Technology Update 2013

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Tech Update 2013

What About K2?

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- Webinars on leading accounting topics that need technology
- Self-study courses on technology with an accounting focus
- Web sites for your reference
- Newsletter monthly with ideas and tips

Learning Objectives

Upon completing this session, participants should be able to

- Discuss at a high level the top twenty technology driven trends
- Identify specific software trends and how these will affect your business
- Describe which hardware trends will affect your business and where should you invest
- Discuss forthcoming changes to the network infrastructure and how should you prepare
- List the six technology trends that will emerge in 2013 and how will they affect you

State Of Technology 2013
CIO Magazine Survey February 2013

- Nearly half of IT leaders are planning to boost their spending in the coming year, according to CIO magazine's most recent Tech Poll/Tech Priorities survey conducted in January & February 2013
- 48% of the CIOs reported IT budgets up slightly from 46% in January 2012.
- The average expected increase rose to 5.9 percent, up from 4.4 percent among all respondents.
- 36% reported no IT budget changes.
- 16% reported cuts.

2013 Investing In IT

Top Investment Areas	% Plan to Increase
Mobile	59%
Business intelligence & analytics	56%
Hardware infrastructure upgrades: Tablets (e.g., iPad, Android, Playbook)	51%
Public cloud computing services	48%
Private cloud computing services	47%
Software-as-a-Service (SaaS)/cloud apps	47%
Security technologies (e.g., identity management, data loss prevention, encryption)	47%

Top Infrastructure Projects

On the Radar or Actively Researching

Business process management	31%
Cloud computing services (external/public)	31%
Software-as-a-Service/cloud apps	31%
Software defined networking (SDN)	30%
Social media/collaboration tools	29%

Piloting

Hardware infrastructure: tablets (e.g., iPad, Android Playbook)	22%
Social media/collaboration tools	21%
Desktop/application virtualization	18%
Mobile	17%
Cloud computing services (internal/private)	15%

Top Infrastructure Upgrades

In Production at Business Unit, Division or Enterprise Level

Server Virtualization	68%
Storage Virtualization	48%
Video conferencing/telepresence	47%
Hardware infrastructure: smartphones (e.g., Blackberry, iPhone, Android)	44%
Mobile	43%

Upgrading or Refining

Hardware infrastructure: desktop/laptop upgrades	34%
Hardware infrastructure: smartphones (e.g., Blackberry, iPhone)	23%
Security technologies (e.g., identity mgmt., data loss prevention, encryption)	18%
Business intelligence & analytics	16%
Hardware infrastructure upgrades: tablets (e.g., iPad, Android, Playbook)	16%

Top Technology Driven Trends

- What should you be watching for in 2013 and beyond?
- What technologies are driving how we do what we do?
- Which ones are applicable to your business?

1. Rapid Growth Of Big Data

- Term used to describe the technologies and techniques used to capture and utilize the exponentially increasing streams of data with the goal of bringing enterprise-wide visibility and insights to make rapid critical decisions
- High speed analytics using advanced cloud services will increasingly be used as a complement to existing information management systems and programs to tame the massive data explosion

Use of traditional and emerging technologies
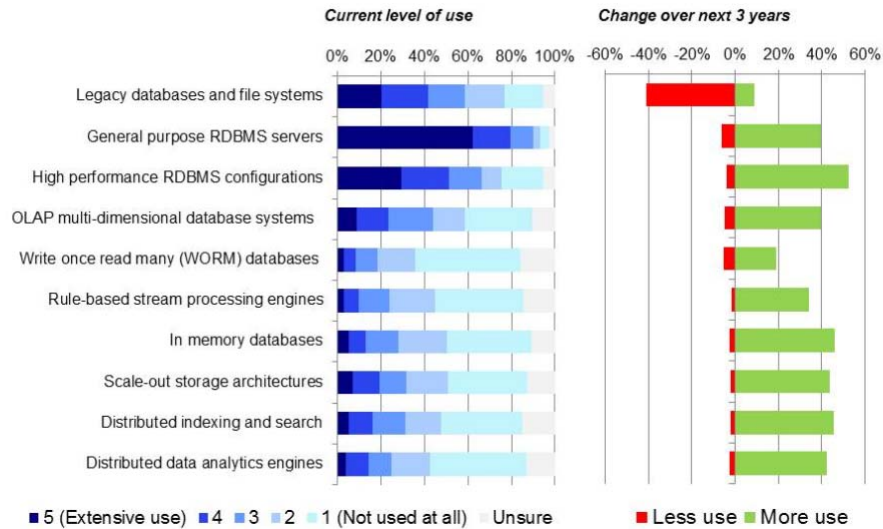
2. Cloud Computing And Advanced Cloud Services

- First experienced as a personal trend: iCloud, Dropbox, SkyDrive
- Businesses of all sizes are now rapidly embracing
- Represents a major shift in how organizations obtain and maintain software, hardware, and computing capacity
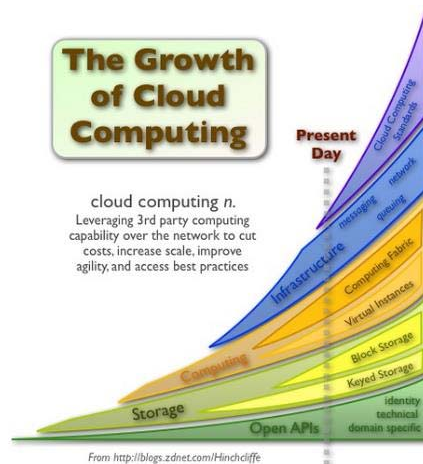
cloud computing n. Leveraging 3rd party computing capability over the network to cut costs, increase scale, improve agility, and access best practices

From http://blogs.zdnet.com/Hinchcliffe

Cloud Enablement & Storage

- Read EULAs before using
- Consider Internal Control procedures carefully
- Ease of use makes theft of client data or intellectual property very easy
- Key players
  - Microsoft SkyDrive or Office 365
  - Google Drive
  - Apple iCloud

Cloud Enablement & Storage

- Simple off-site backup/synchronization
- Collaboration
- Seamless integration
  - Windows 8
  - Office 2013/2010
  - Google Apps
- Portable device access
  - Smartphones
  - Tablets

3. On Demand Services

- Creating the "as a Service" generation
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)
  - Hardware as a Service (HaaS)

- Creates an "IT as a service" mentality
- Rapid acceptance by SMB and Enterprise
- Many new players in a multitude of business process categories
- Will help companies cut costs as they provide access to powerful software programs and the latest technology without having the expense of a large IT staff and time-consuming, expensive upgrades
- As a result, IT departments in all industries will be increasingly freed to focus on enabling business process transformation, which will allow organizations to maximize their return on their technology investments

Infrastructure As A Service

- New support for servers and storage on demand
- Will make cloud hosting a reality
- Getting sufficient disk performance a problem
- Key players
  - Amazon has 78% market share
    - http://aws.amazon.com/free/
  - Rackspace
  - Google
  - Microsoft Azure
  - HP and IBM would like to be players

Cloud Applications

- Single sign-on gaining traction
- WAAD – Windows Azure Active Directory
  - Federation service of AD
  - Intuit IPP V3 running on Azure
    - Interface for QuickBooks Online and QuickBooks Desktop
    - $5/company file/month

SaaS Accounting

- QuickBooks Online
- Accounting Relief
- Monchilla
- FreshBooks
- Xero
- Kashoo
- Wave
- Sage One

- SAP ByDesign
- Intacct
- NetSuite
- Financial Force
- Avalara AvaTax
- Concur
- Results CRM

CPA Firm – SaaS Products

- AccountantsWorld
- CCH – Scan
- CPA2Biz
- Commercial Logic – APS
- Doc.It Portal

- Intuit SaaS Tax
- ShareFile
- SurePrep
- Thomson - GoFileRoom, GoSystem RS
- XCM

Document Sharing And Portals

- SmartVault
- Doc.It
- ShareFile

- Thomson Reuters
- CCH
- AccountantsWorld CyberCabinet

4. Virtualization Of Storage, Desktops, Applications, And Networking

- We will continue to see the virtualization of processing power, allowing mobile devices to access super-computer capabilities and apply it to processes such as purchasing and logistics
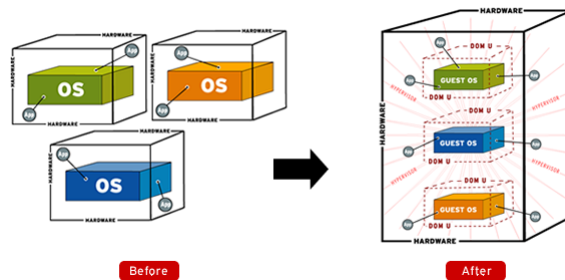
Desktop Virtualization

- VMware Player, Workstation and Fusion
- Citrix XenDesktop
- Microsoft Hyper-V
  - Replaces XP Mode
  - Working better
  - Limitations
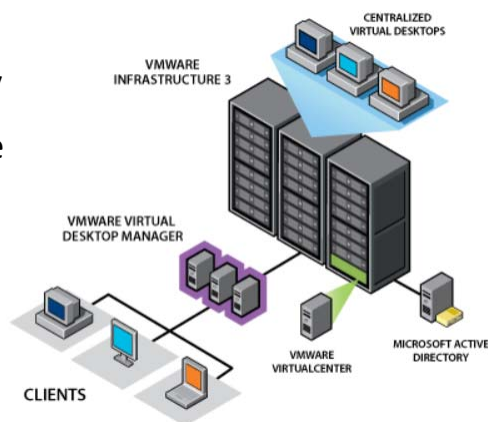
Virtual Desktops - VDI

- VMware View
  - Working acceptably well
  - Need around 30 desktops to justify infrastructure
- Citrix XenDesktop
  - Choose if you already own XenApp
  - Smoother screen handling
- Microsoft Hyper-V
  - Beginning to work, but not ready for prime time

Virtual Desktops - Considerations

- Get Microsoft licensing right
- Must use high performance disk
  - SSD's
  - Atlantis ILIO
  - Watch your IOPs
- Better, easier scanner and printer support
- Superior support for tablets and Macs
- Lower cost of ownership
- Watch for hosting cloud data centers offering this service

5. Consumerization Of IT Increases

- BYOD... BYOC... BYOT... and so it continues
- Consumer innovation and technology will continue to drive rapid advances in processing power, storage, and bandwidth
- Smart companies have recognized that this is a beneficial trend and have stopped fighting consumerization
- Instead, they are turning it into a competitive advantage by consumerizing their applications, such as recommending safe and secure third-party hardware and apps.

6. Gamification Of Training And Education

- Will fuel a fast moving hard trend using advanced simulations and skill-based learning systems that are self-diagnostic, interactive, game-like, and competitive, all focused on giving the user an immersive experience thanks to realistic three-dimensional interfaces
- Some will develop software using these gaming techniques to work on existing hardware systems such as Xbox and PlayStation
- A social component that includes sharing will drive success

Gamification Interventions
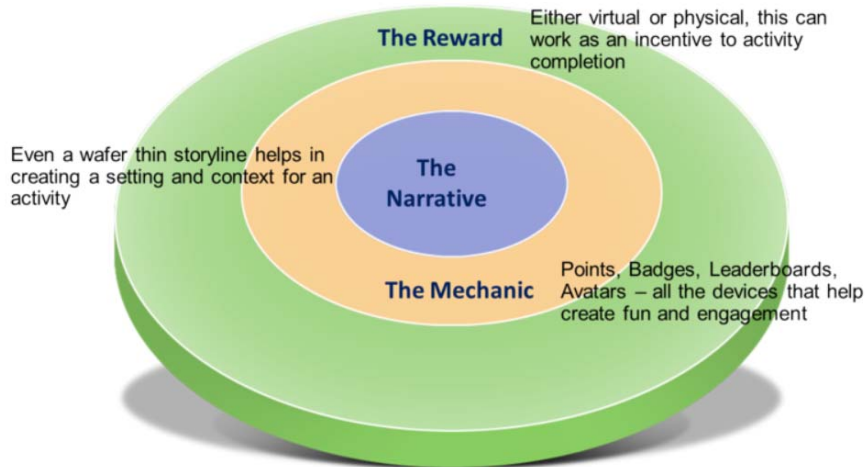
The Reward — Either virtual or physical, this can work as an incentive to activity completion

Even a wafer thin storyline helps in creating a setting and context for an activity

The Narrative

The Mechanic — Points, Badges, Leaderboards, Avatars – all the devices that help create fun and engagement

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7. Social Business

- Organizations are shifting from an Information Age "informing" model to a Communication Age "communicating and engaging" model
- Social software for business will reach a new level of adoption with applications to enhance relationships, collaboration, networking, social validation, and more
- Social search will increasingly be used by marketers and researchers, as well as Wall Street, to tap into millions of daily tweets and other social network conversations, providing real-time analysis of many key consumer metrics

The Purpose of Social Business is to

- **Engage** clients and potential clients through dialogue in real-time. Follow what people say about you and defend yourself.
- **Empower** staff and clients to exchange ideas and comments and participate.
- **Enable** clients and potential clients to better communicate with you in real-time. We live in the Six Second Society.

8. Smartphones & Tablets Become Our Primary Personal Computers

- Mobile Web becomes a must-have capability
- An Enterprise Mobility Strategy becomes mandatory for all size organizations as we see mobile data, mobile media, mobile sales, mobile marketing, mobile commerce, mobile finance, mobile payments, mobile health, and many more mobile services explode
- The smartphone or tablet is becoming our primary computer signaling a profound shift in global computing
- This new level of mobility will allow any size business to transform how they market, sell, communicate, collaborate, educate, train, and innovate using mobility

9. 3D Printing
(Additive Manufacturing)

- Represents a revolutionary type of manufacturing where 3D printers build things by depositing material, typically plastic or metal, layer-by-layer until the final product is finished
- Originally designed to print prototypes, they are increasingly being used to print final products such as jewelry, iPhone cases, shoes, car dashboards, parts for jet engines, prosthetic limbs, and much more
- This process allows companies to manufacture quickly, locally and with far fewer costs.
- Now supported directly in Windows 8.1

3D Printing – Print Almost Anything
(Shown below, the Liberator. Printed on a Stratasys Dimension SST 3D printer)

10. Visual Communications

- Takes video conferencing to a new level with programs like SKYPE, FaceTime, Lync and others giving us video communication on phones, tablets, and home televisions
- Visual communications will be integrated with current video conferencing systems, fueling this as a main relationship-building tool for businesses of all sizes

11. Mobile Banking
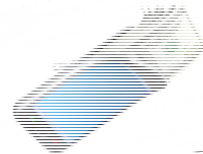
- Using smartphones as an eWallet is already being used in a few countries and will finally take off on a larger scale thanks to an increasing number of phones with *Near Field Communications (NFC)* chips
- More importantly, banks and credit card companies are already starting to see non-bank competitors jump in to the mobile payment race, such as Google Wallet and Apple's iOS 6 Passbook

12. 3D Displays for Phones and Tablets

- Will be the breakthrough that will drive wide-scale consumer acceptance of 3D computing
- This trend has already started with hand-held gaming systems thanks to the need to visualize ever increasing amounts of rich data
- We will see 3D data simulations for
  the enterprise grow rapidly
  starting with the military and
  then to medicine, entertainment,
  architecture, and education

13. Machine-to-Machine Communications

- Using chips, micro sensors and both wired and wireless networks will create a rapidly growing "internet of things" sharing real-time data, performing diagnostics, and making virtual repairs all without human intervention
- By 2020, there will be well over a billion machines talking to each other performing tasks and making decisions based on predefined guidelines using artificial intelligence
- Wearable technology will enhance advancements.
- But, don't wait until 2020, the Nest Thermostat does that today

Business and Personal

SECURITY CONCERNS

Security Considerations

- The past 12-18 months has exposed new, as well as, unique security issues.
- China has been found to be engaging in corporate espionage
  - Cyber attacks are routine
  - We are considered to be in a Cyber War on a number of fronts
- Death in the Digital Age is not so simple as it used to be…

Loss Of Digital Assets

- 600,000 U.S. Facebook users deceased in 2012
  - Lawsuits to gain access to pictures and content
- Consider your Amazon Kindle, Apple iCloud, and other libraries
  - They are a license agreement
  - On your death, who owns the content?
- Do you care? What is the value?

Is Your Password Good Enough

- Simply making your password, or passphrase, longer, may not be good enough
- Consider how secure your password has to be
- Test your password:

  Gibson Research Corporation Haystack - https://www.grc.com/*haystack*.htm

The Threat Of Java

- Many technologists are recommending that if you can live without Java, you should remove it from all your systems
- Multiple zero-day attacks in 2012 and 2013
- Consider a policy to remove Java from all computers
  - www.tinyurl.com/k2java

If You Must Have Java

- Some business critical sites may still require Java to run
- Until you divorce yourself from these, you may still need Java
- Here is a site to help you manage Java to some degree
  - www.tinyurl.com/k2safejava

Reduced Effectiveness Of Antivirus

- Infections become more common
- End point protection not as useful
  - More overhead
  - Does not significantly improve protection
  - Use simple antivirus instead
- Built into Windows 8
- Consider only running antivirus on firewalls if you have an all Windows 8 environment

Spam, Too!

- Amount of spam is dropping, but still a lot
- Hosted mail providers not as effective in spam filtering – Office 365 email, as an example
- Better providers
  - Google Spam (was Postini)
  - DoubleCheck
  - Barracuda

SOFTWARE UPDATE

Workstation

- Importance of platform
- Windows 8, Pro, Enterprise and RT
  - Portable Windows
- Android
- iOS & Mac OS
- Reduced effectiveness of antivirus
- Desktop virtualization
  - Microsoft Hyper-V
  - VMware
  - XenDesktop
- Cloud enablement & storage

Importance Of Platform

- The platform (i.e. Windows, Mac, or Linux) is becoming less and less important
  - At the same time, Google, Apple, and Microsoft, are struggling to dominate and promote their own platforms
- Evolving technologies such as HTML5 (and beyond) ensure that applications are platform (OS and hardware brand) independent
- This may be a 5+ year evolution but a very positive sign of what is yet to come
  - The landscape is constantly changing as well as who dominates in the technology world

Windows OS

- Four flavors: Windows 8, Windows 8 Pro, Windows 8 Enterprise and RT
  - We believe that Pro or Enterprise is where most of you want to be
- Most of the conversation has been about the change in the navigation – the Start screen
- With use, you realize that Windows 8 is a better Windows 7

Windows 8.1

- Preview is out, but beware, option to uninstall is not there. Will have to reinstall apps when RTM is out.
- Download Preview from
  - http://windows.microsoft.com/en-US/windows-8/preview

Windows 8.1 – A Semi-Start Button

- The Windows flag to the far left updates a new pop-up Start as a semi-transparent version of the modern Start menu, over whatever else you were doing.
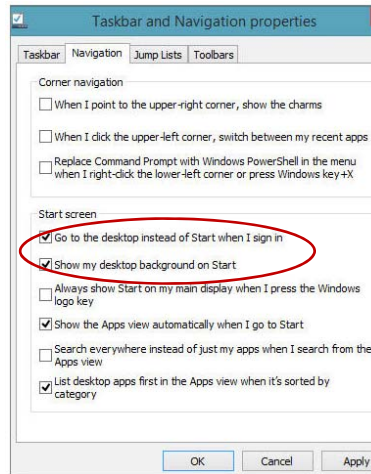- You can also right-click to bring up other options like "shut down."

Windows 8.1 – Desktop Direct

- A properties box that helps Windows users avoid Start altogether. To open the dialog box, right-click any empty spot on the taskbar and choose Properties; then select the Navigation tab

Windows 8.1

- Updated Start tile options include a smaller option and a large option, all will be interactive and allowing better organization of your apps.

- Internet 11 will be released with 8.1 with a version for Windows 7 to follow.

- Two improvements include Mozilla's WebGL graphic-rendering technology and SPDY load-time speed up protocol pioneered by Google.

Windows 8.1 - Hands-Free Mode

- Windows 8.1 comes with a ton of apps already installed, from news readers to music and video players to games, and has updated a lot of those with "cool" new features. All this description may be a hint of where this OS is headed.
- The Food & Drink app, for example, collects recipes and tips from famous chefs, but if you're reading it while cooking, you may not want to touch your screen, so Microsoft has used Kinect technology and made a hands-free mode.
- Just wave your hands to swipe through pages and recipes. The computer's webcam will do the job of the Kinect. Pretty cool!
- Wait to see the interactive games coming soon as well as, of course… business apps!

Windows 8.1 – Universal Search

- The "Charms" menu, which you access by swiping in from the right side of the screen, has always had a search option, but it wasn't all that useful with the release of version 8.
- Now it's a true universal search function, allowing you to search Bing, but also your files, folders, and applications, all in one box.

Windows 8.1 – New & Updated Apps

- Yes, Windows 8 (and 8.1) has apps, just like a tablet or smartphone.
- There are a few new touch Apps for this update:
  - a calculator (with scientific and unit converter built-in);
  - Health & Fitness (which monitors your diet and exercise, sort of like a simpler Fitbit);
  - Reading List, which like Instapaper or Pocket lets you save long items to be read later;
  - and updates for existing apps ranging from some small cosmetic changes to the Maps app to a total visual overhaul for the Music app.

Windows 8.1 – Support for 3D Printers

- Microsoft says Windows 8.1 is the first operating system to support desktop 3-D printers like Makerbot or Solidoodle intrinsically.
- 3-D printers will have a driver and an API, just like a regular 2-D printer so you should be able to hit File -> Print from your 3-D modelling software the same way you would to print from Microsoft Word.
- This should make things a bit easier in the long run as new software and hardware can all rely on a single driver. This also indicates the expanding future of 3D Printing.

Windows 8 To Go

- **Windows To Go** is a feature in Windows 8 Enterprise that allows Windows 8 Enterprise to boot and run from mass storage devices such as USB flash drives and external hard disk drives
- **Think:** a complete, manageable computer on a USB
  - It is a fully manageable corporate Windows 8 environment
  - It is intended to allow enterprise administrators to provide users with an imaged version of Windows 8 that reflects the corporate desktop and, as such, is aimed at enterprises
  - Creation of Windows To Go drives is not supported by other Windows 8 editions

Windows 8 To Go

- Windows To Go works both on USB 2.0 and USB 3.0 connections, and both on legacy BIOS and UEFI firmware
- Enables BYOT and protects the business
- Enables and controls temporary or remote workers' computers
- Not just any USB drive can be used in this environment, and Microsoft has set up specific testing requirements that the USB drive manufacturer must meet in order to be a supported device

Windows 8 To Go Drives

- Currently there are five USB Flash memory devices listed as supported by Microsoft for Windows To Go, and while a 32GB device might work, we recommend you use a 64GB USB stick
  - Imation IronKey Workspace 3.0 $389
  - Kingston DataTraveler Workspace 2.0 $219
 - SPYRUS Portable Workplace 2.0 $300
  - SuperTalent Express RC8 3.0 $400

Windows 8 To Go

- When using a PC as a host, only hardware certified for use with either Windows 7 or Windows 8 operating systems will work well with Windows To Go
- Computers running Windows RT or OS X are not supported
- To create your own Windows 8 To Go Stick, visit this site: http://techmell.com/how-to/create-portable-windows-8/
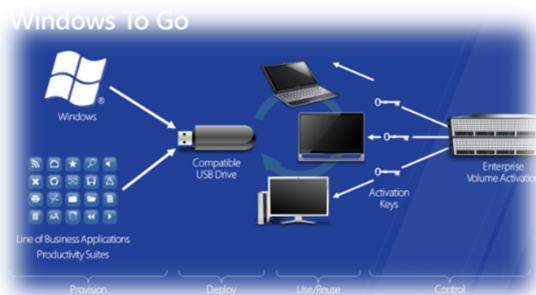
Google Android vs. Chrome

- According to the Android Developers' Dashboards section, 37.9% of users are running Android version 4.1 and 4.2 on their smartphones, while Gingerbread (2.3) slips into second place with 34.1%. Ice Cream Sandwich (4.0) takes third place with 23.3%

- The biggest smartphone technology event in a decade may be just one year away. **Google** appears to be working hard to replace Android with its current PC desktop/laptop operating system, Chrome OS -- commonly referred to as "Chromebook" and "Chromebox" products. These new smartphones and tablets would be called "Chromephones" and "Chromepads." The Chromephones would launch around the middle of 2014.

Apple iOS And Mac OS Update

iOS 7 – Radical Look, All new feel…

- For the first time since the original iPhone, the overall look and icon structure of iOS is now new and fresh.

- The wallpaper can now be dynamic or static. Dynamic wallpaper is similar to the animated wallpaper in Android, except it doesn't interact with your finger. The default wallpaper is static.

New iOS 7

Folders and Control Center

- Swiping up from the bottom brings up the Control Center. This is an easy way to access your most used settings, including WiFi, audio, brightness and quick access to alarm, a calculator, camera and flashlight.
- Meanwhile, photos can now store more items and span pages.

New iOS 7

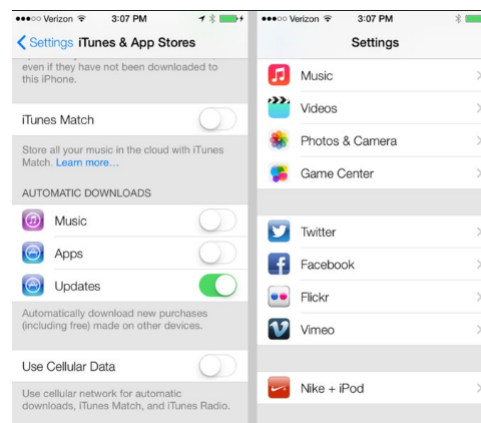**New Integrated Services**

- Flickr and Vimeo join Facebook and Twitter as built-in services.
- New Lock Screen.
- Easier access to Setup
- Nearly all apps get a refresh, some are radical and others a new look.
- Now what will the hardware look like?

New Features For Mac OSX

- Apple also showed off features of a coming operating system upgrade for Mac computers, called **_OSX Mavericks_**.
- Apple also showed it's answer to Pandora, iTunes Radio, which will be available on computers and mobile devices later this year. The program brings in pre-programmed radio stations to iTunes, and will let listeners create stations based on their favorite artists. It's more akin to online radio services like Slacker than Pandora, which uses a computerized system to determine stations based on your musical tastes. The service will be ad-supported.

Mac Air Gets New Update

- Beyond software, Apple announced new versions of its popular MacBook Air and Pro laptops, the ultra-thin and light computers.
- Apple says battery life has been dramatically improved for the new models, going to 9 hours (from 5 hours) from the 11 inch edition, and 12 hours (from 7) for the 13 inch model.
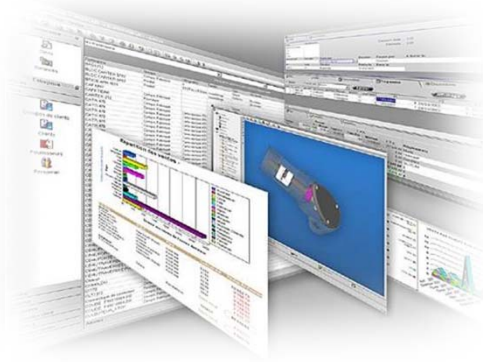
Server Software Updates

- Windows Server 2012
- Exchange Server 2013
- SQL Server 2012
- SharePoint 2013

Windows Server 2012

- Redesigned Server Manager eases managing multiple servers
- The operating system, like Windows 8, uses the Tile UI when not installed in Server Core mode
- Windows PowerShell for Windows Server *2012 has over 2300 commandlets, compared with around 200 in Windows Server 2008 R2*
  - There is also command auto-completion
  - Windows 8.1 now goes to PowerShell instead of CMD

New Windows File System, ReFS

- ReFS (**Re**silient **F**ile **S**ystem, originally codenamed "Protogon") is a new file system initially intended for file servers that improves on NTFS

- ReFS provides improved reliability, using B+ trees for all on-disk relational database structures including metadata and file data

- The file size, total volume size, number of files in a directory and number of directories in a volume are limited by 64-bit numbers, which translates to maximum file size of 16 Exbibytes, or 10^{18} bytes = 1,000,000,000,000,000,000 bytes

Features - ReFS

- ReFS seamlessly integrates with Storage Spaces, a storage virtualization layer that allows data mirroring and striping, as well as sharing storage pools between machines
- ReFS resiliency features enhance the mirroring feature provided by Storage Spaces and can detect whether any mirrored copies of files become corrupt
- Some NTFS features are not supported in ReFS, including named streams, object IDs, short names, file compression, file level encryption (EFS), user data transactions, sparse files, hard links, extended attributes, and disk quotas
- ReFS does not offer data deduplication

Exchange 2013

- Contact consolidation and search
- SharePoint and Lync integrations
- More compliance including protection on sending information erroneously
- Built-in malware protection
- Outlook Web Access (OWA) optimized for tablets and smartphones

SQL Server 2012

- Three reporting engines – much higher performance
- A new architecture for SQL Server 2012 SP1 PowerPivot that supports a PowerPivot server outside a SharePoint 2013 farm
- The new architecture leverages Excel Services for querying, loading, refreshing, and saving data
- The PowerPivot server can still be installed on a server that also hosts SharePoint servers but it is not required
- The new architecture is available when you deploy a new PowerPivot server with the slipstream version of Service Pack 1

SharePoint 2013

- eDiscovery support
- Records Management and retention policies
- In-Memory Business Engine (IMBI)
- Excel Business Intelligence with PowerView
- GeoLocation for mobile apps
- PerformancePoint for the Apple iPad

Office 2013

- Office 2013 is out, updates have been somewhat slow, but expected to improve
- The method for purchasing Office is changing to a subscription model
  – Microsoft is still offering out of the box, but at $399, clearly discourage it and want you to purchase the $99 annual subscription for home personal use, or $149 a year for the business version

Office 2013

- Box versions only offered as single license
- Subscription versions may be installed on up to five computers that you own
  - Business subscription has additional restrictions
- Subscription versions also includes 20+GB of SkyDrive space!

Office 2013 Version Caution!

- Four tools (PowerPivot, PowerView, GeoView, and Inquire) are not available in current retail, home, or OEM versions of the product
- Microsoft requires users to either
  - (1) have a Mid-sized business Office 365 plan (E3 or E4) or
  - (2) purchase the software through a volume licensing plan to get these four features

Office 365 Home Premium

- Office 365 Home Premium will cost $99 per year, with 20GB of SkyDrive storage and 60 minutes of Skype calling per month and access on five computers, along with the ability to change out the devices at any time, and use "full featured apps" temporarily on any PC
- It's a single subscription for up to 5 users, and will have a 30 day free trial available

Office 365 Small Business Premium

- Small businesses with 1-25 employees could opt for Office 365 Small Business Premium that also comes with all the apps,
- Each user can install on up to 5 PCs or Macs
- For each user, provides 25GB Outlook storage, and 7GB SkyDrive
- Also provides online meeting tools and even website hosting
- $150 per user, per year with free trial available

Office 365 – Midsized Businesses And Enterprise Businesses

- Plans ranging from $4 per user, per month to $20 per user, per month with variety of features to suit even the largest organizations
- For example, Office 365 Midsize Business plan supports up to 300 users at $15 per user, per month and Office 365 Enterprise E3 supports an unlimited number of users at $20 per user, per month
  - Both plans provide desktop software, Web Apps, Exchange Online, SharePoint Online, Active Directory Integration, etc.

HARDWARE UPDATE 2013

Workstations – Desktop Configuration

- Intel 3rd generation iCore processor or higher
  - i7 - The business and gaming solution for maximum speed with dual or quad core preferred
  - i5 - Locate for low impact work such as receptionist, bookkeeping, cloud-based processing
  - i3 – Rarely suitable for office productivity, perhaps inventory receiving and distribution or thin client and cloud solutions

Workstations – Desktop Configuration

- 8 – 16 GB of RAM for i7 or i5 based systems
- SSD or HDD (Hybrid Disk Drive) for the boot drive
  - 128GB OK for cloud, but typically not enough space for processing desktop apps
  - 256 – 512GB preferred for boot drive
- Many desktop systems are not shipping with an optical disk
- Verify type of display adaptor
  - VGA is disappearing quickly in favor of HDMI and DisplayPort

Workstations – Laptop Configuration

- Consider what we presented for desktop and apply to laptops as well
- Consider Ultrabooks™ as super thin, powerful, and highly mobile devices
- Chromebook – Google Android notebook devices targeted to those not needing Windows compatibility to run local apps
  - Excellent for cloud-based computing
- Google Pixel – Touchscreen - $1,299

Workstations – Displays

- There is a movement to larger displays such as 27 – 30" models and away from dual monitors that were in the 15 – 19" class
- Windows 8 does an excellent job of supporting multiple monitors
- Touch monitors in the 27" or larger class include Planar, Panasonic, and LG
- Pricing is currently from $700 up
- Expect pricing to begin coming down mid-2013

Workstations – Peripherals
(Mice, Keyboards, Printers & Scanners)

- Logitech G series are excellent high resolution options, such as the G9x
  - Adjustable pixel density for rapid mouse movement across multiple monitors
  - Use Logitech SetPoint software with Windows for best Windows 8 experience
  - Programmable buttons are great for returning to Start Screen
- If using Microsoft mouse, install Microsoft Intellisense software for the mouse

Server Recommendations

- Remain on name brand (HP, IBM, Dell)
  - Rumor that Lenovo may purchase IBM Server line
- License Microsoft Data Center edition (>12 CPUs)
- 8-16 cores
- Virtualize!
- 64-128GB of RAM
- SSDs for performance
- Boot ROMs if SANs are used
- Fiber Channel SAN if
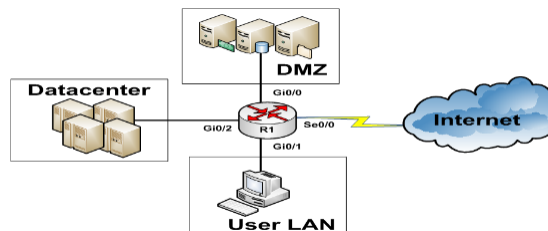 - Virtual Desktops implemented
  - More than 50 users

Network Update - LAN/WAN

- Switches
  - HP if <500 users
  - Cisco
- Firewalls
  - SonicWALL, WatchGuard if <500 users
  - Cisco, Juniper, Fortinet otherwise
- VPNs
  - Hardware based less common
  - Consider Microsoft Direct Access

Network Update - SDN

- Software Defining Network (SDN) is an approach to building computer networks that separate and abstracts elements of these systems
- These elements are called the "control plane" and the "data plane"
- SDN decouples the system that makes decisions about where traffic is sent (the control plane) from the underlying system that forwards traffic to the selected destination (the data plane)

Network Update - SDN

- The inventors and vendors of these systems claim that this technology simplifies networking and enables new applications, such as network virtualization in which the control plane is separated from the data plane and implemented in a software application
- This architecture allows network administrators to have programmable central control of network traffic without requiring physical access to the network's hardware devices
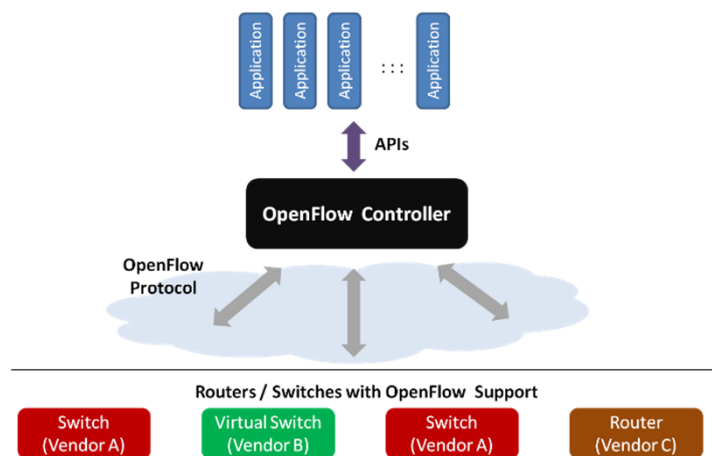
Network Update - SDN

Source: http://tech.saroscorner.com

Network Update – Remote Access

- Citrix leading the way with XenApp
  - Better monitor, printer support
  - Higher speed
  - Less communication line speed required
- Microsoft Remote Desktop Protocol (RDP, formerly Terminal Server)
  - One generation behind Citrix
  - Sufficient for occasional use
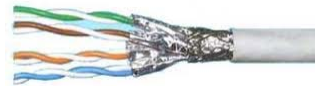 - Broadly recommended and used, and perhaps shouldn't be

Network Update – Support It Right

- Cabling
  - New CAT 8 standard
  - Cost effective – CAT 6A
  - Leading edge – CAT 6AF, CAT 7 or CAT 7A
- Wireless
  - High density access points
  - 802.11ac – new standard

Network Update - Wireless

- Remove 802.11b & 802.11g devices
- Standardize on 802.11n for the short term
- 802.11ac - http://en.wikipedia.org/wiki/IEEE_802.11ac common in 2015.
    - Pre-standard devices available now. Reviews rated NetGear R6300 top product. Most home grade competitors are between $179-229
    - IEEE 802.11ac is a wireless computer networking standard of 802.11, currently under development (Draft 4.0), providing high-throughput wireless local area networks on the 5 GHz band. Standard finalization was in late 2012, with final 802.11 Working Group approval in late 2013.According to a study, devices with the 802.11ac specification are expected to be common by 2015 with an estimated one billion spread around the world.
    - Theoretical multi-station WLAN throughput of at least 1 gigabit per second and a maximum single link throughput of at least 500 megabits per second.

High Density WAP Recommendations
(Could support as many as 500 devices)

- Meraki MR16
    - Dual 802.11n radios
    - 600 Mbps wireless access point
    - $649.00
    - PoE Support
- Juniper
- Cisco

QUESTIONS/MORE?

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