

# 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  
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# What is the cloud?



# Cloud Computing

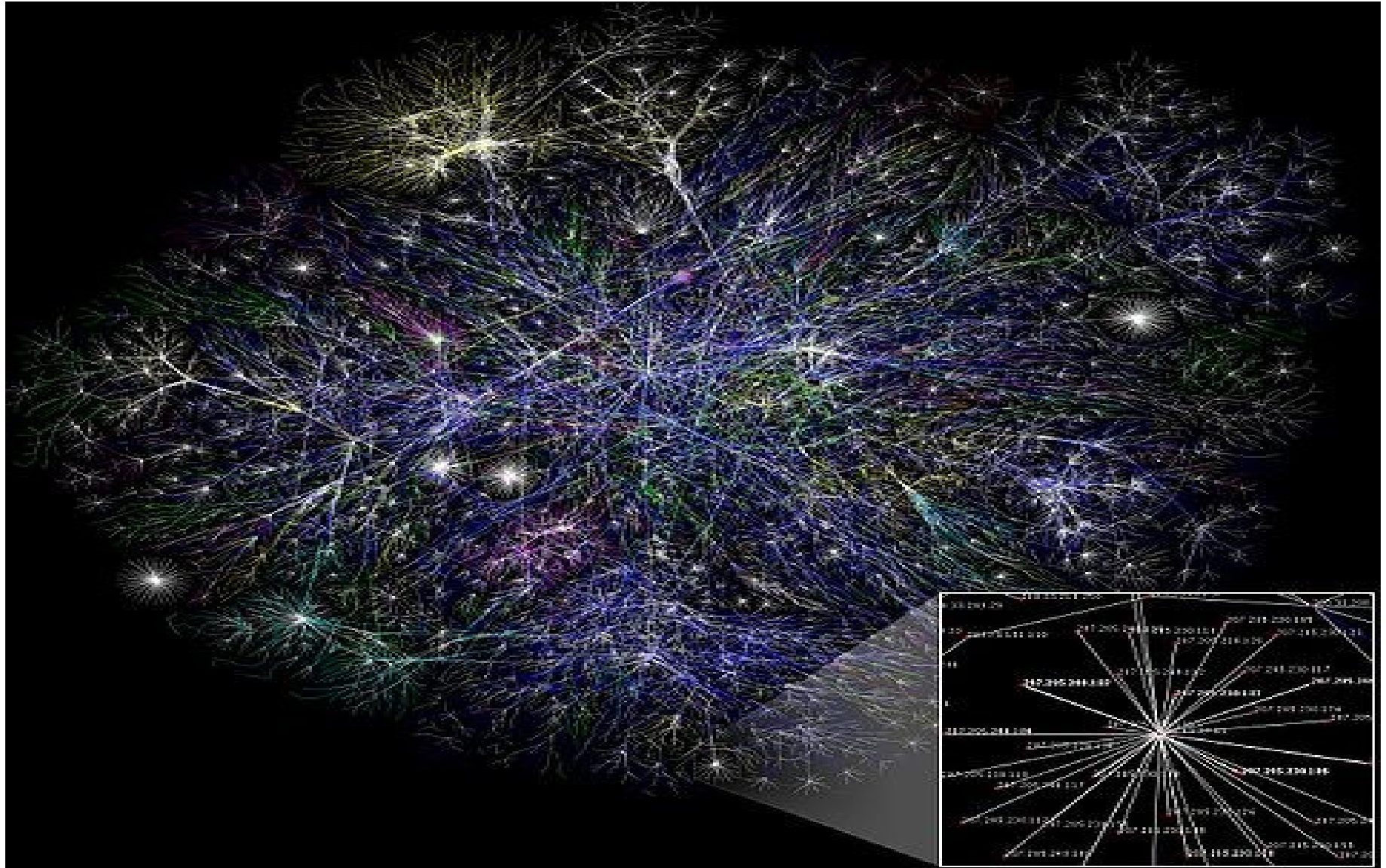
- Cloud computing is the delivery of computing as a service rather than a product, whereby shared resources, software, and information are provided to computers and other devices as a utility (like the electricity grid) over a network (Internet)\*

Wikipedia

# 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

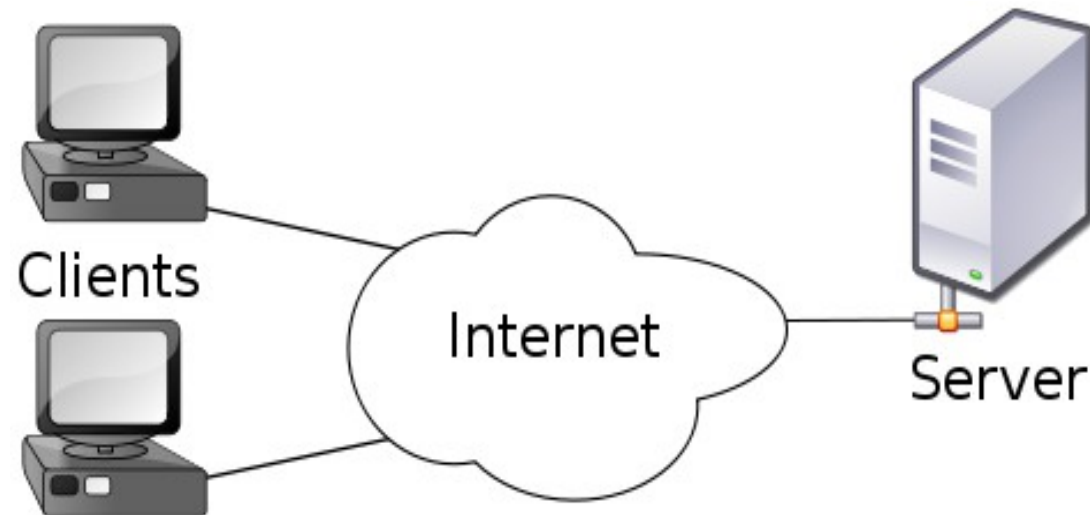
- Global system of interconnected networks
- Allowed unprecedented evolution in communication and computing
- Internet technologies spurred evolution of cloud



# 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

# 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

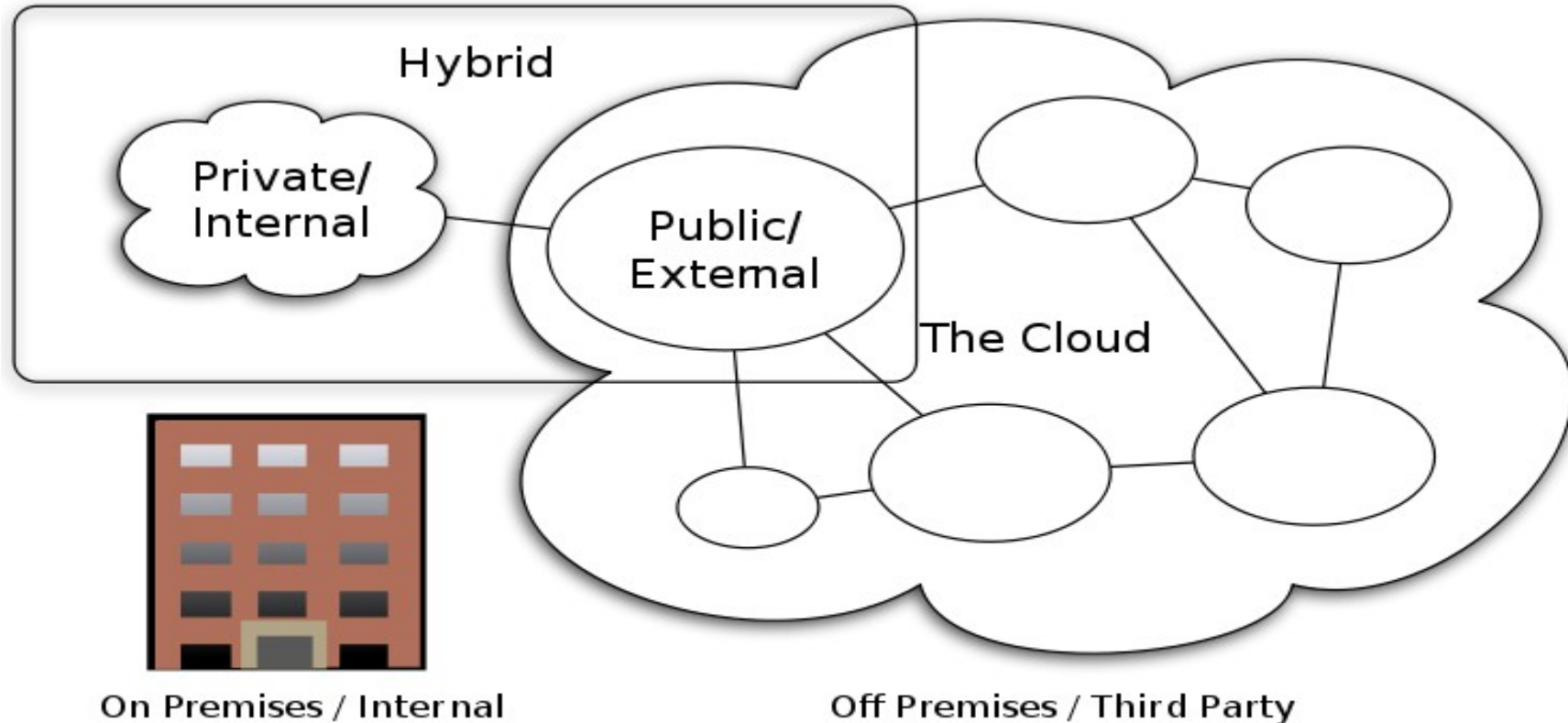


# Deployment Models

# 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

# Cloud Deployment Models



## Cloud Computing Types

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# Major Consumer Cloud Providers

**amazon®**

The Amazon logo consists of the word "amazon" in a bold, lowercase, sans-serif font. Below the text is a curved orange arrow that starts under the letter 'a' and ends under the letter 'n', pointing to the right.

# 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



# 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

# 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

# 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™

# 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 smart phones 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



***Microsoft®***

# 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.

# 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

# 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)
- 4<sup>th</sup> 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>