A large-scale International IPv6 Network

www.6net.org
6NET is:

- one of the largest Internet research projects from the European Commission
- preparing the Next Generation Internet
- a major international IPv6 testbed
- a 3 year project (started 1-1-2002)
The main goals of the project are:

- to build and operate an international native IPv6 network; initially spanning at least 10 European countries, and with links of 2.5Gbit/s by 2003

- to use this network to validate that the demands for the continuous growth of the global Internet can be met with the new IPv6 technology

- to help European research and industry to play a leading role in defining the next generation of networking and application technologies that go beyond the current state of the art
The sub goals of the project are:

- to provide and operate a combined fixed/mobile IPv6 pilot network

- to gain a better understanding of IPv6 deployment issues, including physical infrastructure, address allocation, registries, routing and DNS operation

- to operate an international pilot service such that geographically dispersed groups can interwork using native IPv6 facilities
The sub goals of the project are (contd.):

- to study, implement and validate IPv6/v4 coexistence, migration techniques and transition tools
- to test state of the art IPv6 applications and access to legacy IPv4 applications and content
- to exploit the synergy between work being performed on IPv6 by manufacturers such as Cisco, IBM and Sony, and DANTE, European NRENs and Universities.
A large-scale International IPv6 Network

The 6NET Network

- Provided by 6NET partners
- Circuit dedicated – initially 155Mbit/s
- Dedicated circuit added for redundancy (optional)
- Tunneled solution for cost reasons

North America

Asia-Pacific

Europe:
- UK
- SE
- NL
- DE
- FR
- CH
- IT
- AT
- GR
A large-scale International IPv6 Network

Description of Work

WP1: Build & operate the IPv6 network

WP2: IPv4-IPv6 coexistence, interworking & migration

WP3: Basic Network Services

WP4: Application & service support

WP5: IPv6 application trials

WP6: IPv6 network management architecture & tools

The main items of technical work are focused in 3 broad areas: infrastructure, network services and application trials.
Innovation:

The innovation of this project extends from the many service support development activities, through to the building and operation (including management) of the network, so that it can be used for the application trials.

Examples are:

- auto-configuration, and the relationship between auto-configuration and user/terminal management, multihoming, multicast, performance, and roaming

- support for class-of-service (in the form of a ‘Traffic Class’ field compliant with the IETF DiffServ model)
Innovation examples (contd.):

- IPSec

- the development and testing of network services such as DNS, multicast routing, etc.

- the design, implementation and test of both intra-domain and inter-domain IPv6 multicast

- interoperability with IPv4 multicast

- interoperability between IPv6 network services and IPv4 network services
Innovation examples (contd.):

- mobility (wireless-only LANs in an end-site environment, ranging from 802.11b, Bluetooth and 802.11a, through to the convergence of mobile and fixed network technologies)

- new applications that will stress the network and be used to evaluate the benefits to end-users that IPv6 can bring, through the expanded IP addresses, integrated auto-configuration, QoS, mobility and security
The Opportunities:

- for Europe -> to lead the IPv6 (next generation) Internet
- to create a new business environment -> mobile Internet
- to develop and test new services and applications
- to build an IPv6 testbed for other IPv6 testbeds
A large-scale International IPv6 Network

Industrial Partners

IBM

Cisco Systems

Sony

NTT Communications

Invenia Innovation
A large-scale International IPv6 Network

Universities and Institutes

Universität Wien

Université Louis Pasteur Strasbourg

Westfälische Wilhelms-Universität Münster

University of South Hampton

Fraunhofer Institute for Open Communication Systems

6net

Oulu Polytechnic

INRIA

Telematica Instituut

Research Academic Computer Technology Institute
A large-scale International IPv6 Network

National Research Networks

Surf/Net

NORDUnet

Renater

UNINETT

DFN
Key data:

Project cost: EUR 17 million
EC funding: EUR 9.5 million
Total manpower: 1100 manmonths
Number of partners: 31
Web site: www.6net.org