$$f(c,s) = \left[\left(\frac{c}{s-1}\right) * s\,;(s-1) * s\right]$$

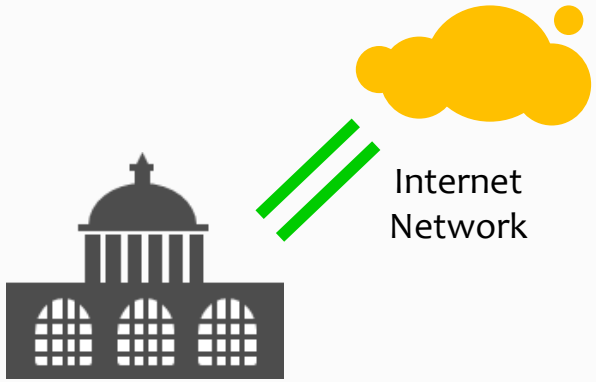
How Many Data Centre's?

One of the first questions asked by any prospective MSP or CSP is which Data Centre (DC) facilities they should buy or rent. Often a cost or investment case has been created on the basis of a sublet of a large DC facility. This short presentation seeks to raise the question of whether this approach really suits? And to provide a method for divining an optimised answer …

Contents

The Starting Point

A start-up Cloud Service Provider (CSP) has been asked by a customer to provide a quote for a large hosting requirement numbering some 10,000 cores. It is known that the customer will not pay more than £4.50 per core per month. The immediate reaction is to fulfill this request by costing up a DC with 10,000 computers.



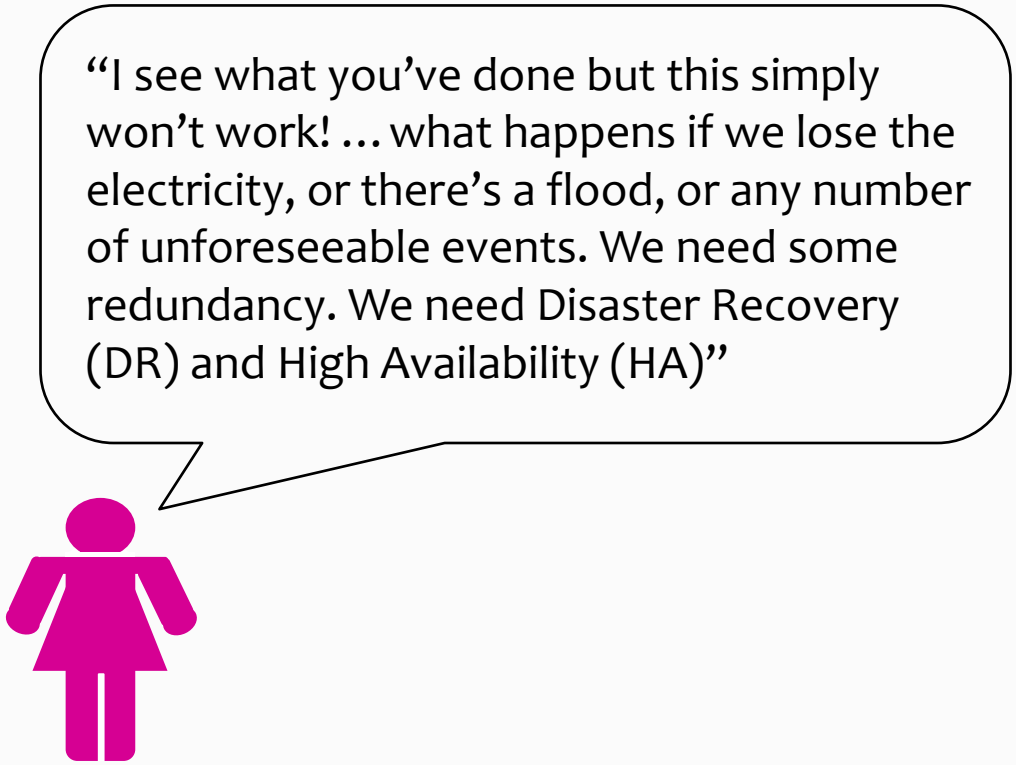
Computers = 10,000

Approximate Cost* = £1.80 per core/month

* Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

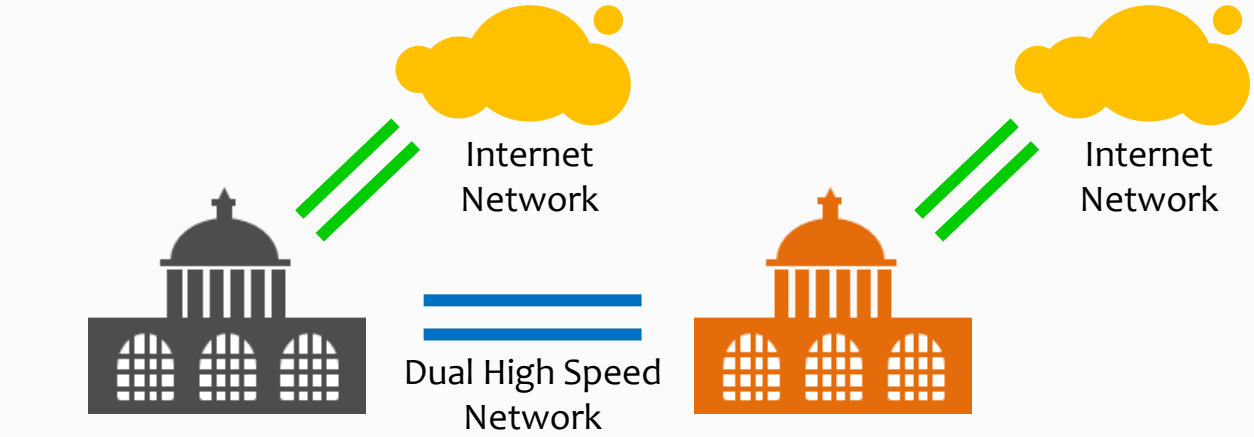
The Starting Point – A Problem!

Initially this looks like a good solution but very quickly it comes to the fore that there is a service exposure inherent in the single site design.



The Dual-Site Solution

The team worked quickly and built a dual-site redundant architecture which provided 100% redundancy (both DR & HA) in the event of failure to the building, the computers and the networks. This entirely resolved the problem but, as is often the case, created another …

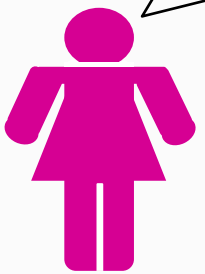


Approximate Cost* = £3.65 per core/month

* Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

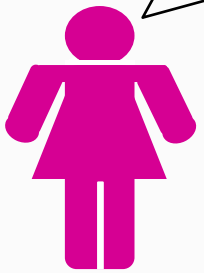
The Dual-Site Solution – A Problem!

"This won't work either! … the costs of the full Disaster Recovery (DR) solution have blown our chance of making decent money on this deal .. This is only **19%GP!**"



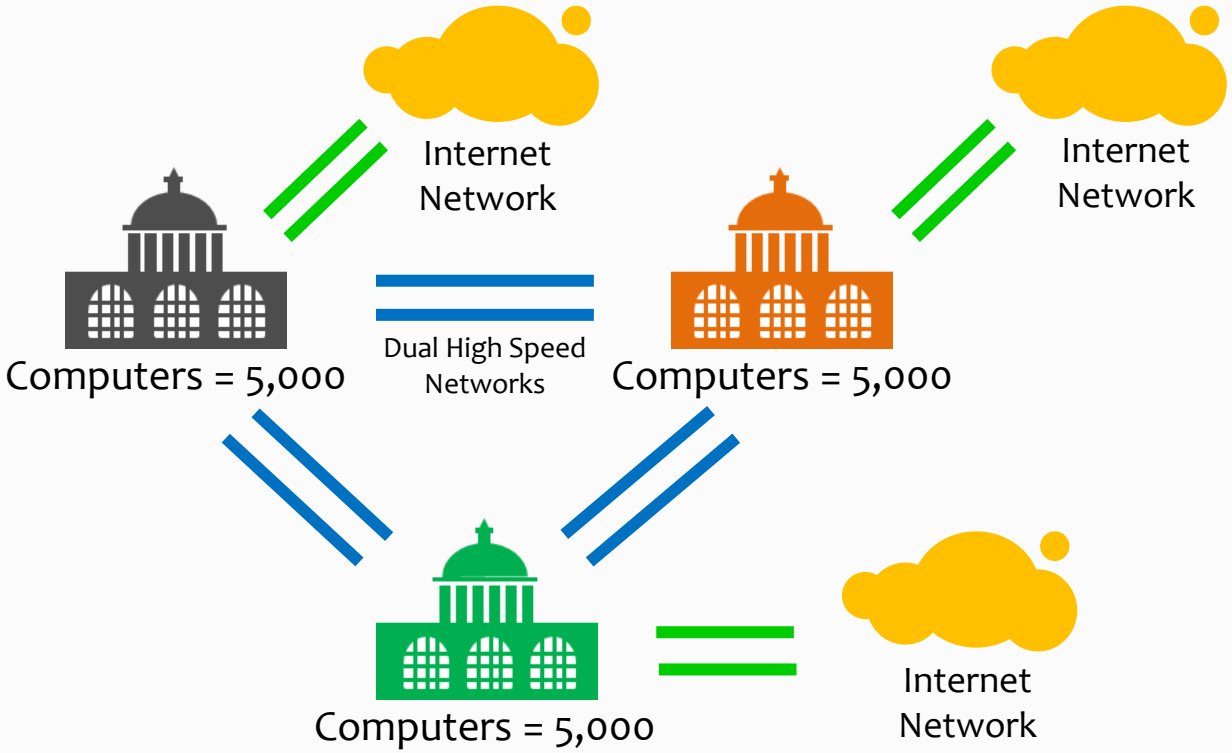
"What if we spread the implementation over three sites (perhaps even more sites) rather than two then we could optimise the capital spend and reduce the overall cost"

"Are you crazy? Have you seen the effect of dual-sites – almost doubling the cost … I can only imagine what three or more would do! Squeeze the suppliers for more discount …"



The Triple-Site Solution

Undeterred the team worked to draft up a three-site solution with astounding results …

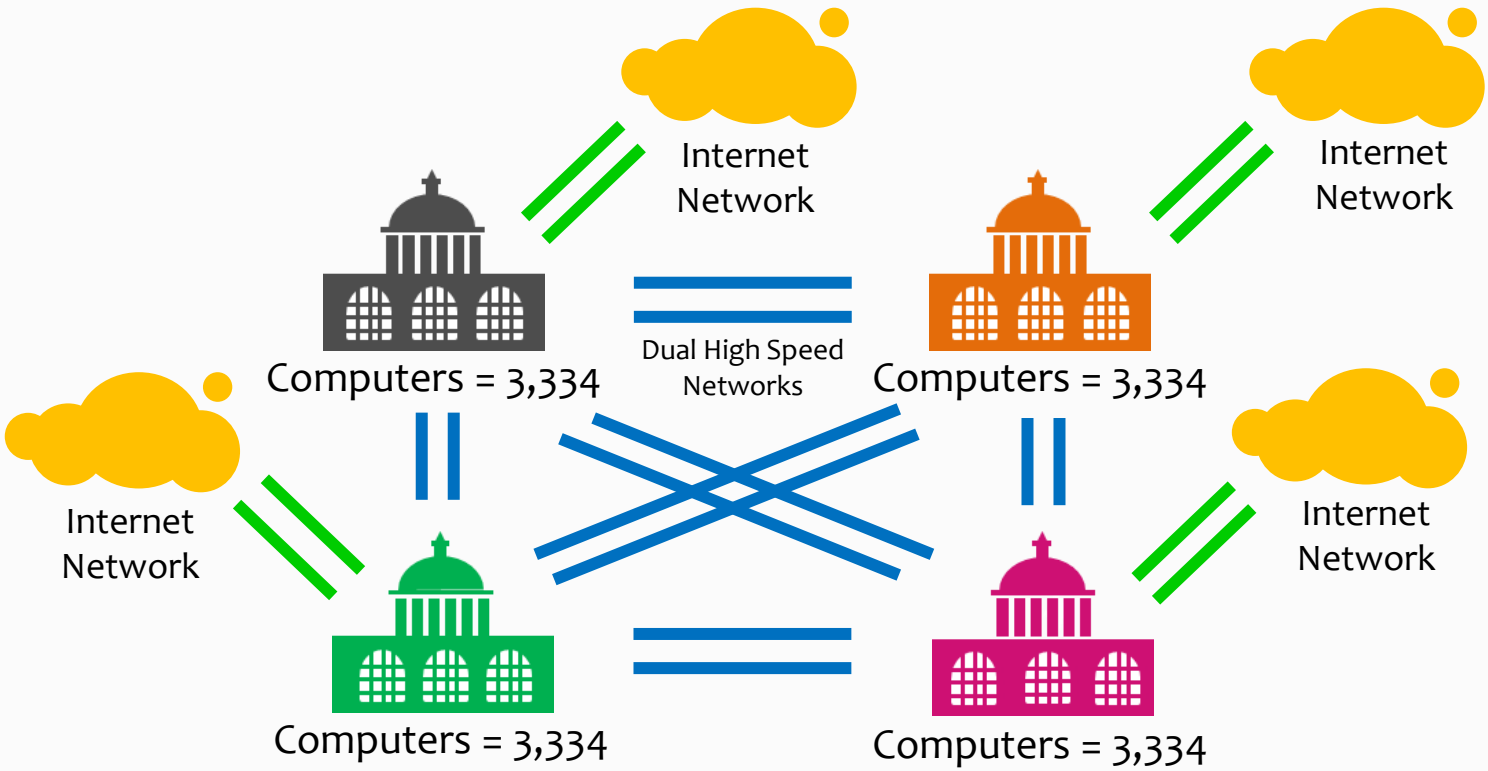


Approximate Cost* = £2.88 per core/month

* Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

The Quad-Site Solution

They kept working and built a four site solution …

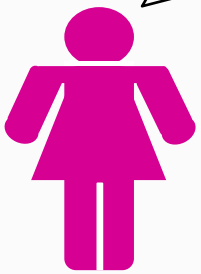


Approximate Cost* = £2.77 per core/month

* Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

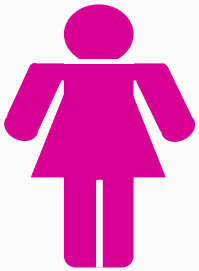
Evaluating the Potential Solutions - I

"Okay – that's impressive .. By moving to four sites we can save 24% off the cost per core per month … and double our GP to **38%!**"



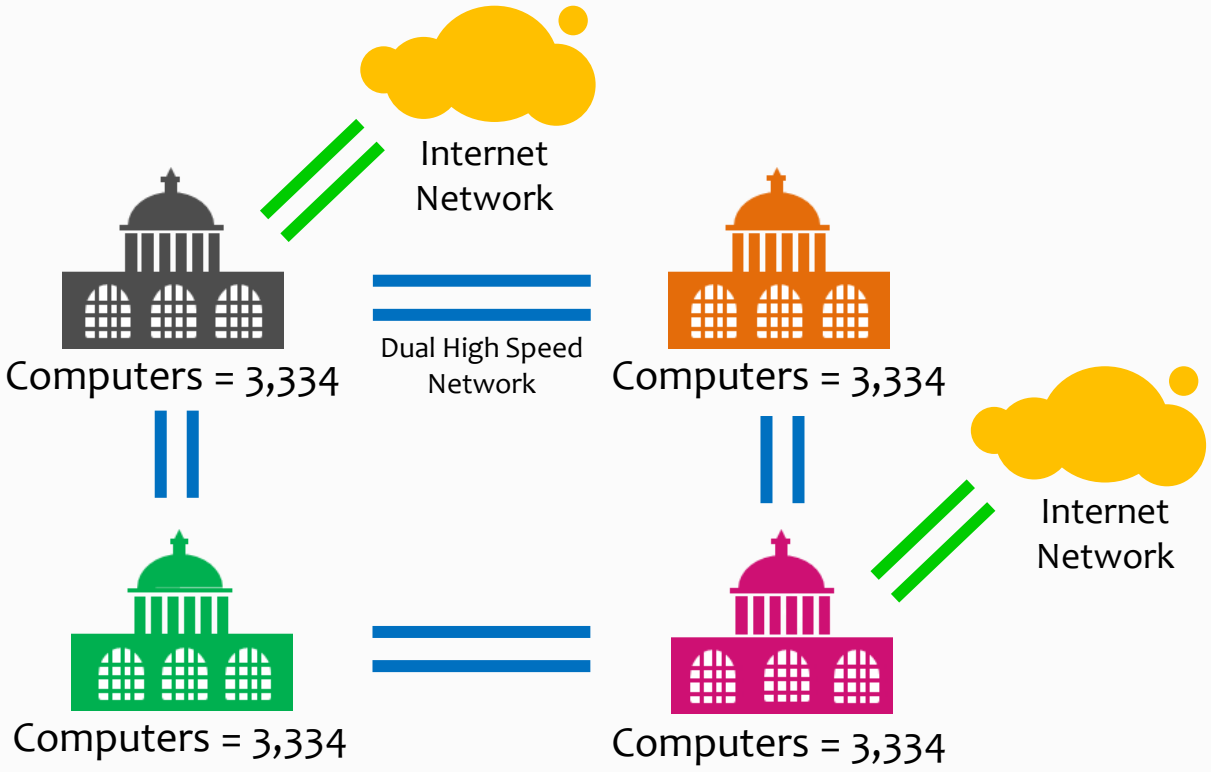
"I think we can do even better .. The solution for four sites assumes a comprehensive "mesh-type redundancy between the sites which is expensive for networking"

"What do you propose?



The Quad-Site Solution with Optimised Redundancy

They kept working and built a new four site solution with optimised redundancy …

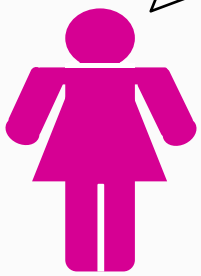


Approximate Cost* = £2.65 per core/month

* Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

Evaluating the Potential Solutions - II

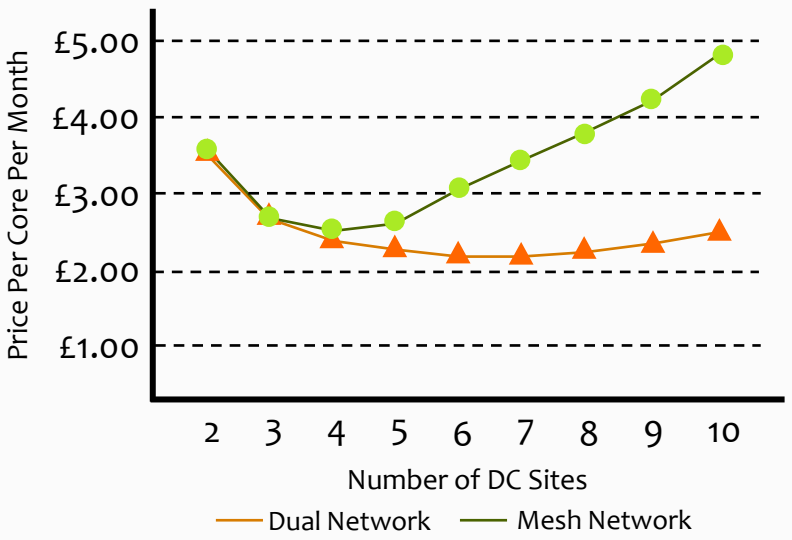
"Wow 27% cost savings against the initial dual site on a four site solution … that's **41%GP** .. I get it now … the capital cost trade off against the increased sites … the less computers I need to buy the better … why not ten sites which means I only need to buy 1000 cores per site!!!"



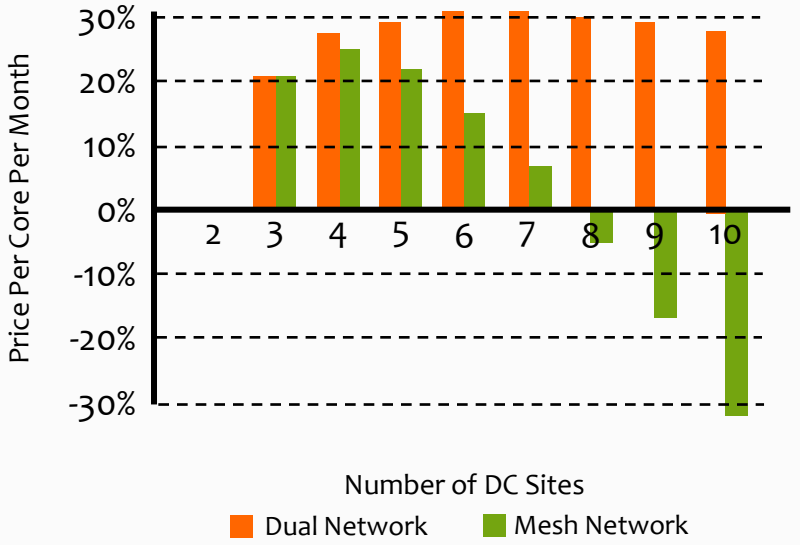
"The problem with adding sites is the network charges begin to increase with interconnects between them but I can model it mathematically to find the optimum solution …"

When the team finalised their model they were able to determine that the optimal cost savings (against a Dual-Site solution) were found at a Six-Site solution

Cost Per Core Per Month: Dual vs. Mesh



Saving Per Core Per Month: Dual vs. Mesh



***** Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

The Cost Case & Customer Quote

Internal View:

- Number of Cores = 10,000
- Number of Computers = 625
- Number of Sites = 6
- Number of High-Speed Internet Connections = 4
- Number of Interconnect Networks = 12
- Total Costs over Four Years = £1.21M
- Cost Per Core Per Month = £2.53p
- Price Per Core Per Month = £4.50p
- Gross Profit % = 44%

> "A fully redundant, highly available 10,000 core solution for £4.50p Per Core Per Month"

***** Cost Baseline Basis: Engineers = £50k/year; High Speed Network = £2.5k/month; Server & Maintenance=£4.5k; Rack=£2k/year; & Depreciation 4Yr straight line; Amortisation 4Yrs

Eamonn Killian

Mail: eamonnkillian@gmail.com

Telephone: +44 7896 103881

Twitter: @eamonnkillian

WWW: eamonnkillian.com