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NEWSLETTER ARTICLE

Global e-Infrastructure of IPv6 experimental labs

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In a coordinated effort amongst a number of EC and NATO projects, UCL has proposed, and Cisco has agreed, to extend its network of experimental IPv6 labs to the Caucasus, Central Asia and India, in addition to ones it is deploying in Europe, Latin America and Africa. UCL will use this e-Infrastructure for collaboration across projects to train the staff of the National Research and Education Networks (NRENs) of respective developing countries on the new Internet Protocol (IPv6), including remote coordination of the labs with global-scale VoIP systems. The activities will enable the NRENs and their associated scientific communities to engage into consolidated networking and partnership building amongst them.

For this e-Infrastructure to become a reality, a number of projects are coordinating tightly. Partners of the EC-funded Specific Support Action 6DEPLOY (www.6deploy.org) offer basic training to organisations in Europe and developing countries, and support real IPv6 deployments. With major Regional Internet Registries as members of the Consortium (AfriNIC and LACNIC), a substantial lab infrastructure, training, and e-learning material base on IPv6 has been developed by the project's global workshop activity. The project offers not only the direct training of engineers and network administrators, but also transfers knowledge and best practices on the subject to other trainers, who can then use the 6DEPLOY material to teach others.

Cisco is playing an important role in these activities by being the exclusive equipment contributor and generous donor. The existing IPv6 training labs of Paris, Sofia, and Mauritius can be accessed remotely for performing hands-on exercises on routing and configuration, either during the workshops or at any other time. The coordination of the organisation of the 6DEPLOY laboratories is being organised mainly by RENATER in France; the coordination of the voice and video collaboration both to ease the communication of the labs, and as an important application of IPv6 in its own right, is being led by UCL.

Furthermore, the NATO-funded Virtual Silk Highway project (www.silkproject.org) has built a substantial network infrastructure and sustainable National Research and Education Network organisations in three Southern Caucasus and six Central Asian countries, including Afghanistan. As a result, the communication requirements of the regional research communities has grown multi-fold to the point where transition is now taking place from satellite-based to fibre-based network infrastructure (through the NATO-funded Silk project, the EC-funded BSI project in the Caucasus, the EC-funded CAREN project in Central Asia (give all three references).

Cisco is also currently installing new labs to Bangalore, Tbilisi and Bishkek, thus building a global IPv6 training lab infrastructure. Plans for labs in Turkey, Kenya and others are in progress The new labs will also be equipped with advanced Unified Communications components (IPv6 phones, call managers and conference servers) to allow interaction between trainers and remote site administrators, and for future course and skills development.

The projects mentioned above are not the only ones involved in this activity. UCL is making coordinated efforts to bring together a wealth of human, knowledge and infrastructure resources from a wider spectrum of EC projects, including also 6CHOICE (www.6choice.eu) and GLOBAL (www.global-project.eu). We expect the following benefits, both for the developing regions and as for Europe out of this coordination experiment.

- The host organisations will be managing the e-Infrastructure (IPv6 labs) locally and will benefit by knowledge transfer on matters relating to network management, computing esource management, and increased links with European libraries, network providers and suppliers of network equipment. They will also be given the opportunity to develop new services for their regional communities, and deploy state-of-the-art technologies, such as virtualisation, networked embedded systems, etc.
- The hosts will maximise use of their National Research and Educational Networks by allowing for remote access and availability.
- The activities will bring regional research communities from the developing areas closer to their European counterparts for conducting joint research on core scientific areas such as seismic research, water conservation and energy generation.
- The interaction will ignite further development of national academic and research e-Infrastructures, and align remote regions and the EC with common social and infrastructure development interests (use of future internet protocols and advanced network services).
- Bridging scientific and cultural gaps among geographically isolated rich communities.
- The European area will benefit by expanding its research context and by broadening the focus of its research framework.
- Mobility of human resources and knowledge will be fed back in to the EC regions.

- Strengthen the economic stability of both the remote and the European region.