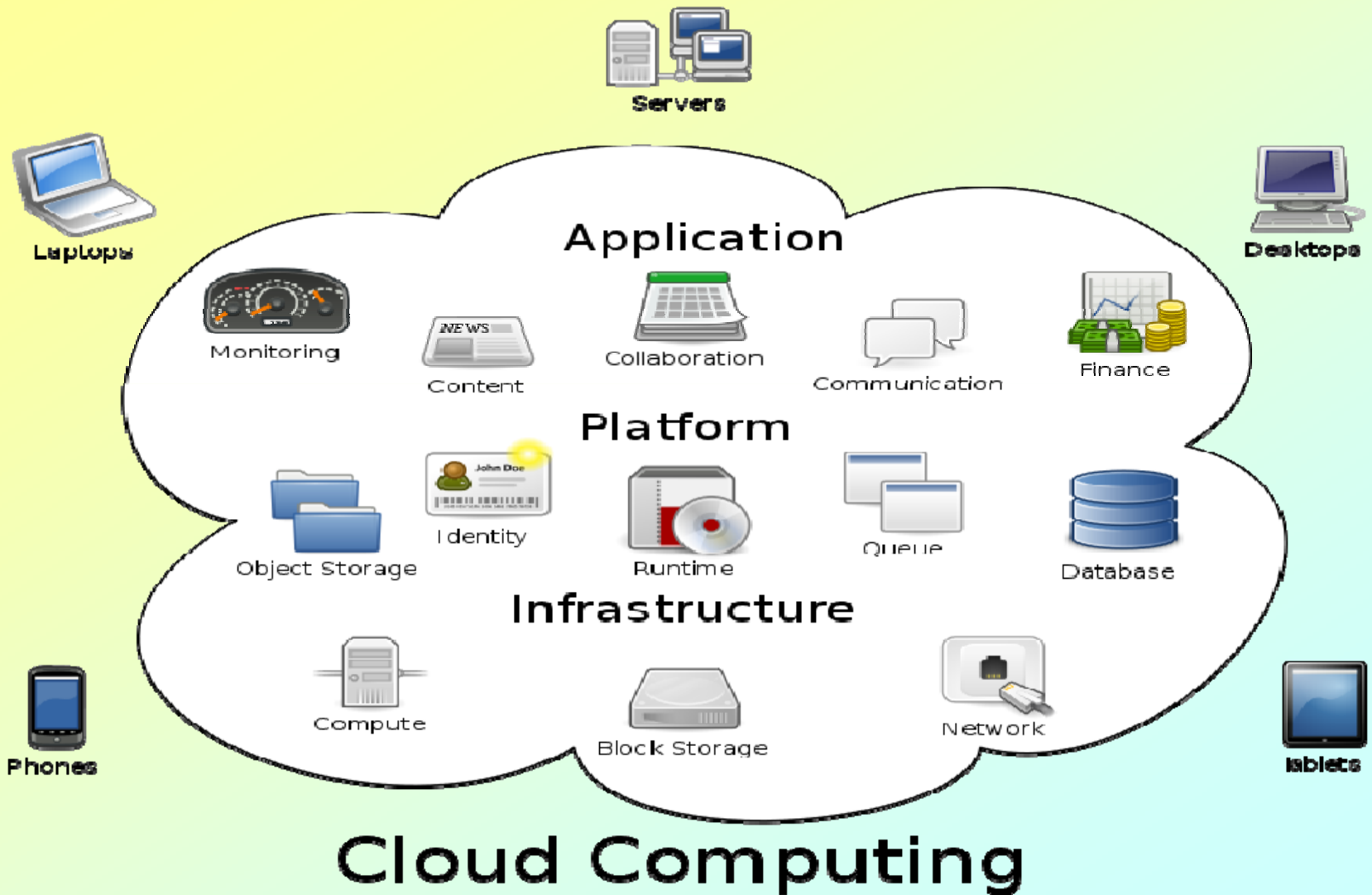
Program Committee

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## Cloud Services you can choice ...

- Business Apps
- Productivity Apps
- Cloud IT Services
  
- Centralized Reference:  
<http://www.apps.gov>



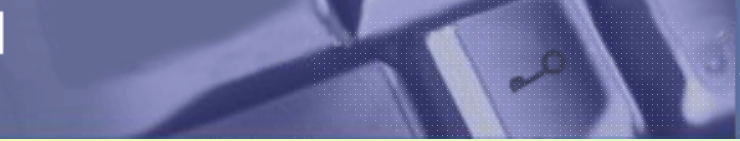
Graphic Source:

[http://upload.wikimedia.org/wikipedia/commons/thumb/b/b5/Cloud\\_computing.svg/848px-Cloud\\_computing.svg.png](http://upload.wikimedia.org/wikipedia/commons/thumb/b/b5/Cloud_computing.svg/848px-Cloud_computing.svg.png)



# Cloud Services Characteristics

- Zero capital investments
- Zero maintenance cost
- On-demand self-service
- Rapid elasticity and scalability
- Ubiquitous network access



## Well-known Cloud Service for us

- dropbox
- evernote
- Apple iCloud
- ... etc



## Using Cloud Service

- A work through of using a cloud service
  - Client Tool
  - Authentication
  - Data Transmission
  - Data Storage



# Cloud Service Clients

- Web Browser
- Customized Client (Windows, MacOS X, Linux etc)
  - dropbox
  - evernote
- Mobile Apps



# Web Browser

- Security depends on
  - Operating System Patches Level
  - User Privilege on the PC
  - Browser patches level
  - Browser configuration



# Customized Clients

- Security Depends on
  - Operating System Patches Level
  - User Privilege on the PC
  - Client Configuration
  - Vulnerabilities in Cloud Services Client
    - E.g. the issue of `%APPDATA%\Dropbox\config.db` in DropBox.



# Mobile Apps

- Security depends on
  - Platform
    - iOS vs Android
    - Jailbreak or Rooted
  - Any vulnerabilities in Apps?
    - Dropbox for Android
      - allows other apps to access its content database
      - allowing attackers to upload your files to the public

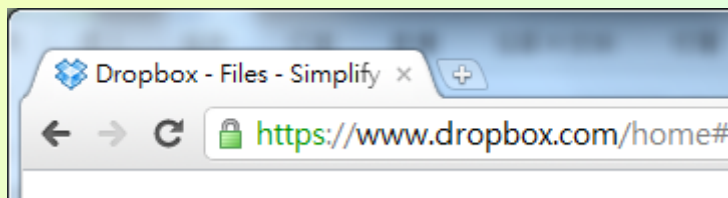


# Authentication

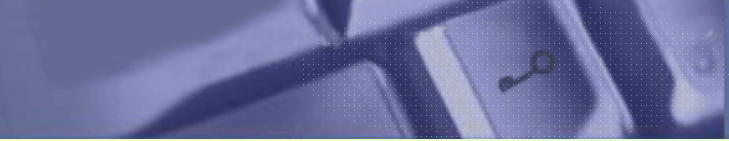
- Authentication Methods
  - Password-based may become insufficient
  - The evil of “Save Password”
  - Automatic login → how secure the credentials in client computer?

# Data Transmission

- Protection in data transmission
  - Communication encryption
    - HTTPS ← check the Web Browser when using Cloud Service

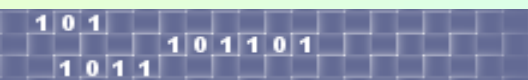


- How about Client Application?
- How about Mobile Apps?



# Data Storage

- Security Controls
  - Encryption
    - Type of encryption?
    - Key Management?
- Does Encryption enable?



# Communication Availability

- The reliability of your network connection
  - Dial-up
  - Broadband
  - Wi-Fi
  - 3G/LTE
- Bandwidth Consideration
- Latency Consideration



# Service Providers Availability

- Technical Problems
  - Network outage
  - Servers down
  - Storage system down
  - Services malfunction
  - Information Security Incident
- Out of Business
  - Can you migrate an accounting data from one provider to another? (hint: there is not standard data format in cloud computing world)



## Availability in cloud based infrastructure is ...

- the largest challenges to date.
- Feb 2009: Gmail outage for 2.5 hours ...
- Mar 2009: Microsoft Azure outage for a day ...
- Jun 2009: Amazon EC2 outage for 4 hours ...
- Apr 2011: Amazon EC2 outage for 3 hours ...



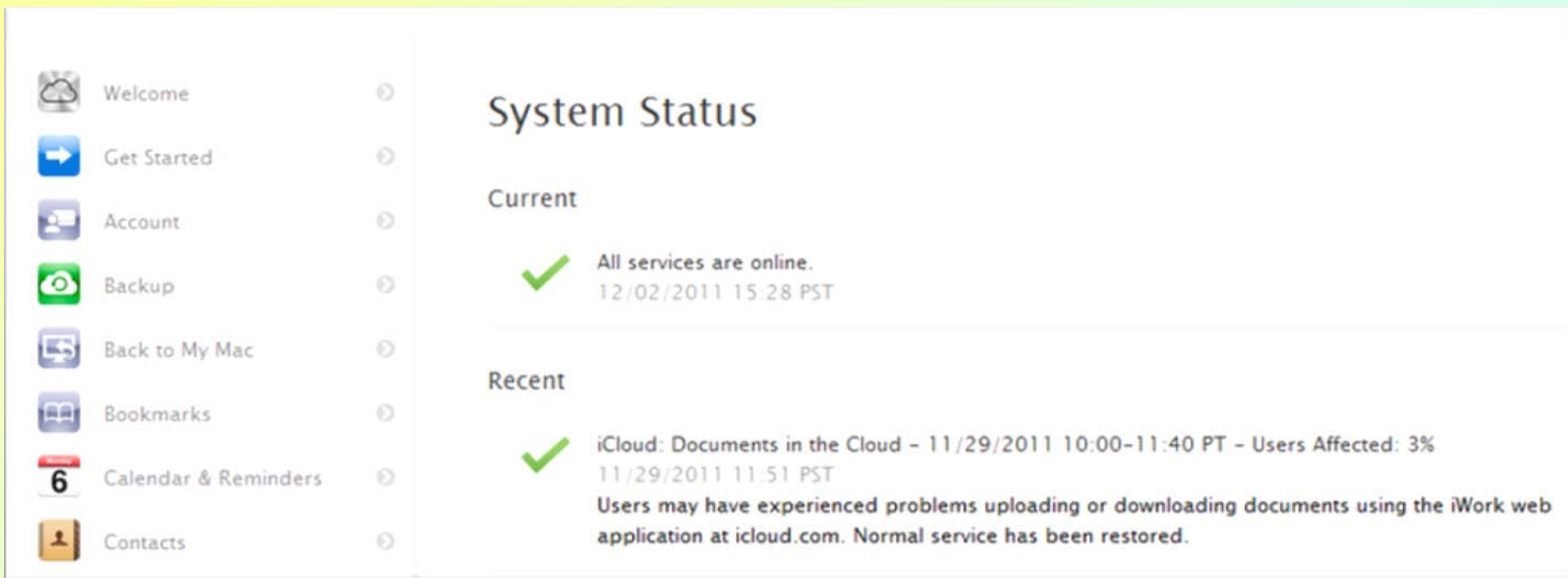


## Availability of Microsoft Office 365...

- Sep 2011: includes Microsoft Office 365, Hotmail, Skydrive and Live Services

# Availability of Apple iCloud ...

- Nov 2011: Apple iCloud service is not available for some users



The screenshot shows the Apple System Status page. On the left is a navigation menu with icons and labels: Welcome, Get Started, Account, Backup, Back to My Mac, Bookmarks, Calendar & Reminders (with a '6' badge), and Contacts. The main content area is titled 'System Status' and is divided into 'Current' and 'Recent' sections. The 'Current' section shows a green checkmark and the text 'All services are online. 12/02/2011 15:28 PST'. The 'Recent' section shows a green checkmark and a detailed report: 'iCloud: Documents in the Cloud - 11/29/2011 10:00-11:40 PT - Users Affected: 3% 11/29/2011 11:51 PST. Users may have experienced problems uploading or downloading documents using the iWork web application at icloud.com. Normal service has been restored.'



## Security Incident of Cloud Services

- Oct 2009: T-Mobile, lost customer all sidekick data ...
- Apr 2011: Epsilon, customer data were stolen by hacker ...
- Jun 2011: Dropbox, allowed any password to be used to access any user account



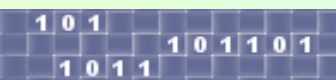
# Conclusion

- Cloud Services is still in stone age
- Encrypt your data, if possible, before uploading to cloud service provider
- Encrypt your communication traffic
  - HTTPS / VPN
- Local copy of data for backup purpose
- Contingency if -
  - Internet connection outage
  - Provider services suspend
- Reputation of Providers
- Keep up-to-date of your cloud service clients
- Password



## About PISA

- A not-for-profit organization for local information security professionals.
- Focus on developing the local information security market with a global presence in the industry





## Mission

- to facilitate knowledge and information sharing among the PISA members
- to promote the highest quality of technical and ethical standards to the information security profession,
- to promote best-practices in information security control,
- to promote security awareness to the IT industry and general public in Hong Kong



## Contact PISA

- Web Site:
  - <http://www.pisa.org.hk>
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  - <http://www.pisa.org.hk/membership/member.htm>