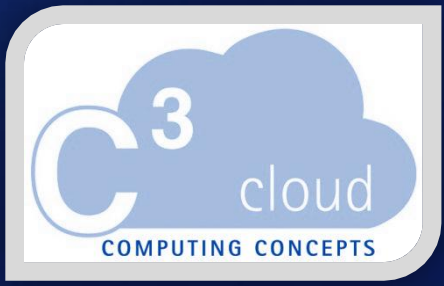
Leveraging the Cloud to Save Energy, Money, Time, and Potentially Your Business!



Introduction…

- Presented by Rick Mancinelli
- Technology Consultant since 1990
- Background in Software Development, Network Engineering, and Executive Level IT Management
- Managing Partner in Cloud Computing Concepts, LLC (aka “C3”)

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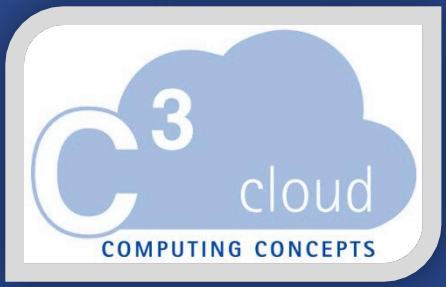
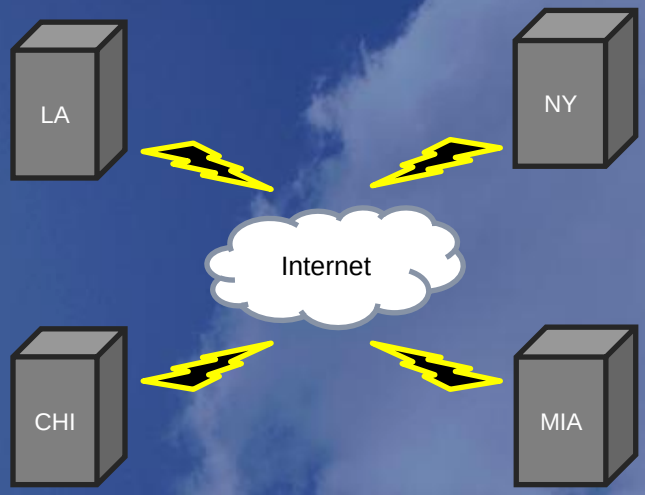
So What Is Cloud Computing?



Origins of the term Cloud Computing

- The “Cloud” was originally used in technology diagrams to represent the corporate network and/or the Internet.
- IT professionals did this to avoid having to explain technical things to corporate executives!
- When data processing and computing moved to centralized data centers, it was then said to occur “in the cloud.”



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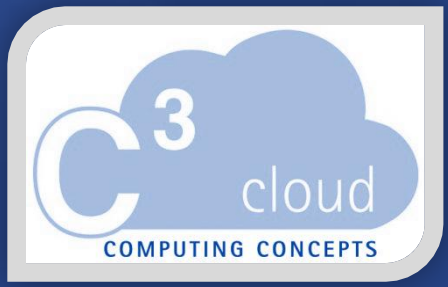
Official Definition of Cloud Computing

According to the National Institute of Standards and Technology…

"Cloud Computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

Clear as mud, right?



Cloud Computing in English

- Cloud Computing essentially turns Technology into a utility service, similar to water, power, or cable TV.
- Resources are available on an as-needed basis.
- Companies pay only for the resources they consume.
- Companies are relieved of the day-to-day management and operation of the infrastructure required to deliver those resources.
- It is cheaper than doing it yourself!

Two Major Components of Cloud Computing

- Software as a Service (“SaaS”)
  - **Software accessed via web browser.**
  - **Initially used for CRM and SFA tools.**
  - **Many types of applications now available via SaaS.**
  - **Most businesses using one or more SaaS apps today.**
  - **Examples include Gmail, Salesforce.com, WebEx, Quickbooks Online, NetSuite, and many others.**

- Infrastructure as a Service (“IaaS”)
  - **All or most of corporate servers moved to the Cloud.**
  - **In some cases, desktops moved as well.**
  - **IT systems become available from many different types of devices including PC’s, thin clients, smart phones, tablets, and more.**

- The Endless Upgrade Cycle Is Broken!

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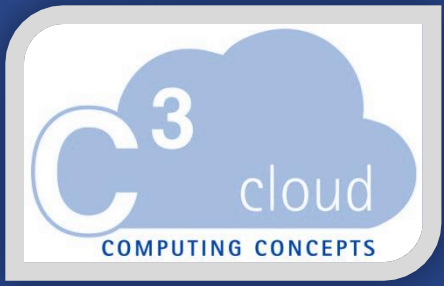
Energy Savings



Electrical Savings

The following assumes a per kilowatt hour rate of $0.115:

- Replacing a 50 watt PC with a 10 watt Thin Client results in a savings of approximately $40 per year. Dual processors, dual power supplies, multiple hard drives, and high end graphics cards all increase this number dramatically.

- Migrating a 600w server to the Cloud saves approximately $604 per year.

- An office with 3 servers and 25 PC's will save approximately $2812/yr in electrical costs by migrating to the Cloud.

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Cooling Savings

The following is a simple example:

- An average 50w PC requires approximately 170 BTU/hr of cooling.
- An average 600w server requires approximately server requires approximately 2047 BTU/hr of cooling.
- An office with 25 of the above PCs and 3 of the above servers will require 10391 BTU of cooling – that means nearly a 1 ton unit for JUST the technology.
- The cost to cool that technology: $3044/yr.

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Total Energy Savings

Using the same sample 25 PCs and 3 servers:

- Electrical Savings: $2812/yr.
- Cooling Savings: $3044/yr.

- NET Savings: $5856/yr, or $488/mo.

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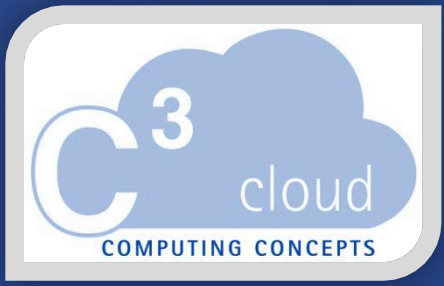
Additional Environmental Benefits



Reduced Landfill Impact

- An average PC has a life expectancy of 4 years, whereas the average Thin Client has a life expectancy of 8 years.
- The average “small form factor” PC is approximately 782 cubic inches in volume. The EVGA PD02 Thin Client is just 57.5 cubic inches in volume.
- In 8 years, an office with 25 PCs will result in 39,100 cubic inches of uncompressed trash. A Cloud based office with 25 Thin Clients will generate just 1,437 cubic inches of uncompressed trash.
- The PC solution generates over 27x the uncompressed trash that the Cloud solution does.

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A Global View

- The servers that run in most offices operate at an average utilization rate of less than 5%.
- The aggregation of resources allows the servers that power most Cloud environments to run at utilization rates of between 80% and 85%.
- Overall, this results in LESS servers being deployed, which results in a greatly reduced carbon footprint for technology services!
- A recent Microsoft/Accenture study reveals small businesses can reduce IT energy costs by up to 90% by migrating to the Cloud.

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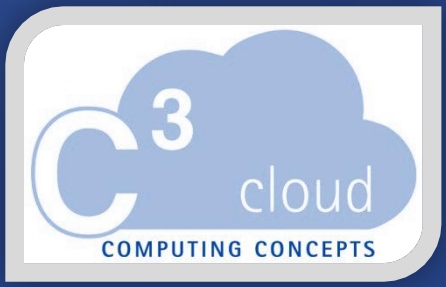
Cost Savings



Reduced Capital Expenditures

- This is often the number one reason cited by users of Cloud Computing.
- Little or no capital expense for hardware/software.
- Popular for Startups with limited access to capital.
- Also popular given recent shortages in funding available for lease financing.

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Other Cost Savings

- Save on the true cost of money. Using an average rate of 11% for an equipment lease, it costs $17,850 to finance $100,000 in equipment for 36 months.

- Eliminate co-location costs for those clients already paying for space in a hardened facility. This can mean savings of up to $3000 per rack per month, depending upon how it is configured.

- Let us not forget the Power & Cooling savings discussed earlier!

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Reduced Management Costs

- Hardware lifecycle management goes away.
- Server BIOS upgrades handled by Cloud Provider.
- Equipment failure handled by Cloud Provider.
- Reduced attack surface for viruses, trojans, and other malware.
- Faster & easier provisioning of new services.
- Recovery from failure is faster.
- Off-site backup is included in most solutions.
- Upgrade to new servers is handled automatically.

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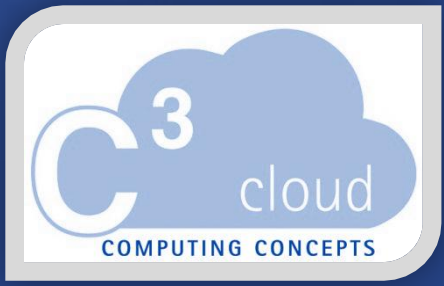
Time Savings



Scalability

- Management can quickly scale up without additional capital expenditures.
- Delays related to equipment backorders, shipping, and configuration are eliminated.
- Servers can be provisioned in less than 15 minutes.
- Add RAM or Disk Space in as little as 5 minutes.
- Simply impossible to match these service levels with physical hardware.

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Elasticity

- The Cloud allows companies to scale down IT operations just as easily as they can scale them up.
- Cyclical or seasonal businesses can provision additional resources for short period of time.
- Downsizing companies, a painful reality in today's economy, can save immediately by eliminating unused resources.
- Ideal for temporary projects, proof of concepts, upgrades, etc.

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Reliability

- Most reputable providers use enterprise class commercial hardware with highly redundant features.
- Google is one notable exception – they actually build their own servers, and the Gartner Group estimates that they are actually the 4th largest server manufacturer in the world.
- Most every Cloud provider maintains their equipment in one or more highly resilient data centers.
- Most organizations, especially small and medium sized businesses, could not afford to replicate the level of high availability that most Cloud providers offer.

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Inherent Remote Access

- Once in the Cloud, remote access is the ONLY method of access.
- Eliminates the need for expensive solutions like Citrix or Terminal Services/Remote Desktop Services.
- Remote access can be controlled by user and/or by location as necessary.
- Ideal for organizations with multiple small offices/locations OR remote employees.

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How The Cloud Might Just Save Your Business

Disaster Recovery Statistics

- Gartner estimates that only 35% of small and medium businesses have a comprehensive DR plan in place.
- SANS Institute estimates that only 15% of mid-sized data centers would be able to recover more than 30% of their applications given an unlimited time frame.
- Almost 50% of companies without a DR plan who experience a disaster event will not be in business in 24 months.
- Symantec reports that in 2009, 25% of all DR tests failed – and this was an improvement over 50% in 2007.
- Recovery Time Objectives decreased by 20% from 2007 to 2009.

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An Ounce of Prevention…

- Physical Security
  - **Restricted access greatly reduces likelihood of theft.**
  - **With data secured in The Cloud, theft at the office results in material loss only.**
  - **Insurance can replace material – but not data!**
- Fire Resistant
  - **Facilities are highly resistant to fire.**
  - **Waterless fire suppression systems, such as FM-200, are commonplace.**
  - **Again, with data in The Cloud, fire at the office results in material loss only.**
- Flood Resistant
  - **Facilities are also highly resistant to flood or water damage.**
  - **No water pipes permitted in susceptible areas.**
  - **Even toilets have overflow alarms!**

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…Is Worth A Pound of Cure

- Weather Resistant
  - **Most facilities have no windows.**
  - **Most facilities have roofs rated to withstand 150mph+ winds.**
  - **Most facilities have redundant power, including UPS systems and generators.**
  - **Most facilities have at least some subterranean fiber connectivity.**
  - **Some western facilities are Earthquake resistant.**

- Data Backup Techniques
  - **Few providers rely on tape or optical backup.**
  - **Most use disk-to-disk backups.**
  - **Recovery time for disk-to-disk is greatly reduced.**
  - **Multiple images or snapshots can be utilized.**
  - **For maximum protection, backup data can be replicated to a second site.**

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Disaster Strikes! Now what?

- First and foremost, ensure everyone's personal safety.
- Establish contact with key executives, vendors, and suppliers.
- Simultaneously trigger the Disaster Recovery and Business Continuity plans.

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Cloud Based Business Continuity

- The Cloud isolates applications and data from corporate offices.
- Virtualized desktops can be accessed from most any modern device including PCs, Macs, tablets or smart phones.
- Key employees can work from home (if possible) or take laptops to any location with power and internet connectivity.

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Telephony Can Be Protected, Too!

- Hosted PBX Systems and co-located IP PBX Systems ensure voice mail and auto attendant operation during an emergency.
- Web based consoles can be accessed to forward main numbers and or extensions to specific cell phones.
- Laptops equipped with a headset can be used as “soft-phones” during emergency operations.

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We Eat Our Own Dog Food!

- C3 Corporate Office is 100% Cloud Based
- There are no servers and no phone system in the office.
- We use a combination of thin clients and old PCs repurposed as thin clients.
- Phone system is a Cisco IP PBX in the data center.
- Zero customer data resides within our corporate location.
- In the event of fire, theft, flood, or hurricane, we can operate as if nothing ever happened.
- During Hurricane Wilma, our servers and telephones stayed up and available and employees worked largely from home as our office had no power for 10 business days!

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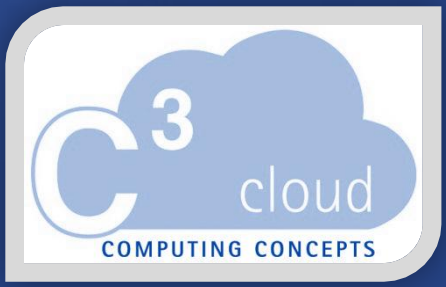
Some Final Thoughts



Quotable Quotes

- “By 2012, 20% of businesses will own no IT assets.” – Gartner Group, January 13, 2010.
- “Almost every startup we invest in either offers cloud services or uses components of Platform as a Service or Infrastructure as a Service.” – Habib Kairouz, Rho Capital Partners, June 6, 2010.
- “We are betting our company on the Cloud.” – Steve Ballmer, Microsoft CEO, March 4, 2010.
- “There is no way that company exists in a year.” - Tom Siebel, in 2001, talking about Salesforce.com. Siebel Systems was bought by Oracle in 2005 and now ceases to exist. Salesforce.com now has $2.0B in annual revenue and an $18B market cap.

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Oh Larry….

“Maybe I'm an idiot, but I have no idea what anyone is talking about. What is it? It's complete gibberish. It's insane. When is this idiocy going to stop?”

- Larry Ellison
Oracle CEO
September, 2008

“Our cloud's a little bit different. It's both platform as a service and applications as a service.”

- Larry Ellison
Announcing Oracle’s New Cloud Service
October 2011

Even the most outspoken critics of the Cloud have come to realize the future is upon us.

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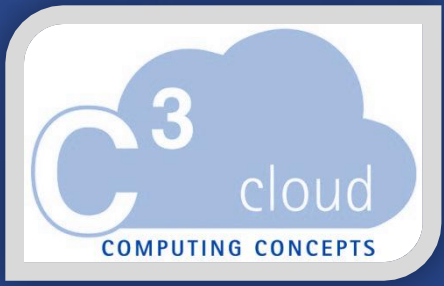
Questions & Answers



THANK YOU for Your Time!

Questions, comments? Please reach out for me!

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Want to learn more?

- Web: www.c3office.com
- Facebook: www.facebook.com/c3office
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