IS “CLOUD COMPUTING” A DATA CENTRE PARADIGM SHIFT FOR DATA CENTRE EFFICIENCY?

Presented by: Greg Goode

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"Cloud is a change in delivery model and not a technology."

**CLOUD**

**BUSINESS**

strategy and planning, solutions and products, commercial NPV, TCO, P&L, human resources, business processes, org. structure, markets, competitiveness

**PHYSICALS**

network, server, storage, power, mechanical, cabling, location, building, container, energy efficiencies, ‘as a service’
CLOUD DATA CENTRES

- Taxonomy
- Characteristics
- History
- Commercial
- Operations
- Green
- Benefits
- Trend
- Paradigm
I call this ‘the raw Google stat’

No shortage of informative comment, advice!
CLOUD DATA CENTRES

• PRIVATE
  • A term describing corporate internal IT for the past 10 years.
  • Located/hosted in the users data centre
  • Located in a 3rd party data centre

• PUBLIC
  • Shared IT
  • Located/hosted in a 3rd Party data centre

• Similar form and structure – It is still is housed in a data centre
• It still requires physical environment, real-estate, technology, software, networks
CLOUD DATA CENTRES

• COLLABORATIVE
  • Like minded corporations sharing IT
  • Located/hosted in a users data centre
  • Located/hosted in a 3rd Party data centre

• HYBRID
  • Private, public and collaborative
  • Located in a users data centre
  • Located in a 3rd Party data centre

SIMILAR FORM AND STRUCTURE – IT IS STILL A DATA CENTRE
CLOUD DATA CENTRES

CHARACTERISTICS

[Images of data centres and plans]
CLOUD DATA CENTRES

Private | Public | Collaborative | Hybrid Cloud Data Centre

- Compartmentalised data hall | user premises | 3rd party
- Energy load equivalent to immediate processing | Elastic
- Facility replicatable and scalable | Design | Build
- Commoditised technology | IT | Facility
CLOUD DATA CENTRES

Cooling:
- In-row cooling
- Air-side economiser

Security:
- Prox
- Bio-metric
- Key
- RFID

Data Cabling:
- Copper
- Fibre
- Modular or pair managed

Intelligent” Racks
- Open | Closed architecture

Measurement & Management
- Data collection | storage | mining
- Analysis | Reporting
- Planning | capacity
- Asset | RFID

Monitoring and Alarming
- Cooling
- Power
- Security
- Fire

Fire:
- Gas
- Water (Pre-action | Mist)
Distributed platforms:

- Virtualised servers | operating systems | applications
- Network - converged
- Security – firewalls
- Storage – SAN, NAS

Private Cloud
- it's about in-house management and control with agility and scaling

Public Cloud
- it's about generic management and control with agility and scaling
Distributed platforms:

Collaborative Cloud
• it's about common management and control with agility and scaling

Hybrid Cloud
• it’s a mixture of in-house, common and generic management and control with agility and scaling
CLOUD DATA CENTRES

HISTORY
CLOUD DATA CENTRES

Time Line
• Been around in various technical guises for 10 years | only recently got business legs in the last 2 years

• A false start in the late 90’s early 21st century – DOT.com (technology but no business)

Significant Drivers
• Web_Internet – citizen enquiries/social network/entertainment | Cost pressures | virtualisation | network | elastic demand | speed of provisioning | energy efficiency | utility ‘ pay as go’ concept | business in the driving seat

Other Drivers
• IT Technology that is modular | scalable | commoditised |

• Real Estate | shrinking | 3rd parties

• Facility infrastructure that is modular | scalable | commoditised | replicable
CLOUD DATA CENTRES

COMMERCIAL
CLOUD DATA CENTRES

• Just in Time | fast provisioning

• Increased reliability

• Commoditised technology (removes overhead of moribund internal standards/compliance/architecture) - containment | racking | power | cooling | cabling | fire | management | security

• Disintermediation of products/services – cut out the middle man or department by DC user – lowers cost (think internet shopping)

• Users only see pay as you go | off book – opex | less capital acquisition
• Energy efficiency gains | reduced opex

• Densification of processing | more for less

• Re-engineering of IT human resources (less FTE’s)

• Real-estate shrinkage | mixed data centre assets
CLOUD DATA CENTRES

OPERATIONS
CLOUD DATA CENTRES

• One or multiple Service Suppliers in Public | Collaborative | Hybrid

• One point of contact | vendor influence diminished

• One Service Contract | Service Level Agreement’s paramount

• VMonitoring & VManagement | Real-time | Pro-active | Predicative

• Change Management | Defined Environment
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IT & Facility Management in the Private Cloud

• Convergence of back-end and front-end engineering

• Convergence of IT and Facility personnel – collapsing the silo’s

• Convergence of cost centres

• Improved responsiveness to - IT Architectural change | capacity planning| provisioning
CLOUD DATA CENTRES

GREEN
CLOUD DATA CENTRES

• Does it make any difference if its private, public, collaborative, hybrid | NO!

• All have unpredictable performance due to elastic demand

• Design principles need to be scalable, modular, flexible

• The metrics are very important | PUE, DCiE, WPSM, CADE

• Definable | Measurable | Tuneable

• Adaptable to efficient energy solutions | IT, cooling, power

• Adaptable to smarter building design | NABERS, LEED
CLOUD DATA CENTRES

• In built engineered energy efficiency principles | Racking | Cooling | Power

• Management and monitoring | Constrained environment | tighter control

• Scalable during life cycle | Meets immediate processing demand

• Only consumes ‘as required energy’
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BENEFITS
CLOUD DATA CENTRES

Strategic:
• Business core competency
• Market differentiator
• Market share
• Marketing | Sales | Production
• Finance | Cycles 5 – 10 – 20 year

Tactical:
• Real - Estate
• Facility
• Information Technology
• Operational
• Green
CLOUD DATA CENTRES

Real –Estate:

• Greater real-estate scope
• Smarter building opportunities
• Just in time| Lower provisioning costs
• Energy Efficient
CLOUD DATA CENTRES

Facility:

• Smart racks – power | cooling | cabling | fire

• Cooling solutions - adaptable

• Power solutions - adaptable

• Energy densities – higher | definable | scalable

• Management – Energy (power, cooling)
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Information Technology:

• Open and service oriented architecture

• Commoditised

• Convergence of network | storage | server

• Virtualised

• Broadband (Internet) and Browser
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Operational:

• Common Environment
• Reduced implementation to operational
• Reduced manpower
• Monitoring and Management
• Service Level Agreement
• All inclusive fee
• Commoditised technology
• Security
Green:

• Use of high energy efficiency engineered facility infrastructure | cooling | power | containment

• Use of high energy efficiency IT hardware

• IT virtualisation | maximises processing and storage resources

• Data centre building construction | energy savings
CLOUD DATA CENTRES

Trends
CLOUD DATA CENTRES

• Cloud data centres predominately national | security | legal

• Reduced private real-estate demand | private cloud

• Private, Public, Collaborative, Hybrid | high density computing

• Facility engineering | integrated and commoditised

• IT commoditised | vendor’s “same same” | less relevance to business user

• Virtual management tools critical
CLOUD DATA CENTRES

• IT HR to shrink | skills become obsolete or change

• HR Silo’s converge | matches technology trend

• Business units grow | vendor relationship managers | risk managers | technical architects

• The distinct privately owned data centre will become command centre renting processing time and storage
Data Centre Paradigm – has it changed?

OH WOW! PARADIGM SHIFT!
# CLOUD DATA CENTRES

<table>
<thead>
<tr>
<th>Traditional Data Centre (Pvt)</th>
<th>Pvt</th>
<th>Public</th>
<th>Collaborative</th>
<th>Hybrid</th>
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<tbody>
<tr>
<td>Real-Estate (owned)</td>
<td>Real-Estate (can be owned &amp; 3\textsuperscript{rd} party)</td>
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<tr>
<td>Tailored facility infrastructure</td>
<td>Commoditised infrastructure</td>
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<tr>
<td>Multi-layer, tiered, segmented network</td>
<td>Unified network architecture</td>
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<tr>
<td>Hundreds of different applications</td>
<td>Few applications</td>
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<tr>
<td>Mixed specific hardware (legacy)</td>
<td>Commoditised hardware</td>
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<td>Multiple &amp; mixed NM tools</td>
<td>Standardised Vnm tools</td>
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<td>Frequent app patching and updates</td>
<td>Minimal app patching and updates</td>
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<td>Complex workloads</td>
<td>Simplified workloads</td>
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<td>Multiple software architectures</td>
<td>Single standard software architectures</td>
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<tr>
<td>Commercial model Capex and Opex intensive</td>
<td>Lower Capex and lower Opex</td>
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THANK YOU
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