Stream Schedulers and User Message Interleaving for SCTP

Randall Stewart (randall@lakerest.net)
Michael Tüxen (tuexen@fh-muenster.de)
Salvatore Loreto (Salvatore.Loreto@ericsson.com)
Robin Seggelmann (rfc@robin-seggelmann.com)
Status

- draft-ietf-tsvwg-sctp-ndata-05.txt
- Addressed reported issues
- Added a generic description of stream schedulers
- Some additional comments from Karen received.
Implementation Status

• Running Code for FreeBSD (Hackathon)

• Found Issues:
  – Handling of TSNs at the sender and receiver not good enough specified.
  – Negotiation of support of I-FORWARD-TSN chunks not described.
  – Text requiring I-FORWARD-TSN with I-DATA and FORWARD-TSN with DATA missing.
  – API issue on the receiver side on the interleaving of messages on the same stream.
ToDo

• Address Karen's comments.
• Address issues found during the Hackathon.
RFC 4960 Errata and Issues

Randall Stewart (randall@lakerest.net)
Michael Tuexen (tuexen@fh-muenster.de)
Karen Nielsen (karen.nielsen@tieto.com)
Maksim Proshin (mproshin@tieto.mera.ru)
Status

- draft-tuexen-tsvwg-rfc4960-errata-02.txt
- 23 issues currently addressed, each one in its own section using the old text / new text style and providing an explanation why the change is done.
- Using an issue tracker at https://github.com/sctplab/rfc4960bis
- The issue tracker currently contains 18 open issues.
ToDo

• Address issues in the issue tracker
• Address upcoming issues
• Address SACK.delay parameter issue, if agreed by the authors of draft-morand-tsvwg-sctp-parameters-update-00
• WG adoption?
Stream Control Transmission Protocol (SCTP) Network Address Translation Support

Randall Stewart (randall@lakerest.net)
Michael Tüxen (tuexen@fh-muenster.de)
Irene Rüngeler (i.ruengeler@fh-muenster.de)
Status

• draft-ietf-tsvwg-natsupp-08.txt
• Editorial changes have been made to improve the readability of the document
Features

- SCTP-specific way of doing NAT with NAPT properties.
- It is using the verification tag and the port numbers as an association identifier (46-bit of randomness)
- Doesn't require any changes to the SCTP packet when processed by the NAT box.
- Needs support from the NAT box and the end-points.
ToDo

• Split up considerations for
  – NATs
  – Endpoints

• Cover translation from IPv6 to IPv4 and vice versa.
Additional Considerations for UDP Encapsulation of Stream Control Transmission Protocol (SCTP) Packets

Michael Tüxen (tuexen@fh-muenster.de)
Randall Stewart (randall@lakerest.net)
RFC 6951 in a Nutshell

• RFC 6951 describes the UDP encapsulation of SCTP packets.
• An end-point automatically updates the remote encapsulation port. This includes turning on/off UDP encapsulation.
• RFC 6951 states that you MUST do this update after
  – Finding the SCTP association for an incoming packet
  – Checking the verification tag of the received packet
The Issue

- RFC 6951 does not describe what an endpoint does, when it can't perform the required checks.

- How to handle:
  - Out of the blue (OOTB) packets
  - Packets containing an INIT-chunk for an existing association.
The Solution

• For OOTB packets use a "reflection" mode if a response packet has to be sent.
• For packets containing an INIT chunk matching an existing association
  – Don't update the encapsulation behavior.
  – If there is a mismatch between the received packet and the current encapsulation behavior, the end-point MUST send an ABORT and MAY include a new error cause.
  – If the packet matches the current encapsulation behavior, respond with an INIT-ACK.
• Limitation: A client can't change its UDP encapsulation behavior during a restart. Seems acceptable.
"Restart of an Association with New Encapsulation Port" Error Cause

| 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 |
|--------------------------|--------------------------|--------------------------|
| +--------------------------+--------------------------+--------------------------|
| | Cause Code = 14           | Cause Length = 8         | |
| +--------------------------+--------------------------+--------------------------|
| | Current Encapsulation Port| New Encapsulation Port   | |
| +--------------------------+--------------------------+--------------------------|
Status

- draft-tuexen-tsvwg-sctp-udp-encaps-cons-00.txt
- Initial version
- Explicitly describing when the ports MUST NOT be updated
- Interoperability improvements based on experience with userland stacks could be added
Way Forward

• Alternatives:
  – Just file an Errata
  – Progress this document to an update of RFC 6951
  – Do an RFC 6951bis.