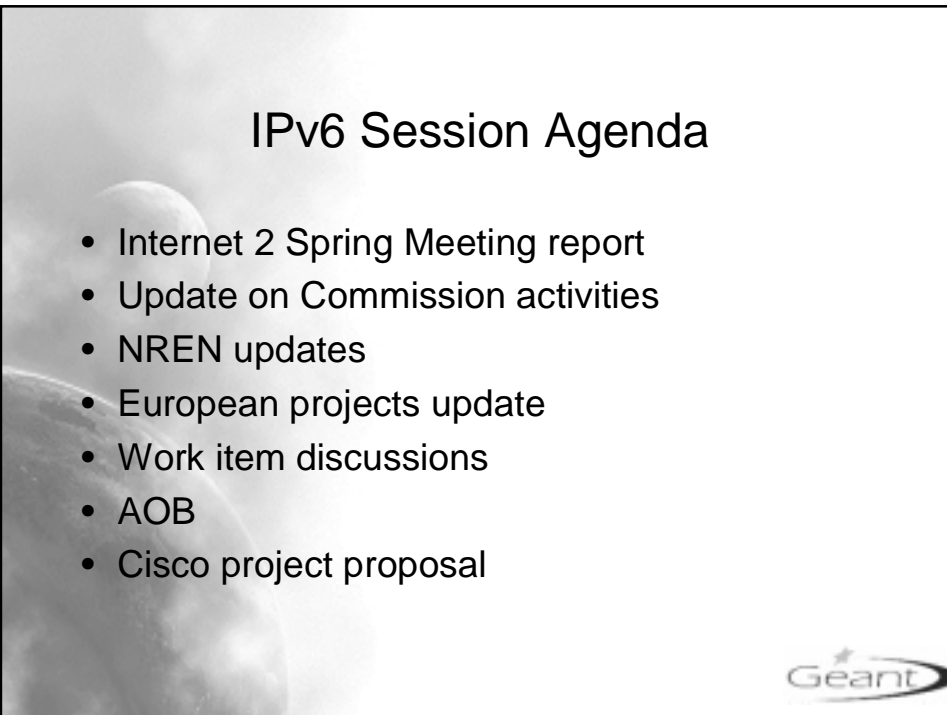




IPv6: GTPv6


Tim Chown
tjc@ecs.soton.ac.uk

<http://www.ipv6.ac.uk/gtpv6/>



IPv6 Session Agenda

- Internet 2 Spring Meeting report
- Update on Commission activities
- NREN updates
- European projects update
- Work item discussions
- AOB
- Cisco project proposal



Apologies for absence

- Bernard Tuy, Renater
- Wilfried Woeber, Aconet
- Janos Mohacsi, BME



Current themes

- Moving from QTPv6 to GTPv6
 - Implies new network infrastructure
- Studying relevant topics
 - Work items, reporting to GEANT deliverable
- Liasing with other groups
 - EU projects, Internet 2, Japan,...
- Encouraging NREN IPv6 support
 - Facilitate network, promote applications



Internet 2 IPv6 WG

- Run IPv6 seminars and tutorials
 - Make them hands-on, bring a laptop
 - Significant effort to develop and run
- Other goals
 - IPv6-enable networks at major events
 - Install IPv6 “spy” hosts and looking glass
 - Engineering blueprint for campuses
 - IPv6 multicast deployment
 - IPv6 at gigapop locations
 - Find researchers/assistants for certain study topics



Commission Update

- Pascal Drabik is attending today
 - Commission held IPv6 Ad Hoc event, 13 March
 - <http://www.cordis.lu/ist/ka4/mobile/4concerta.htm>
- Desire for acceleration of IPv6 deployment
 - EC soliciting testbed/pilot deployment projects
 - Deadline 25th April 2001
 - Cisco-led initiative being discussed later today



IPv6 Ad Hoc presentations

- Bernard Tuy (Renater)
 - Talked about what's missing for deployment
- Munechika Sumikawa (Hitachi)
 - On Japanese deployment on WIDE
- Peter Kirstein (UCL)
 - IPv6 deployment requirements
- Pascal Drabik (EC)
- Tim (GTPv6)



Some deployment “issues” identified

- Address allocation methods, need /29
- “Last mile” technology – ADSL, CATV, ISDN
 - And dialup systems
- End-host/router systems support, for all OS
 - With full feature set, i.e. IPsec and mobility
- Bundled applications, not patches
 - Middleware is important, e.g. for GRID
- Need to use IPv6 for daily tasks
- 3G operators less willing to take IPv6 “risk”



NREN/Participant Updates

- Joop Joosten, CERN
- Christian Schild, DFN/JOIN
- Stig Venaas, UNINETT
- Tim Chown, UKERNA
- Miguel Sotos, RedIRIS
- Simon Leinen, SWITCH
- Chris Edwards, Lancaster University (UK)



UKERNA: Bermuda 2

- Ongoing 12 month IPv6 study project
- Native network ran over 2Mbit/s ATM PVCs
 - Now being removed under SuperJANET4
 - Seeking new methods for native IPv6 links
 - SuperJANET4 has 4 PoP testbed
- Progressing work items
 - Wireless access, transition, DNS, addressing,...
- See <http://www.ipv6.ac.uk/bermuda2/>



European Project Update

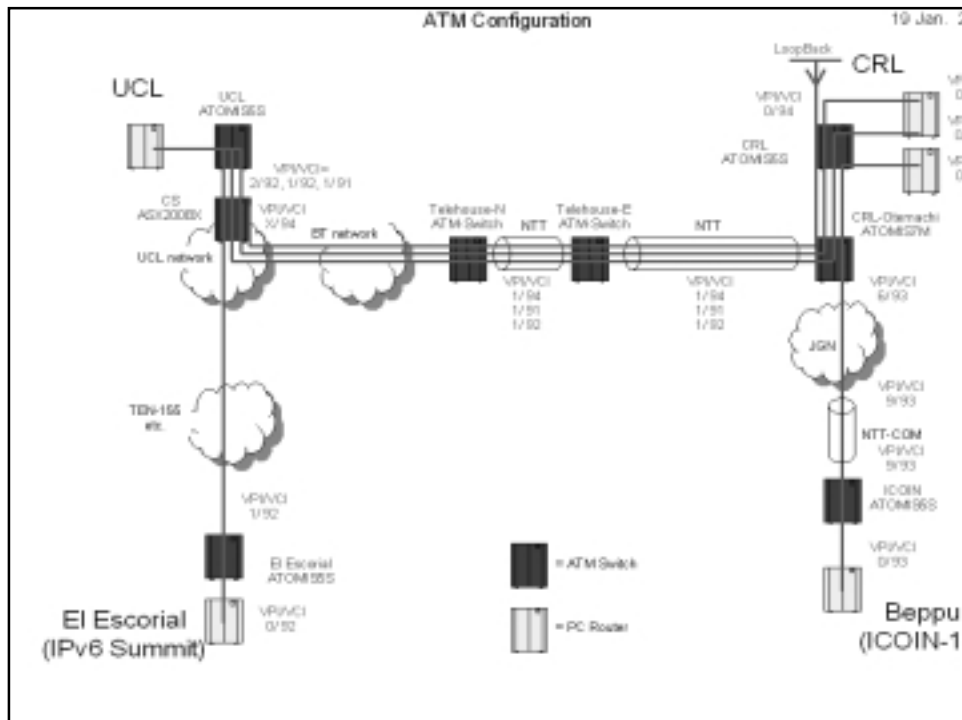
- Commission has produced IPv6 project list
 - <http://www.ipv6.ac.uk/gtpv6/presentations.html>
- Includes:
 - 6INIT – early IPv6 deployment experience
 - 6WINIT – mobility in medical applications
 - WINE – improving TCP/IP for wireless
 - LONG – laboratories over next generation networks
 - BRAIN – wireless “hot spot” access
 - DRIVE – mobility to vehicles
 - Moby Dick – mobility and differentiated services
 - GCAP – IPv6 multicast and multimedia streaming



Inter-NREN backbone

- Aim for GTPv6 backbone to offer to projects
 - e.g. to 6WINIT, Moby Dick, LONG
 - Each wants an international IPv6 testbed
 - Why have each use a different interconnect?
 - Run leading edge code, on available network
 - Offer to EU projects
- Also:
 - Establish international links
 - Work with IPv6 exchange providers (BT, NTT,...)
 - We have 45Mbit/s link to Japan available





GTPv6

- IPv6-purposed routers
 - “Realistic” topology
- Use RIPE-assigned production addresses
 - Initially use NREN-assigned addresses
 - Do we want a “real” backbone, or an interconnect?
- Aim for “production-like” qualities
 - Investigate options for native IPv6
- Ultimately extend to all GEANT partners
- Usage dependent on end users

GTPv6 Work Items

- Primary:
 - Platforms, routing and Interoperability (Christian, DFN/JOIN)
 - Addressing and registries (Wilfried, Aconet)
 - DNS (David Harmelin, DANTE)
 - Transition tools (Stig Venaas, UNINETT)
 - Applications (Tim)
- Secondary
 - Network monitoring (Simon, SWITCH)
 - IPv6 multicast (Tim)
 - Firewalls (Mohacsi Janos, BME)
 - IPsec (Yves Schaaf, RESTENA)
 - Wireless access (?)



Work Item Updates

- Transition methods – Stig
- DNS – David
- IPsec – Yves
- Applications - Tim



IPv6 Applications

- Aim to develop IPv6 versions of popular IPv4 tools
 - Peer-to-peer
 - Unified messaging
 - E.g. ICQ, AIM, video mail, “ticker” messaging, ...
- Take and promote outputs from EU projects
 - e.g. LONG is porting ISABEL to IPv6
- Java
 - Enables architecture-independent networking
 - JDK 1.4 with IPv6 just going public beta
 - Dallas ibutton will support IPv6 soon



Further work item updates

- Firewalls – notes from Janos
- Addressing – RIPE IPv6 WG meeting
- Multihoming – new “multi6” IETF WG
- Multicast – wider deployment options?



Firewalls (Janos)

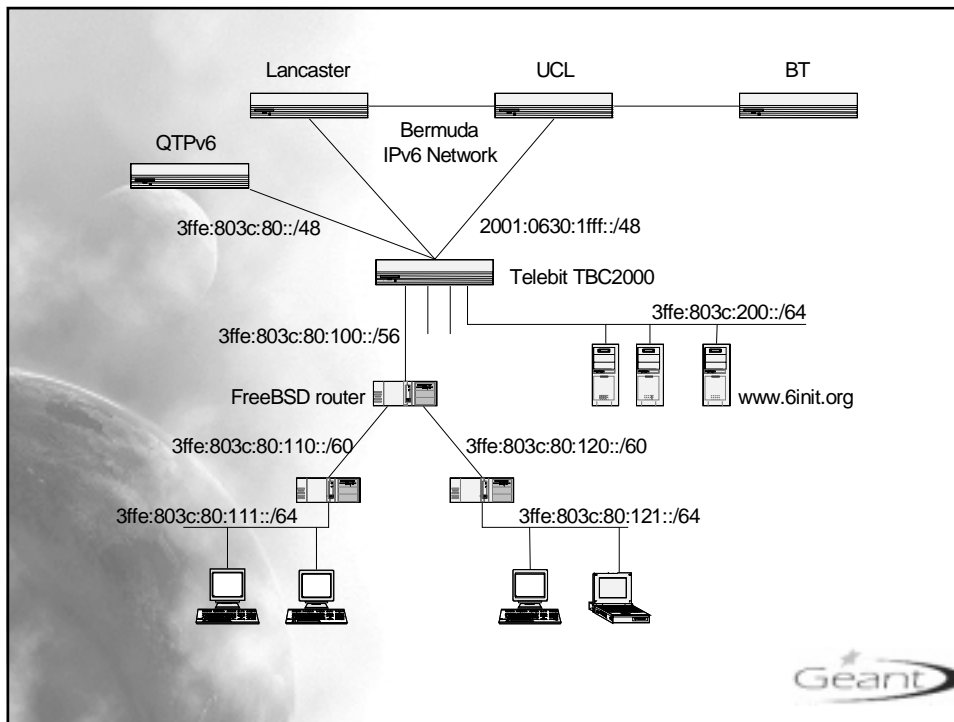
- ip6fw – FreeBSD 4.2
 - Setup ok, stability disappointing
- netfilter – Linux
 - Working on improving IPv6 support
 - Adding new patches, e.g. for iptables save/restore
 - Hard to work patches back into mainstream code
- Ipfiler (*BSD, Solaris, Linux, ...)
 - Plan to test on Solaris for FreeBSD
- e-Border (commercial product from NEC)
 - Not tested yet



IPv6 security?

- Are there problems looming?
 - IPv6 back-doors into protected dual-stack network
 - Put IPv6 hosts in IPv4 DMZ
 - Run IPv6 filtering/firewall
 - Tunnel broker attacks
 - Denial of service
 - Implementations in infancy
 - Differences to IPv4 implementations?
- How might IPv6 improve network security?





RIPE IPv6 WG

- Review document on IPv6 address allocation
 - “RIPE-196”
 - Defines subTLAs, allocations, bootstrap period,...
 - <http://www.enigma.ie/articles/global-ipv6-alteration.html>
- General recommendations:
 - Accept /48 site proposal
 - But then /35 slow rollout should be /29
 - Need to reduce delays for IPv6 startups
- Currently 32 subTLAs assigned by RIPE

RIPE subTLA assignments

UK-BT-19990903 2001:0618::/35	SE-SWIPNET-20000828 2001:0698::/35
CH-SWITCH-19990903 2001:0620::/35	PL-ICM-20000905 2001:06A0::/35
AT-ACONET-19990920 2001:0628::/35	DE-SPACE-19990812 2001:0608::/35
UK-JANET-19991019 2001:0630::/35	BE-BELNET-20001101 2001:06A8::/35
DE-DFN-19991102 2001:0638::/35	IT-CSELT-20001221 2001:06B8::/35
NL-SURFNET-19990819 2001:0610::/35	SE-TELIA-20010102 2001:06C0::/35
RU-FREENET-19991115 2001:0640::/35	DE-JIPPII-20000426 2001:0678::/35
GR-GRNET-19991208 2001:0648::/35	DK-TELEDANMARK-20010131
EU-UUNET-19990810 2001:0600::/35	2001:06C8::/35
DE-TRMD-20000317 2001:0658::/35	RU-ROSNIIROS-20010219 2001:06D0::/35
FR-RENATER-20000321 2001:0660::/35	PL-CYFRONET-20010221 2001:06D8::/35
EU-EUNET-20000403 2001:0670::/35	SE-SUNET-20001218 2001:06B0::/35
DE-NACAMAR-20000403 2001:0668::/35	NL-INTOUCH-20010307 2001:06E0::/35
DE-XLINK-20000510 2001:0680::/35	FI-TELIVO-20010321 2001:06E8::/35
DE-ECRC-19991223 2001:0650::/35	SE-DIGITAL-20010321 2001:06F0::/35
FR-TELECOM-20000623 2001:0688::/35	UK-EASYNET-20010322 2001:06F8::/35
PT-RCCN-20000623 2001:0690::/35	



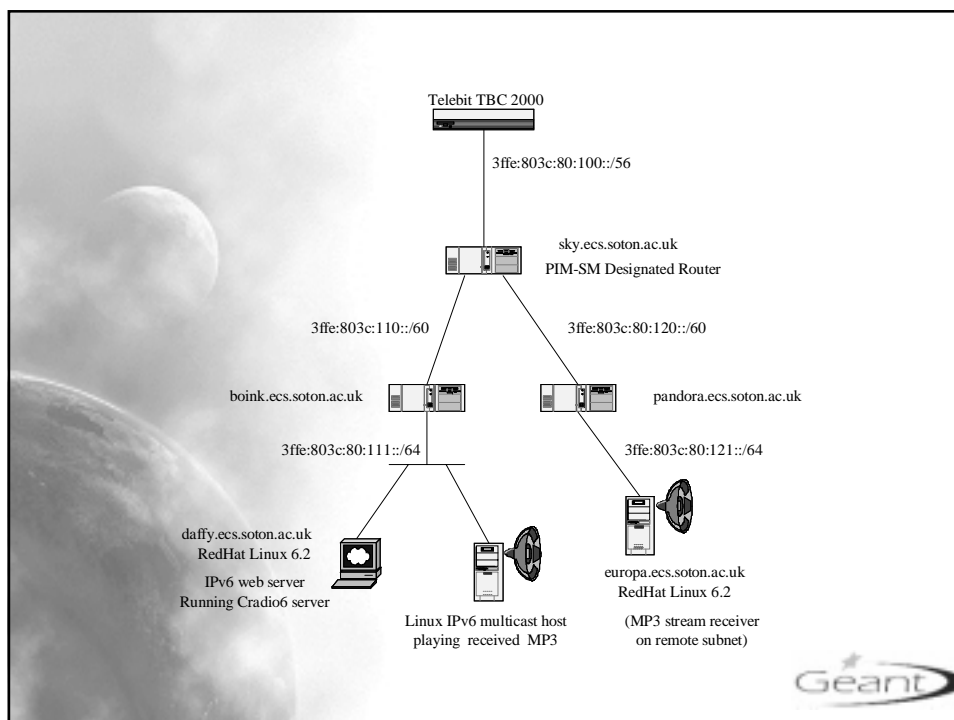
multi6

- **New IETF working group**
 - <http://www.ietf.org/html.charters/multi6-charter.html>
- **Charter**
 - Investigate site multihoming issues
 - Consider impact on size of DFZ by additional BGP adverts
 - What can IPv6 offer to solve the problem that IPv4 cannot?
- **Actions**
 - Define what site multihoming means
 - Produce comparative document on current IPv4 methods
 - Only 1 draft produced in the WG to date



Multicast IPv6

- Running PIM-SM at Southampton
 - Uses KAME implementations for FreeBSD
 - Runs over local hierarchical IPv6 network
 - Tested using vic, rat, and own applications
- Would be interesting to expand it
 - Tunnel multicast to other sites
 - Interested participants?
 - (could access an IPv6 MP3 jukebox remotely)



A.O.B.?

- IPv6 Forum RFQ on open source DNS/DHCPv6
 - Do we wish to provide input?
- Infrastructure requirements
 - Over to Graca...
 - Proposal outline
 - Participation by and relationship with GTPv6
 - Interim network deployment?

