The Data Centre Network Effect

How to identify and change your weakest link

Outsourced data centres and cloud services are offering unprecedented flexibility to respond to rapidly changing business demands, but that's only half of the picture. Data centres have to be coupled with high capacity, transmission grade connections that deliver data securely and reliably – and be hooked-in to a network of high performance peers to enable businesses to achieve the full benefits of an ecosystem of partners, no matter where they are. *Nextgen's Phil Martell draws on his 33 years of Telecommunications experience to explain this concept – what he calls the Data Centre Network Effect.*

The Data Centre Network Effect can be easily understood by examining Metcalfe's Law. This concept coined by Robert Metcalfe in 1980 proposes that the value of a communications network is proportional to the square of the number of connected users (n^2).

An simple way to visualise and understand Metcalfe's Law is to use the example of connected telephones. A single telephone has no value on its own. Two telephones can make only one connection, five can make 10 connections and 12 can make 66 connections – so you can see clearly how the value of a network increases as more people are connected to it.

Laws and Moore's law
Anecdotally, I've run the numbers from my own early days of running networks comparing the mid-80s, when peak speeds were 34Mbps, through to now where speeds reaching multiple 100Gbps are available, and it's interesting to note that networks have followed that other popular paradigm – Moore's Law – having averaged a doubling in speed near on every 18 months!

Drawing on this concept, we can say that the great value of the internet is that it allows every user to eventually connect to every other user on the network, but is that good enough? For larger organisations the answer is typically 'no'. At the business level we begin to focus on the speed of connection. If your network is running multiple 10Gbps pipes internally and connecting to other sites at much lower speeds, of say 1Gbps or less, you're both throttled down to the lowest common denominator – so you really aren't getting a network effect.
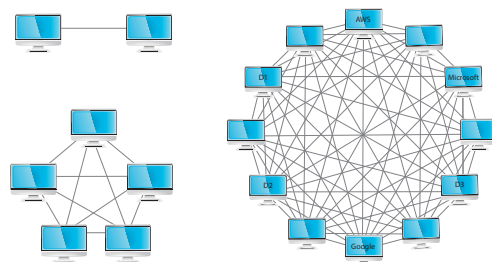
The fact is you can get to pretty much anywhere these days – if you're prepared to run at a low enough speed. I would contend, therefore that you need a really high speed interconnect if the network effect is to come into play. Effectively the n in n^2 is the number of sites with high bandwidth connections.

While speed is important there are other key attributes such as, network security, reliability, latency which make a network suitable for your mission critical applications. This is why Nextgen has invested in one of the largest and most robust fibre networks in Australia, spanning over 16,000 kilometres and connecting over 75 premium data centres. This level of connectivity ensures our customers can put their data exactly where it suits their business – without sacrificing their need for speed or ease of connections.

Phil's Data Centre Migration checklist

For many organisations, their first step to outsourcing their data comes as their legacy infrastructure starts to reach capacity and they begin experimenting with the cloud. Once they realise the benefits of this change they are ready to consider a new data centre to help enable that next stage of growth. Here are a few tips if you're about to make this move:

✓ **Run a high speed connection to the existing site.** You'll need this to move your data, and also for experimenting with system trials, rollbacks and forward – and to prepare for any contingencies.

✓ **Look for commercial flexibility during the migration.** Typically providers want long term commitments for this higher capacity, but your needs during the migration might be substantially greater than your long term need.

✓ **The future is about the ecosystem.** Look for data centres and network providers who can facilitate you getting to the key players in the new IT – everything as a service – world.

✓ **Integrated provider** – getting your Data Centre and Communications from one provider means less operational complexity, a single SLA and no finger pointing if things go wrong.

Helping your business speed to the future

With the incredible pace of development in networks, Nextgen is very keen to ensure Australian businesses are ready to take full advantage of all advances. We're about to debut a direct connection to Amazon Web Services and other major public cloud providers will follow soon. We've also successfully run 400Gbps trials between Sydney and Canberra on our existing network – that's the fastest ever data transmissions speeds in Australia. Another area where we're making great strides is Software Defined Networking. We're using standardised APIs and Data Models to automate many of the processes involved in running a network. Ultimately, as a technology partner, our goal is to remove the road blocks and help you deliver an IT infrastructure that gives your organisation an edge – the platform to take your business where your customers are.

About the author

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Phil is responsible for setting Nextgen's technical direction and overseeing major network initiatives. He has a deep understanding of networks and telecommunications having held senior positions at Telstra, on the SDh project Team and as Project Director for the launch of ADSL in 2000. Phil was one of the founding engineers behind Nextgen and provides technical continuity for the evolution of the company and its services.