

The Internet Addressing Crunch

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Introduction

- What's the problem?
- What's going to happen?
- What can be done about it?
- What is 6UK and where does it fit in?
 - What's it going to cost?

IP Address Primer

- Master registry is IANA
 - Hands out blocks of 16M IPv4 addresses to an RIR
 - Called /8s in the trade
- RIR issues addresses to its members (typically ISPs)
- ISPs hand out addresses to their customers
- All done on the basis of need
 - Addresses are not traded or considered “property”

So what's the problem?

- There are 256 /8s of IPv4 address space
 - IANA only has 7 /8s left to give out to RIRs
- IANA usually issues one /8 every month
 - => IANA IPv4 shelves will be empty next year
 - Current projected end-date is mid-March 2011
- When there are 5 /8s left, IANA will give one to each of the 5 RIRs

What does this mean?

- It will get progressively harder to get IPv4 addresses
- RIRs will probably run out of IPv4 space about a year after IANA does
- ISPs & enterprises may run out shortly after the RIRs do
- How will **you** grow **your** network then?

Don't Panic!

- Exhaustion of IPv4 will not be a cataclysmic event
- The Internet will continue to work as though nothing had happened:
 - Email, web, audio/video streaming, etc. unaffected
- Adding new stuff on IPv4 will get harder and harder... and harder
- What's the impact for new service roll-outs planned for the years ahead?

The Not So Good News

- IPv6 and IPv4 are not compatible
 - Can run both on the same physical network
- However most devices speak IPv6 today
 - Dual-stack operating systems
 - IPv6 is usually just not switched on!
- Chicken and egg problem
 - Not much IPv6 demand because of little content
 - Not much content because of low IPv6 uptake

Short-Term Workarounds - I

- Buy IPv4 from a likely market?
 - How much?
 - ... and for how long?
 - Can the addresses be used?
 - Can the seller be trusted?
 - Who really “owns” the addresses?

Short-Term Workarounds - 2

- Proxies and Address Translation boxes
 - Clunky and won't scale well
 - Expensive to maintain and operate
 - May cost **a lot** more in the long run
 - Significant performance impact
 - RIPA, IMP and Data Retention horrors
- Simply postponing the inevitable

The Eventual Solution

- 4Bn IPv4 addresses are simply not enough for 6Bn+ people
- Adopt IPv6
 - “New” protocol with vast address space
 - 340 trillion, trillion, trillion addresses
- IPv6 deployment really needs to get under way
 - Phase out of IPv4 will take a long time

Why IPv6?

- Future growth of the Internet will depend on it
 - “Emerging” technologies
 - Smart phones & hand-held devices, mobile computing, intelligent grid/utilities, RFID tags
- Some of your customers and suppliers will **only** have (or be able to get) IPv6
- If you don't have IPv6, they won't be able to contact you and *vice versa*
- Already starting to happen in Asia

What To Do

- Prepare now!
 - Assess your organisation's IPv6 readiness
 - Develop a migration/adoption plan
 - Align business drivers with likely crunch points
- Get IPv6 into your core Internet presence soon
 - Connectivity, DNS, email, web, etc.
 - Start IPv6 roll-out to customers?
- Join 6UK

6UK Overview

- What is 6UK?
- Who's behind it?
- What's it for?
- What will it do?
- What's it going to cost?

What is 6UK?

- Non-profit membership association
- Objectives:
 - Promote uptake of IPv6 and raise awareness about the IPv4 run-out
 - Provide a clearing house for information sharing, case studies, migration plans, advice, tools, etc.
- Aspiration is to get UK business (and other Internet users) IPv6-capable before IPv4 runs out

Paying for 6UK

- Initial seed funding from BIS
- Activities to be sustained by membership fees and organisation's own revenue generation
- Future or increased support from government is unlikely
- Currently relying on goodwill from Intellect for logistical backup

Membership Scope

- **Definitely** not just for telecommunications & IT sectors!
- Retail, manufacturing, finance, transport, SMEs, local authorities, public sector bodies, academia, trade/business associations (CBI, FSB, etc.)
- Anyone using the Internet could/should join
- If you use the Internet (as a business tool?), you must prepare for the end of IPv4
 - And here's what you need to do...

6UK Governance

- Interim Board
 - Nigel Titley (Chairman)
 - Peter Kirstein
 - Richard Yule
 - Philip Sheldrake
 - BIS Observer
 - Jim Reid (Company Secretary)
- New board elected by membership at 2011 AGM

What has 6UK done?

- Usual motherhood and apple pie stuff
 - Set up limited company, register trademarks
 - Membership agreement, policies
 - Web site: www.6uk.org.uk
- Membership packs
- Appointed a secretariat
- Arranged launch event

What will 6UK Do?

- Raise awareness through education and outreach
 - Targeted training (largely for IT management)
 - Presence at trade events
 - Promotional activities & workshops
 - Forum to exchange knowledge & experiences
 - Special Interest Groups?
 - Procurement panels
- Creative commons licence for 6UK material

Training

- 6UK developing its own courseware
 - Filling gaps mostly unfilled by commercial providers and other resources
 - Strategic planning and high-level awareness
 - Developing a migration plan, business/use cases, procurement considerations
 - Here's what you need to do and why, what will probably happen if you do nothing, etc...

More Training & Workshops

- To be decided...
- Probably won't focus on technical nitty-gritty
 - Others already talk about packet formats and how to configure routers, computers for IPv6
- Focus on “national competitiveness” issues?
 - Compare/track IPv6 uptake
- Emerging technologies:
 - Smart metering, RFID tags, mobile networking

Membership Fees

- Full Members:
 - £2000 pa Large organisations
 - £1000 pa Medium organisations
 - £500 pa Small organisations
- Associate Members:
 - £250 pa non-individuals
 - £50 pa individuals

QUESTIONS?