

OGF NSI WG

Architecture Issues

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NSI Architecture Deliverable

- The following is a discussion of NSI architecture
- Some concepts as I understand them
- Some ideas for future work
- This is to start discussion
 - WG can take these as one hopefully helpful input

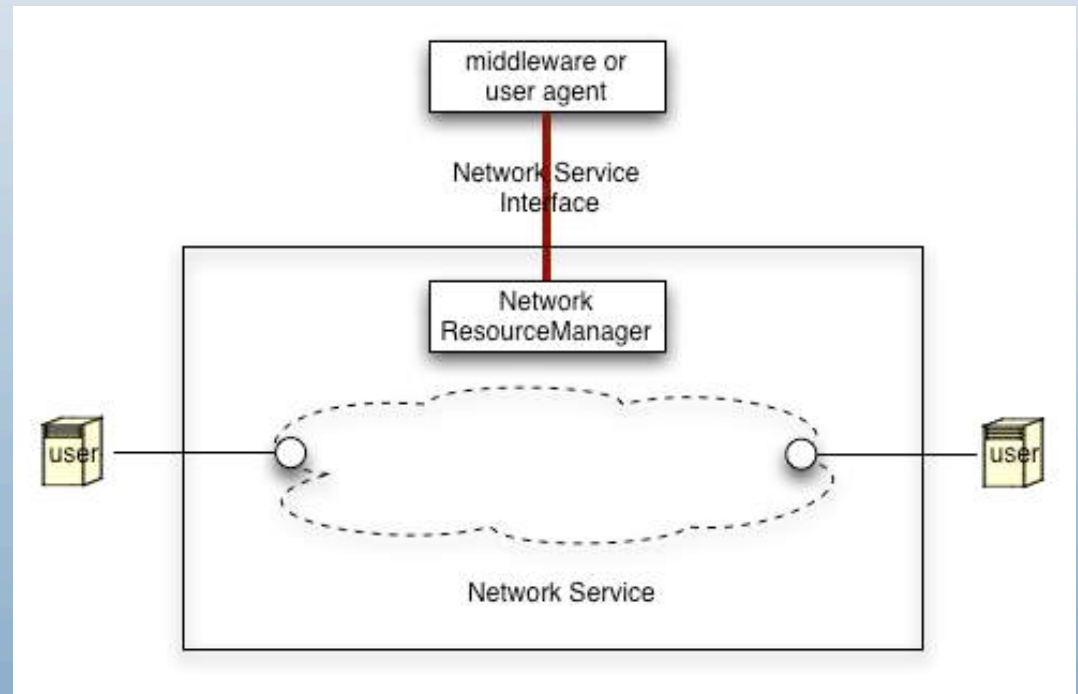
Request Architecture

Users connect to Network at network edge points

Connections across a network are controlled by a Network Research Manager NRM

Users request service via middleware or agent
[agent may be incorporated in User or NRM]

NSI Architecture describes interface to a NRI i



NRI Architecture Elements

- Definition of Request Elements
 - Naming – devices connecting to network and network edge points
 - Describing path of circuit across network
 - Messaging on NSI – circuit properties and attributes, protocol sequences

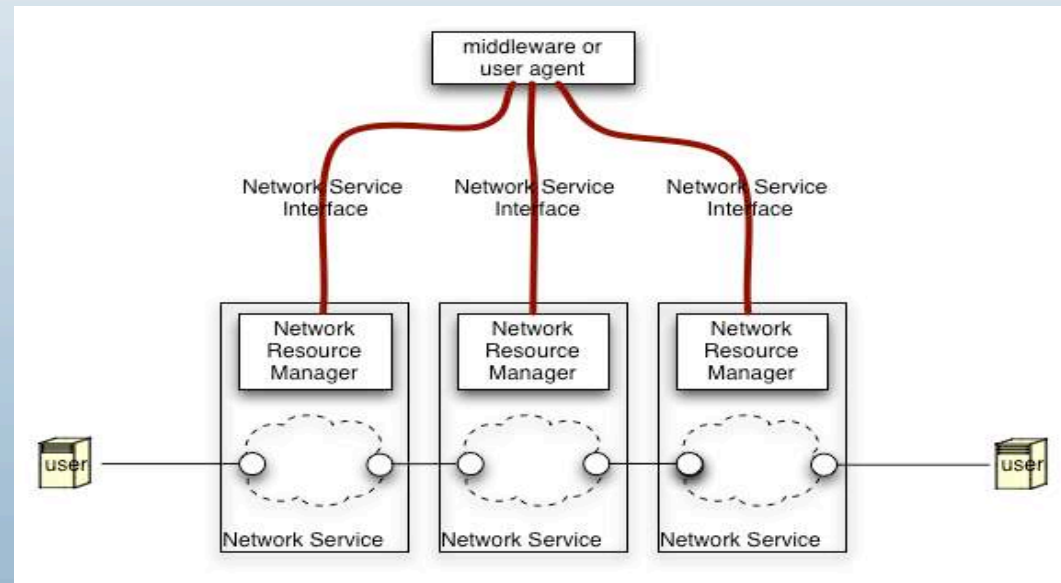
Circuits crossing multiple network domains

- Network Domains interconnect to allow creation of circuits between endpoints on different Domains
- User request must include edge points and MAY include path information between edge points
- NSI supports requests in either chained or tree sequence between domains – as described in next slides

Multi network request hierarchical (tree) model

Middleware or Agent makes connections to multiple networks, concatenates connections to make etc circuit

Middleware must know how networks interconnect



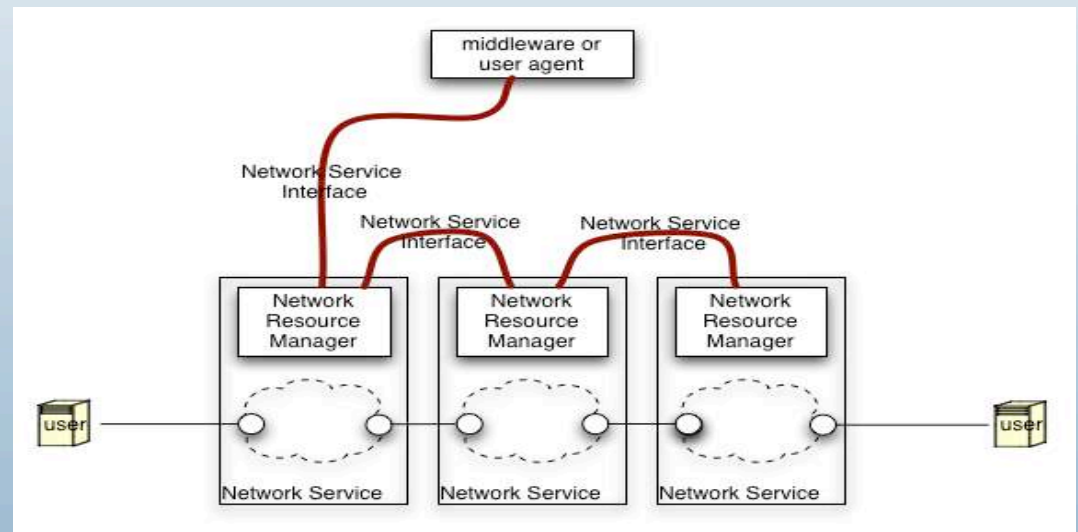
Multi network request Chained model

Middleware requests
connection from its
network

Networks interoperate to
find etc connection

Networks know connectivity
to other networks

Similar to first case for
middleware/ agent



AA and Trust Requirements

- Trust is required between elements using NSI
 - Architecture defines trust requirements for different deployments and how these are supported in NSI
- Authorization is done by each domain
 - Architecture describes how multiple authorizations work together
- Policy requires information about requestor
 - Architecture defines what attributes about requestor are required and how they are verified

Some assumptions to be validated

- Requirements for middleware to net interface are subset of net to net interface
- Tree and chain requests may be used to satisfy a request
- Trust and AA requirements may be different in the two models

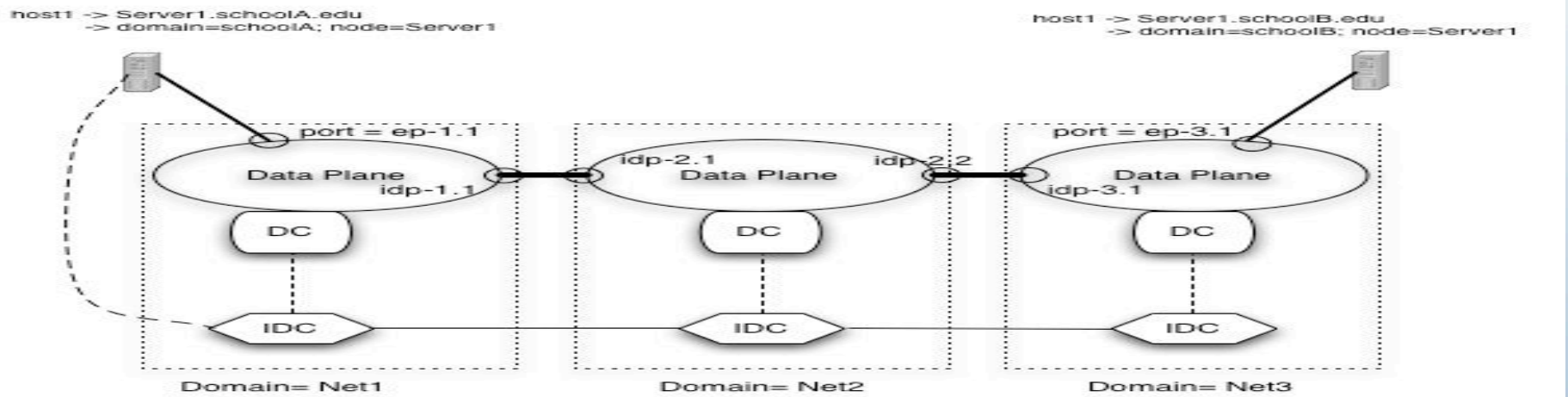
Interface Elements

- Request Connection
 - Required attributes and responses
 - Naming of end points
 - Sequencing of network requests
- Instantiate circuit
 - Required attributes and responses
 - Validate circuit performance and integrity
- Topology exchange
 - Reachability of end points
 - Network topology descriptions
 - Combining topologies from multiple domains

Collaboration with other standards

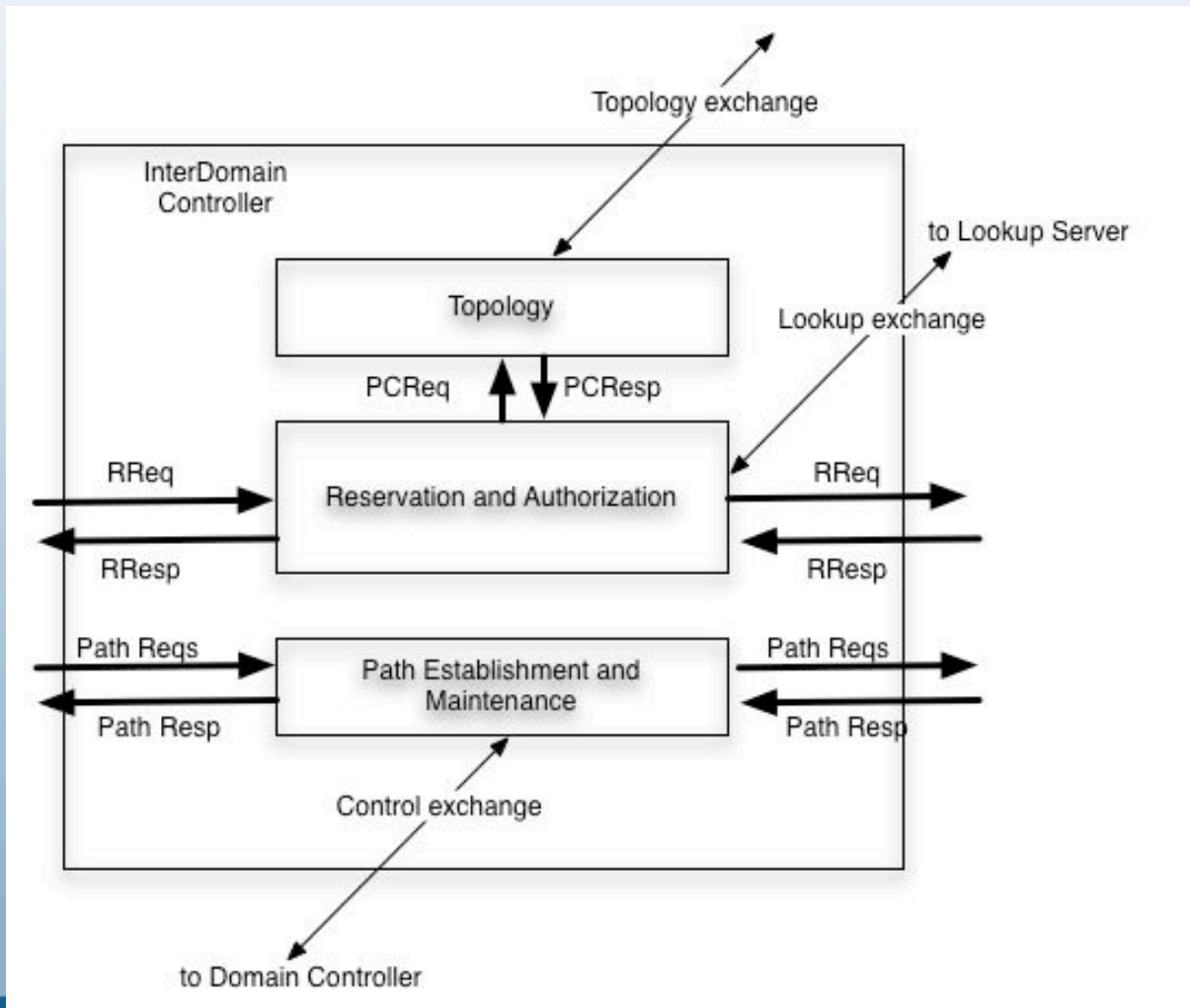
- Naming of elements and topology from NML working group
- AA and trust infrastructure from OGF AA groups
 - IdP and Authorization servers
 - Policy and identity across multiple domains
- Monitoring of connections from NM-wg
- Other references to Scheduling, Accounting, Path finding as appropriate

IDC role in DCN

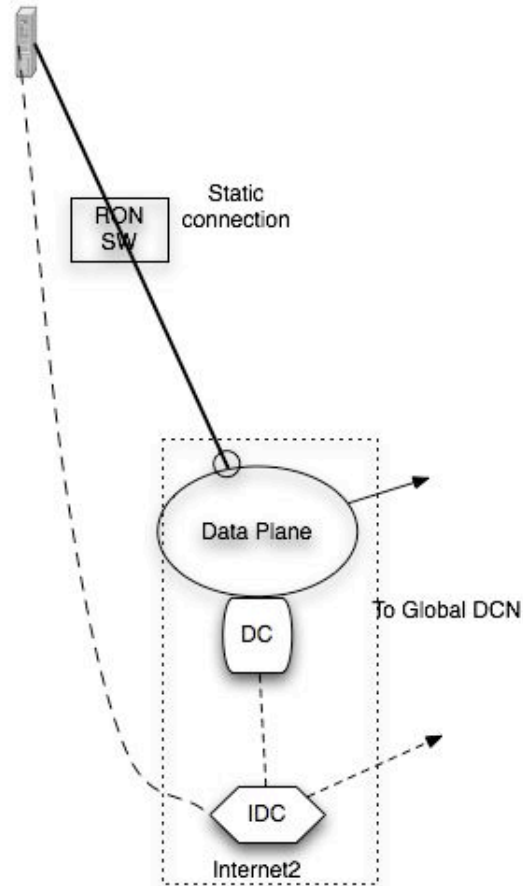


- IDC is what allows DCNs in different domains communicate
- IDC communicates with user and with other domains
- IDC requests services from its Domain Controller
 - Different implementations from Internet2, Esnet, GEANT, Nortel

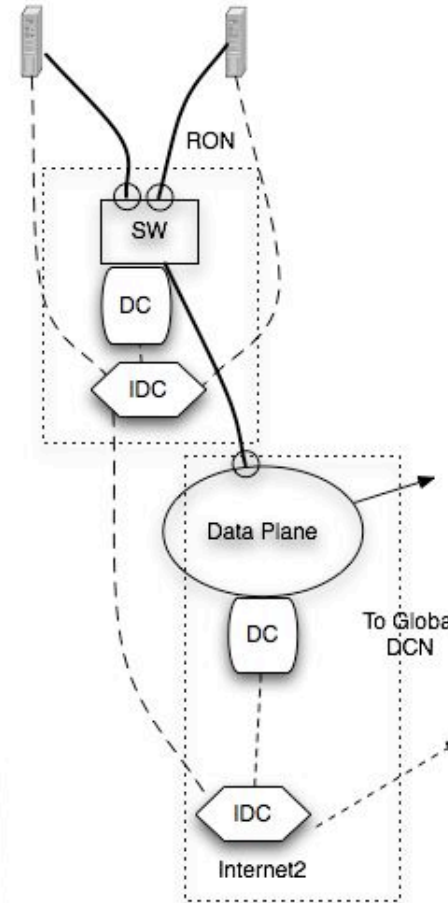
IDC Architecture



RONs and Campuses connecting to DCN



Step1 -
connect to Internet2 through static switch



Step2 -
create RON DCN connected to Internet2

Existing implementations

- Compare existing implementations
 - GLIF GNI work as one source for this
- Adapt existing work where possible
- Need input from developers and users
- Role of charging policy

Architecture Next Steps

- Decide on initial set of editors
- Set up subgroup with regular call
- Create Framework
 - Collaborate to write sections
 - Review
- Build spec from sections
- Additional items / suggestions ?

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Discussion?

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