Global Lambda Integrated Facility
Open Exchange Point Discussion Meeting, 20 April 2011
Marriott Crystal Gateway Hotel, Arlington, United States

1. Introduction

Tim Lance opened the meeting by explaining the motivations for establishing MAN LAN in New York. This took advantage of the economic uncertainties in the aftermath of 9/11, by agreeing a long-term lease for rack space at an under-utilised facility at 32 Avenue of the Americas. It not only proved beneficial for the owners of the building in difficult times, but in the long-run has secured a cost-effective peering and exchange point facility in a location where it now very expensive and difficult to find suitable facilities.

Today, NYSERNet, Internet2, NLR, ESnet, GÉANT and more recently NOAA are now co-located in a dedicated space within the building, along with other regional research networks. Any US or international research and education network or organisation may co-locate equipment, cross-connect with each other, and in some cases peer with each other. In principle, commercial entities may also co-locate provided the purpose was research and/or education, and this has not happened yet. Prices are the same for all participants according to usage, and charges are made on a strict cost recovery basis.

The Avenue of the Americas facility has proved to be extremely successful and demonstrates the advantages of an open exchange point. It has also allowed the MAN LAN operators to gain experience of how to operate such a complex exchange point, and with respect to the administrative and technical policies that are needed.

2. Proposal for Open Exchange Point Advisory Group

Bill St. Arnaud said that a number of optical exchange points (GOLEs) had been established around the world in the past few years, and that these were coordinated by their respective owners through GLIF. These built on the success of Internet Exchanges, although they primarily focused on interconnecting lambdas to allow end-to-end lightpaths to be created.

Nevertheless, whilst the GOLEs had facilitated high-speed dedicated links around the world that could service high-performance applications, the policy and charging regimes and technical facilities differed from exchange-to-exchange. The increasing demands of e-science applications now and in the future required more coherent management of the infrastructure, and it was therefore proposed to establish an Open Exchange Point Advisory Group that could address some of these issues. It should however be stressed the focus would be on identifying best common practice and improving coordination, and there were no plans to implement binding regulations on participants.

It was proposed to have two advisory committees – one on policy and another on technical matters. Both would meet at least annually, although other meetings could be organised as necessary. In order to keep things manageable, it was suggested that the group should have a regional based membership (Asia-Pacific, Europe, North America and South America), with additional representatives of the IRNC, major science projects and connected exchange points, as well as an at-large member. Nominations and selection of representatives would be undertaken by all participants.

3. Discussion

Jerry Sobieski suggested that GOLEs and other similar exchange points needed to better defined, along with the minimum requirements that could be expected by connecting organisations. For example, some exchange points were distributed to the extent they really constituted separate exchanges, whilst others could be on stubs with limited onward connections. In addition, increased demand was making dynamic connections a necessity, but this required standard provisioning mechanisms as well as policy and topology distribution.

Dave Reese agreed, but he felt it would be useful to first define what problems were currently being experienced and work from there. Without this, policy and technical definition was rather jumping the gun.

Cees de Laat pointed out there were already similar discussions back in 2005, and it really came down to the issues of trying to build a connection oriented system with a limited number of connections.

Jerry Sobieski said the debate had been re-opened by the LHCONE (Large Hadron Collider Open Network Environment) objective that planned to establish a number of access points to the LHCOPN network connecting Tier 1 sites. The aim was to have a more structured approach to LHC-related traffic that was likely to become significant on existing R&E networks, whilst making it possible to establish dedicated links over existing infrastructure to service Tier 2 and 3 sites. It made sense though, to utilise existing exchange points where possible.

Artur Barczyk said that open exchange points provided more flexibility when building networks in response to particular needs and demands. They offered the opportunity for more routes, resilience, and better peering which was particularly necessary as some GOLEs still remained without direct connections to each other.

John Graham thought it difficult to have a meaningful discussion without DANTE being present, as they were the operator of the largest R&E network in Europe and heavily involved in LHCONE provisioning.

It was agreed that Bill St. Arnaud would summarise the discussions that lead up to this meeting and would draft a problem statement.

Action 20110420 – Bill St. Arnaud to draft problem statement

There followed a short discussion about technical requirements.

Jerry Sobieski said that it had always been difficult to achieve consensus between exchanges with respect to technical matters, but perhaps a similar approach as with policy was needed. Rene Buch agreed that problems first needed to be defined before acceptable policies could be devised.

4. Date of next meeting

It was agreed to try to arrange another meeting sometime during the 26th NORDUnet Conference that would be held on 7-9 June 2011 in Reykjavik, Iceland.

Attendees

Name	Organisation	Country
Bill St. Arnaud (Chair)	-	-
Kevin Meynell (Scribe)	TERENA/GLIF Secretariat	-
Heidi Alvarez	AMPATH	United States
Paul Avery	University of Florida	United States
Artur Barczyk	Caltech/USLHCNet	United States
Abotella Battou	Mid-Atlantic Exchange	United States
Greg Bell	ESnet	United States
Jeff Boote	Internet2	United States
Eric Boyd	Internet2	United States
Rene Buch	NORDUnet	-
Jacqueline Brown	Pacific Wave	United States
Chip Cox	AMPATH	United States
Eli Dart	ESnet	United States
Jim Dolgonas	CENIC/Pacific Wave	United States
Dale Finkelson	Internet2	United States
Leon Gommans	University of Amsterdam	The Netherlands
John Graham	Indiana University	United States
Julio Ibarra	FIU/AMPATH/Atlantic Wave	United States
Dave Jent	Indiana University	United States
Bill Johnston	ESnet	United States
Dan Jordt	Pacific Wave	United States
Cees de Laat	University of Amsterdam	The Netherlands
Tim Lance	NYSERNet	United States
Luis Lopez	ANSP	Brazil
Kees Neggers	SURFnet	The Netherlands
Harvey Newman	Caltech/USLHCNet	United States
Per Nihlen	NORDUnet	-
Balasubramana Pillai	Mid-Atlantic Exchange	United States
David Reese	Pacific Wave	United States
Don Riley	UMD/Atlantic Wave	United States
Chris Robb	Internet2	United States
Chang Sheng-I	TWAREN	Taiwan
John Silvester	USC/Pacific Wave	United States
Dale Smith	University of Oregon	United States
Jerry Sobieski	NORDUnet	-
Michael Stanton	RNP	Brazil
Jin Tanaka	NICT	Japan
Kevin Thompson	National Science Foundation	United States
Robert Vietzke	Internet2	United States
John Vollbrecht	University of Amsterdam	The Netherlands
Hans Wallberg	SUNET	Sweden
Jim Williams	Indiana University	United States
Rod Wilson	Ciena Research	United States
Steven Wolff	Internet2	United States
Matt Zekauskas	Internet2	United States