NGN-LAB
Concluded Project: Dec. 03

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Objectives

- **Provision a test platform for IP**
  - Main topics addressed are: IPv6 and QoS
  - Additional topics: security, mobility, access networks, interworking & interoperability
- **Support IST and National research projects for testing their system**
  - Applications and test equipment provision
  - Link to GEANT to test across 2 testbeds in Basel (CH) and Brussels (BE)
- **Liaison with other NGN projects to promote IPv6 and QoS: participation in clusters and concertation process**

IPv6 Cluster meeting, 14 Jan 2004

Two Testbeds

Basel and Brussels:

- Multiple access technologies (leased lines, ISDN, xDSL, GSM, GPRS, PLC)
- Multiple routers, LANs and WLANs, fixed and mobile terminals
- Connectivity to GEANT, Euro6IX, 6NET (through BELNET and SWITCH)
- IPv6 implemented and tested
- Diffserv environment available
- Multiple IPv6 applications

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Preparation and Support of the European IP Testbed

- **Connection to Wide Area Network**
  - Eurodemo connected to the BELNET Gigabit Dual Stack network (and to 6NET and GEANT)
  - Basel testbed connected to SWITCH, Euro6IX, 6NET and GEANT
- **OSPFv3, DHCPv6 and Diffserv test suites prepared for ETSI Plugtests**
- **Testing across multiple routers: VPN, NAT-PT, Mobile IPv6 and Diffserv (for interworking and interoperability)**
- **Demos at IPv6 events: Zurich, Madrid, Brussels**
- **Participation in several ISABEL events**
- **IPv6 IDS in Basel**

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Heterogeneous IPv4/IPv6 network testing

- **Connectivity to GEANT, 6NET and Euro6IX and joint experiments (e.g. multicast, NAT-PT, tunnelling, transition scenarios, ...)**

- **Setting up IPv6 firewall at NEC**

- **DHCPv6 Interoperability Event in Vienna and Brussels**

- **Participation in IDC'03 and ISABEL events**

- **Demos at IPv6 events in Zurich, Madrid and Brussels**

- **IDS implementation in Basel**

- **Mobile IPv6**

- **Cooperation with Eurov6 project in demonstrating the IPv6 services and applications**

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DHCPv6 Interop Event

- **Vienna event**

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Differentiated QoS using IP

- **Diffserv Test Suite at ETSI Plugtests**
- **IPv6 video streaming with Diffserv**
- *Iperf*: **Network Testing**
- **Several IETF Drafts on QoS signalling and FlowLabel**

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Dissemination

- **www.ngnlab.org (IPv4/v6)**
  - **All deliverables are public and available**
- **Organized and managed multiple workshops: Zurich, Brussels**
- **Participated in IPv6 cluster activities (IST exhibition and meetings) and concertation process**

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IPv6 Workshop, Zurich, April 2003

- **Active participation of NGN-LAB in creating IPv6 CH Task Force and organizing an IPv6 workshop**
- **Demonstrated IPv6 services and applications**
- **More than 180 participants**

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Demos at workshop

- **Zurich IPv6 workshop**

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IPv6 Event, Brussels, September 2003

- **3 concurrent events:**
  - **International Workshop on IPv6 Testing, Certification and Market Acceptance**
  - **ETSI IPv6 Plugtests**
  - **Eurov6 Showcase**
- **More than 200 participants**
- **Video clip available at www.ngnlab.org**

Demos and ETSI Plugtests

- **Brussels event**

External Liaison and Consensus Building (1)

- **Contacts with ETSI (Plugtests, Workshop)**
- **Organization of IPv6 Events and participation in concertation process and IST conference.**
- **Links to other projects**
  - GEANT, 6NET, Euro6IX
  - 6POWER, Eurov6, TORRENT
  - NGN-I, 6LINK
  - CADENUS, NOMAD
  - InterMon

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External Liaison and Consensus Building (2)

- **Participation in meetings and conferences:**
  - **IPv6 Cluster & Task Forces**
  - **IPv6 Summit in Madrid**
  - **TF-NGN**
  - **IETF**
  - **Interop**
  - **ETSI, ITU**
  - **...**

Conclusions (1)

- **NGN-LAB was a practical project.**
- **We were one of the first to demonstrate many innovative aspects (albeit on a small scale) that we now take for granted, such as:**
  - **IPv6 on small devices**
  - **IPv6 on mobile devices (Bluetooth, WLAN, GPRS)**
  - **Many transitioning mechanisms (tunnelling, ISATAP, DSTM, NAT-PT)**
  - **Wide Area native IPv6 interconnectivity**
  - **Porting applications (VideoLAN, MP3 streaming, Darwin video streaming, VoIP, ISABEL, ...)**

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Conclusions (3)

.... and, despite its small size, the NGN-LAB project:

- **Forged liaison with ETSI on IPv6 Plugtests (and were instrumental in opening up these events to remote participation)**

- **Contributed regularly to the IPv6 Cluster**

- **Liaised with national projects (IPv6 showcase in Germany**

- **Had a key influence on the establishment of Swiss and Belgian IPv6 Task Forces**

- **Helped create one of the two peering points between the two main IPv6 backbones: 6NET and Euro6IX**

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