Multihoming: the SCTP perspective

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SCTP: Stream Control Transmission Protocol

- Described in RFC 2960 and 3309
- Multihomed host: endpoint with more than one IP address allocated to it.
- Each IP address represents a path through the network towards that endpoint and has separate congestion control variables
- SCTP does NOT know if the paths are completely, partly or not distinct at all from each other.
- Ideally: we would like all paths to be completely distinct
- Practice: we simply don’t know...
- Heartbeats for every path: keeps paths variables up-to-date and checks if the path is alive.
SCTP: Stream Control Transmission Protocol

- **Multihoming did open some new horizons for us:**
  - Add/remove IP address: in draft version \(<\text{draft-ietf-tsvwg-addip-sctp-06.txt}>\)
  - Based on add/remove IP, mobility support by the endpoint/host \(<\text{draft-riegel-tuexen-mobile-sctp-01.txt}>\)
  - Loadsharing accross the different paths of a multihomed association: still a research issue, but it is certain that the endpoint has a better view of loadsharing than any node within the path ...
  - Proves that things that are done at the endpoint are really simpler and more powerfull than doing it in the network... OK, allright ..The end-to-end principle rules...happy now...
  - In conjuction with partial-reliaebility SCTP(PR-SCTP)... better quality video?!?!<draft-stewart-tsvwg-prsctp-01.txt>
  - Some multihoming issues are documented in RFC 3257 and in \(<\text{draft-coene-sctp-multihome-03.txt}>\)
- **..but for some of the above, we actually new that already, based on previous experiences....**
Transport and Network solutions towards the problem

- SCTP has a solution which is from our point of view sufficient for the future: provides multihoming, mobility and reliability.
- However some of us (SCTP folks) feel that support by the network layer for multihoming would be a plus (even when it required some minor changes to SCTP: ex. Exchange of number of supported paths between the endpoints...)
- The basic problem is a namespace problem: endpoint with a “single” name should be reachable via different links/paths, provided the paths are identified so the congestion control algorithms should still work.

ref E. Lear Namespace presentation at the plenary in Yokohama:
http://www.ietf.org/proceedings/02jul/slides/plenary-14/index.html
• Warning: I am a SS7 network software designer, not a bellhead, nor a nethead, must worry about the connectivity of 600 million humans (and counting...++)
• I don’t give a damm how the identifier looks (text, crypto, URL, phone number ...), as long as there is a choice of identifiers...
• implies a variable length “name”/address (folks like me are not at all interested in fixed length address solutions: would force us to build such a things on top of your solutions..)
towards Network solutions(2)

- incoming msg(dest_name, path_sel, org_name)
- Node does
  - Dest_ipvx, { destname” , orgname”..} = f(dest_name, path_sel, {org_ipvx, orgname...})
- Function f can be a mapping, hash function, cryptographic function, both hash and cryptographic, other...
- required: the function executed on the “name” should preserve the end-to-end routing of the msg wow you send msg, return msg must get back to you
- already in use?: Yes, for 10 years already, but not in a IP network
Conclusion

- **Personal view from the transport plane:**
  - SCTP: we can get along with the present solutions
  - TCP: requires changes

- **Network solutions:** well some mapping, locator separator proposals, mobile-IP clearly go the way in which the network could solve the problem but may not be general enough yet...

- a good network solution will need time and lots of effort

- heck, ....even a transport solution needs time

- ...and the prize is .....
..being used by the better looking part of the world population