Stream Control Transmission Protocol (SCTP) Applications and Open Issues

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Outline

- SCTP
- Current status of SCTP
- Activities at the IETF regarding SCTP
- Other research topics

SCTP

- Message oriented reliable transport protocol.
- Runs over IPv4 and IPv6 and supports multiple IP addresses.
- Supports user controlled dynamic reconfiguration of IP addresses.
- Supports user controlled in sequence delivery.
- Supports user controlled reliability.
- Is extensible.

SCTP: Current Status

- RFC 4490: Base protocol specification.
- RFC 3758: PR-SCTP extension.
- RFC 4895: SCTP-AUTH extension.
- RFC 5061: ADD-IP extension.
- Open source kernel implementations:
  - FreeBSD 7.0 (and a kernel extension for Mac OS X)
  - Linux
  - Solaris 10

SCTP: Current Activities at the IETF

- Support for an SCTP specific NAT, which allows multi-homing and peer-to-peer communication.
- Support for DTLS, which supports all services provided by SCTP and its extensions.
- Socket API.
- Protocol improvements:
  - Non-revocable SACKs
  - Immediate SACKs
  - Stream reset
  - Packet drop reports

SCTP: What is coming to the IETF

- Support for other than unicast traffic:
  - Anycast support for server redundancy.
  - Multicast support for distributing information within clusters.
- Firewall considerations.
- PR-SCTP policies and probably stream scheduling algorithms.

Other research activities

- Using multi-homing not only for redundancy, but also for load sharing.
- Transport layer mobility, especially improvements in the handover procedures.
- HTTP/SCTP.
- MPI/SCTP.
- SSH/SCTP.