



Noordwijk, 12 August 2004

Dear Sir,

You are herewith cordially invited to attend a Final Presentation of an ESA funded project on:

Preparations for IPv6 in Satellite Communications
Monday 20 Sep 2004, 13.00h, ESTEC, Room Copernicus/Ya027

The new Internet Protocol IPv6 has reached a level of maturity, which allows the beginning of its deployment. While ISPs worldwide have already started offering commercial IPv6 services, satellite networks can be used as a valuable alternative for providing a native IPv6 connectivity to early IPv6 customers, whose local ISPs do not offer this kind of service. Furthermore they can connect areas that have insufficient terrestrial infrastructure. Often it is exactly in these areas of poor connectivity that global IPv4 addresses are extremely scarce. The SILK project, which connects the research networks of eight Central Asian and Caucasian countries via satellite to the European Research Network GÉANT, is just one example for such a situation.

Contrary to the investigation done concerning the integration of IPv6 in terrestrial and 3rd Generation cellular networks, the integration of IPv6 in satellite networks has not been analyzed in the same detail. However, due to their specific characteristics, such as their broadband capability, the frequent use of unidirectional links, or the deployment of proprietary components like Performance Enhancing Proxies, such an analysis is important.

For this reason ESA initiated a project that investigated IPv6 issues in satellite networks, specified appropriate IPv6 transition scenarios, and demonstrated the benefit of IPv6 over satellite.

Following the final presentation of this project, which includes the introduction of the SILK project by Prof. Peter Kirstein from UCL - London, a native IPv6 satellite network using prototype equipment from previous ESA projects will be demonstrated. In addition, a number of speakers from industry and academia will report on IPv6 developments for their products.

The presentations and demonstration will take place at the ESTEC premises in Noordwijk, the Netherlands in meeting room **Copernicus/Ya027, on Monday 20 September 2004, 13.00h – 19.00h.**



Outline Agenda

- 13:00 - 13:10 Introductions (ESA/IABG)
- 13:10 - 15:30 Final Presentation on the ESA funded study, addressing the following topics:
- State of the art in IPv6
 - Impact of IPv6 on satellite link and network layers
 - New service offerings when using IPv6 in satellite communications
 - Example migration scenario for an existing teleport and DVB-RCS hub
 - Overview of the SILK project
 - Provision of IPv6 over the SILK network
 - Recommendations and conclusion based on project results
 - Questions and Discussion
- 15:30 - 15:45 Coffee break
- 15:45 - 16:15 Live demonstration with Central Asian partners SILK IPv6 network via satellite
- 16:15 – 18:00 Session with various speakers from Industry and Academia (WishNet, EC-IST FP6 SATLIFE/Uni Surrey, FP5 SATIP6/Alcatel, CNES, MediaMobil, Thales, CGS/Uni Salzburg and others to be confirmed) with short presentations on satellite products supporting IPv6 and reports on related work on IPv6 in satellite networks.
- All presentations will focus on satellite-specific usage of IPv6.
- 18.00 – end Conclusions and Social Drink



Project Summary

The key objective of this project has clearly been the investigation of the influence of introducing the new Internet Protocol IPv6 on today's satellite networks.

For this purpose the project started with the identification of link layer, network layer, transport layer, and network management protocol issues for IPv6. Knowing and understanding these IPv6 issues the project investigated possibilities for introducing IPv6 into different satellite architectures, such as DVB-S/RCS, bi-directional DVB-S or DVB-S with SCPC or terrestrial return links. For a DVB-S/RCS and a DVB-S/SCPC Teleport a more detailed IPv6 transition plan has been specified, which also takes into account economical aspects.

Besides the technical investigations another goal of the project has been the live demonstration of IPv6 over satellite. In a first step native IPv6 over satellite has been demonstrated on IABG's Teleport. During this demonstration various performance parameters have been measured, and different applications like audio- and video conferencing have been used together with advanced networking services like IPsec and Mobile IPv6. In a second step collaboration with the SILK project, which connects the research networks of eight Central Asian and Caucasian countries via satellite to the European Research Network GÉANT, has been established. Within this collaboration equipment, satellite capacity, and expertise has been provided in order to allow the introduction of IPv6 into the SILK network. This operational IPv6 service on SILK is available for a period of 4 months.

Finally the project provided a roadmap and a set of recommendations for future work required in this area.

NOTE 1: Confirmation requested for external visitors

Please confirm your attendance by email to Frank.Zeppenfeldt@esa.int, in order to gain access to the ESTEC premises. A badge will be waiting for you at the main entrance gate. Information on ESTEC and a route description can be found on <http://www.estec.esa.nl/pr/estecinfo/contact.php3>.

NOTE 2: Satellite Communications Conference at ESTEC

For your information: **EMPS 2004 6th European Workshop on Mobile/Personal Satcoms & ASMS 2004 2nd Advanced Satellite Mobile Systems Conference** will take place during the two days following this presentation (Tue 21 and Wed 22 Sep 2004). See <http://www.congex.nl/04c16/main.html> for more information.

Yours sincerely,

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