



THE UNIVERSITY
OF AUCKLAND

NEW ZEALAND

Te Whare Wānanga o Tāmaki Makaurau

University of Auckland IPv6 deployment

Prof Brian E Carpenter

Department of Computer Science

John Dhliwayo

Warwick Dixon

IT Services

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Who are we?

- Our business is world-class education and research.
- Our catchment area for students is the world*, with an emphasis on the developing economies of the Pacific region.
- Our catchment area for research partners is the world.

*including NZ, of course

Why deploy IPv6?

- We can't afford to be behind the leading edge in what we teach or how we do research
- As IPv6 usage becomes unavoidable in our target market, we must
 - Teach our students about IPv6, by using IPv6
 - Ensure that potential students in our entire catchment area can reach us using IPv6
 - Ensure that we can work with research and academic partners who use IPv6

Steps

- Skills acquisition for central IT staff ✓
- Verify firewall readiness ✓
- Arrange ISP transit for IPv6 ✓
- Enable dual-stack routing centrally ✓
- Enable local dual-stack routing and DNS for Computer Science
 - about 1000 desktops in Computer Science labs & offices
 - able to use IPv6 for teaching, research ✓
- Enable dual-stack Computer Science servers ✓
- Address management tool with DNS & DHCPv6 support
- Ensure all management, security & accounting tools support IPv6 ✗
- Validate all applications on campus for IPv6 support ✗
- Plan stepwise rollout across all departments ✗
- Plan dual-stack version of main Uni web site ✗



Costs and challenges

- Cost to date is estimated at <1% of IT budget
- Challenges:
 - Skills acquisition, Network team getting to grips with it
 - Commercial ISP support
 - IP Addressing Management tool
 - DHCPv6 support

UoA IPv6 - technical (1)

- Allocated portable 2001:0df0::/47 by APNIC
 - not using KAREN address space
- Advertising 2001:0df0::/48
- Reserved 2001:0df0:1::/48 for future use
- /48 divided into 16 /52 zones (network eng, data centre, VOIP, campus sectors, etc)
- Longer prefixes used in each zone
- Initial 6 zones to be used for whole network
 - keep lots of spare for future usage

UoA IPv6 - technical (2)

- BGP Peering with KAREN and Telstra
- Full IPv6 routing table from KAREN (~1335 routes)
- Default route to Telstra
- Open BSD IPv6 firewall
- Dual stack internal network OSPFv2/OSPFv3
- IPv6 enabled border, core, ITS and Computer Science
- Stateless Address Autoconfiguration for user subnets
 - DHCPv6 later