Global Network Architecture

An inclusive Blueprint for a Global R&E Network Interconnect

APAN42 – Hong Kong – August 2016
Agenda

Location: 1/F Run Run Shaw Tower
Room: CPD-1.21
Date: Friday, 5 August 2016
Times: 9:00am – 10:30am & 1:30pm – max. 5:00pm HKT

1. Opening & welcome
2. Introductions
3. Introduction to the Global Network Architecture
4. Asia Pacific resources
5. Next steps and Follow Up
6. AoB
7. Closing
What is the GNA?

A Vision & An Ambition
The GNA is:

- an “architecture” to facilitate more cooperative interaction among R&E networks in the delivery of network services to the global R&E community

Achieved by the global R&E Network community contributing resources to:

- Defining a blueprint that R&E Networks can use to align their investments in intercontinental circuits

To ensure that:

- R&E Networks can better meet the expectations and requirements of their member institutions and funders, and have more service for the same amount of money by
  - Co-investing
  - Sharing resources
  - Levering each other’s services
GNA Artist’s Impression
GNA to-date

• GNA Technical WG:
  • over 30 network engineers from R&E Network organizations around world (Europe, Australia, North & South America, Asia, and Africa), working on:
    • Network Services Definitions
    • Information Architecture Framework
    • The Commons

• Creation of publicly reviewed framework documents

• Web site (background and documents)

• Getting real life feedback from Path Finders, e.g. ANA-300G, and using this experience in next versions of documents
White paper:
Global R&ENetwork Architecture Program

Developing a blueprint for global
R&E network architecture
GNA Path Finding

Doing what we say and learning from what we do
ANA – 200G

100G production ring for R&E
ANA – 200G

100G production ring for R&E

100G Hibernia

100G TGN Atlantic South

MAN LAN

WIX

GÉANT Open London

NetherLight
ANA – 300G

Reliable Transatlantic connectivity

- Montreal
- New York
- Washington
- London
- Paris
- Amsterdam
- 100G Hibernia
- 100G TGN Atlantic South
- 100G Global Cloud Xchange

NREN infra
Asia Pac OXPs, relevant to GNA

• Already under discussion, planned or established:
  • Singapore
  • Hong Kong
  • Guam
  • Beijing
  • Tokyo
  • Others?
The bigger picture

Putting it in context
Dimensions of GNA

- GNA Vision
- Funding
- Policies and principles
- Organizational framework
- Technical Architecture Planning
• Recognizing that networking is the foundation of collaboration the GNA is:

A coordinated worldwide effort that efficiently interconnects national and multi-national R&E Networks around the world in a manner which increases the international reach, capacity, and capability of the global R&E network for the benefit of all countries.
• How are international links funded?
  • NRENs
  • Opportunities for
    • Cost sharing
    • Fibre swaps
    • Private sector partnerships
    • Operational support (op ex funding)

• Work items
  • Value prop for GNA – how to sell to funders?
  • Cost sharing models
  • Private partnerships
Policies and principles

- **Equity**
  - Value for contribution (what an NREN gets for what it pays)

- **Architectural framework**
  - Open exchanges

- **Work items**
  - Usage policies
  - Link restrictions
  - Open exchange policies
  - Accepted practices:
    
    At open exchanges: R&E Networks only peer with other R&E Networks?
Organizational framework

• Currently organized around:
  • Technical Working Group
  • Executive Action Team
  • Global R&E Network CEO Forum sponsorship

• Rethinking the organizational framework, input welcome
Technical Architecture Planning

• Principles
  • Open and inclusive

• Work items
  • Architecture
    • Open exchanges
    • Documented rules to qualify as an open exchange
  • Linkage to GLIF?
Thank you!

APAN42 – Hong Kong – August 2016
Global Network Architecture

An inclusive Blueprint for a Global R&E Network Interconnect

APAN42 – Hong Kong – August 2016
Location: 1/F Run Run Shaw Tower
Room: CPD-1.21
Date: Friday, 5 August 2016
Times: 9:00am – 10:30am & 1:30pm – max. 5:00pm HKT

1. Opening & welcome
2. Introductions
3. Introduction to the Global Network Architecture
4. Asia Pacific resources
5. Next steps and Follow Up
6. AoB
7. Closing
Dimensions of GNA

- GNA Vision
- Funding
- Policies and principles
- Organizational framework
- Technical Architecture Planning
• All the comply with the GNA Architecture Structure and Operation
• Resources can still be used for existing purposes
ANA-300 Principle

- The total capacity is NOT divided by the amount of partners (300/5)
- Each partner has a guaranteed bandwidth of 40 Gbit/sec (> 200 Gbit/s)
  - It is rare that all partners is using their full guaranteed BW
  - Time shift has a large impact on usage
- The remaining bandwidth is considered as “The Commons” where partners and others can bust into / use @ a best effort basis
The Commons & Time shift
Next GNA Tech WG Meeting

Schedule & Recurrence Details

• September 19 @ 1:00 pm - 6:00 pm
• Location: Helsinki, Finland (co-located with the NORDUnet Conference 2016)
Contact Points

• Chris Hancock: Chris.Hancock@aarnet.edu.au
• Rene Buch: rbuch@nordu.net
Thank you!

APAN42 – Hong Kong – August 2016