Automated GOLE demonstration at SC11

Project	: GigaPort3
Project Year	: 2011
Project Manager	: Gerben van Malenstein
Author(s)	: Jeroen van der Ham, Ralph Koning and Paola Grosso
Completion Date	: 23 November 2011
Version	: V1.0

Summary

Dynamic circuit services have recently been introduced in many R&E networks. The Open Grid Forum Network Service Interfaces Working group (OGF NSI-WG) has been working to define an open interface standard to make such a service interoperable among networks. Here we show how topology descriptions are supporting the NSI demonstration.

The Automated GOLE demonstration shows that we can have automated dynamic exchange points that can provision virtual circuits, without manual intervention, initiated by the end-user through the standard Network Services Interface.

Colophon

Programme line	: GigaPort3
Part	: WP4 Netherlight and global connectivitiy
Activity	: Demonstration
Deliverable	: D1.2 - A demonstration at SC11 of the Automated GOLE project
Access rights	: Public
External party	: UvA SNE, http://www.science.uva.nl/resarch/sne/

This project is part of the GigaPort3 program, for which SURFnet receives government funding from the Economic Structure Enhancing Fund (FES). SURFnet is carrying out the project under the supervision of SURF and in cooperation with suppliers, users and research partners. More information on SURF is available on the website www.surf.nl

Obligated to fill in unless there is approval from the Project Board to decay this fact sheet.

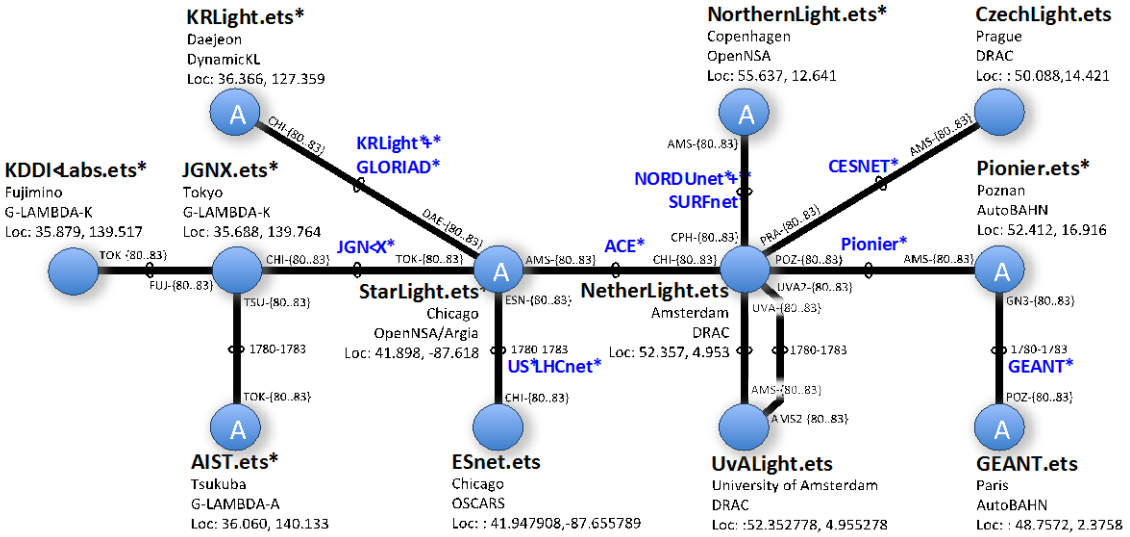
6 Matters one should know about D1.2: A demonstration at SC11 of the Automated GOLE project

Scenario	A client/researcher needs an inter-domain lightpath for collaboration. He uses a “phonebook” to figure out the ID of the destination and uses that to request that lightpath through a Network Service Interface. The protocol uses topology exchange to find this location and the appropriate domains to fulfill this request.
What is it?	An implementation of the NSI Connection Service protocol, combined with a supporting topology description for inter-domain pathfinding.
Whom is it for?	Users of inter-domain lightpaths or services depending on lightpaths (e.g. connecting clouds).
How does it work?	We have deployed an OpenDRAC installation on our testbed. Through the use of a graphical user-interface or our developed command-line client, a user can reserve a lightpath. These interfaces, and the NSI servers need the topology file to find a path through the inter-domain network.
What can one do with it?	Use a single interface to make an inter-domain lightpath request. This request is forwarded to the appropriate domains, and the circuit is automatically configured on demand.
More information	Visualisations of the current infrastructure: http://163.220.30.174:8070/monitor.jnlp http://kote-ps-1.ps.jgn-x.jp/ps/autoearth-nsi/ Jeroen van der Ham – vdham@uva.nl

Index

Automated GOLE demo & NSI interoperability test

At SuperComputing 2011 different Network Service Interface (NSI) implementations were deployed and were able to successfully create circuits on demand. For the first time these NSI implementations were also supported by dataplane connections. The figure below shows the topology, and the implementations used in these networks.
The demonstration at SC11 using an actual dataplane proved to be a big success. Hundreds of inter-domain circuits were scheduled using time-scales measured in minutes, instead of days or weeks.



UvA Activities in the Demonstration

We have had a very active participation in this demonstration. In the first place we have provided a deployed instance of OpenDRAC which was able to successfully configure VLANs on our testbed network. Secondly, the topology description for the demonstration used by all the participants was created based on an ontology developed by us, using a graphical semantic web editor also developed by the SNE group.
Third, using available tools we developed a reservation registration system, coupled with a query agent which could automatically gather the status of these reservations. The results of this query agent were used to feed both visualization tools.

NSI Birds of a Feather session

During SC11 there also was a Birds of a Feather session about NSI. During this meeting the experiences on the demonstration, and of the developers was presented. An important outcome was that the overall demonstration was considered to be a big success.

Outcome and future work

Using the NSI with an actual dataplane and in this demonstration setting shed new light on the usage of the protocol. We found some minor practical points on querying and timeout values which will be discussed in the NSI group shortly.

We are currently working with the participants of the demonstration to improve our information model to better support pathfinding. An important finding is that the label is becoming an important component of pathfinding. This will be incorporated in future versions of the topologies.