Cloud Computing
A plain English introduction to the cloud

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Objectives

• Explore what the cloud is from a consumer perspective

• Overview of Amazon, Apple, Google, Microsoft

• Pitfalls and risks

• Opportunities
Who am I?

- Joseph Guarino
- Working in IT/Business for last 15+ years
- CEO/Sr. IT consultant with my own firm Evolutionary IT
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What is the cloud?
Cloud Computing

- Cloud computing is the delivery of computing as a service rather than a product, whereby shared resources, software, and information are provided to computers and other devices as a utility (like the electricity grid) over a network (Internet)*

Wikipedia

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Simpler Definition

• Applications and services driven by Internet based computing resources rather than on your local (i.e. Your computer)

• For the general user: Shift from software you “buy” to software you get as a service.
What is the Internet?
Internet

• Global system of interconnected networks
• Allowed unprecedented evolution in communication and computing
• Internet technologies spurred evolution of cloud
Client/Server

- Central idea in distributed networking computing
- Computing model which details two roles client and server and describes relationship of cooperating programs in an application
Client Server

→ Servers provide resources
→ Clients request them
Client

- Web browser – Firefox, Google Chrome, etc.
- Email client – Microsoft Outlook, Mozilla Thunderbird, etc.
- Request something from a server
Server

• “Big” computers or sets of computers out on the Internet that provide resources to client

• They serve a client

• Ex. Web server, mail servers, database servers, name servers, file servers, etc
Key Terms with the Cloud
Client or Cloud Client

• How you access the cloud
• Web browser
• Mobile “smart” phones
• Tablet
• Any other device
Cloud Server

• Computer dedicated to running one or more services for your network.

• Ex. Database server, Mail server, Web server.

• In case of cloud it is a server on cloud providers network

• IaaS
Cloud Storage

• Storage available in the cloud
• Available on multiple devices often with sharing feature
• Use as a “drive” on your computer
• Microsoft SkyDrive, iCloud, Amazon Cloud Drive, etc.
Cloud Provider

- Organization that provides cloud services
- Google, Amazon, Microsoft, Apple, Rackspace
- SaaS service providers Google, Intuit, etc.
Cloud Service Models
IaaS

• Infrastructure as a service
• Hardware & software infrastructure in the cloud like data center, network devices, servers, databases, storage, etc.
• Provider manages all infrastructure and client manages deployment
• Pay as you go – Elastic computing
IaaS

- Amazon
- Rackspace Cloud
- Microsoft Azure
PaaS

- Platform as a Service
- Infrastructure for software deployment, I.e. platform
- Develop your own or install other applications
- Provider manages cloud infrastructure and client managed deployed application
PaaS

- Force.com (salesforce.com)
- Google App Engine
- Microsoft Azure

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SaaS

- Software as a service – software “on demand”
- Applications in a browser, mobile device (app) or other
- Everything managed by the cloud provider
- Cloud applications, cloud databases, email, office suites, cloud OS.
SaaS

• Google Apps
• Salesforce
• Intuit
• Microsoft Office Web Apps
Deployment Models
Deployment Models

• **Public** – Resources shared to all non-exclusively Multi-tenant in cloud provider

• **Private** – Resources available to single user or organization can be on premise or in cloud provider Single tenant

• **Hybrid** – A mix of both models

• **Community** – Resources organized to server common function or purpose
Major Consumer Cloud Providers
Amazon Cloud Drive

• Amazon cloud storage for music, video, photos, etc.

• Integration with other Amazon cloud services like Amazon MP3 store
Amazon MP3 Store

• Online music store
• Cloud player is extension of store
• Amazon MP3 downloader available on nearly all platforms
Amazon Cloud Player

• Play music stored in Amazon cloud drive
• Play or download to web, Kindle Fire, iPad, Android
• Supports uploads from iTunes library and Windows Media Player library

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Amazon Kindle

- E-book reader
- Buy and read e-books, newspapers, magazines, websites, etc.
- Can read your Kindle books nearly everywhere with Kindle for PC
- Or on Smartphone (Android/Blackberry/Win7), Table (Android/iPad), PC/OSX

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Amazon Appstore

• Online store for streaming movies/TV, Kindle e-books, etc.
• Think iTunes Store
Amazon Web Services

- IaaS
- Amazon Web Services (AWS)
  - suite of cloud computing services, AKA web services
- Amazon Elastic Cloud Compute (EC2)
  - rent virtual cloud servers to run what they need.
- Amazon Simple Storage Service S3
  - online cloud storage
Apple

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iCloud

• Apple cloud storage available on all your devices – but in the cloud

• Stores your music, photos (photo stream), documents, books, apps, etc.

• Sync on iPhone, iPad, iPod, OSX, even PC as long as you use iTunes
iCloud Cont.

- Sync Calendar, Mail, Contacts
- Integrates with iWork- Apple's Office Suite document, spreadsheets, presentation
- Integrates with all of our iOS devices
iOS

- Apple's mobile operating system
- Runs on iPhone, iPod, iPad, Apple TV
- Ties together Apple devices with OSX
OS X

- Apple's desktop operating systems
- Lion 10.7 (current) supports iCloud – 10.8 (mountain lion) coming soon
- Itunes, iWork all integrated with iCloud
Itunes Store

• Apple's online digital media store
• Music, videos, podcasts, audiobooks,
• Everything from iPhone, iPad, iPod touch, Apple TV integrated
• Integrates with iCloud
Google Gmail

• Google's cloud based email service
• 350 million users as of 01/2012
• Top webmail provider (Comscore 2011)
• Integration with other Google services
Google Docs

• SaaS Office Suite

• Create, edit and collaborate word processing, spreadsheets, presentations, drawings, forms, etc. App suite

• Supports formats such as ODF, HTML, PDF, Text, Microsoft Office, and many more
Google Talk

• Cloud based instant messaging service for text and voice

• Integrated in Gmail
Google Calendar

• Cloud based calendaring service
• Import from common applications such as Outlook, Support of iCal & iCalendar
• Calendar sharing
• Device sync to Blackberry, Palm, iPhone, Windows Phone
• Integration with other Google services
Google Voice

• Free cloud based PC-to-Phone calling, PC to PC calling and video calling via Google Voice

• Voicemail, free text messaging, conference calling, screening, call blocking, etc.

• Inexpensive international rates
Google+

- Google's social network & identity service
- Connects to other Google cloud services
- Hangouts, Messenger, Sparks, Games
Google **YouTube**

- Google's online video sharing service
- Editing, sharing and viewing video
- **Movie** and **TV show** rentals and more
- Integrated with Google+
Google Drive

• Google online storage option
• Online storage and backup
• Google Docs integration, sharing, collaboration
• Available for PC/MAC, Android, iPhone, iPad
• Integrated with other Google services like Gmail, G+, Google Docs
Google Chrome OS

• Minimalist Linux based cloud focused Operating System
• Stripped down functionality of file manager, media player and browser
• Chromebooks
Android

- Google's (via Open Handset Alliance) Linux based open source mobile operating system for smartphones and tablets, ebook readers, Google TV, etc.
- 50%+ of the market and growing
Google Play

• Formerly Android Market
• Online store for apps, music, movies, books, games and cloud media player
• Available on smart phones, tablets, etc.
Google Cloud for SMB/Enterprise
Google Apps Marketplace

- Google Apps Marketplace expands applications that can run in Google cloud
- Accounting, finance, administration tools, calendaring, CRM, document management, project management, sales and marketing, security, etc.
Google Apps for Business/Education

- Same core office suite, communication, groupware suite but for business.
- I.e. Web based calendar, documents, email w/ focus on business/educational customers
- Integration of Google Drive
Google App Engine

• GAE is Google's platform for developing and hosting web applications
• PaaS
Windows Live

• Consumer suite of software plus services platform
• SaaS + PaaS
• Most accessible from browser but many have installable windows applications (client side) pieces (Windows Live Essentials)
Windows Live Essentials

• Integrate email, IM, blogging, photo sharing, Windows Live SkyDrive, Windows Live Hotmail and security services into the Windows OS

• Bring local and the cloud full circle
Windows Live Essentials

- **Family Safety** – parental controls
- **Mail** – successor to Outlook Express/Windows Mail
- **Mesh** – file synchronization PC to PC, PC to cloud, etc.
- **Messenger** – IM, VoIP
- **Movie Maker** – Video Editing
- **Photo Gallery** – Photo gallery and posting to SkyDrive/Facebook
Windows Live Hotmail

• Microsoft's web based (cloud) email service
• 310 million users (Comscore 2011)
• Top email provider
• Integrates into other Windows Live services like Hotmail Calendar, SkyDrive, etc.
Windows Live Calendar

• Microsoft's cloud time management application
• Supports private sharing, view only links, calendar sharing, reminders
• Integrates with rest of Microsoft Live suite and MS services.

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Microsoft Live SkyDrive

- Microsoft cloud storage part of Windows Live
- Edit, share and collaborate in the cloud
- Integrated with other Windows Live applications (ex. Office Web Apps), newer versions of Office, mobile platforms and other Microsoft services
Microsoft Office Web Apps

• Microsoft cloud based version of MS Office
• Includes MS Word, Excel, PowerPoint, OneNote
• Available in Windows Live, Office 365, etc.
• Integrated with rest of the MS Suite
Microsoft Windows 7

• Current Windows operating system
• Connects to Microsoft cloud services through Windows Live Essentials Suite and many other applications
• Windows 8 even more cloud integration
Windows Phone

- Windows mobile operating system
- Windows Phone 7
- Metro-style interface
- Windows Phone Marketplace
My Windows Phone

- Cloud service for windows phone for sync of information stored on Windows phone device
- Ex. Windows Live Contacts, Windows Live Calendar, Windows Live SkyDrive
- Remote ringing, mapping, wiping of lost phones
Marketplaces

• **Windows Phone Marketplace**
  - Online store for applications, games (think iTunes store) for Windows Phone 7

• **Windows 8 Store**
  - Central online store for applications, games, etc for Windows 8
Microsoft Cloud for SMB/Enterprise
Microsoft Office 365

- Software plus service
- Office Web Apps – browser based Microsoft Office
- MS Office online version plus various server applications such as Exchange (Email calendaring, contacts), SharePoint (Collaboration, sharing), Lync (IM, audio/video calling, web conferencing)
Microsoft Azure

• Microsoft small business to enterprise cloud computing platform.
• PaaS – application platform in the cloud
• All the things you need to run in the cloud such as compute, storage, fabric
Ubuntu Linux

• Open source Linux operating system
• Fully functional desktop replacement for Windows or OSX that is completely free
• Feature rich includes: LibreOffice, Firefox, Thunderbird, etc.
• Cloud integrated
Ubuntu One

- Online backup
- Music streaming
- Integrated into Ubuntu and Windows
Adobe.com
Acrobat.com

• Full Office suite for creation, editing, collaboration & sharing
• Documents, spreadsheets, presentations, advanced PDF features
• Online conferencing and collaboration w/ audio, video and whiteboard, screen sharing, whiteboard
Adobe Creative Suite

• Creative Cloud membership based SaaS of Creative Suite application suite

• Master collection of Adobe Photoshop CS6, InDesign, Illustrator, Dreamweaver with only a monthly fee
Online Storage
I.e. Backup/Sharing/etc. Solutions
Amazon Cloud Drive

- Online storage in Amazon cloud
- Store data of any kind
- Stream audio to other devices with Amazon Cloud Player
- Amazon Cloud Drive
DropBox

• Online storage, sharing and backup
• Access as a local drive
• Available on Windows, OS X and Linux, iPhone, Android, Blackberry
• Dropbox
Microsoft SkyDrive

- Online cloud storage
- Browser based way to share, save, access and collaborate on files
- Not fully integrated into OS as others as of today but wait till Windows 8
- Microsoft SkyDrive
Managing Cloud Storage Risks

- Read Terms of Service
- Encrypt whenever needed (specifically online backup)
- Understand how sharing and securing your files works
- Read the documentation
Cloud Risks and Opportunities
Vendor Lockin

- Walled garden
- Vendors don't interoperate well
- Hard and costly to switch
Privacy Concerns

• Read TOS (Terms of Service)
• 4th Amendment doesn't always apply
• Do they claim the right of use of that data or do data mining or sharing/selling of that data?
• Know and manage these risks
Terms & Conditions
Terms of Service

• TOS – Rules one must abide by to utilize a service
• ALWAYS read and understand them in any cloud service you might use
• Make sure they fit with your needs
Issues with TOS

- Some free services have nebulous TOS
- Questions of ownership of content are still up in the air
Minimizing Cloud Security Risks
Securing Your Cloud Experience

• Patch your device(s) desktop, mobile devices

• If at home/work make sure you have a good hardware firewall AND a software firewall

• Update all other systems applications like browsers, plugins, addons

• Use a quality Anti-malware solution
Securing your Cloud Experience

• Run as a regular user not administrator or root

• Choose a strong password, change it often

• Use a password manager
Passwords

• Choose strong passwords. >8 alphanumeric, not a word in any language. Use mnemonics or “memory device”.

• Strong passwords for you systems, websites, network devices, etc.

• There are also simple biometrics or a password management applications such as Robo Form or KeePass.

• http://www.us-cert.gov/cas/tips/ST04-002.html
Password Managers

• RoboForm
  - Commercial - Windows, OSX, Mobile
    http://www.roboform.com/

• KeePassX
  - Open Source - Windows, OSX, Linux, Mobile, etc.
    http://keepass.info/

• KeePass
  - Open Source - Windows, OSX, Linux, Mobile, etc.
    http://www.keepassx.org/
Rule of Thumb

• Think of the cloud as a public space
• Don't put anything sensitive PII (Personally Identifiable Information) unless encrypted
• Encrypt when you want additional privacy
Encryption

• GNU Privacy Guard
  - (Windows/OSX/Linux) Open source
• TrueCrypt
  - (Windows/OSX/Linux) Open source
• AxCrypt
  - (Windows) Open source
Cloud Benefits
Benefits of the Cloud

• Increased reliability
• Lower cost (in some cases)
• Easier maintenance and upgrades
• No need to invest in hardware or software
• Constant innovation
Cloud of the Future
Cloud Evolution

• Cloud is evolving and merging into the desktop, smartphone, tablet, everywhere

• Integration of applications, services

• New opportunities
Cloud Evolution

• Expect Windows 8 and OS X 10.8, iOS, and Android to move further into the cloud

• Integration
Enjoy and Explore!

Thank You!
Find me online and in the cloud at:
http://network.evolutionaryit.com