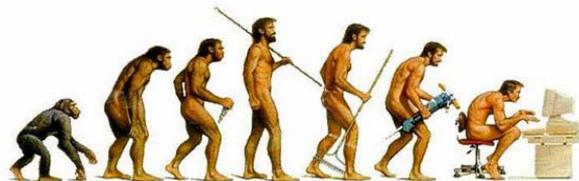


⇒ Eight hundred and sixty eight days later

IPv6 summit, Melbourne, October 2011

FXnetworks

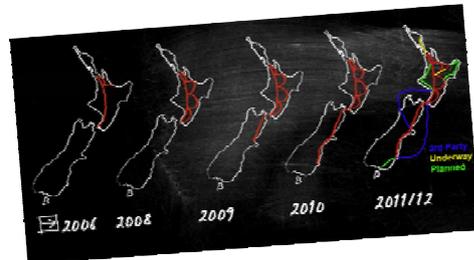
Evolution



Who?



- ☒ FX Networks, National Telecommunications and Internet Backbone.
- ☒ TUANZ Next Generation Fibre Network 2010.



- ISP to those that need real horsepower. Private WAN networking for those who demand the same.
- Native IPv6 dual stack support on the ISP went into full production in June 2009. This support costs our customers no extra. It's just *normal for us* now.

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Who?



- Major network provider to central and local government.
- Partnership with Dimension Data
- 15% of local government organisations.
- 25% of core central government agencies.
- 37% of core central government employees.
- Plus 15,000 non core central government employees including the NZ Police.

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What?

- ☒ Parallel support for IPv4 and IPv6 (Dual Stack). The Global Internet. It's about reach.
- ☒ Dual stack support for managed private L3 enterprise WAN services.
- ☒ ~650 dual stack WAN ports delivered to Government Agencies since December 2009.



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2 years ago - why?

- ☒ We wanted to be ready before our customers demanded it.
- ☒ Operational stability is paramount in 'the core'
- ☒ We recognise good things take time. Doing it early is less expensive and easier than doing it late.



"..Engineering in a hurry never leads to good outcomes.." - Vint Cerf, August 2009

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The good..

- ☒ Vocus. Until they arrived in NZ with native dual stack on international transit in early 2009, deploying domestically was a quagmire of tunneled ugliness.
- ☒ Since then a number of international transit providers support dual stack.
- ☒ Now seeing support for IPv6 in major CDN operators (hello Akamai!)
- ☒ More CIO's can spell IPv6 now. In 2009 more than half had no plans. Now it's 26%, which is still bad but it's better.
- ☒ Supporting IPv6 is now a competitive advantage and is often asked for in RFP's etc

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The bad...

- ☒ Swamp space account holders. We're selling IPv6 & APNIC at the same time.
- ☒ A continuing misunderstanding of the IPv4 well endowed that they don't need IPv6 - they all forget about the global change going on.
- ☒ Software architects (ha!) who hardcoded IPv4 addresses.
- ☒ Seeing less ideal v6 paths to other CDN's (hello google!)
- ☒ Some tunnelled L2 implementations don't support neighbour discovery properly.

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The ugly...

- ☒ Anyone who makes an appliance that has tight L3/L4 and above integration. That means you Traffic Shaping vendors!
- ☒ Firewall vendors who support IPv6 but only at CLI and not GUI. Most enterprise folks are point and click. So the actual implementation of policy is um, lacking.
- ☒ Control plane features still missing in routing. E.g. TACACS over v6. There's others (e.g half duplex VRF's). We still don't have feature parity (but it's a lot better than it used to be)

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The ugliest..

- ☒ DNS. Specifically reverse DNS. Populating in.addr.arpa is a nightmare, and generally doesn't get done as a result.
- ☒ Reverse DNS is important for topology troubleshooting. A simple traceroute doesn't immediately help with identifying the transit providers.
- ☒ Whilst IPv6 peering and transit arrangements evolve this is an issue. Routing policy harmonization potentially a challenge due to timing.
- ☒ Because customers (remember we're a business provider) complain about suboptimal topology compared to the v4 Internet.

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Other thoughts..

- ☒ Enterprise networks. The WAN should be dual stack too.
- ☒ Dual stack Internet to Head Office. Don't stop there. What about the branch office?
- ☒ Don't compel enterprises into doing their own translation mechanisms internally as it undermines the case for seeking a dual stack Internet.
- ☒ Systems integrators. Hurry up. Opportunity is banging loudly on your door.

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Parting thoughts..

- ☒ IPv6 is not a Project. It is the 'new normal'.
- ☒ It is a modification to Business as Usual. Treat it as such.
- ☒ ISP's who offer Internet access, yet do not provide IPv6 transport are misleading their customers.

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