

SPONGE

Silk Project Operations, Networking and GEANT Extension

Abstract:

The ancient Silk Road was not only a trade route but also an all-important road for the transfer of information and knowledge between major regions of the world. The Silk Project is bringing cost-effective, global Internet connectivity to the research communities in the newly independent states (NIS) of Caucasus and Central Asia through state-of-the-art satellite technology, thus creating a virtual Silk information highway. The aim of the Silk Project is to increase significantly the exchange of information with, and between, academic and educational institutions in these regions. Under the SPONGE Project we are providing complementary services needed to ensure that the Silk network operates well and gives maximum benefit to the NIS users.

Objectives:

The NATO Science Committee has awarded a grant (Silk) for the provision of a VSAT-based network, which will provide GEANT access for the NRENs of the newly independent states (NIS) of the Southern Caucasus and Central Asia. Additional grants provide for operating the VSAT hub, LAN equipment for connecting the NRENs and special tariffs for the satellite bandwidth. None of this may be spent on European staff. The SPONGE Project is a complementary initiative that will ensure a maximum benefit for NIS grantees; SPONGE will provide overall management for Silk, infrastructure services needed (like documentation, a web site and information services), and training help. Technical structures will provide performance information on the system, and mechanisms for optimal tuning. Under SPONGE we will explore mechanisms for providing better person-person communication on an IP basis using the Silk network. The management structure provided under SPONGE will enable the NIS NATO Silk grantees and the NGO funding bodies in the Silk countries, to make operational and upgrading decisions; much of the technical information on which these decisions are made will come from the activities of SPONGE. Finally the organisational activities set up by SPONGE should assist in attaining sustainable longer-term services.

Technical Approach:

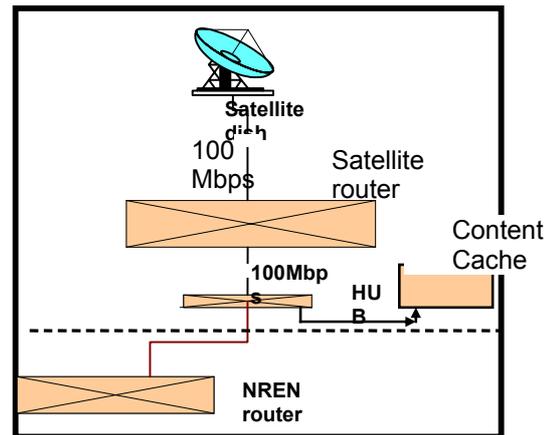
With a limited budget of \$2.5 million over the period 2001-2004 for this project; the Silk Project has installed a VSAT system with the 5.6 m hub at DESY (Hamburg), and 8 VSAT stations (2.4 m or 3.8 m) - one in each of the countries the Southern Caucasus (comprising Armenia, Azerbaijan and Georgia), and Central Asia (comprising Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan).. This size of deployment was required partially for political reasons, but the system design is such that the number of earth stations and of networks can be considerably increased. Moreover we have also received from Cisco a generous donation of a router, switch and 155 GB Content Engine at each site, to tie in their NRENs, and DESY is providing the Network Operating Centre free of charge. Our systems design seems to be paying off; several Non-governmental organisations (NGOs) are proposing to make additional investments in the Silk system.

SPONGE provides Management, Infrastructure services, measurement and personal communications for Silk. For project management, we have set up a Silk Board, and Executive Committees – Chaired by the SPONGE Project Manager. The infrastructure services will include liaison with other projects. We have already established a Web site to disseminate information about Silk/SPONGE, and have set up facilities for e-mail exploders, co-ordinating teleconferences, and organising relevant training sessions and workshops. To provide a sustainable system after 2004, our management structure will aim to transition much management to the Eastern countries. The workshops are aimed to transition maximal operational know-how to the Eastern NRENs. The partnership of the groups in Armenia and

Georgia is specifically to build up local centres of enterprise. We are providing a financial structure that is attractive to NGOs and other aid agencies. For technical information we ensure that relevant statistics are gathered at the earth stations and routers. We are building monitoring facilities to derive operational performance data on many aspects of the system. We will gather data on the advantages gained from the Content Caches available at each earth station, and experiment with optimising the cache parameters in this environment. In Silk countries multi-party telephone calls and multimedia conferencing are unavailable. We will ensure Voice/IP and multimedia conferencing between SPONGE partners. Wider deployment to all Silk partners may require further investment.



Region covered by the Silk Network



Equipment at each Silk Node

Applications:

SPONGE has started various experiments to ensure that it is possible to carry H.323 Conferences and VoIP over the Silk network. Also some work is done on tuning the cache parameters, to improve the throughput of the system.

Normal NREN applications are carried over the Silk Network. However in addition we are providing Voice/IP and have started multimedia experiments.

Results:

All eight remote sites have now been brought up; the remaining equipment problems are being resolved. The Silk Board has had three meetings, and the Executive Committee many Teleconferences. Information about Silk and SPONGE are available on the Web at <http://www.silkproject.org/>. VoIP has been integrated with the Silk network and with the Cisco audio conferencing system. The SPONGE partners have contributed to several Workshops, and further ones are planned.

Success stories:

That this complex network has been brought up within a relatively short time, and that other bodies are considering making further investment into the Silk Network, are factors in a success story in their own right.

Project name:
SPONGE

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IST-2001-37580

Project type:
Accompanying Measure

Start date:
01/10/2002

Duration:
30 months

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€ 261,473

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€ 220,000

Total effort in person-months:
47.5

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Project participants:
ARENA AM
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RUG NL
UCL UK

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Collaboration with other EC funded projects:
SEEREN

IST - Research Networking - Networks for Research – European Research Network Backbone