

European IPv6 Internet Exchanges Backbone



Abstract

The goal of the Euro6IX project is to support the rapid introduction of IPv6 in Europe. Towards this target, the project has defined a work plan. This describes the network design, network deployment, research on advanced network services, development of applications (that will be validated through the involvement of user groups and international trials), and active dissemination activities, including events and conferences, contributions to standards (IETF among others), publication of papers and active promotion of all the publicly available project results through the project web site.

The project will research, design and deploy a native Pan-European IPv6 network, called the Euro6IX test bed. It will include the most advanced services obtainable from present technology and will follow the architecture of the current Internet (based on IPv4). It will consider all the levels needed for the worldwide deployment of the next generation Internet.

Objectives

- 1) Research an appropriate architecture to design and deploy the first Pan-European non-commercial IPv6 Internet Exchange (IX) Network. It will connect several regional neutral IPv6 Internet Exchange points across Europe, and achieve the same level of robustness and service quality as currently offered by IPv4 Internet Exchange Networks.
- 2) Use the deployed IPv6 IX infrastructure to research, test and validate IPv6-based applications and services.
- 3) Open the Euro6IX network to specific user groups (existing and to be created), who will be connecting to the Euro6IX network by means of a variety of access technologies – mobile, xDSL, cable – and internetworking with legacy IPv4 networks and services, to test the performance of future IPv6 networks, and non-commercial native IPv6 advanced services and applications.
- 4) Disseminate, liaise and coordinate with clusters, fora, standards organizations (e.g. the IETF and RIPE) and third parties, with particular consideration for interworking and coordination with peer projects.

Figure

Initial Euro6IX Network



Technical Approach

The success of the Euro6IX project will be measured against the achievement level of:

- Good management of project activities to meet the milestones according to agreed plans, on top of the rest of the activities (WP1).
- Procurement of IXs according to defined specifications, deployment and provision of efficient interconnectivity for the IPv6 European level Internet (designed by WP2, and deployed by WP3).
- Involvement of research entities and non-commercial trial users in order to use this network, advanced services and applications (developed by WP4).
- Promotion of the IPv6 interests by ISPs and users through test and trials (WP5 and carried out by WP4).
- Creation of awareness with Euro6IX activities at events of IST, IETF, fora, summits and national events with targeted participants (WP5).

Testbed

The infrastructure of Euro6IX will consist of the following different network levels:

- **IX-level:** Regional native IPv6 exchanges.
- **Backbone-level:** Pan-European core network that interconnects the regional exchanges and creates the highest level in the network hierarchy.
- **Node-level:** Service providers, ISPs and other providers accessing the core network to provide IPv6 services and end user access. The users will be connected by means of a variety of access technologies, including legacy IPv4 networks and services whenever no IPv6 native links are available or feasible. This level includes a set of academic, research and non-commercial trial users who will use native IPv6 services and generate IPv6 native traffic.

Applications

Euro6IX will offer advanced network services, and a repository of IPv6 enabled applications, which have been ported, adapted or enhanced, and made available for trials both within Euro6IX and to third parties.

Emphasis will be put on tools that use the advanced features of IPv6 such as:

- Code porting (include Java).
- Address Delegation WEB Tools.
- Instant Messaging.
- WEB Mail Tools.
- Multimedia.
- Shareware Repository.
- Test Suites.
- On-Line Education Tools.
- Billing Tools Prototypes.

Innovation

In order to allow for the continuous growth of the Internet, it is necessary to provide a neutral IPv6 based test exchange facility for researchers and ISPs to connect to and test the network, performance, its reliability and scalability, to determine if large scale networks can be established, solving interoperability and QoS issues. This is the key purpose of the Euro6IX project. Euro6IX will:

- Provide efficient interconnectivity for the IPv6 European networks.
- Involve the research community and non-commercial trial users on the network, with advanced services and applications.
- Promote the interests of ISPs and users for IPv6 development.
- Create awareness through dissemination of project results among the targeted recipients (IETF, RIPE, fixed and mobile operators, Summits, etc.).

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Euro6IX

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1.299

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Project participants:

TID	Spain
Consulintel	Spain
TILAB	Italy
UPM	Spain
TELSCOM	Switzerland
UoS	UK
6WIND	France
Airtel	Spain
T-Nova	Germany
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E&A Abogados	Spain
Telebit	Denmark
Eurocontrol	Belgium
FT RD	France
novaGnet	Spain
PTIN	Portugal
UMU	Spain

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Collaboration with other EC funded projects:
6NET, MIND, LONG, GÉANT, 6WINIT, NGNLAB,