

Trusting the Cloud: A Standards Odyssey

Terry Landers

Regional Standards Officer – Western Europe

Microsoft

Monday, 17 October 2011



Opening Questions

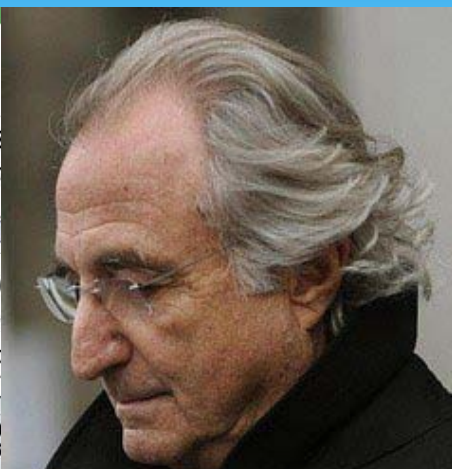
Q1: How many people here trust the web?

Q2: How many people here trust the cloud?



**What do we mean
by Trust ?**

Trust

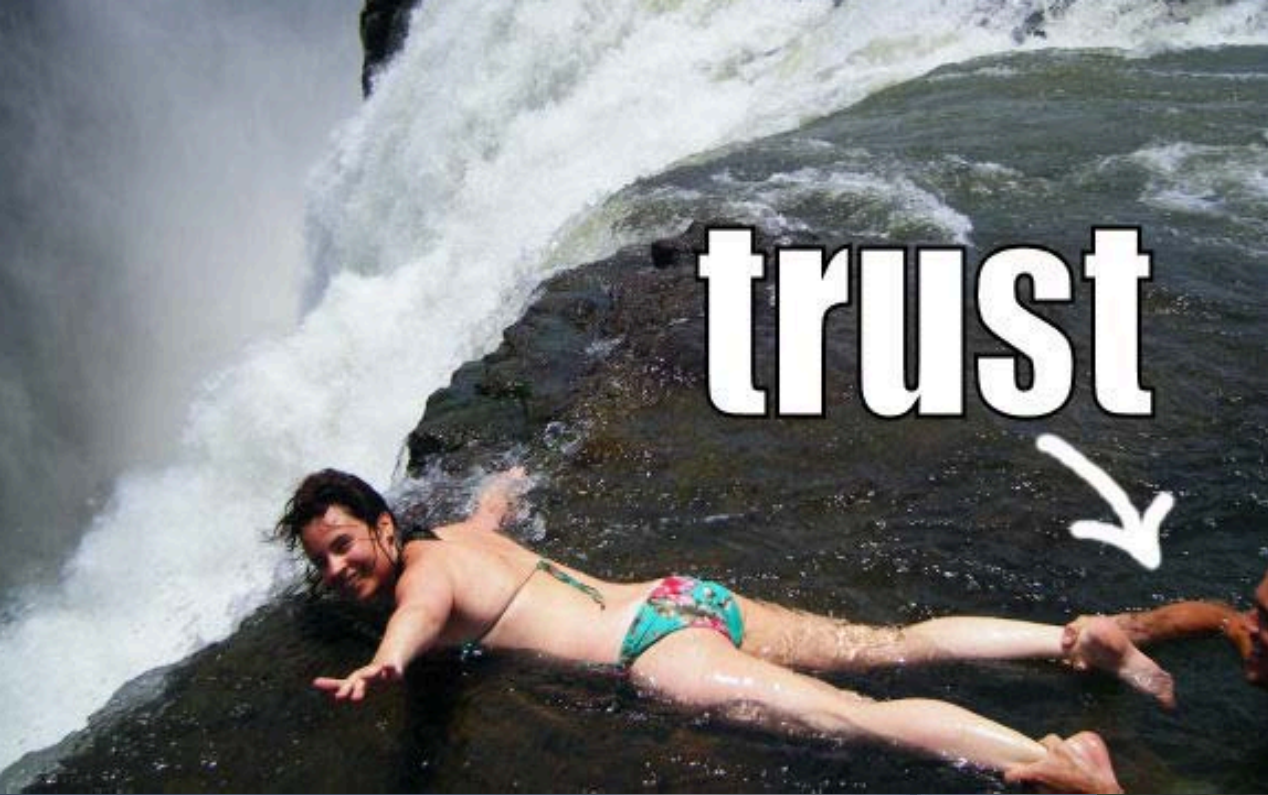


**WHO
DO
WE
TRUST?**



**In
God
We
Trust**

'When you don't know who to trust, start by recognising those that didn't hurt you while your back was turned'



Defining Trust

- * Trust is **complex and abstract** : making it difficult to define and to identify the elements that encompass trust.
- * Trust is defined as **‘confidence in or reliance on** some quality or attribute of a person or thing, or the **truth in** a statement’.
- * Trust is often **built on previous interactions...**
- * Trust is based on the **confidence** a person has on **the actions of others.**

Building Trust

Essential Characteristics

- * **Honest**
- * **Reliable** (Honour commitments)
- * **Competent**
- * **Respect** for people, and confidential information
- * **Compliant**
- * **Transparent** :Volunteer information/ not omitting important details.
- * **Consistent** in behaviour
- * **Objective**
- * **Fair**



Understanding the Cloud



... a Generational Shift

Technology

Economic

Business



Centralized
compute & storage,
thin clients

Optimized for
efficiency due to
high cost

High upfront costs
for hardware and
software



PCs and servers for
distributed compute,
storage, etc.

Optimized for
agility due to
low cost

Perpetual license for
OS and application
software



Large DCs,
commodity HW,
scale-out, devices

Order of magnitude
better efficiency
and agility

Pay as you go,
and only for
what you use



Top 10 Enterprise IT Trends for 2011


Source: Ovum/Datamonitor

Security: Security continues to be high on the IT agenda as the number of threats to businesses increases rapidly. “New technologies such as mobility, social media and cloud computing present new opportunities, but also vulnerabilities,” believes Blowers.


- * **Data management:** Data management will be a key area due to the sheer volumes now passing through enterprises. “The management of data will come to a head for CIOs in 2011,
- * **Business analytics:** “Business analytics will remain an important tool for organisations that want to differentiate themselves from the competition. “Business analytics will remain an important tool for organisations that want to differentiate themselves from the competition. *prove decision-making, giving its importance for*
- * **Mobility:** the mobile market will continue to grow rapidly. “Developing a strategy that maintains a balance between security and compliance.”
- * **Data Centre Transformation:** The era heralds a new era of data centre transformation. *is the cloud computing*
- * **Cloud services:** Cloud services will continue to grow rapidly. *hat it is no longer a*
- * **Collaboration:** Collaboration tools will continue to grow rapidly. *oration is needed which is a traditional hierarchy,” says Blowers.*
- * **Sustainability:** Sustainability will continue to grow rapidly. *itions to work in a more collaborative way. To make more of a leading role says Blowers.*
- * **IT financial Management:** IT financial management will continue to grow rapidly. *nges are needed to drive the return on investment to the business.*
- * **Context-aware Computing:** Instrumentation, metering and wireless technologies to play a significant role in providing the context which can lead to automated business processes and increased productivity.



Cloud Definitions



a 'cloud' is an elastic execution environment of resources involving multiple stakeholders and providing a metered service at multiple granularities for a specified level of quality (of service).



“Cloud-computing is a convenient, on-demand model for 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.”

Source: US Federal Government, in its 2010 budget

A Standardised IT Capability (service, software or infrastructure) delivered via Internet technologies in a pay-per-use, self-service way

Economic Impact of Cloud computing

Source [Prof Federico Etro](#), Univ of Milan

* SME Formation:

* Short term:

* EU: 25 :378k

* Medium term

* EU 24 ; 431k

* Employment

* Short term:

* EU25: 2.58m

The economic value of Cloud is irresistible

- * Organistional efficiency
- * Service improvement
- * Customer reach
- * Optimisation of resources
- * Regulatory Compliance

Joe Wienman's 10 laws of Cloudeconomics

1. Utility services cost less: only pay for what you use / don't pay for what not using
2. On-demand trumps forecasting
3. The peak of the sum < sum of the Peaks
4. Aggregate demand is smoother than individual
5. Average unit costs are reduced by distributing over more units of output
6. Superiority in numbers: resistant to attack
7. Space-time is a continuum : parallel processing
8. Dispersion is the inverse square of latency
9. Don't put all your eggs in one basket: 99/ 99.99/99.9999
10. An object at rest stays at rest : location of data centers

Efficiency

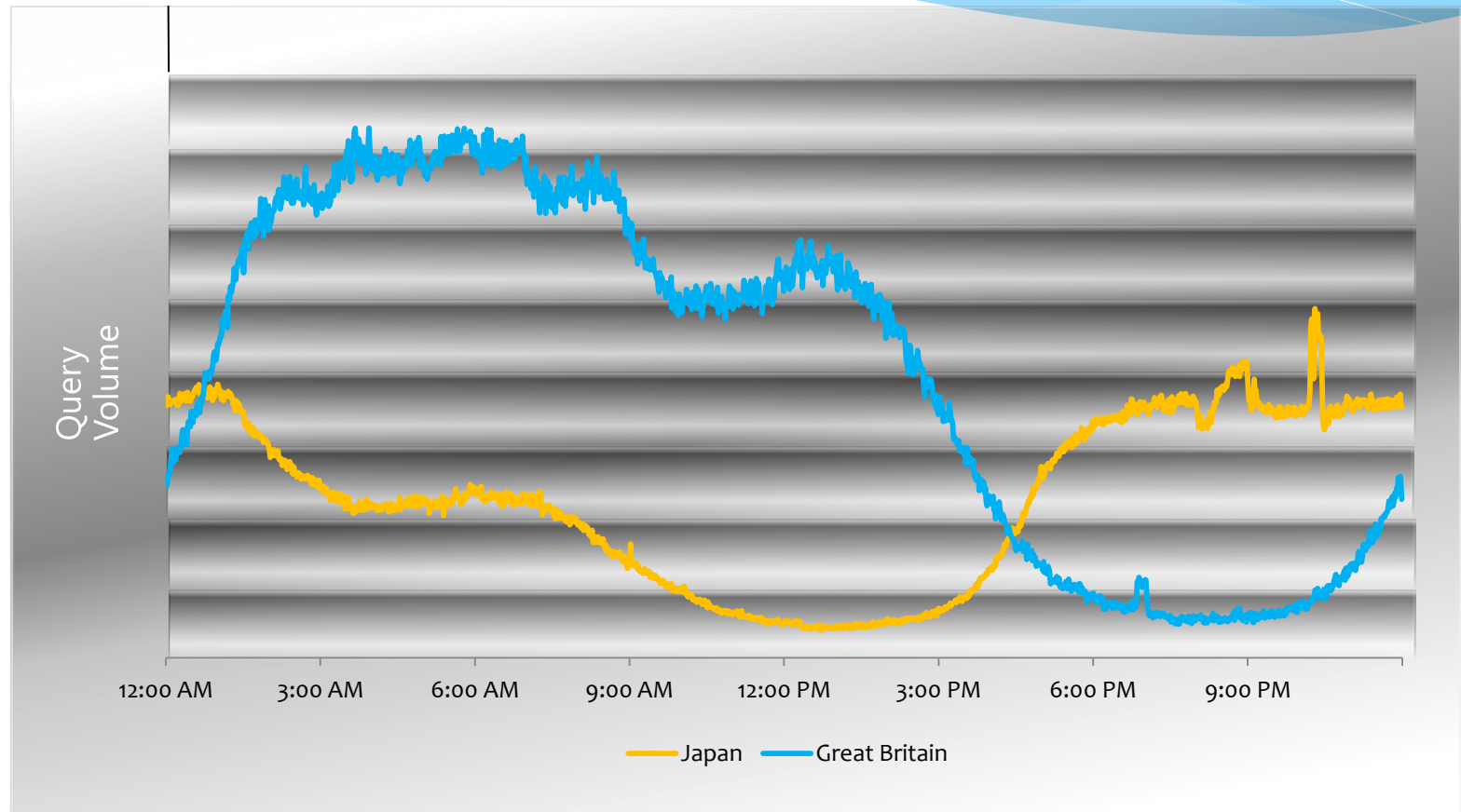
Agility

Innovation

Demand Side Economies of Scale

Time of Day

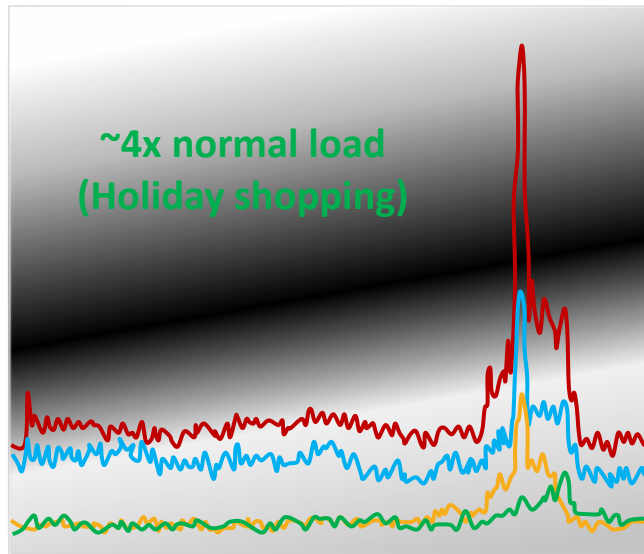
BING SEARCHES – JAPAN VS. UK



Demand Side Economies of Scale

Industry Variability

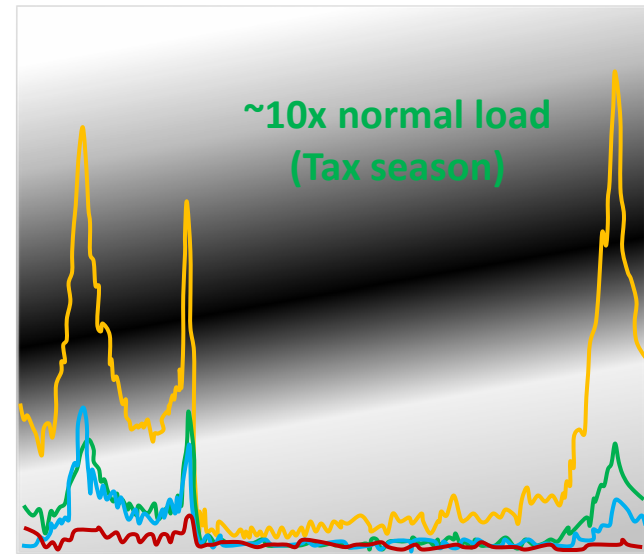
- target.com
- walmart.com
- turbotax.com
- taxcut.com
- toysrus.com
- barnesandnoble.com
- hrblock.com
- taxact.com



Jan 2009

Jan 2010

Source: Alexa



Jan 2009

Jan 2010

Source: Alexa

EU Cloud Strategy

[expected 2012]

"I want to make Europe not just "cloud-friendly" but "cloud-active". We've got the right platform: strong fixed and mobile communication networks. Now we need to work on three things:

- *The legal framework. This clearly has an international dimension and it concerns for example data protection and privacy, clear rules for the allocation of jurisdiction, responsibility and liability, and consumer protection.*
- *Technical and commercial fundamentals. (...) International standardisation efforts will also have a huge impact on cloud computing.*
- *The market. Scaling up pilot projects and pushing the public sector to really make use of the potential of cloud computing (...).*

Neelie Kroes, Commissioner INFSO & Media, blog March 2011



THE FUTURE OF CLOUD COMPUTING

OPPORTUNITIES FOR EUROPEAN CLOUD COMPUTING BEYOND 2010

- * The EC should stimulate Research and technological development in the area of cloud computing
 - * Elastic scalability
 - * Cloud systems development
 - * Data Management
 - * Programming models and resource control;
 - * Trust , Security and Privacy
- * The EC, together with Member states, , should set up the right regulatory framework to facilitate uptake of cloud computing
 - * Economic aspects ,
 - * Legal Issues and
 - * Green IT





Cloud First Policy



- * From 2010, defined for all IT investment by US agenda
- * Designed to accelerate cloud adoption ...

The future picture for Federal Government IT is exciting. IT enables better service delivery, enhanced collaboration with citizens, and dramatically lower costs. We must get rid of the waste and inefficiencies in our systems. Outdated technologies and information systems undermine our efficiency and threaten our security.

CyberSecurity : Key trends

- * **Value of cloud**
more people
corporation
and market

- * **Corporate**
Increasingly
devices that
new types
for malware

- * **Supply**
optimize supply
engagement
business partners
rests in part

- * **Malevolent**
to hobbyist
malware. A
difficult to



ecome

reover,
oduct launches,

efore.

the same mobile
y also present
orporate networks

to customers and
however, this
ration with
gainst attacks

minals to Hackers
e they infect with
much more



**What does it
really look like?**



- Hotmail
 - 1.3 billion mailboxes
 - 155PB storage, growing 2PB per month
- Windows Live Messenger
 - 300 million users
 - 76 countries, 48 languages
 - ~40 million people simultaneous connections
 - 9.9 billion messages a day via Windows Live Messenger
- 600 million unique users every month on Windows Live & MSN
- 1M Business Productivity Online Suite users in 36 countries & regions
- 5 petabytes of content served by Xbox Live during Christmas week
- 1 Petabyte+ of updates served every month by Windows Update to millions of servers and hundreds of millions of PCs worldwide



Cloud by the numbers

1.8 Zetabytes created and replicated in 2011

- * 200bn HD movies
 - * It would take 1 person 47m years watching 24x365
- * 57.5b billion iPads(32Gb): mountain 25 times higher than Mount Fuji
- * \$600: to store ALL the world's music
- * Its doubling every 2 years
- * 30bn Pieces of content shared on Facebook each month
- * Every 60 seconds :
 - * 168m emails are sent
 - * 98,000 Tweets
 - * 100 new Linked in



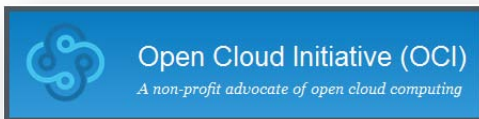
facebook



Cloud Standards



Cloud: Many, Many Actors...





Essential Characteristics



Service Models



Deployment Models

JTC1 SC7

What Needs To Be Standardized?

The SC7 standards stack currently do not include definitions, measures and processes that are relevant to Cloud Computing. The key areas aligned with SC7 Domain that need standardization are as follows:

- Cloud Computing Vocabulary
- Modeling Cloud Solutions
- Systems Engineering of Cloud based Solutions
- IT Service Management for Cloud
- IS Governance for Cloud Computing



ITU-T Focus Group Cloud Computing

Focus Group will have seven output documents

1. Overview of Standards Development Organizations involved in Cloud Computing
2. Introduction to the Cloud Ecosystem
3. Benefits of Cloud Computing from Telecom/ICT Perspectives
4. Cloud Security, Threat & Requirements
5. Functional Requirements and Reference Architecture
6. Infrastructure and Network Enabled Cloud
7. Cloud Resources Management Gap Analysis

- Security, access and identity policy standards - SAML, XACML, SPML, WS-SecurityPolicy, WS-Trust, WS-Federation, KMIP, and ORMS.
- Content, format control and data import/export standards - ODF, DITA, CMIS, and SDD.
- Registry, repository and directory standards - ebXML and UDDI.
- SOA methods and models, network management, service quality and interoperability - SCA, SDO, SOA-RM, and BPEL

OASIS Standards as Building Blocks

- XACML
eXtensible Access Control Markup Language
- KMIP
Key Management Interoperability Protocol
- IDCloud
Identity in the Cloud
- ORMS
Open Reputation Management Systems
- PMRM
Privacy Management Reference Model
- EIC-TEM
Electronic Identity Credential Trust Elevation Methods

BENEFITS

- * Security and Benefits of scale
- * Security as market differentiator
- * Standardised interfaces for managed security services
- * Rapid smart scaling of resources
- * Audit & evidence gathering
- * Efficient effective upgrade
- * Better resource concentration

RISKS

- * Loss of Governance
- * Lock in
- * Isolation failure
- * Compliance
- * Data Protection
- * Insecure/incomplete data deletion
- * Malicious insider

Study Group

Energy Efficient data centres

- * About SG-EEDC:
 - * Established by ISO/IEC JTC1 November 2009 to study the domain, and report on potential standards opportunities
 - * Has completed a mapping of the domain from Facilities and IT perspective, with respect to standardisation activities by International Standards bodies and Consortia

- * Data centers represent
 - * A significant use of energy accounting for approximately 1.5% of the world's electrical power consumption.
 - * A critical element in the delivery of information technology services
 - * A wide range of technologies, and hence a wide range of standards actors
 - * An area of increased demand as functions, services & consumer needs evolve.

- * Four Primary Action areas identified:
 - * Information technology/network telecommunications equipment and its usage;
 - * Environmental control;
 - * Power distribution;
 - * Physical infrastructure.



Looking to the future

Can we trust the Cloud?



The Way Forward?



Summary

We're **all in.**



Microsoft[®]

Development

Producing more secure, private and reliable products & services from the ground up

Operations

Providing world-class secure, private and reliable infrastructure

Incident Response

Responding to incidents should the unexpected occur

Experience

Standards
Policy
Legal

Experienced

Committed

Leading

Final Comments

We're  all in.

- * Cloud is truly transformational:
 - * innovation, agility & efficiency
- * Cloud offers the potential put order on the web frontier
- * The cloud standards /regulatory landscape is still evolving
- * Likely to emerge as a mosaic of *harmonised* established and new standards:
 - * + legal , accounting, audit, specific (Health)

Final Comments

We're  all in.

- * Hard (technical)+ Soft(People /behavioural) :
- * Strike the right balance: Standardisation & innovation
- * Trust is critically dependent on getting Security right
- * We can, and we must, build the trusted cloud – as prelude to -
- * The next wave: Internet of Things & Smartgrid

Thank You!



Microsoft[®]
Be what's next.™

We're  all in.

