GÉANT Multi-Domain Bandwidth-on-Demand Service

Tangui Coulouarn

LHCONE Point-to-Point Service Workshop - CERN Geneva, 13 December 2012

Status of the deployment

- BoD is in production in the Géant backbone
- Migration of backbone to MX's effectively gives all NRENs access to BoD from the Géant backbone
- 27 edge point on the GÉANT backbone, more than 50 end-points
- Deployed in 5 NRENs to end-points + 4 in the process
- Peering to Esnet and Internet2 about to be reestablished
- Global collaboration to serve end-users

Technically

- Tool agnostic (protocols define the borders)
- Most NRENs have chosen AutoBAHN and cNIS
- IDCP and NSI 1.0 to interoperate with other tools today, plans for NSI 2.0
- Development work focus on NSI2.0 through GN3+
- Rewrite AutoBachn IDM to NSI2.0 state machine
- Deprecate IDCP end 2013?
- Wrappers at the other end of the Géant circuits?

Priorities

Robustness and support

Emphasize the need that all NRENs keep their BoD at production level

MDSD delivers support for all connected NRENs

Footprint extension

Particularly where large customers reside

AAI

- Defining roles and eID compliance

Monitoring

- cMon and Integrate with perfSonar architecture

NSI

- V1.0 adapter

Tests completed December 2012

Production December January (SURFnet)

- V2.0

Tests maybe with Internet2 at WIX end of February 2013

Dependencies : AutoBAHN development

Oscars development in ESnet

Capacity of OGF WG to document the protocol and stablize

- Production fall 2013

- All Géant BoD networks to have migrated to NSI by M12 in GN3+ (April 1st 2014)

Monitoring

1. control plane solution

Agreement to deploy from all participating NRENs

Set-up before end of Q1 2013 in all domains

2. Mid- Long-term data plane solution

Architecture and requirements nearly over (not only up and down by hops but also utilization)

Demo in February

End 2013 prototype

Integration with PerfSONAR architecture

AAI

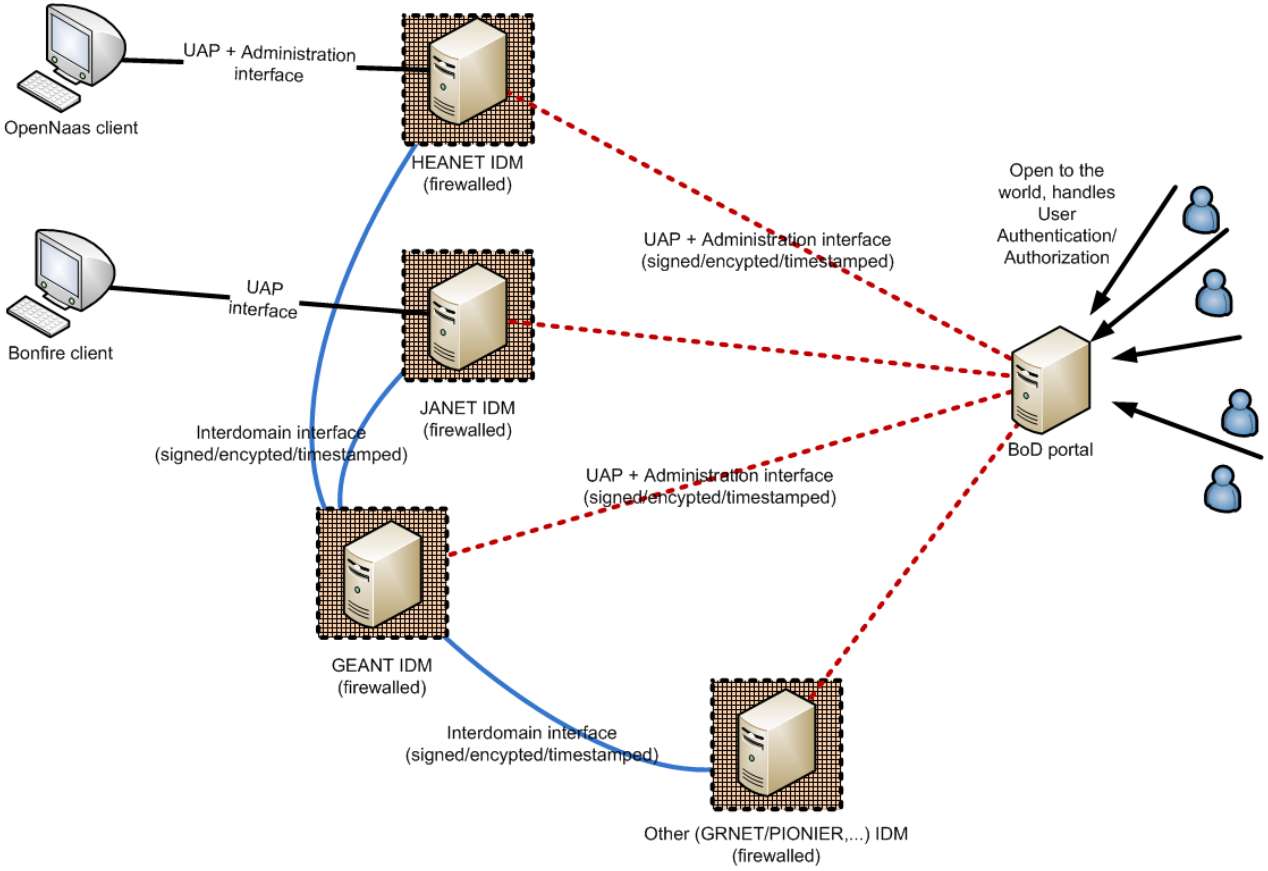
First draft Policy distributed in September 2012 and discussed in December 2012

Need more granularity of the roles

New Policy proposal February 2013

Implementation end 2013

Access to the service



API details

- Each domain IDM has 2 listening interfaces for API access called UAP (UserAccessPoint) and Administration. (AutoBahn specific)

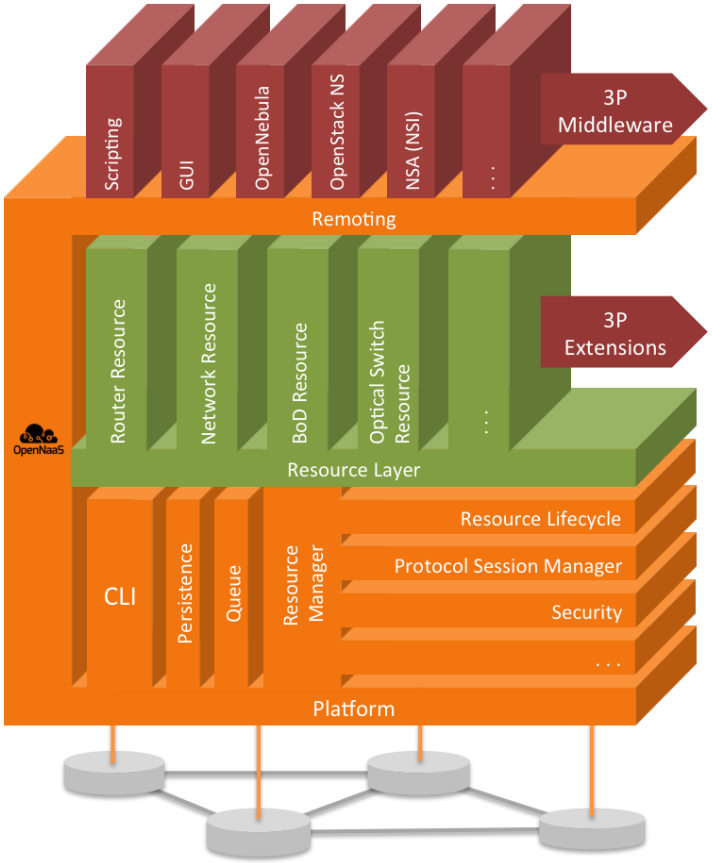
- UAP has methods for querying the available domain/ports of the global abstracted topology, and for submitting/cancelling a user request. So UAP is enough for a simple API client.

- Administration interface has methods for retrieving logs, services/reservations lists, configuration properties and intradomain topology information. So Administration is needed in addition to UAP for more advanced Client Platforms

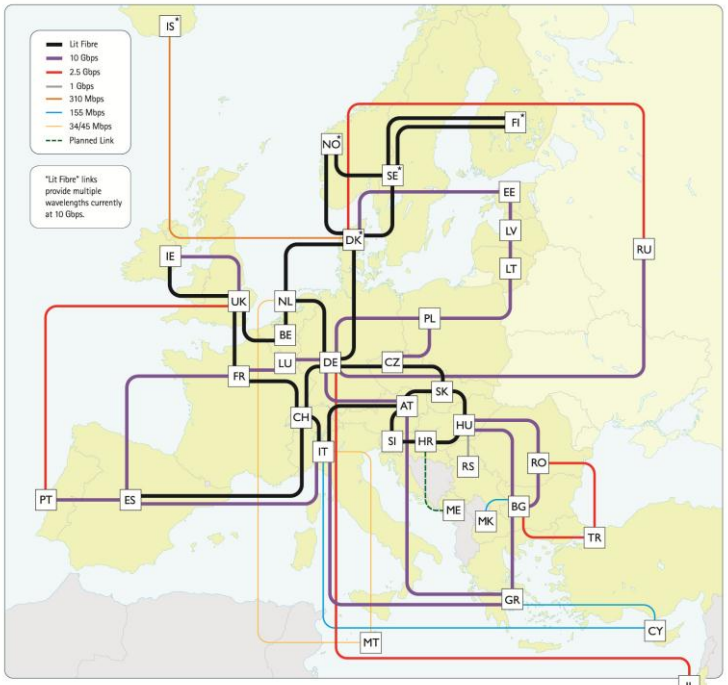
API details (2)

- All Autobahn instances currently in the service (including BoD portal) have WS-Security enabled, which means that all exchanged messages are signed/encrypted/timestamped using eduPKI certificates.
- OpenNaas and Bonfire have clients that connect to Heanet and Janet IDMs respectively.
- Regarding authorization, each IDM can enable its own authorization policy (e.g. permit requests only by specified users or user groups).
- the NSI Requestor Agent interface will replace the AutoBAHN UAP (User Access Point) interface. They are similar however, at the design level.

OpenNaaS


Scripting
GUI
OpenNebula
OpenStack NS
NSA (NSI)
. . .
3P Middleware
Remoting
Router Resource
Network Resource
BoD Resource
Optical Switch Resource
. . .
3P Extensions
OpenNaaS
Resource Layer
CLI
Persistence
Queue
Resource Manager
Resource Lifecycle
Protocol Session Manager
Security
. . .
Platform

GÉANT Topology



Backbone Topology November 2009. GÉANT is operated by DANTE on behalf of Europe's NRENs.

AT Austria	CZ Czech Republic	FI Finland*	IE Ireland	LU Luxembourg	NL Netherlands	RO Romania	SI Slovenia
BE Belgium	DE Germany	FR France	IL Israel	LV Latvia	NO Norway*	RS Serbia	SK Slovakia
BG Bulgaria	DK Denmark*	GR Greece	IS Iceland*	ME Montenegro	PL Poland	RU Russia	TR Turkey
CH Switzerland	EE Estonia	HR Croatia	IT Italy	MK F.Y.R. Macedonia	PT Portugal	SE Sweden*	UK United Kingdom
CY Cyprus	ES Spain	HU Hungary	LT Lithuania	MT Malta			

*Connections between these countries are part of NORDUnet (the Nordic regional network)