OIF OPTICAL INTERNETWORKING FORUM

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Re: Results from OIF World Interoperability Demo

Dear Adrian, Kireeti, Alex and Bill,

Thank you for your recent communication of June 27, 2004. We appreciate the ongoing dialogue and information provided.

As previously communicated, the OIF successfully held its World Interoperability Demo at Supercomm 2004 (see http://www.oiforum.com/public/pressroom/Demo04-June9.pdf and http://www.oiforum.com/public/pressroom/OIF-Post-Demo-FINAL.pdf). This demo included the ASON compliant OIF UNI and ENNI Implementation Agreements.

Due to the number of implementations involved (15 vendors, 7 carriers) we were able to learn much from the demo. The OIF would like to share some of these control plane results and solicit guidance from CCAMP on some issues. Successful interoperability tests included:

- Switched Connections (SCs)– UNI clients calling other UNI clients
- Soft Permanent Connections (SPCs) – network management driven calls including those that traversed ENNIs.
- SC to SPC calls – a UNI client with a call to an SPC client (and vice-versa)
- ENNI routing – link state inter-domain routing
- Call using OC-3c and VC-4 links for an STS-3c equivalent connection. This used the common signal type of 6.

Some things we learned were:

- In addition to the Srefresh message, it was helpful to periodically send the full refresh message as it helped the topology display system track calls. (This is consistent with an option described in RFC 2961 section 5.5.)
- For SPCs, we determined that it was helpful to use a TNA as the context for the SPC egress label because for the interdomain case, the name of the egress network element would not necessarily be known.
- Interpretation of the encoding for SUKLM. There was some inconsistency in the interpretation of the S bit setting which we think arose from use of earlier text on SONET/SDH encoding types. Implementers should be encouraged to adhere to draft-ietf-ccamp-gmpls-sonet-sdh-08.txt.

- Loss of a signaling adjacency effectively makes a data-plane link unavailable. Since the network does not support crankback (yet), there is no way to recover from this situation. It is suggested that a link attribute be added to state whether the link capacity being advertised is available for new connection admission.

Issues that we seek guidance from CCAMP are:

- There was a new capability proposed in which a client that has an SPC becomes UNI capable and the operator wants to create SC state for the client so that it can teardown the call (as opposed to the management system). Any thoughts on how this might be done would be appreciated.
- There is confusion if a Router ID must be the same value as a reachable IPv4 address on an LSR.
  RFC 2328 defines Router ID as:
  > "A 32-bit number assigned to each router running the OSPF protocol."

  It is further clarified in footnote 9 that a Router ID is not an IP address. It specifically states:
  > "The address space of IP networks and the address space of OSPF Router IDs may overlap."

  RFC 3477 defines Router ID as:
  > "… a stable IP address of an LSR that is always reachable if there is any connectivity to the LSR."

  It goes on to state:
  > "If one is using the OSPF or ISIS as the IGP in support of traffic engineering, then it is RECOMMENDED for the Router ID to be set to the "Router Address" as defined in [OSPF-TE], or "Traffic Engineering Router ID" as defined in [ISIS-TE]."

  Unfortunately, it is not clear if the usage of Router ID here is referencing the OSPF Router ID or the Router ID as defined by RFC 3477. Clarification is requested.

  Maintaining the independence between OSPF's Router ID, and the IP addresses used on a LSR is a powerful and necessary capability as it allows for the renumbering of links without causing the revocation of the OSPF Router ID being used by an LSR and the resulting flushing and regeneration of all locally originated LSAs describing attached broadcast networks and links. Requiring the Router ID to be a reachable IP address on the LSR results in an unnecessary behavior that causes significant churn in the LSDB, and potential disruption of TE-route calculation, when renumbering is done.
- MPLS-TE does not allow for nodes that are not participating in OSPF to be advertised. When an MPLS-TE LER relies on another node, such as a path computation server, to perform route calculation on its behalf, it is unnecessary for the LER to participate in OSPF. However, since the LER is not participating in OSPF, it has no way to advertise where it appears in the network. Consequently, ingress LERs will not be able to calculate routes to this egress LSR. A mechanism to advertise reachability of non-OSPF participating LERs needs to be developed.

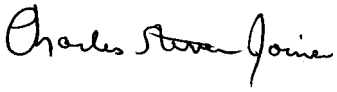
We also recommend the following item be considered by the ASON routing solutions design team:

- The ASON routing architecture allows for the abstraction of information when hierarchical routing is utilized. This abstraction is handled by a transformation function that exists between the Child Area and the Parent Area. The amount of transformation of routing information performed can be described as a continuum with the following extremes:
  - Let all link and node information through with no changes

- Abstract all link and node information provided by the Child Area into a single node. (This was successfully tested in the recent demo.)

Other approaches exist on this continuum, but may be complex to define. Consequently, we believe these approaches may be best left as vendor specific approaches.

Sincerely yours,



Steve Joiner
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cc: Jim Jones, John McDonough