DTOX TF

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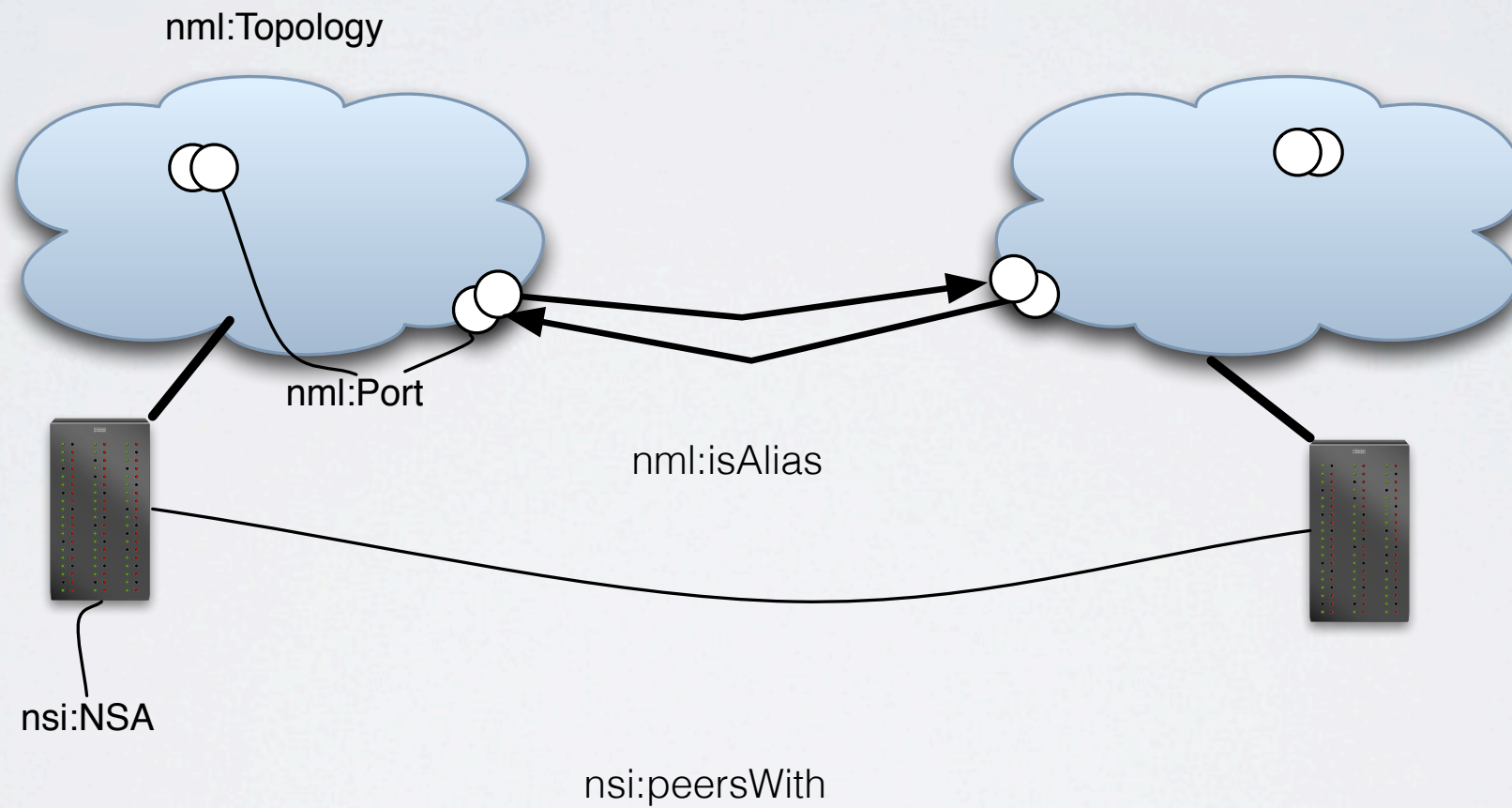
NML First Draft!

- The NML group has (finally) published a first draft of the NML Schema!

  - http://bit.ly/nml-schema

- Comments are more than welcome!

Topology Requirements

- Scalable

- Compact

- Abstract

- Compatible

- Flexible

- Unambiguous EROs

Topology Representation

nml:Topology

nml:Port

nml:isAlias

nsi:NSA

nsi:peersWith

Topology Snippet

```
uvalight:topology a nml:Topology;
    nml:hasInboundPort uvalight:netherlight-uvalight ;
    nml:hasOutboundPort uvalight:uvalight-netherlight;
    nsi:managedBy uvalight:nsa .

uvalight:nsa a nsi:NSA,
    nsi:csProviderEndpoint """
      http://nsa.uvalight.nl:9080/NSI/services/ConnectionService/
      """
    nsi:managing uvalight:topology .

uvalight:netherlight-uvalight a nml:PortGroup,
        owl:NamedIndividual;
    nml:isAlias <urn:ogf:network:netherlight:2012:netherlight-
uvalight>;
    nmleth:vlans "1780-1783" .
```

NSI Concept	Representation
STP	2x nml:Port / nml:BidirectionalPort
Connected To	nml:alias
NSNetwork	nml:Topology
Has STP	nml:hasPort
Located at	nml:locatedAt
Location	nml:Location
GPS coords	nml:lat, nml:long
NSA	nsi:NSA
Network managed by NSA	nsi:managedBy
Admin Contact	nsi:adminContact
Provider endpoint URL	nsi:csProviderEndpoint
Control-plane connections	nsi:peersWith

Dictator Model

- Single Maintainer

- Push and Pull through email

- Does not scale well

Distributed Model

- Github version controlled repository

- Updates through HTTP or git

- Multiple maintainers

- Single point of failure

NSI Topology Service - P2P

- Distribution directly between NSAs

- Follow the peering relationships

- Bootstrap between neighboring domains

- Implementation?

Topology Distribution

Dictator
Model

Topology Distribution

Dictator
Model

Topology Distribution

Dictator Model

Distributed Model

Topology Distribution

Dictator
Model

Distributed
Model

Topology Distribution

Dictator Model

Distributed Model

NSI Topology-Service

Peer-to-Peer Model