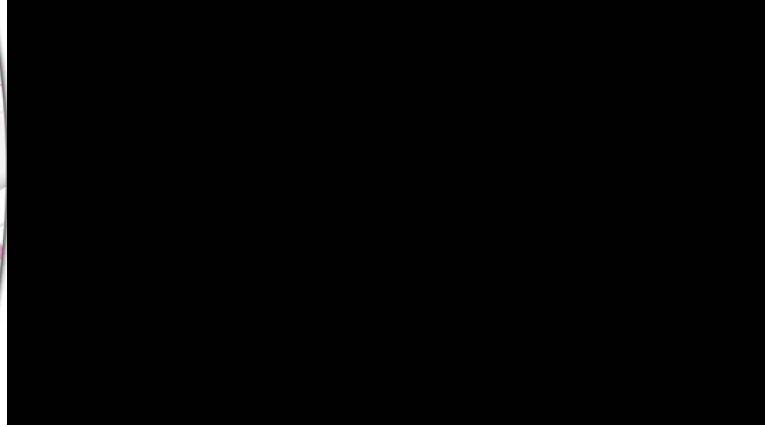


Today I'll be giving you an overview of cloud computing. The presentation will hopefully give you three things:

- An understanding about how cloud computing is being adopted by the business community
- An understanding of some of the benefits and also the downsides of cloud computing
- An understanding of how to take initial and ongoing steps, should you decide to utilize the technology for your business
- Please if you have questions, interrupt me at any time. We should also have time at the end of the presentation for questions.




What is Cloud Computing?



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“...The Computer industry is the only industry that is more fashion driven than women’s fashion...”

Source: Larry Ellison, CEO of Oracle Corp. 2008

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In 2008 when Larry Ellison, the CEO of Oracle spoke at Oracle OpenWorld, he made this statement as he addressed the use of the phrase “cloud computing” being hijacked by marketers, including Oracle’s people. At this point in time, Oracle had not yet released a cloud computing offering.


Who here understands where women’s fashion is headed next?

With all of the marketing hype around the term cloud computing, it’s no wonder that there’s confusion about what is and is not cloud computing.



**“World’s Best
Foundation for
Cloud Computing:
Oracle Exalogic
Elastic Cloud....”**

Source: Oracle announcement
at OpenWorld 2010

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Two years later, Mr. Ellison had changed his tune completely. Oracle has jumped on the cloud computing bandwagon in a big way.




“The global market for cloud computing is going to increase from about \$41 billion in 2011 to \$241 billion in 2020, according to new estimates from research firm Forrester.....”

Source: WSJ Digits blog – April 2011

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Two years later, in September 2010, Oracle has changed their tune about the term and used it to make this announcement regarding their entry into the cloud computing market. Oracle has a market capitalization of about 162 billion dollars.

Despite Mr. Ellison’s views about cloud computing in 2008, Oracle is obviously on the cloud bandwagon two years later, as recently as 2010.



“Worldwide IT cloud services revenues are expected to grow rapidly at a CAGR of 26% from 2009 to 2013 to reach US \$44.2 billion.”

Source: Capgemini Strategy Lab Analysis; Forrester Research; Cloud Computing 2010, *An IDC Update*, September 2009


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Here’s what Forester Research had to say about the growth of the cloud computing market in 2009. This is an especially interesting set of numbers given what we all were experiencing with the economy in 2009.

How many of you had business growth in 2009?


Update on this – according to an IDC analyst, SaaS revenues were over \$16 billion in 2010 and expected to grow at CAGR of 25% through 2015.

Here’s an area of IT that despite the economic conditions we all were experiencing, is growing at double digits CAGR.



“Gartner, projected that it (cloud computing) will have revenue of \$148.8 billion by 2014, higher than Forrester’s forecast of \$118.7 billion for the same year.”

Source: WSJ Digits blog April 2011

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Here’s another quote from the wall street journal blog that says Gartner’s estimate for growth in cloud computing is even higher than Forrester’s estimate.



“With Microsoft’s latest cloud-based productivity and collaboration tools, New York City employees will benefit....”


- \$50MM 5-year deal

Source: Microsoft CEO Steve Ballmer press release October 2010

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This is a record \$50 million 5 year deal with City of New York that was done in late 2010 – Steve Ballmer and Mayor Michael Bloomberg unveiled the deal., which is part of the city’s larger strategy to renew the tech infrastructure and centralize IT planning.

100,000 employees will be using MS cloud productivity services (Office and Sharepoint) estimated savings of \$98 million.



“Frost & Sullivan estimates growth of cloud computing will rise from 32% (adoption rate) this year to 50% by 2012”

Source - Dr. Monsinee Keeratkrainon,
Country Manager, Frost & Sullivan
Thailand – reported in “The NATION”
11/17/11

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This is from an article in an online news source called The NATION – that quotes a source from Frost & Sullivan. The rise in adoption is being driven by the recent flooding in Thailand. With users unable to get to their computers and servers that are under water due to the flooding, cloud computing is thought to be a viable alternative.



Here's a short video about what cloud computing can do for a smaller company, in this case it's a 4-person outfit. You may have seen this recently yourself as it's an ad for Microsoft. What you may not know is that Microsoft has been developing cloud applications for the past 4 years. These applications are now being marketed commercially. Microsoft Office 365. The video shows how multiple people can work on the same presentation from different places, including the office, home, a coffee shop, and a hotel.

What's compelling about this is that this is happening in real time. Microsoft Office 365 includes something called a sky drive, which allows a document to be stored in the cloud and shared with others.

Here's the video.

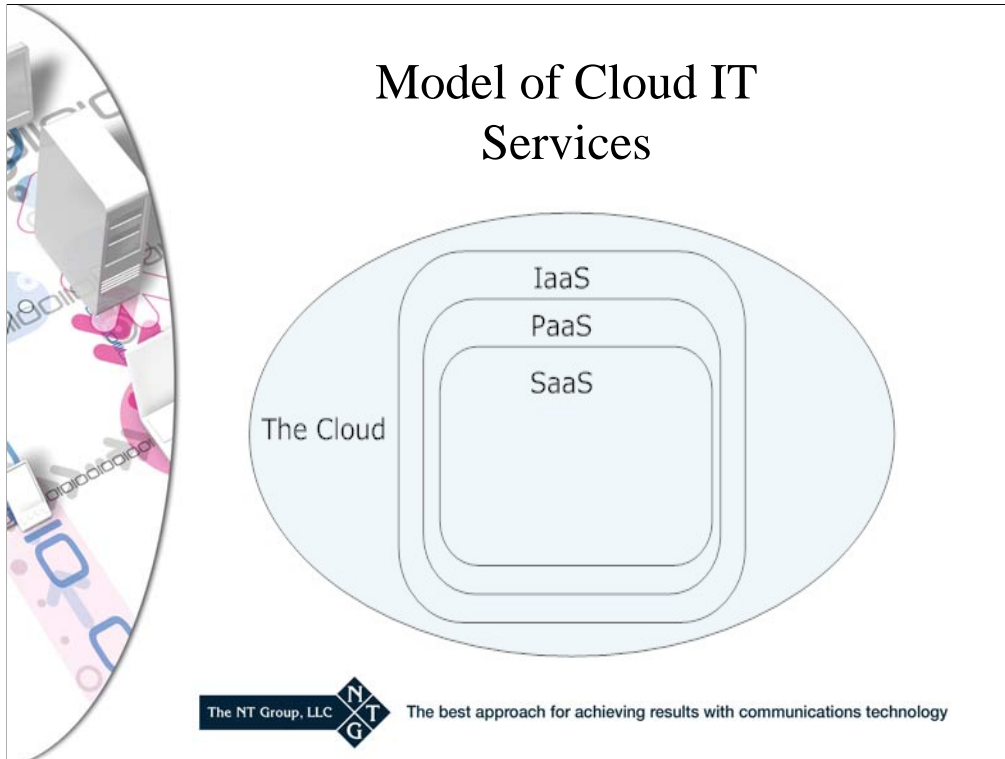


Common Traits of Cloud Computing

- On Demand
- Rapid Elasticity
- Ubiquitous Access



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Infrastructure as a service

- The hardware, utility power, network connection, HVAC, rack space, disk storage
- You specify the need and pay for it as you go – datacenter-based

Platform as a service

- Typically a combination of the above with an application development toolset

Software as a service

- Individual software applications that are hosted on a subscription-based service



SaaS – Software as a Service

- Google Docs
- Microsoft Office 365
- Salesforce.com
- pixlr.com (image editor)
- aviary.com (audio editor)
- jaycut.com (video editor)
 - free until 1/31/2012
- carbonite.com (backup)



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David Fletcher – Cloudtweaks.com



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Platform as a Service (PaaS)

- MS Windows Azure – MS application dev.
- Google App Engine – several programming languages
- Common Traits
 - Web-based application development environment
 - Capacity scales up/down as needed
 - Quickly configured and started
 - Access to the application but not the (server machine) console




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Examples of PaaS – application development environments. No capital hardware to buy in the form of servers, application development software, data storage hardware. This opens up the development arena to smaller companies that can scale up development projects by hiring project developers on contract and using these development arenas in which to develop software.



Infrastructure as a Service (IaaS)

- Hosted Datacenter Space
 - Servers
 - Data Storage
 - Redundant power, connectivity, HVAC
 - Network connection options (Internet/phone)
 - User provides database and applications

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Examples of IaaS

AT&T – provides and manages the infrastructure including the network, servers, and storage. The user provides and manages the database and applications.

Hosted space providers have been around for years. This is first generation cloud computing . This is evolved to where I've had providers that will rent 1u and 2u slots within a rack.




IaaS/PaaS – Blurred Lines

- “...by 2012 the concept of IaaS and PaaS will disappear, and IT professionals will discuss the more generic feature offerings of each cloud vendor.”

Simon Ellis/CloudTweaks Contributor




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In Summary

- An IT provisioning technique
 - Subscription-based
 - Easily scaled up and/or down
- Capabilities are provided as a service
 - Computing Horsepower
 - Data Storage
 - Application Software
- Access technology via the Internet
 - Secure connection (desired)


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Cloud Computing – putting some definition around the term

-A different provisioning technique

-Eliminates the need for expensive IT infrastructure and the labor to support and maintain that hardware and software

-Gives the ability for small and mid-sized companies to essentially get and use the same technology as larger enterprise companies because it's subscription based and not infrastructure based technology

-Gives companies the ability to quickly adopt new technology and replace aged or outdated equipment and software without spending capital dollars


-Because it's subscription based, IT expenses are predictable

-Access to technology is Internet-based so it enables mobility in an organization

-Makes it easier to spend more time with the customer


-Makes people more productive – spend less time traveling

-Financial services firm – estimated 20% improvement in productivity and an increase in overall morale and job satisfaction




Case Study - Small Business Situation

- 14 User Financial Services Company
- Applications
 - MS Office
 - MS Exchange
 - Document Management
- Issues
 - Ongoing support problems
 - Outdated hardware/software
 - Need to reallocate personnel
 - Unreliable data backup


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Real life example of a customer I worked with a year or so ago.



Case Study - Solution

- New MS Office application for all users
- New MS Exchange (shared calendaring, email, contacts)
- Data backup – disk to disk and disk to tape
- Antivirus included
- Inexpensive PC hardware
- Secure connection/SAS 70 Type II hosting facility
- 24x7x365 help desk
- Reduced real estate footprint
- Mobile workforce enabled

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Here's an overview of what was implemented for this client.

Estimated 20% increase in productivity – added revenue without adding headcount.

Reallocated Office manager to work on implementing new practice management solution – meeting strategic vs tactical goals – enabled business to address new market

Solved DR/Backup problem immediately

Enabled mobility for sales people and work at home for operations people

Improved overall technology toolset

Reduced the need for office space – increased space to lease

Annual IT spend was unchanged.

SAS 70 – Auditing Standard developed by the AICPA to report “processing transactions by service organizations”




Case Study - Situation

- 12-agent inbound call center
- Insource asap
- Need network, telephony, CC software, CRM software, carrier services
- More space needed to house agents (business move)




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Case Study Outcome

- SaaS for CRM
- SaaS for CC Software
- Carrier – 3Mb Internet Circuit
- Network – Security and Quality of Service (QoS)
- No Building Move Needed – Scales with home-based agents


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Big savings here was not having to move the business. The solution scales with home-based agents. And it's a predictable IT spend based on adding headcount. In other words, the monthly cost for SaaS applications is based on a license cost per user.



Benefits

- **Flexibility/Speed**
 - Faster application deployment
 - Scale up/down easily (subscription-based)
- **More Control of Your Business**
 - Work from anywhere
- **Cost Efficiency**
 - Reduces/eliminates need for IT human resources
 - Predictable technology expense


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IaaS and PaaS enable application development in a scalable environment without spending capital budget on hardware/software – this is going to speed up application development.

300,000 applications for the iPhone now. Google Droid? Microsoft Windows Phone Seven
This will translate to better options for all of us.


Work from anywhere you have broadband Internet access. Get closer to your customers with the applications that enable business. Sales – demo applications/on the fly marketing information

Operations – project schedules/task list updates/checklists – be able to report in real time

Financial services org – reallocate office manager's time to focus on application rollout for practice management applications (strategic to business growth) vs PC break/fix virus removal.


Predictable expense due to subscription-based model.

Dave's story.



Benefits

- **Increased Technology “Horsepower”**
 - Computing, data storage, application dev.
- **Levels the Competitive Playing Field**
 - Enterprise-type applications and infrastructure are available to smaller companies
- **Agility/Responsiveness**
 - Easier application deployment
 - Easier scalability

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Cloud computing provides a more affordable upgrade path for business owners who need:

-New hardware/new applications

-Solve license compliance issues

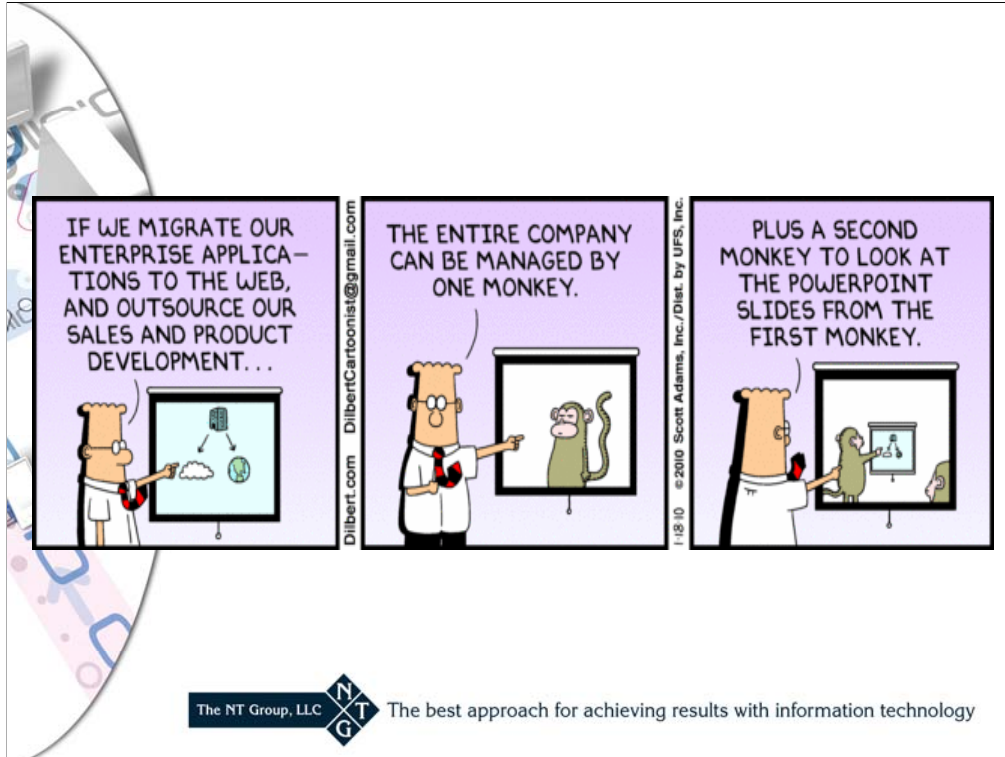
-Web-based applications take less CPU/storage overhead

-- example of winter devices

-Can scale with ease – phone call to set up a new user vs ordering the PC, calling the support guy, scheduling service, configuring servers, etc.

-- use example of Superior vs hosted client.


-Innovation.



So cloud computing sounds like it's the best thing since slice bread – and according to Dilbert, we'll only need a monkey to manage our technology. But like anything, there's a downside that has to be managed as well.


I think that the lesson here it's that like with any technology, be cautious of an overly-simplistic approach.

As with any strategic shift in an approach to solving business problems, the devil is in the details.



Risks and Challenges

- Data Security
 - CIA Triad
 - ISO 27002
 - Two Factor Authentication (2FA)
- Application Interoperability
- Architecture vs. SLA
 - Selecting Appropriate Model
 - Hybrid vs. Private vs. Public


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Confidentiality is the term used to prevent the disclosure of information to unauthorized individuals or systems

Integrity means that data cannot be modified undetectably.

Availability For any information system to serve its purpose, the information must be available when it is needed. This means that the computing systems used to store and process the information, the security controls used to protect it, and the communication channels used to access it must be functioning correctly

ISO 27002 – standards for information security


Provides best practice recommendations on information security

2FA – something you know and something you have

Example – username/password combined with a token card


Now token cards are being replaced with PDA-based tokens

Application Integration – Hosted MS Exchange and Outlook vs web-based practice management application that integrates email – click to send email.



Six Gotchas

- SLA – uptime guarantee/penalties
- DR Plan for provider
- Communication of outages/problems/fixes
- Backups
- Security of Data
- Redundancy (Architecture of the Solution)
 - Facility
 - Network


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SLA – what’s in the contract for guaranteed uptime – usually expressed as a percentage. Look for 5 9s.

Ask the provider to review their Disaster Recovery plan with you. What happens if there’s an unplanned emergency at the main site?


Ask how the provider communicates problems and fixes. What is their help desk availability during and after business hours?

What is their data backup scenario? Disk to disk (needed) then disk to tape (guarantee) tape stored offsite in secure location

Redundancy – How is it implemented in the provider’s environment? Spare disk drives/servers


Redundancy – second site for DR?

Redundancy – failover Internet connection at critical sites.



What Does it MEAN for Commercial Real Estate?

- Mobile/remote office worker – less space needed/tenant
- Eliminates/reduces needs for HVAC/Power for server/computer rooms
- Eliminates/reduces needs for special security


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Start by studying the current environment. Get a handle on what hardware and software applications exist and any license compliance exposure you may have.

Example of TBG – MS Office license compliance. Email licenses at Vanman.

Outdated server hardware? Disc storage reaching capacity on servers?

What's the backup/DR plan? Exposure there?

Where can staff be reallocated - Insurance services provider – Deb was fixing pcs instead of implementing the practice management application - TBG – Joe was repairing desktops vs. upgrading the practice management application

Easy app to go to cloud – outsource MS Exchange to a cloud service provider – enable global calendaring, shared contacts, shared calendars and other productivity-enhancing toolsets.

Check on secure email needs at the same time

MS Office applications - google docs is an alternative

Voice U/C applications – PBX or telecom infrastructure in need of upgrade? Work with Vanman – studying hosted VoIP/UC along with premise solution



Cloud Impact On Commercial Real Estate

- Increases the need for redundant and reliable Internet connections
- Increases the need for shared vs. dedicated workspaces
- Increases the need for wireless vs. wired access
- Increases opportunity for improved LEED score



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