

European IPv6 Testbed networks: 6INIT, GEANT and Bermuda2

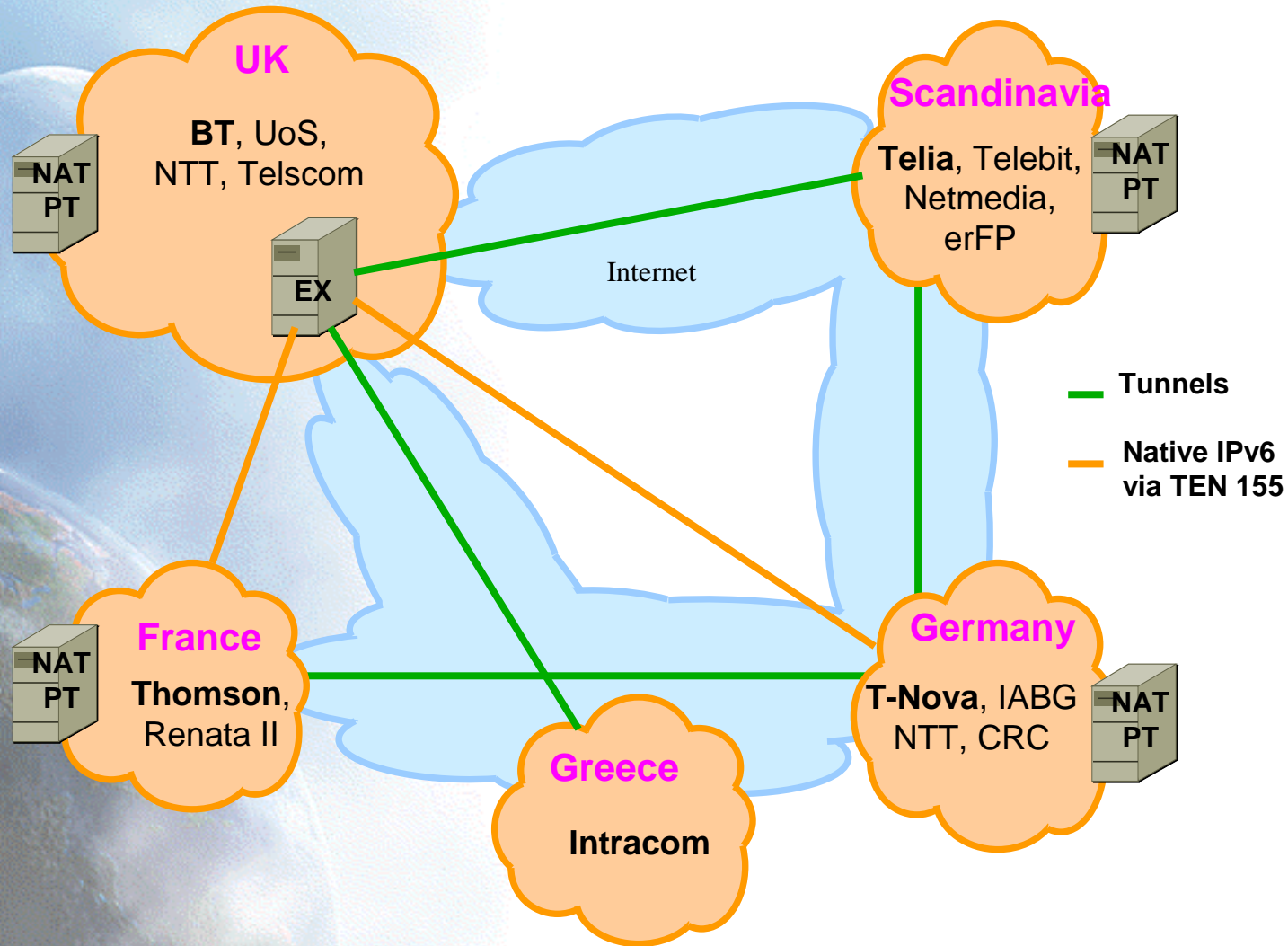
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6INIT (www.6init.org)

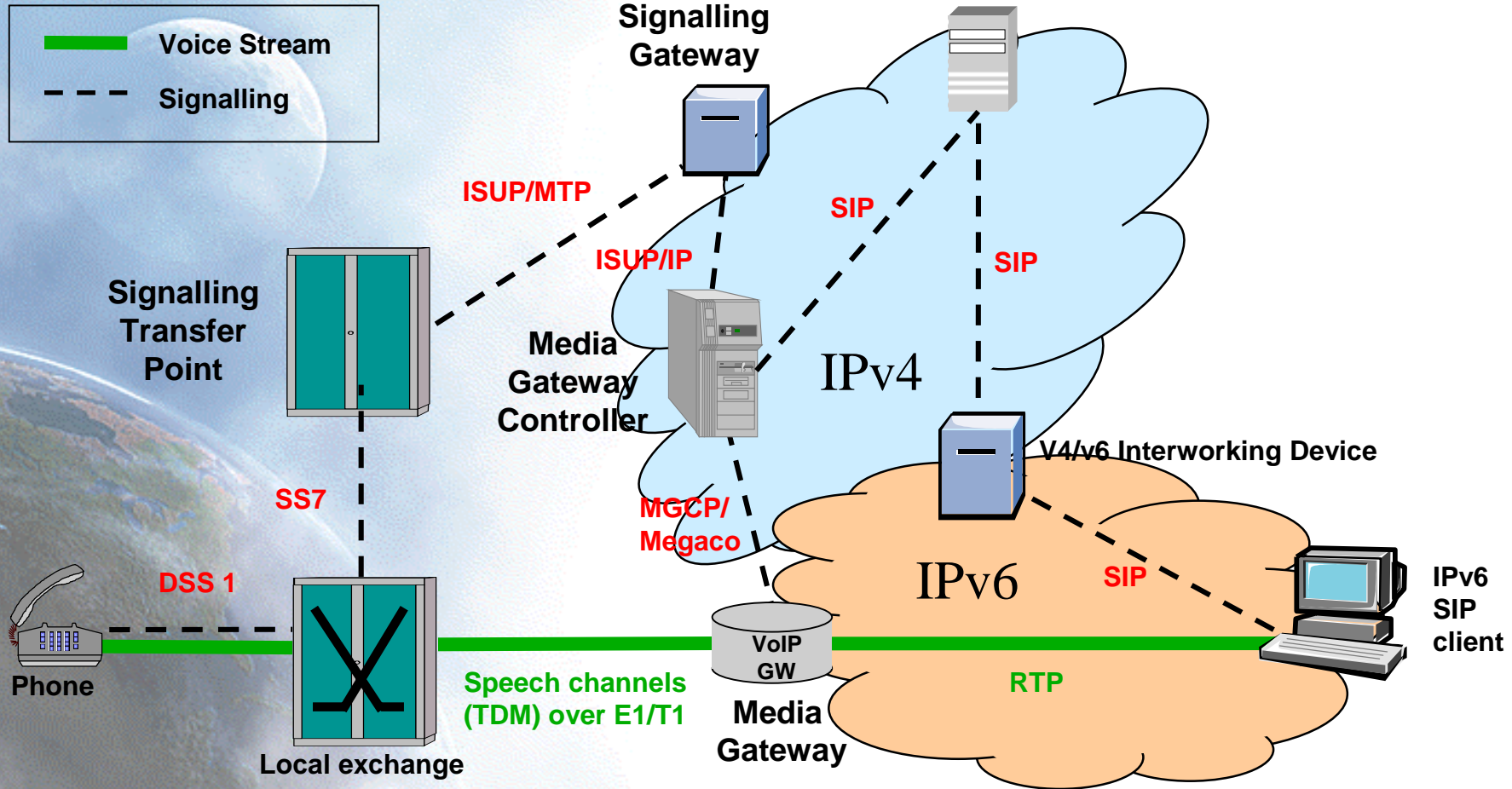
- EU 5th Framework Project, ~ 4.5M euros, 16 months
- 12 partners including BT, Berkom, 6WIND, Ericsson Telebit, Telscom, Telia, Netmedia, Intracom, er, UoS
- Focus on deployment of pan-European IPv6 testbed
 - Five interconnected national clusters
- Study and deploy transition tools
 - Using NAT-PT
- Develop and port multimedia applications
 - Includes VoIP, online stock trading, newspaper printing, videoconferencing, news-on-demand, streamed audio.

6INIT IPv6 network services

- DNS
- Quality of Service (QoS)
 - IPv6 diffserv edge device developed by 6WIND
- IPSec
 - FreeS/WAN for IPv6 developed by IABG
- IPv4-IPv6 interworking
- Use of multiple sTLAs
- BGPv4+ peering
- IPv6 multicast



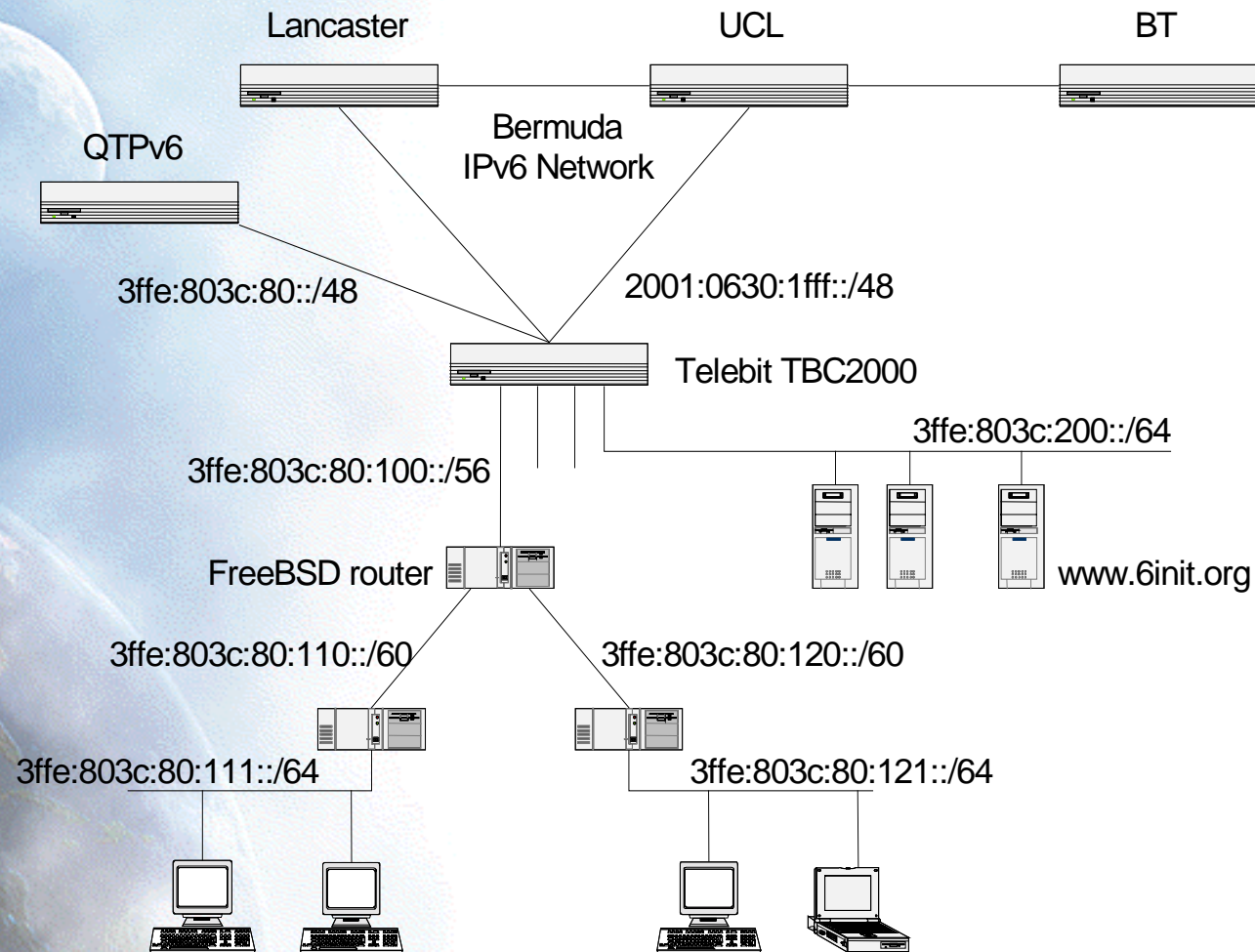
VoIP (SIP)



UoS 6INIT activities

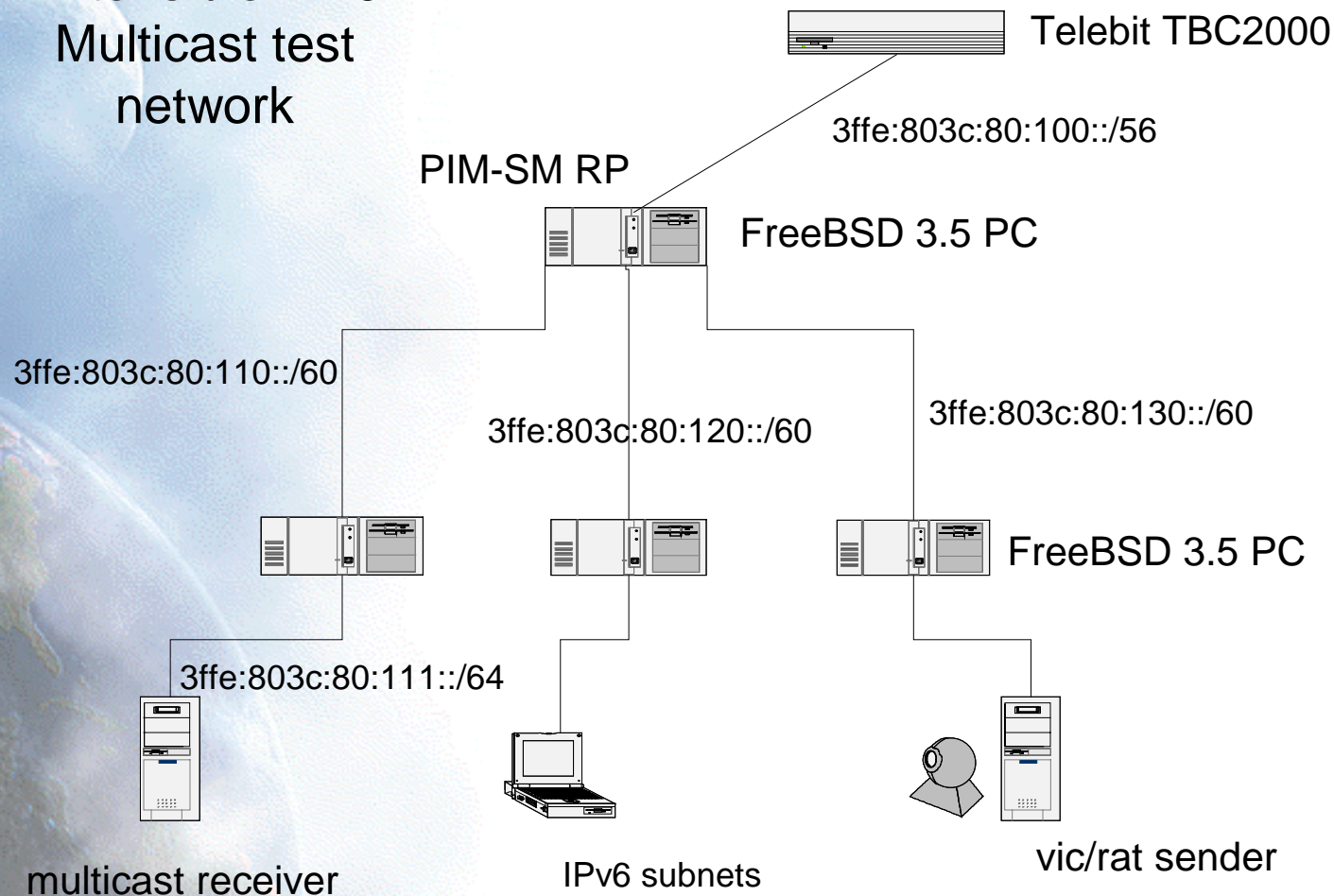
- New multimedia applications
 - MP3 audio “jukebox” multicast IPv6 streaming software, “cradio”
 - Linux IPv6 audio device driver, used for MIDI
- Deploying core services
 - IPv6 firewall (FreeBSD IP filter)
 - E-mail transport/access (sendmail, fetchmail)
 - Web applications (Mozilla, MS IE5, Apache)
- Local network
 - External native IPv6 connection via Telebit TBC2000
 - Internal unicast/multicast routing on FreeBSD 3.5 PC routers
 - Linux, Windows 2000, Solaris 8, FreeBSD 3.5 IPv6 clients

Overview of UoS IPv6 network



UoS IPv6 multicast topology

Extensible IPv6
Multicast test
network



6INIT UK Cluster



IPv4 tunnel to
Telscom
Switzerland



NTT's world
IPv6 network





- UK academic IPv6 deployment study
- Jointly by Southampton, UCL, Lancaster
 - Address assignemnt issues
 - QoS-enabling multicast services (vic/rat)
 - Transition tools study
 - IPsec and VPNs
 - Wireless access methods
 - Policy management
- 12 months, runs to October 2001
- Seeking US (Internet 2) collaborations

GEANT IPv6 Working Group

- Gathering of European NRENs
- Successor to Quantum
- New multi-gigabit GEANT backbone to replace TEN-155
- GEANT includes network technology study groups, e.g.:
 - Differentiated Services
 - IP Multicast
 - Network Monitoring
 - IPv6
- Hold “TF-NGN” meetings 4-5 times a year
 - <http://www.dante.org.uk/tf-ngn/>

GEANT Test Programme GTPv6

- Understand deployment issues
 - Routing, DNS, registries, address allocation, ...
- Operational experience of IPv4/IPv6 backbone
- Insight into IPv6 impact down to site level
- Deployment of “production quality” IPv6 network
- Encourage additional NREN and site participation
- Seek collaborations with other networks/projects
- Study primary and secondary work items
 - 8 work item leaders from around Europe

GTPv6 Work Items

- Primary:
 - Platforms and Interoperability
 - Addressing and registries
 - DNS
 - Transition tools
 - Applications
 - Routing and multihoming
- Secondary
 - Network monitoring
 - IPv6 multicast
 - Firewalls, IPsec
 - Wireless access

GTPv6 deliverables

- Reports

- 1st report July 2001 on primary work items
- Additional GEANT end-of-year report October 2001

- Network

- Successor to QTPv6 testbed network to be deployed
- Router and network infrastructure under definition
- Use NREN production IPv6 address space under 2001: prefix
- May have tunnels given loss of Quantum ATM PVC links
- Aim to be operational by July 2001
- Offer “production quality” connections by October 2001

Summary

- Outlined 3 IPv6 deployment projects
 - 6INIT
 - GEANT GTPv6
 - Bermuda 2
- Many similarities in goals
 - Some good results achieved thus far
- Dissemination very important
 - And learn from other projects worldwide
- UoS participating in new 6WINIT EU project

URLs to visit

- 6INIT
 - <http://www.6init.org>
- GTPv6
 - <http://www.ipv6.ac.uk/gtpv6/workplan.html>
- Bermuda 2
 - <http://www.ipv6.ac.uk/bermuda2/>
- University of Southampton
 - <http://www.ipv6.ecs.soton.ac.uk>
- UK IPv6 sites
 - <http://www.ipv6.org.uk>