NSI Topology Descriptions
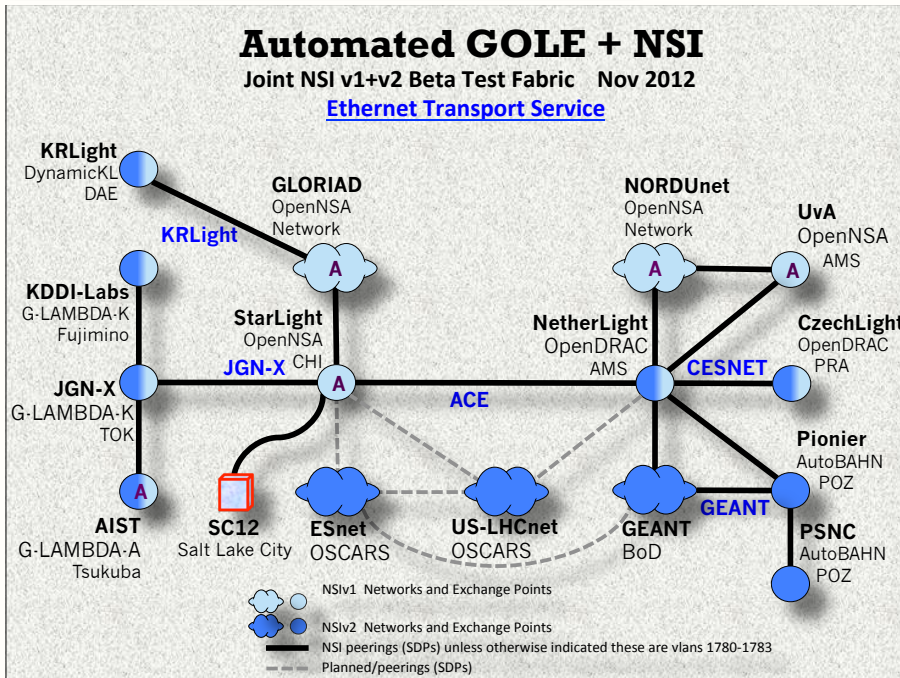## The Network Markup Language

Network Services Interface

Dynamic circuit services have recently been introduced in many R&E networks. The Open Grid Forum Network Service Interfaces group (NSI-WG) has defines a standard interface to interoperate among networks. Here we show how standard Network Markup Language (NML) topology descriptions are supporting the NSI demonstration.

Network Markup Language

The Network Markup Language (NML) is an standard ontology defined by the Open Grid Forum for describing computer networks and connecting resources. NML can describe topologies of different layers, and how the layers and networks interact. This allows network domains to exchange topology information for path computation in circuit-based networks. NML is also an important tool for fault detection and visualization.

Automated GOLE + NSI
Joint NSI v1+v2 Beta Test Fabric   Nov 2012
Ethernet Transport Service

Automated GOLE Demonstration

This 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 version 2.

In the demonstration we are using the standard Network Markup Language enhanced with NSI concepts to exchange network topologies. Each of the networks maintains their own topology, which is exchanged with other networks. The network topologies are currently distributed using GitHub and HTTP. In the future this will be done by the NSI Topology Service.

An example is given below.

Example Description

```xml
<nml:Topology rdf:about="urn:ogf:network:uvalight.net:2012:topology">
  <nsi:managedBy rdf:resource="urn:ogf:network:uvalight.net:2012:nsa"/>
  <nml:hasBidirectionalPort
      rdf:resource="urn:ogf:network:uvalight.net:2012:bi-uvalight-netherlight"/>
</nml:Topology>

<nsi:NSA rdf:about="urn:ogf:network:uvalight.net:2012:nsa">
  <nsi:managing rdf:resource="urn:ogf:network:uvalight.net:2012:topology" />
  <nsi:csProviderEndpoint rdf:datatype="http://www.w3.org/2001/XMLSchema#string">
        http://nsa.uvalight.nl:9080/NSI/services/ConnectionService/
  </nsi:csProviderEndpoint>
</nsi:NSA>

<nml:BidirectionalPort
      rdf:about="urn:ogf:network:uvalight.net:2012:bi-uvalight-netherlight">
  <nml:hasPort rdf:about="urn:ogf:network:uvalight.net:2012:uvalight-netherlight" />
  <nml:hasPort rdf:about="urn:ogf:network:uvalight.net:2012:netherlight-uvalight" />
  <nmleth:vlans>1780-1783</nmleth:vlans>
  <nml:isAlias rdf:resource="urn:ogf:network:netherlight.net:2012:bi-netherlight-uvalight"/>
</nml:BidirectionalPort>
```

Acknowledgements

Jeroen van der Ham,   Ralph Koning,   Cees de Laat

http://sne.science.uva.nl/ndl/

SNE · UNIVERSITY OF AMSTERDAM · SURFNET · novi