Secure Cloud Computing for Healthcare Organizations

Is the cloud secure, or is the cloud the most secure option?

Steve Knipple: Bradson Consulting / Cloud Shift Advisors

Agenda

- Intros, goals, expectations, fun stuff

- Baseline Information : The Cloud

- Baseline information : Security

- The Intersection of The Cloud and Security

- Is the cloud secure? Is the cloud the best option?

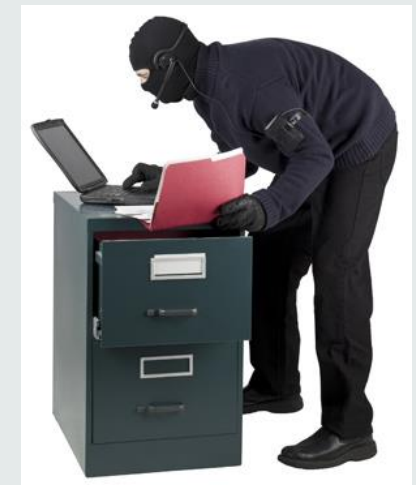- Final Thoughts and Predictions

- Q & A

Hello! I'm Steve

- 20 years in information technology

- Held various CTO, CISO, VP Eng and Operations, program management, engineering

- I seek change... my passion is "intentional organizational transformation" (not change for change's sake)

  - Strategic and structured approach to solving complex problems

  - Data driven (data nerd), looking for patterns, adapt with new insights

  - I think we live in an amazing time... and in 10 years we won't recognize the information tech of today

- Currently Management and Technology Consultant@ Bradson Consulting and Cloud Shift Advisors

CHANGE

IT'S A SHORT TRIP FROM RIDING THE WAVES OF CHANGE TO BEING TORN APART BY THE JAWS OF DEFEAT.

www.despair.com

Perspectives
Point of view matters… especially on a complex topic. What's your view?

About the Audience

- What is your experience with cloud computing?
  - Do you use the cloud?

- What is your expertise in security?
  - What is your biggest security concern?

Parkinson's Law of Triviality

Also known as "bike shedding"

- Members of an organization give disproportionate weight to trivial issues
  - "Reachable" issues encourage more participation
  - Complex topics discourage engagement

- Example: a 3 item financial meeting
  - $800 million for nuclear power plant.. approved quickly
  - $1500 for an employee bike shed… discussed, $150 saved
  - $100 for coffee… debated at length, decision deferred

- Sometimes the case with cloud computing and security
  - But it doesn't have to be… everyone can be at the table and contribute. Discuss the most important things.

iYogi

Any sufficiently advanced technology is indistinguishable from magic.

~ Arthur C. Clarke

Our goal today…

- Enjoy our time together

- Develop a baseline understanding of cloud computing

- Develop a baseline understanding of security

- Explore the intersection

- Answer the question.. Is the cloud secure and is it your most secure option?

Speaker quirk… I assume if you are looking at your cell phone, you have something to add to the conversation and I certainly encourage participation.
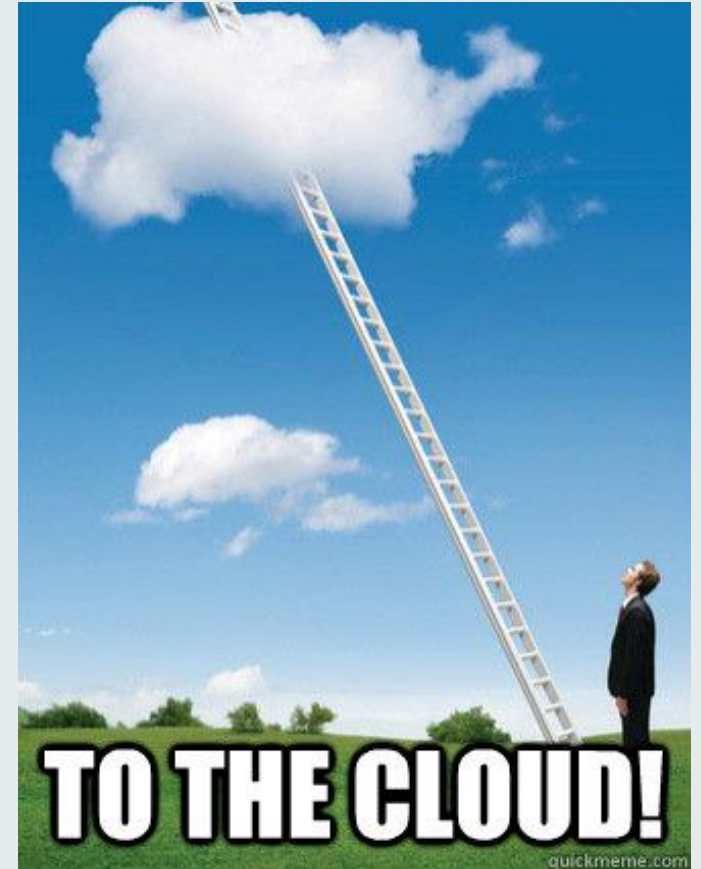
The Cloud

Hmmm…

51% Of People Think Stormy Weather Affects 'Cloud Computing'

Most Americans Confused By Cloud Computing According to National Survey

Ninety-five percent of those claiming they never use the cloud actually do so via online banking and shopping, social networking, and storing photos and music.

People feign knowledge about the cloud: One in five Americans (22 percent) admit that they've pretended to know what the cloud is or how it works. Some of the

You're not alone: While many admit they don't understand the cloud, 56 percent of respondents say they think other people refer to cloud computing in conversation when they really don't know what they are talking about.

The Cloud is a technology business model
A transformative business model

Essential Characteristics

- On demand self service

- Broad network access

- Resource pooling

- Rapid elasticity

- Measured service

Service Models

- Software as a Service

- Platform as a Service

- Infrastructure as a Service

Deployment Methods

- Private Cloud

- Public Cloud

- Hybrid Cloud

There is no cloud
it's just someone else's computer

This business model is not new...

Essential Characteristic	Holiday Inn	Avis	Uber	Spirit Airlines
On demand self service	√	√	√	√
Broad network access	√	√	√	√
Resource Pooling	√	√	√	√
Rapid Elasticity	√	√	√	√
Measured Service	√	√	√	√

What do you consider when you use these services?
Do you assume any basic service level? Why?

How old is the cloud?

Pretty young, but growing up fast...

Adolescence can be a time of both disorientation and discovery. The transitional period can bring up issues of independence and self-identity; many adolescents and their peers face tough choices

- Notable milestones...
  - Salesforce in 1999
  - Amazon Web Services 2002
  - Amazon Elastic Compute Cloud 2006
  - Google apps 2009
  - Azure 2010
- Respected predecessors
  - Mainframe computers 1960
  - ARPANET 1969
  - x86 computing 1978
  - Open source computing 1997
  - OS Virtualization 2001-2009

The cloud lives in Data Centers

A data center is a data center
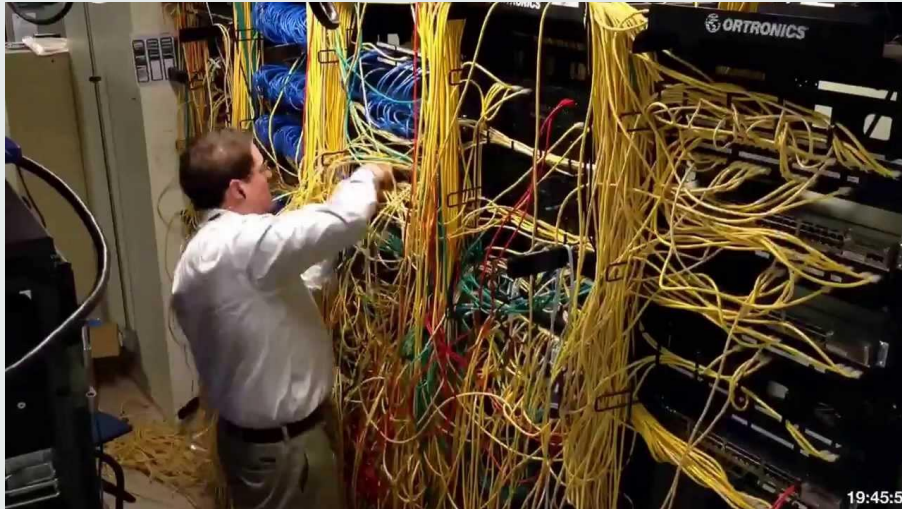
Traditional Data Center
- 1 customer
- Mix of technology
- Well lit… for people
- Human activity


"Best of Breed of data center"
- Many customers
- Highly standardized
- Dark
- Automated

Why Cloud now?

- Low cost, high speed, reliable network connectivity

- Standardization and commoditization of compute hardware

- Extremely low barriers of entry for application developers dramatically increase innovation

- Economies of innovation change the playing field
  - Automation, capability, security
  - Geographic dispersion, Scale

- Direct consumer experience

- Generational expectation shift

Who is using cloud?
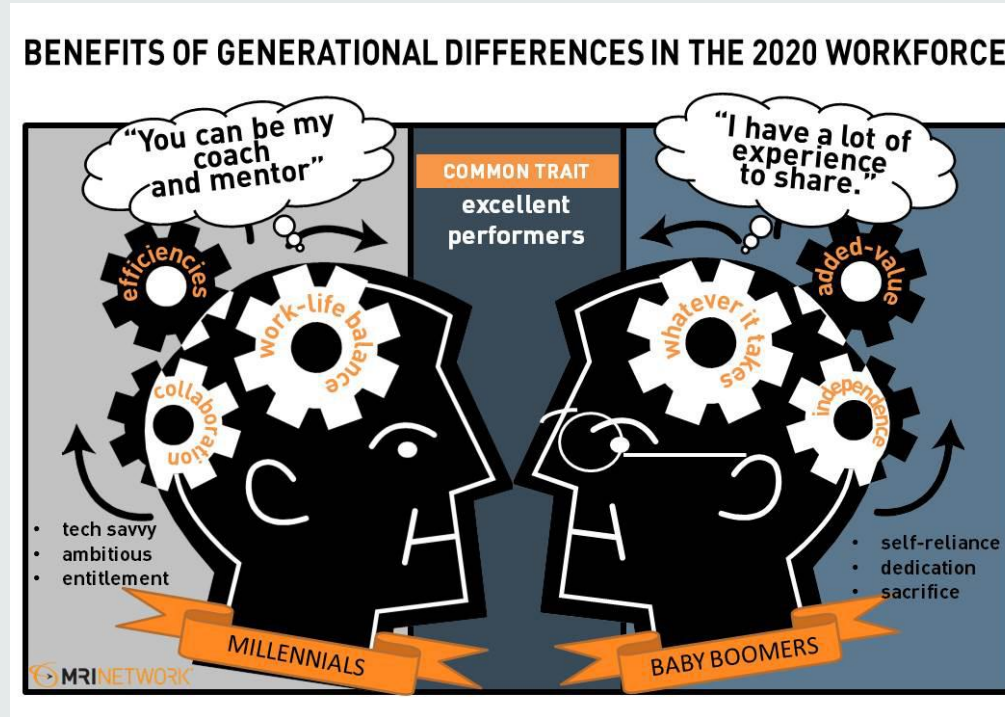
Building a cloud vs Managing a cloud
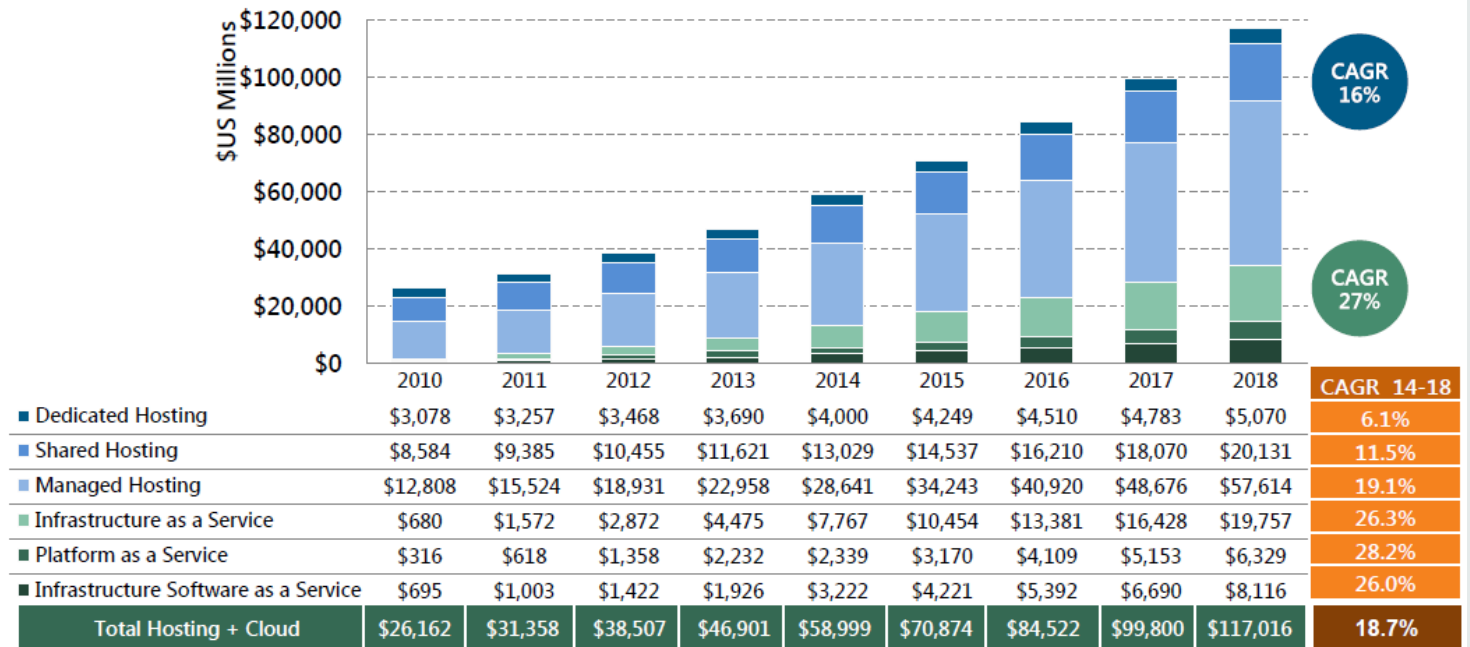

Complexity of Managing Infrastructure
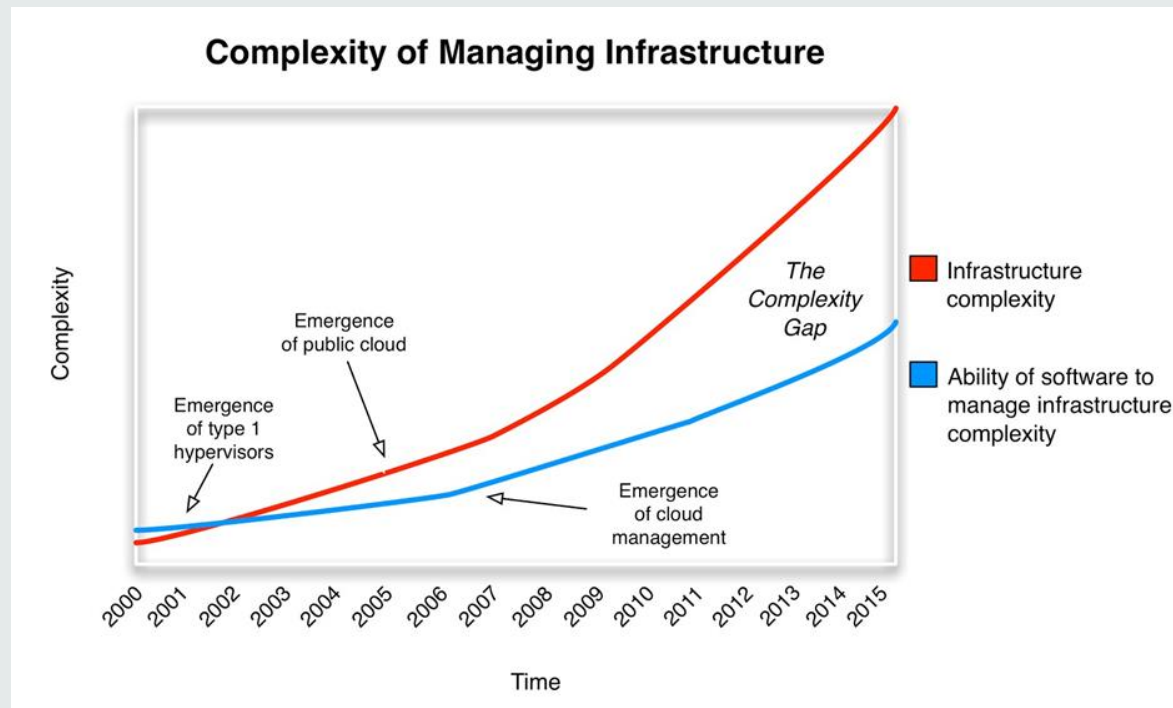
- Building a cloud is complex
  - Lots of $$$
  - Lots of smart people
  - Lot's of choices
- Managing a cloud requires discipline
  - Process focused
  - Service based
  - "Operator" mentality

Who is building the cloud?

- Everybody is trying to.

- Not everyone will be successful.

- Security is one differentiator, because it's difficult to do well

Worldwide Hosting & Cloud Market Size, 2010 – 2018
Cloud Share Increases from 7% to 29%

	2010	2011	2012	2013	2014	2015	2016	2017	2018	CAGR 14-18
Dedicated Hosting	$3,078	$3,257	$3,468	$3,690	$4,000	$4,249	$4,510	$4,783	$5,070	6.1%
Shared Hosting	$8,584	$9,385	$10,455	$11,621	$13,029	$14,537	$16,210	$18,070	$20,131	11.5%
Managed Hosting	$12,808	$15,524	$18,931	$22,958	$28,641	$34,243	$40,920	$48,676	$57,614	19.1%
Infrastructure as a Service	$680	$1,572	$2,872	$4,475	$7,767	$10,454	$13,381	$16,428	$19,757	26.3%
Platform as a Service	$316	$618	$1,358	$2,232	$2,339	$3,170	$4,109	$5,153	$6,329	28.2%
Infrastructure Software as a Service	$695	$1,003	$1,422	$1,926	$3,222	$4,221	$5,392	$6,690	$8,116	26.0%
Total Hosting + Cloud	$26,162	$31,358	$38,507	$46,901	$58,999	$70,874	$84,522	$99,800	$117,016	18.7%

Source: 451 Research Market Monitor, Cloud Computing, Q1 2015

451 Research

In Summary...

- Cloud computing is a business model that provides an alternative to traditional capital intense, in-house delivered IT services

- The cloud computing business model is not new, nor is the technology that enables it.

- Delivering IT services continues to become increasingly complex as technology improves

- Cloud computing will innovate at a very rapid pace providing new capabilities on a regular basis.

- Cloud computing is mainstream to end-consumers and to companies "born" in the cloud. Enterprise with older applications will operate in a hybrid mode during the transition to public cloud

- Winners and Losers in the cloud service provider business will emerge over the next few years... learn how to identify them.

Security

Security Fundamentals
The Triad

- Confidentiality
  - Protection of information from disclosure to unauthorized parties

- Integrity
  - Protection of information from being modified by unauthorized parties

- Availability
  - Information is available to authorized parties when needed

Incident vs Breach

- Incident: A security event that compromises the integrity, confidentially, or availability of an information asset

- Breach: An incident that results in the confirmed disclosure (not just potential exposure) of data to an unauthorized party
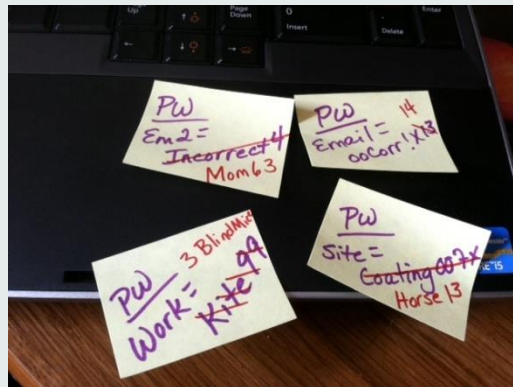

Physical vs Logical

- Tried a door

- Got in the door

- Found something confidential

- Disclosed that information to unauthorized parties.

Security vs Convenience

- Traditional approach

- 3 locks are better than 1, but not
  if you leave the window open.

- We are human, after all.

LOST KEYS
REWARD

LOST: THURSDAY
4000 BLOCK OF BEACH DRIVE SW
LARGE SET WITH SEVERAL
DIFFERENT KEYS
(RANGER / GM / PERSONAL KEYS)
ALSO HAS A LEATHER BAND AND A
SMALL YELLOW FLASH LIGHT.

IF YOU HAVE SEEN THEM PLEASE
CALL ME AT 206.841.1248.
THANKS, BRETT

Relationship Security-Convenience
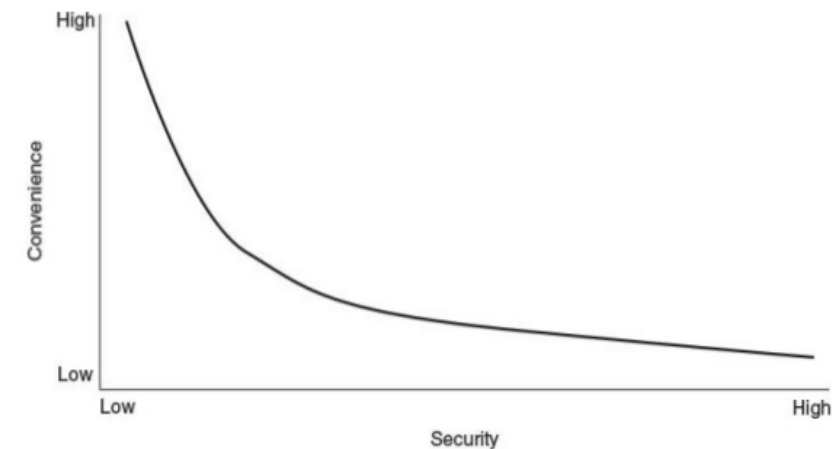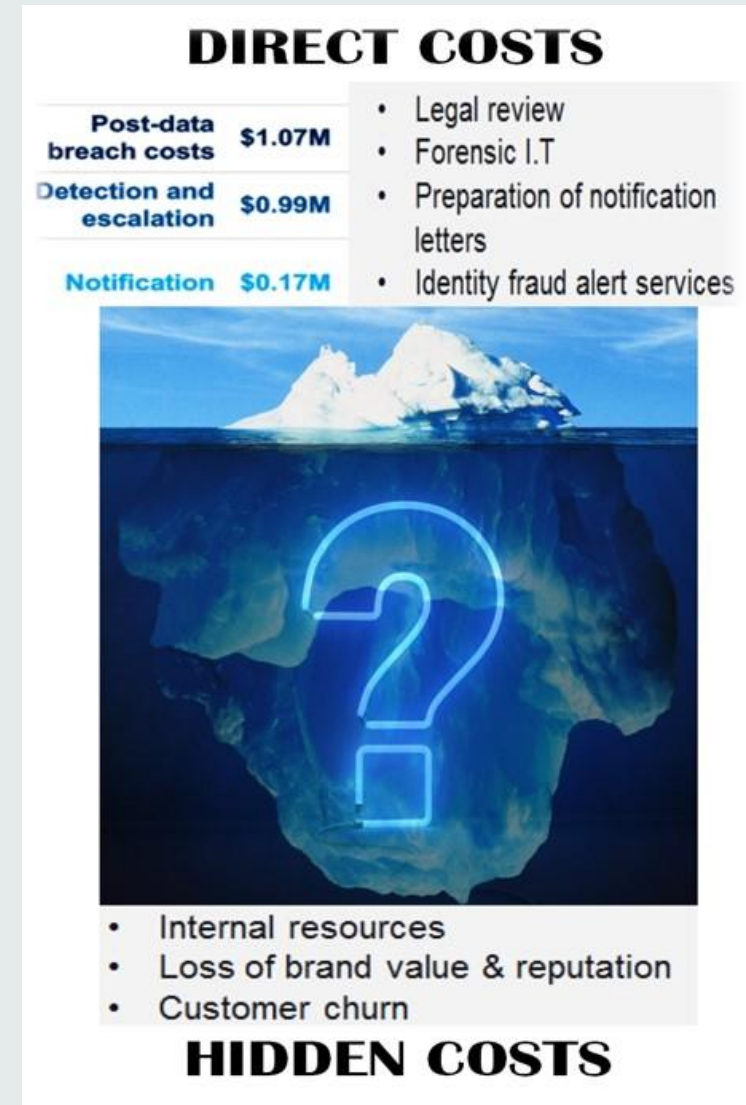## (Figure 1-2)

Figure 1-2 Relationship of security to convenience

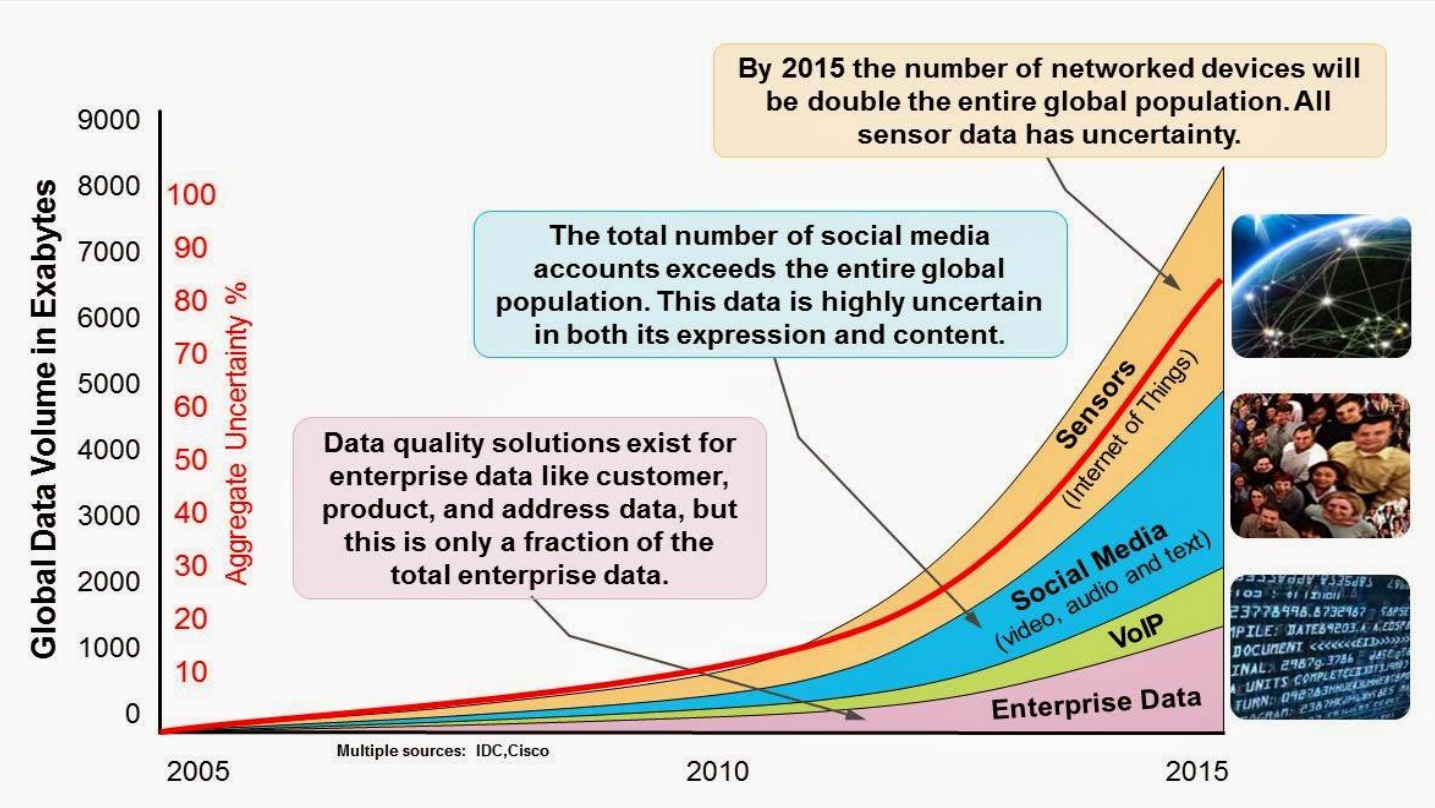Security+ Guide to Network Security Fundamentals, Fifth Edition   16

Security is serious.

- You can never have enough insurance

- You can never completely protect everything

- Breaches are widely reported (by law)

More data = more to protect

By 2015 the number of networked devices will be double the entire global population. All sensor data has uncertainty.

The total number of social media accounts exceeds the entire global population. This data is highly uncertain in both its expression and content.

Data quality solutions exist for enterprise data like customer, product, and address data, but this is only a fraction of the total enterprise data.

Global Data Volume in Exabytes

Aggregate Uncertainty %

Sensors (Internet of Things)

Social Media (video, audio and text)

VoIP

Enterprise Data

Multiple sources: IDC, Cisco

2005   2010   2015

- How does this affect healthcare?

- Think about any non-human entered data.

Source : IBM Global Data Growth

A comment on "Big Data"

big da·ta

noun COMPUTING
noun: big data

extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.
"much IT investment is going towards managing and maintaining big data"

- That is now economically feasible to analyze... because of the cloud

- Allows for short time utilization of massive resources
  - One computer for a year or 365 computers for a day

- Also enable "big hacking"

In Summary…

▪ Security concepts have been well developed over time.

▪ A common approach to an increased security threat results in inconvenience that works against the intent (and is often marginally effective). Think airport security.

▪ World data growth is exponential. Our information is increasing lost is a massive sea or data… unless someone finds a reason to go after it.

▪ When our data is compromised, the impacts can severe.

The Intersection

Where paths cross

- The cloud is only part of an overall security strategy.

- The security features in the cloud are very similar to what internal IT departments have access to

- The amount of digital information has and will continue to increase expontially

- Where physical security has remained stagnant, logical security innovation is accelerating

Remember, the cloud is a service and security is a feature.

- You need to know what you want

- You need to know how to measure it

- You need to ensure accountability

Why prominent "cloud" outages are good...
Pay attention to them

Recent outages

- Sales force outage (and data loss)

- Amazon and Netflix

This does has a positive side

- Demonstrates transparency

- Public accountability

- Force even more innovation

- Motivates the unaffected

Is the Cloud Secure?

Is the Cloud the Most Secure Option?

Some of the cloud is secure

Look for cloud providers that

- Are forward thinking and recognize the pros/cons of the cloud and act accordingly

- Are agile. The cloud is innovating at a tremendous pace.

- Have mature processes and industry best practices as the base of their business

- Are technically deep

- Are financially secure

- Are operationally transparent
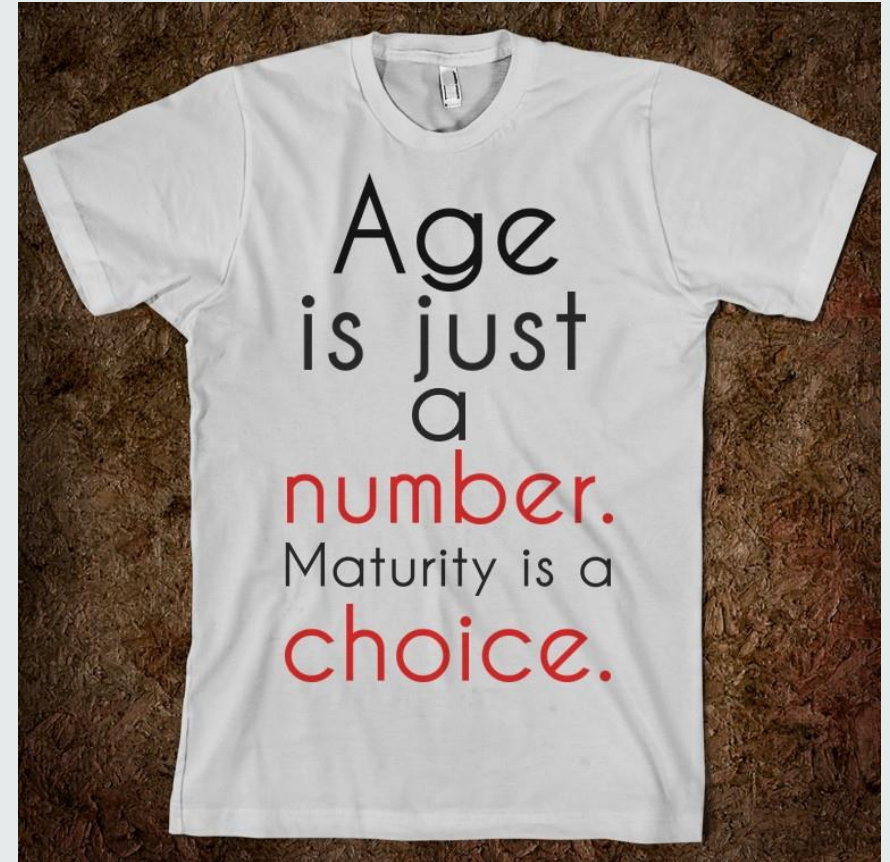
The cloud may be your most secure option

From "A Day Made of Glass" by Dow Corning

- You need to look in the mirror first… is your organization ready for the cloud?

- The cloud cannot provide security on it's own. It is part of a larger security strategy.

- IT governance will become more important than ever

- Poor cloud choices may make your security worse

- Do not take a "black box" approach to the cloud. Ask questions and expect answers.

Final Thoughts and Predictions

The train has left the station...
# but there is regularly scheduled service

- Over time, the majority of workloads will move to the cloud

- Hybrid cloud, a mix of on premise cloud and public cloud, will dominate the transition period

- Innovation at scale will limit the number of providers

- Artificial Intelligence and predictive analytics will drive the next wave of innovation making security less intrusive

And one last thing...

- Technology people usually get called when things don't work.

- In reality, our information technology is really reliable, especially considering their complexity.

- There are real people behind it all.

Call your IT help desk and open a "everything is working great today" ticket
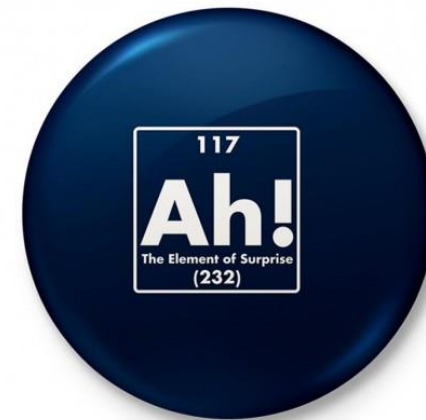
Thank you!

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