

Open Exchange Requirements & Desires, 2014 and beyond

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Background: Based on GLIF and GNA

- The community is looking to coalesce global connectivity around a small number of interconnected Open Exchange Points.
- However the goal is not just best-effort activities based on layer-2 Ethernet,
 - but increasingly to look for the ability to extend dedicated, reserved or advanced capabilities across multiple exchanges.

Background

- Working on ANA-200G as a production environment.
 - These facilities are part of production services in ways that has not been true in the past.
 - Replaces dedicated facilities.
- Built on trust in the past.
 - Too many new players now, need to develop standards.

OPEN EXCHANGE POINT REQUIREMENTS:

- *Open Acceptable Use Approach: Ability to interconnect with any R&E Entity.*
 - Historically a requirement for Exchange points.
 - Any R&E entity can connect.
 - All peering will be determined by bi-lateral agreement between the participants.
 - No Internal Exchange point policy regarding peering relationships
 - Must accept a request from any R&E participant who wishes to purchase a port on the exchange.

OPEN EXCHANGE POINT REQUIREMENTS:

- *Open Acceptable Use Approach: Support for “Commercial” Traffic*
 - The distinction between R&E traffic and Commercial traffic is increasingly blurred.
 - Any Open Exchange should not impede the ability of the sites to achieve these traffic flows.
 - At the request of an R&E member, commercial entities must be allowed to connect to the exchange
 - they must be allowed to participate in bi-lateral peering activity across the exchange
 - Internet2 is comfortable that any commercial connections must pass the one-end rule.

OPEN EXCHANGE POINT REQUIREMENTS:

- *Production Quality Operations Regime & Community Engagement*
 - Given the importance of the paths between these exchange points the highest operational standards will be required.
 - These operational standards need to be well defined.
 - Any provider offering a global exchange should have a 7x24x365 staffed help desk with ability to access advanced engineering support.
 - should be engaged in best practices with other R&E NOC facilities
 - Leadership of these operations facilities should be active participants in forums like the GNA and GLIF

OPEN EXCHANGE POINT REQUIREMENTS:

- *Privacy of Data, Use of Network Flow Data, Packet Capture*
 - The operator of an exchange must create policies, procedures and communications practices to maintain a high level of privacy of the data transiting the exchange possible under the law.
 - There needs to be a written privacy policy that is made available to members of the exchange.
 - Specific to network flow data, packet captures or other operational data, policies and procedures should be in place to assure any personal identification data or usage trends among members of the exchange are managed under a written privacy policy that is made available to members of the exchange.

OPEN EXCHANGE POINT REQUIREMENTS:

- *Performance Assurance Node and perfSONAR*
 - Test facilities and performance nodes are critical.
 - a performance assurance node be placed in each network interconnection point.
 - Each Exchange point shall also provide and maintain a perfSONAR node for Ad Hoc testing as needed for incident management and performance baselining.
- *QOS / CoS / Queuing Support*
 - While the Exchange point may not have policy the links may and the Exchange may need to implement that policy.
 - The result is that exchanges to which these circuits connect will need to support the capability of protecting bandwidth while also allowing unprotected bandwidth for best effort traffic
 - Use and standards for such CoS support will need to be coordinated with other exchanges to allow for end-to-end bandwidth

OPEN EXCHANGE POINT REQUIREMENTS:

- *Virtualization & Openflow 1.0 Support*
 - A new type of service that the Exchanges will be asked to support.
 - exchange points would therefore need to support a virtualized Openflow 1.0 interface (to which Internet2's OESS application or other SDN application could write OpenFlow 1.0 rules) and support the creation of virtual networks through OpenFlow slicing.
- *Other tools?*
 - MPLS
 - Changes the functionality of an Exchange Point.

OPEN EXCHANGE POINT REQUIREMENTS:

- *Open Access to colocation, cross-connects and Carrier Facilities*
 - How much is it necessary to make sure the facilities in a locations are actually able to make the connectivity actually workable?
 - Power, accessibility, cost all are factors that need to be considered.
- *Timeliness of Service Support and Service Delivery*
 - Do there need to be standards for the support and service delivery in order to qualify as an Exchange point.
 - Each exchange operator will need to work together to find a common set of service delivery expectations that attempts to normalize regional, political and cultural expectations against the global set of expectations for timely service delivery.