

## **GHPN Session at GGF 13, Seoul**

Tuesday, March 15th, 11am-12:30pm, Onyx room

Note takers: Leon Gommans, Admela Jukan, Mark Leese

### **Agenda**

- 1. Agenda Bashing and Administrivia [5']**
- 2. GHPN overview and Status of the Drafts [10']**
- 3. Review of NetServices Use Cases [15']**
- 4. Network Control Plane, by Admela Jukan [20']**
- 5. Infrastructures such as NLR and GLIF involving Grid Applications, by Gigi Karmous-Edwards [20']**
- 6. Control Models, by Cees de Laat [20']**

### **GHPN overview and Status of the Drafts (Franco Travostino)**

FT: Unfortunately most people working on the drafts could not come, there was discussion on whether to have this WG meeting.

Status:

2 Drafts made it: GFD 36 (optical nets) and GFD 37 (net issues)

2 Drafts in the making: L4 protocols other than TCP and Network Services Use cases.

1 Draft stalled: Grid Network Services Architecture - Franco mentioned that this one evolved in the Use Cases in the draft, there was a clear need in the past to define the requirements on networks

Gigi: how do we re-start the architecture document now we have use cases ?

FT: still more use cases are needed.

New born drafts:

- Grids and OBS intersection - more longer term work.
- Existing standards for agile circuit based networking - looking at existing standards in IETF and ITU. A more tactical document with strong industry constituency. Make interworking with carrier networks possible. The standards

intended to be covered are pretty close to this world (VCAT, LCAS, GFP, L1 VPN etc.)

Both drafts build and expand on GFD 36

CdL: Atlantic Wave project looks also at LCAS, VCAT

Individual submissions on Wireless grids and Network Service Interfaces need impetus from authors.

Outreach:

- FT: Did do presentation at OIF Conference Calls with GGF and ITU leadership, GHPN documents were featured prominently. Working on new Telecom-and Grid forum with broad scope on both technical and policy elements.
- FT will present at ITU-T.

More network awareness in GGF both in GGF groups & BoF (e.g. Firewall Issues BoF referred to GFD.37) and also nearby the GGF in for example the GLIF.

Milestones - see gridforge for latest version.

### **Review of NetServices Use Cases (Franco Travostino)**

Franco gives an update on behalf of Tiziana Ferrari, the editor for this draft. Motivation is to mine out qualitative and quantitative requirements. Emphasis on role of network and its behavior and make it as quantitative as possible.

Grid apps considered cover a broad range.

Changes since Brussels: Tier1 vs Tier 2 separation in Use cases.  
Tier 2 use cases (needing more work) are moved to companion document

No new Tier 1 cases came in. Franco also sent a new round of invitations to the people who work on interesting cases to contribute to the draft. (e.g. one to UK)

Structure of document split into Path oriented and knowledge based cases.

Gigi / Richard HJ: Consider SAGA WG as opportunity for interaction with GHPN on defining API's

FT: Scheduling groups: Network agnostic scheduling cases would be an option for combining work.

CdL: Is workflow support for networks described?

FT: HEP (CERN) case describes a workflow in detail as a workflow/lifecycle.

CdL: Design Team in HEP community is working on grid of lambda's owned by different people.

FT: Have to support multiple visions - HEP is one specific vision.

### **Network Control Plane (Admela Jukan)**

Presentation on Issues of Network Control Plane from the research perspective.

Control plane sits between the data-plane and management plane.

Research community recognize need for Internet wide control plane.

Developments are already happening in optical networks and wireless area

Internet is moving from network for all to network for you creating lot of specialized networks with performance guarantees. Applications may stay network unaware but not vice versa.

Classes of application create a number of different dimensions in the design space (see slides).

Raises question like how are dynamics handled for advance reservation where jobs determine communication patterns.

Looking at traffic - how to model combination of high performance traffic and background traffic.

Looking at space - what does close mean. How to express closer in what terms/granularity. Network control plane partitioning into different types of grid resources. What interactions are needed.

Scheduling issues.

In summary - Good models and architectures in various terms are needed. The optical work seems to lead the way.

Gigi Karmous-Edwards: Are you saying we need more interaction with scheduling groups?

Franco Travostino: Yes. They try to be resource agnostic, which is good, but they need input from us.

Cees de Laat: Are you expecting the middleware to do the networking related scheduling, or the network to do it itself? Who owns the scheduling? The middleware or the network?

Admela Jukan: That is the question. We need to discuss this.

Richard Hughes-Jones: You need to consider all three resources together: storage, compute cycles and the network. They have to be treated all together, but a scheduler won't know how to set up network - this would have to be done by the network in response to basic instructions from scheduler.

Franco Travostino: The scheduling group are doing top level mission control. They must have an awareness of things, but cannot do all the detailed tasks - the detail will have to be delegated.

Admela Jukan: I have spoken in the background with the scheduling people. They can consider some basic things, like the "cost" of providing bandwidth, but there is no real performance consideration. e.g. the waiting time for applications (which is something that would be of interest to me).

FT: Effort should move into network services work - the modeling work is relevant. It might put network services architecture draft out of the stall.

### **Control Models (Cees de Laat)**

Context is the GLIF work with multiple NRN's running this network creating end to end lambda's.

There is a growing number of exchange points such as Amsterdam, Chicago, LA etc. Need understanding of how to control the exchanges and understand what "openness" means.

An optical exchange can elevate an incoming channel to a different layer that is economically most efficient.

Optical exchange is modelled as black box with a number of elevator services facilitating transfer of data from one layer to another. Elevators can be switches, TDM, store and forward services etc.

Usage models are made by people like Bill St Arnaud, UvA uses TNM model as start for defining ownership models. Ownerships can be subdivided into three different kind (Legal, Economic, Administrative) This structure can be applied to for instance links and exchange port owners. The discussion on openness vs. "less" openness focuses on the fact of administrative link ownership is the same as the administrative exchange port ownerships. Is a link owner allowed to make contacts with peers directly or does the exchange need to manage peering.

Franco asked if the design can be discuss with a level of generality beyond optical such as in wireless, Internet, etc.

Gigi: Management plane policy and control plane interaction is interesting in this context

**Infrastructures such as NLR and GLIF involving Grid Applications (Gigi Karmous-Edwards)**

GOBS draft : there are realistic solutions using OBS. 16 institutes and universities show interest. First draft is ready april 15th as to be ready for GGF14

Outline - see slide.

NLR - see slides

GLIF - Gigi provides an update on GLIF activities – there is a new Optical Control Plane group established recently in GLIF (Gigi is the Chair)

There was a question on network monitoring in the optical layer. The concern was that debugging a failed lambda was not trivial and if there are good solutions to perform and communicate network monitoring. How is lambda recovered?

GLIF and GHPN have similar issues - Gigi is interested in the use cases - collaboration is logical step. Gigi stresses importance of the interactions between management and control – and suggest that GHPN pays more attention to this issue.