Brisbane Universities moving Data Centres to Colo environments

The Brisbane Universities of Griffith, QUT and UQ deliver IT Services from infrastructure installed in University owned and operated data centres ie Enterprise data centres. Each University is moving some IT equipment into a colocation facility or "colo". These are commercial data centres available for rental to retail customers that provide space, power, cooling and physical security for the customer's server, storage, and networking equipment.

UQ made an initial move in March 2014, while Griffith and QUT are moving ~~soon~~ now

The IT departments of each institution have made similar statements that their organisations will no longer build enterprise data centres on premise, instead choosing to opt for commercially provided facilities.

University of Queensland

2013

- 8 Enterprise data centres near capacity, all Tier I
- Insufficient space and power for HPC upgrade
- Insufficient time to upgrade
- Go to tender for Colocation provider
- Evaluation committee selected Dell DC at Polaris Springfield Tier III facility
- Returns space and power to enterprise data centres for corporate IT Service delivery

2014 Colo contract arrangements

- 3 year deal, 2 year extension, total term 10 years
- One primary metric for charging based on power consumption $300/kw/mth or 41.1c/kwh
  UQ deliver in house for approx 15% less
- Min commitment of 50kw/mth
  11 months to reach this threshold, currently 170kw
- Upper limit of 200kw, 300kw next step in negotiation, 500kw and 1mw possible
- Advantages being Anchor tenant – Dell accommodating
- Rack space allocated on sliding scale - 48ru, 1200mm deep, 750mm wide, deliver high density racks at 6kw/rack, currently at 5.3kw/rack across 24 racks. PDUs monitored

EB47 1.8kw	EB45 9.8kw	EB44 9.2kw	EB433 9.3kw	EB42 0.7kw	EB40 7.6kw	EB39 4.6kw	EB38 6.3kw	EB37 0.6kw	EB36 5.7kw	EB34 4.7kw	EB33 6.3kw	IBM test ??	
ED37 0.1kw	ED45 5.2kw	ED44 6.9kw	ED43 5.3kw	ED42 3.5kw	ED40 7.5kw	ED39 7.2kw	ED38 6.5kw	ED37 3.5kw	ED36 12.3kw	ED34 6.3kw	ED33 18.2kw	ED32 5.1kw	ED31 17.73kw

2014 Colo contract arrangements

- Racks and PDUs at no additional cost to UQ
- Racks standard keys, can request biometric or 2 factor access at UQ's cost
- 12 fibre cross connects free between UQ racks and carrier IDF rooms - additional requests at UQ's cost
- 10 Trusted Access passes free allows 24/7 access to DC without notice.

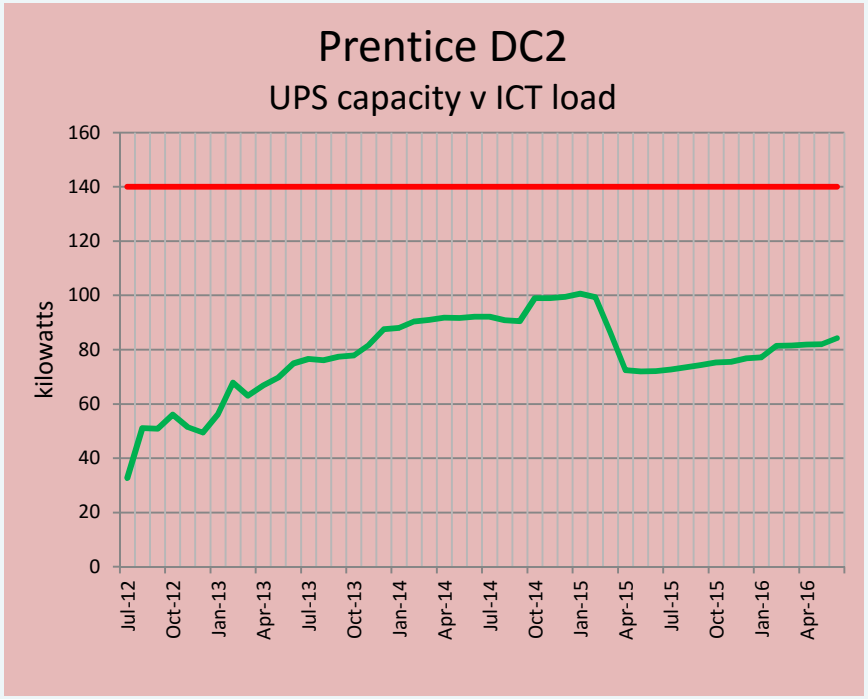
  Trusted Access can bring in 'supervised escorted', but 'escorted' visitors require DC induction. Additional passes available at $320/an, not transferrable.
- 5 hours free remote hands support per mth - have not hit the limit
- Dell invoice on 17th day of following month

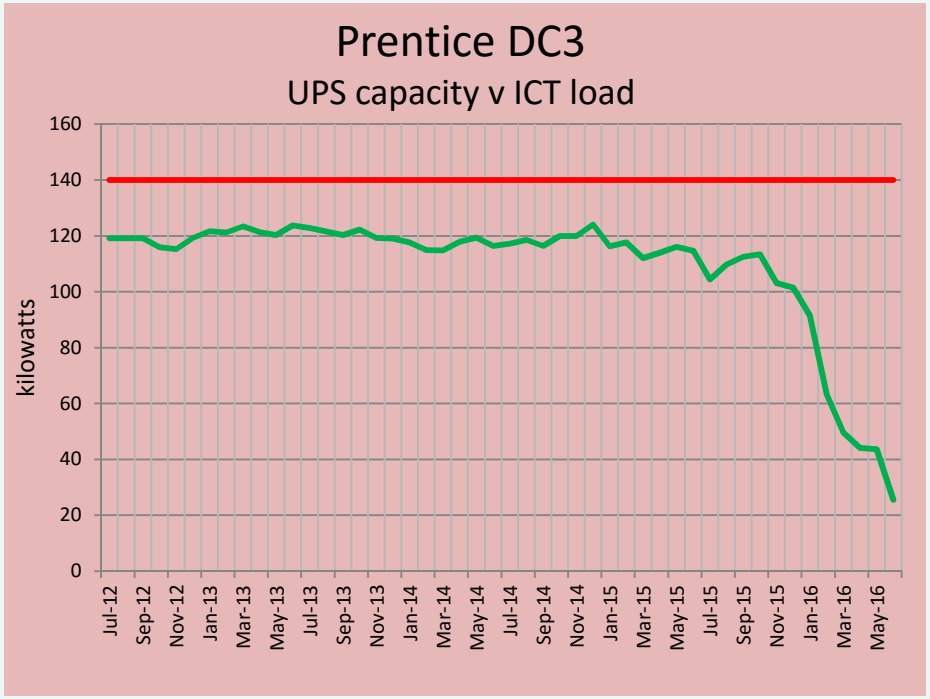
Access and Delivery requests

- Access requests
  Only trusted access folk can make trusted access requests
  Only trusted access folk can make access requests
  - Must be submitted in writing between 9am-5pm with 24 hours' notice
  - can take up to 24 hours to process request
  - Access to data floor – no food, drinks, paper, cardboard.
  - Remain conscious of other customers kit
  - 24x7 camera surveillance

- Delivery and collection requests
  - Loading Bay and Secure Store room – 24 hours' notice to book
  - Shared facilities room – 48 hours' notice
  - Details – date, time, cargo volume, description, consignment no., courier company, driver name, rego, designated location

- Polaris accept no shortcuts, frustrated staff


Prentice DC2
UPS capacity v ICT load
kilowatts
160
140
120
100
80
60
40
20
0
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16


Prentice DC3
UPS capacity v ICT load
kilowatts
160
140
120
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80
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40
20
0
Jul-12
Sep-12
Nov-12
Jan-13
Mar-13
May-13
Jul-13
Sep-13
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Jan-14
Mar-14
May-14
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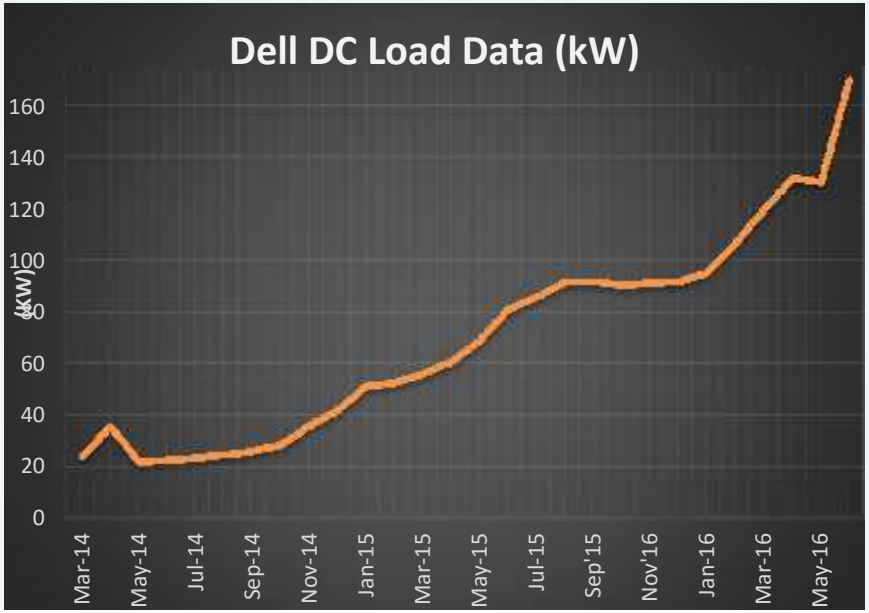
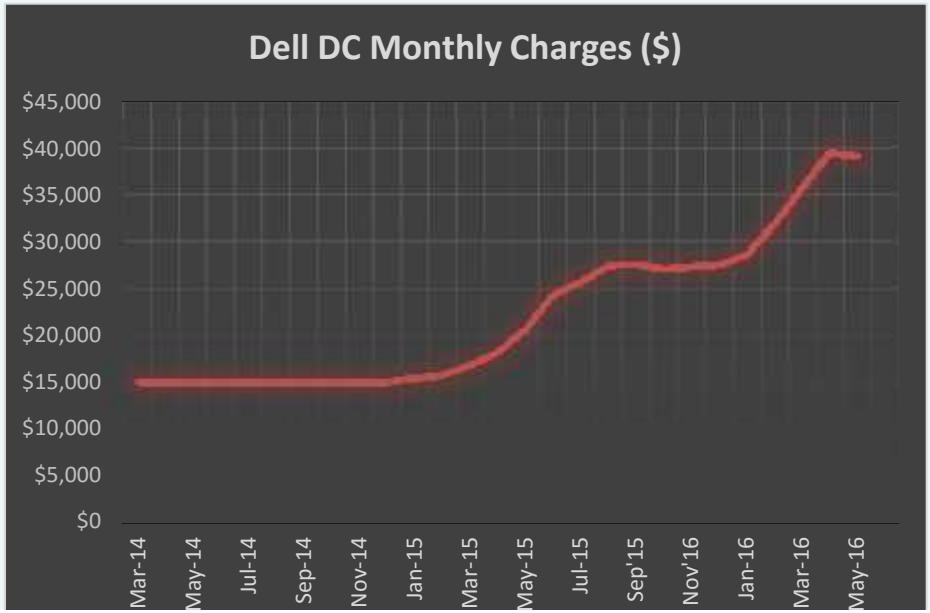
Jan-16
Mar-16
May-16


Dell DC Load Data (kW)
(kW)
160
140
120
100
80
60
40
20
0
Mar-14
May-14
Jul-14
Sep-14
Nov-14
Jan-15
Mar-15
May-15
Jul-15
Sep'15
Nov'16
Jan-16
Mar-16
May-16


Dell DC Monthly Charges ($)
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
Mar-14
May-14
Jul-14
Sep-14
Nov-14
Jan-15
Mar-15
May-15
Jul-15
Sep'15
Nov'16
Jan-16
Mar-16
May-16

Griffith University

Laurence Rietberg *works for Griffith University and leads a small team of Data Centre staff that monitor, maintain and operate two 150m2 enterprise data centres approximately 70 kilometres apart, as well as a number of small network-critical facilities across the University's five campuses. Laurence has an electrical and computer science background and previously worked in an IT support role at UQ in areas as diverse as the medical school and facilities management. Achievements in his current role for the team include: a data centre infrastructure management refresh and virtualisation, installation of fire suppression, a cabling and labelling refresh that removed a lot of old and out of date copper and fibre cabling, and a containment and cooling refresh at their Nathan Campus facility resulting in annual energy savings of AUD$50,000. He also tries to maintain a data centre focus within the University's IT Infrastructure portfolio within a climate of rapid change, uncertain funding and tighter cost controls.*

What is Co-lo?

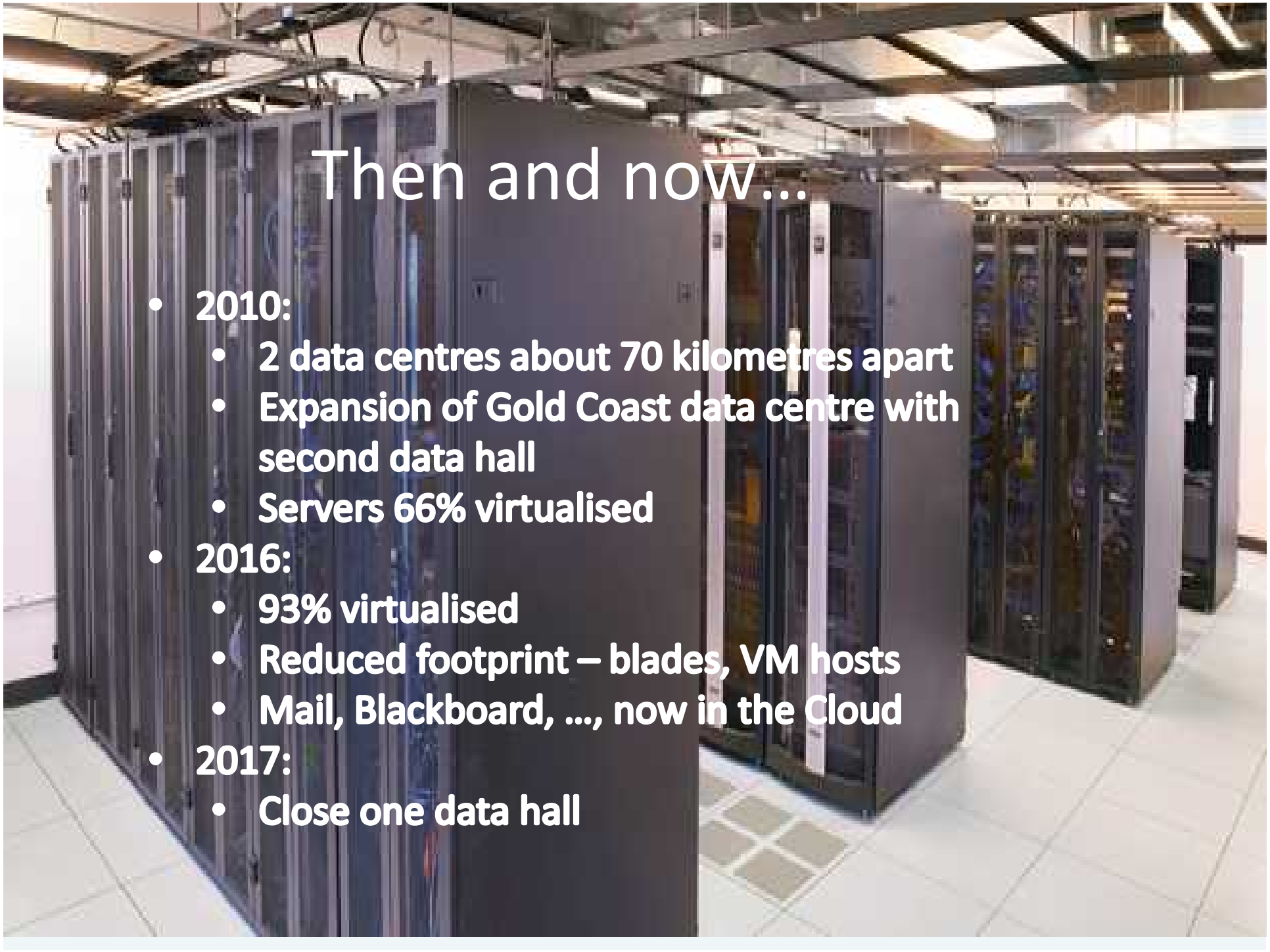
- Gartner (2010): IT equipment is owned and operated by the enterprise but is located in a shared, third party-owned data centre (the co-location provider) (1)

- Gartner (2016): Two distinct providers:
  - Pure: space/power/comms
  - Higher level services: managed services, backup, hosting, cloud, interconnection, internetworking (2)

(1) R. Jones: *Data Center Sourcing: Cloud, Host, Co-Lo, or Do It Yourself*: Gartner, 2010.
(2) B. Gill: *Eight Trends Will Shape the Colocation Market in 2016*: Gartner, 2016.

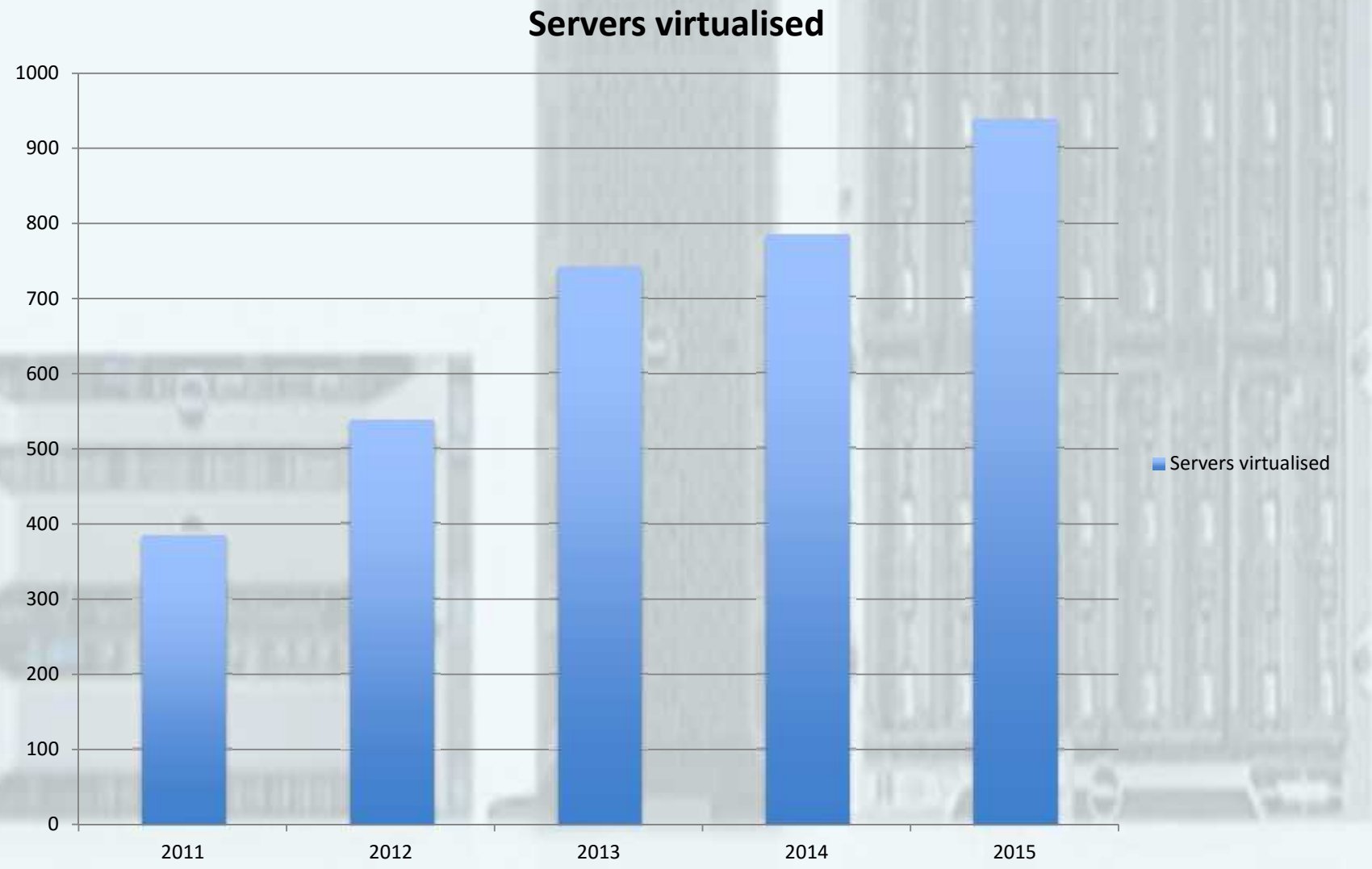
Why Co-lo?

- Maturing Co-lo market
  - Local, high availability, economies of scale, ease of use
- Cost equivalence
  - on-premise vs co-lo ($/kW)
- Inflection point
  - Close down emptying/aging on-premise facilities
  - Lower risk of large spend/stranded capital building new
  - Uncertainty / timing with *aaS
- GU context (IT 2020 trend #4): access over ownership
  - Changing service delivery models / Cloud take-up
  - Devolving on-premise/enterprise DC operation
    - Inflection point: reduce DC spend, outsource DC risk
  - External presence of enterprise services for Disaster Recovery
- Direct institutional involvement and investment in data centres has the potential to become a distant memory...
  - Colo could be the short or long term bridge needed while you're busy making other plans.

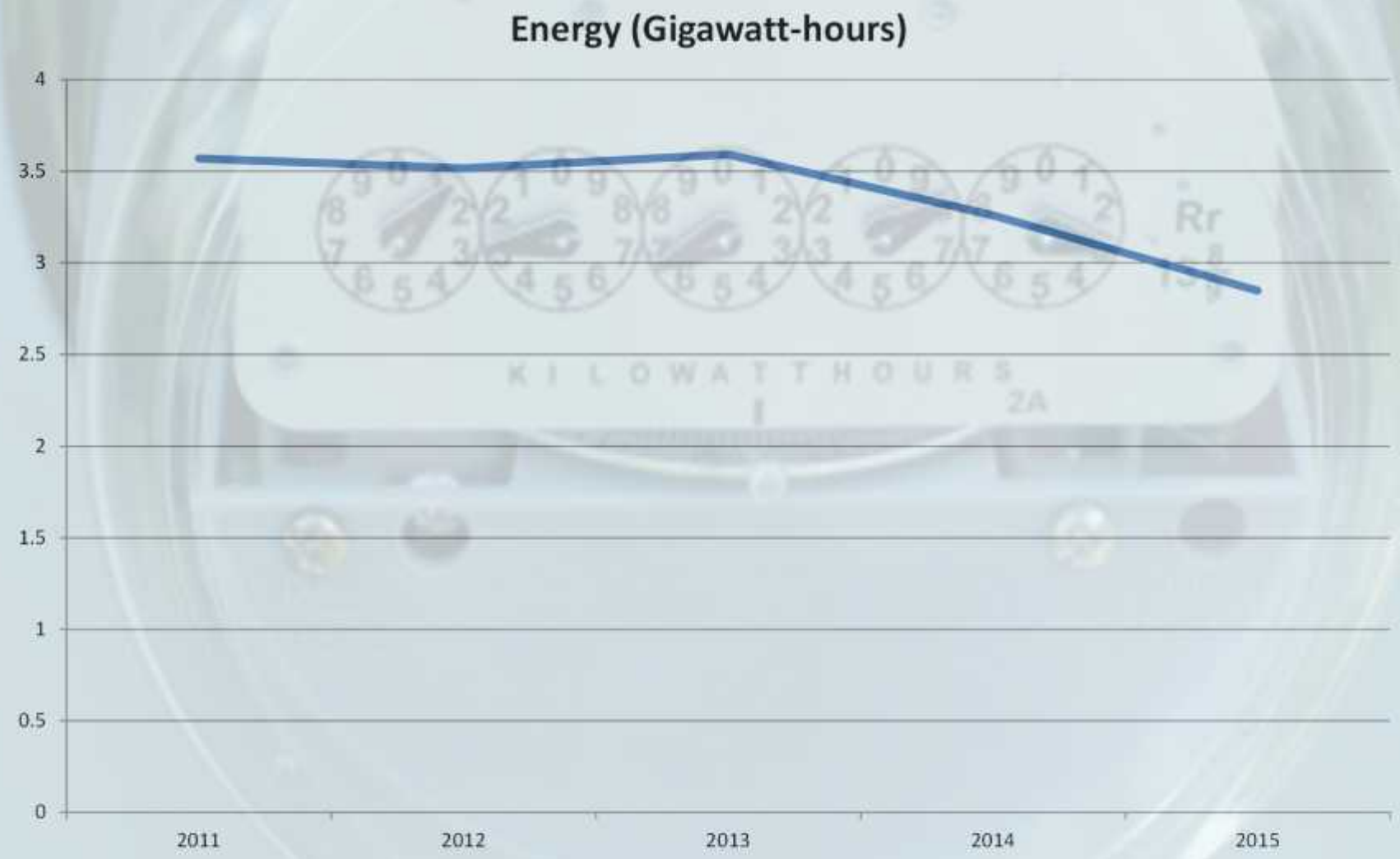


Then and now…

- 2010:
  - 2 data centres about 70 kilometres apart
  - Expansion of Gold Coast data centre with second data hall
  - Servers 66% virtualised
- 2016:
  - 93% virtualised
  - Reduced footprint – blades, VM hosts
  - Mail, Blackboard, …, now in the Cloud
- 2017:
  - Close one data hall


Servers virtualised
1000
900
800
700
600
500
400
300
200
100
0
2011
2012
2013
2014
2015
Servers virtualised

On-premise DC energy usage



Colo for DR

- First Colo cab off the rank
- Provide DR capability for externally facing services
  - Services stay up if on-premise dependent services are down
  - E.g., DNS, eDIR, outage web page
- Consider how CoLo could support your transition plans

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Shaun Vosper *is the project manager for the data centre futures project for QUT. Currently in the phase of relocating the high performance computing and research data storage environments from Gardens point campus to a colocation provider. Shaun is also the owner of Data Centre Technologies a data centre services and products company specialising in IT Infrastructure equipment and relocation services. Shaun has a number of significant achievements through his career including project managing the build of NextDC B1, Sydney Water – Parramatta data centres and the relocations of multiple data centre facilities*

- Have a strategic plan.
- Legislation – are you effected.
- Clients – Do you know them
- Knowledge of relocations.
- Budget – Complete lifecycle cost.

- Planning – Start early
- Options – What are they V2V, P2P
- The physical –
  - Dry run through
  - Checklists
  - Approvals
  - Know your supplier.
  - Know your dates. (holidays, leave)