

Euro6IX

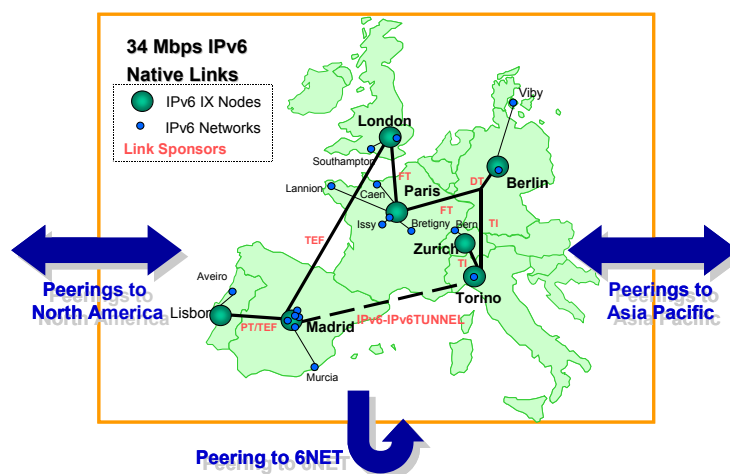
European IPv6 Internet Exchanges Backbone

Abstract:

The goal of the Euro6IX project is to contribute, support and play a key role in the introduction of IPv6 in Europe. One of the main tasks is the research, design and deployment of a native Pan-European IPv6 network - the **Euro6IX testbed** - which can be considered as a complete testbed of the future Internet IPv6 since it includes most Internet elements (External Peerings, International Backbone of IPv6 dedicated links, IXs, Leaf Nodes) and actors (Operators/ISPs, R&D Organizations, Network Consultants, Vendors, Beta-tester Users).

Objectives:

The main objectives of Euro6IX are: (a) To design and deploy a testbed where several regional IPv6 Internet Exchanges points (IPv6 IXs) across Europe get connected; (b) To use this IPv6 IX infrastructure to research, test and validate IPv6-based advanced new applications and services (Networking oriented like Mobility, Security, etc and end-user oriented like P2P, streaming tools, etc); (c) Investigating how current IXs can be improved with new functionalities and new backbone models can emerge; (d) Introduction of beta-testers who will generate the necessary traffic and usage to have a real environment of IPv6 networking; (e) Dissemination, liaison and coordination with other projects or initiatives as well as the research of the legal implications related to privacy concerns about IPv6 addressing.



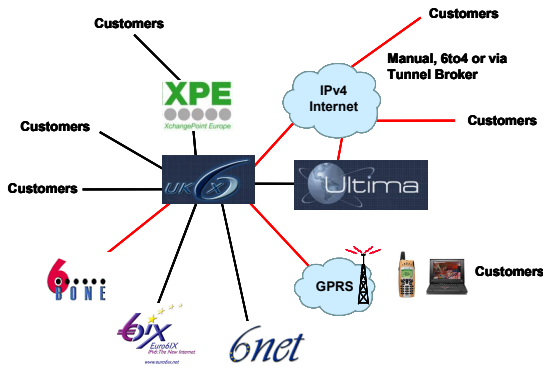
Technical Approach:

Two Relevant IXs & Backbone Models have been studied and are tested in Euro6IX. In **Model B**, each IX has its own addressing space and ASN. The main functionalities implemented are: regional ISPs Layer 2 peering and Transit Services (Operator NAP). This is the model currently deployed as a working solution. In **Model C**, Euro6IX appears the Layer 3 mediation function router. This element allows the testing of RFC 2374, where a customer may change its Service Provider without changing its addressing space (also easier Multihoming).

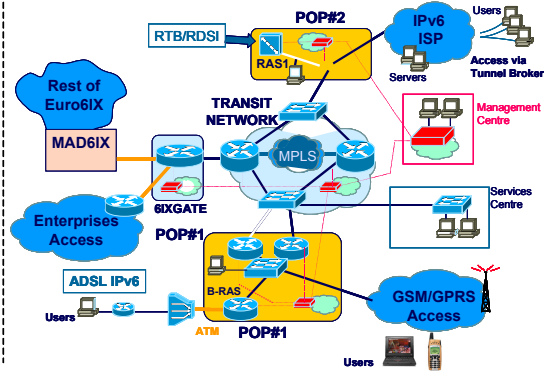
Testbed:

As shown in the following diagrams, both IXs and IPv6 local sites include a complex testbed of networks, management facilities, services and user access systems.

UK6x (LON6IX)



TID IPv6 Local Site



Experiments:

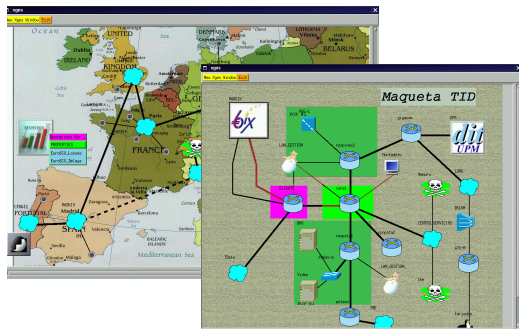
Euro6IX includes concrete experiments in internal and public trials as well as continuous experimentation of stable infrastructures and IPv6 services. As an example of a continuous experiment, all Telcos have agreed a Routing Policy in the backbone (RPv0.4) which enables Euro6IX IXs to share peerings and policies only with other Euro6IX IXs. Another good example of continuous experiments, beta-tester users are now being included to interact with an initial set of IPv6 stable services. These stable services in all partner premises are listed and updated in the project WEB site.

Regarding concrete trials, Euro6IX performs SIP based Multi-Videconferences involving more than 10 sites as well as concrete tests of Multicast (connection to the M6Bone), QoS (A plan for these tests is being prepared), Security, Mobility, Transition, etc.

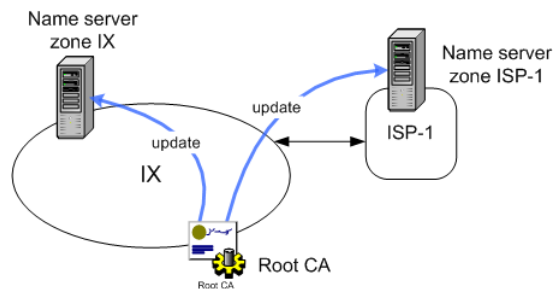
Innovation:

Key innovative lines are: IXs functionalities and backbone policies (RPv0.4), IXs Multicast services (M6Bone, TV), Macro/Micro-Mobility, SIP Signalling (ISABEL), Shared Management Functionality in Magalia, DNSSEC & VPNs based in PKIv6, etc.

Magalia IPv6 Real Time Management



IPv6 PKI: CA at IX Scenario



Results & Contribution to Standards:

Many results, guidelines, software and current trials are detailed in the IPv4/IPv6 WEB site of the project, <http://www.euro6ix.org>. Among other results, the following can be found in this site: Security guidelines of IPv6 networks (IXs, ISPs, Local Sites), Porting Guidelines (document initiated in LONG project and now maintained in Euro6IX), MRTG and Free Radius IPv6 portings, IPv6 IDS (Intrusion Detection System), P2P File sharing tool, Looking Glass, Tunnel Broker, Instant Messaging tool.

Success stories:

In May 2003, Euro6IX performed a successful public trial in parallel with the Madrid 2003 IPv6 Summit. Many IPv6 demos of Euro6IX and other IPv6 projects were shown thanks to the infrastructure and connectivity provided by the project and the event organization.

The list of Demos included:

- IPv6 Mobile in PDAs/WiFi
- IPv6 Radios & TV-Multicast
- Magalia Manag. IPv6 NOCs
- PKI v6, Smart Card and IPv6 DNSSEC & VPNs.

Project name:
Euro6IX

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Project type:
RTD

Start date:
01/01/2002

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Funding from the EC:
€7,697,308

Total effort in person-months:
1.299

Website:
<http://www.euro6ix.org>

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Project participants:

6WIND	FR
Airtel	ES
BT	UK
Consulintel	ES
E&A	ES
Eurocontrol	Int.Org
FT RD	FR
NGN	ES
PTIN	PT
T-Nova	D
TED	DK
TELSCOM	CH
TID	ES
TILAB	IT
UMU	ES
UoS	UK
UPM	ES

Keywords:
IPv6
IX

Mobility

Collaboration with other EC funded projects:

6NET

6WINIT

GÉANT

LONG

MIND

NGNLAB

IST- Research Networking - Research on Networks – IPv6