

IPv6 on Janet

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What is Janet?

- Briefly: Service provider dedicated to the research & education communities
- High speed access, advanced services
 - Demanding users
 - Close contact with our customers
 - (to those of you in the room: we try)

Why IPv6? (1997 version)

- Researchers working on IPv6 standardisation
 - See previous presentation
- Making sure we were ready
 - We'd seen all the IPv4 apocalypse talks too

The start

- Old Sun 4/330 running NetBSD/INRIA
- Cisco 2500 & 4500 running experimental software.
- ~1997-9



Only tunnels?

- Mainly...
- ...but also a native fast ethernet link to Pipex in Telehouse North
 - One of the first native inter-provider links in the country?

What then?

- 6NET: Pan-European project to build a native IPv6 network.
 - Partners included R&E networks, Universities, Cisco, IBM
- Make Janet dual-stack

Dual-stack on Janet

- ~2003
- Biggest problem:
 - Needed to change the IGP from OSPF to IS-IS
 - ...but we were planning to do that anyway
- Large router vendors still software switching IPv6 (on some high-end hardware) in 2003-5.

Dual-stack Janet services

- The easy ones
- ns0.ja.net
 - Primary for ac.uk, gov.uk.
 - Secondary for int, an, cw, gg, je
- Mail relays
- ...others as available

External connectivity

- Initially: Tunnels
- Then: Peering plus separate v6 transit provider
- Now: Mandate IPv6 in transit tenders

Where are we now?

- Can provide IPv6 to all customers
- Uptake is still low
 - ~3Gbit/s out of 200Gbit/s on external border

Advocacy

- There are early adopters, and there are the rest
- The early adopters wanted to deploy IPv6
 - Southampton, Reading, Loughborough, Lancaster...
 - Particle Physicists (“we’ve been doing cloud computing since it was called grid”)

The rest

- Need to see the “business case.”
- Campuses are no different to enterprises.

What is the business case?

- AKA “Why IPv6 (2014 version)”
- Research and education are global
- IPv4 isn’t distributed evenly
- R&E both foster innovation
- Innovation at the edge is hard without public IP addresses
- Continuing “business as usual.”

QUESTIONS & DISCUSSION