

SCTP for Beginners

Introduction

Section 1

SCTP is a reliable transport protocol operating on top of a potentially unreliable connectionless packet service such as IP. It offers acknowledged error-free non-duplicated transfer of datagrams (messages). Detection of data corruption, loss of data and duplication of data is achieved by using checksums and sequence numbers. A selective retransmission mechanism is applied to correct loss or corruption of data.

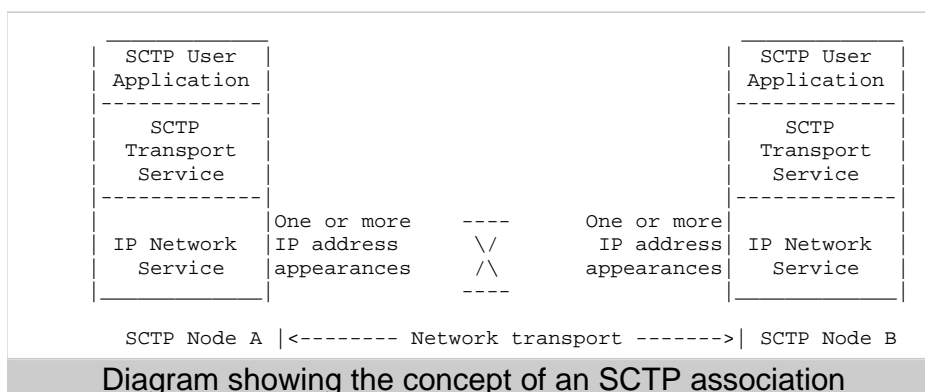
Applicability

Originally, SCTP was designed to provide a general-purpose transport protocol for message-oriented applications, as is needed for the transportation of signalling data. It has been designed by the IETF [SIGTRAN working group](#), which has released the SCTP standard draft document ([RFC2960](#)) in October 2000. Its design includes appropriate congestion avoidance behavior and resistance to flooding and masquerade attacks.

The decisive difference to TCP is multihoming and the concept of several streams within a connection (which will be referred to as **association** in the rest of these documents). Where in TCP a stream is referred to as a sequence of bytes, an SCTP stream represents a sequence of messages (and these may be very short or long).

SCTP can be used as the transport protocol for applications where monitoring and detection of loss of session is required. For such applications, the SCTP path/session failure detection mechanisms, especially the heartbeat, will actively monitor the connectivity of the session.

An SCTP association generally looks like this, so the services of SCTP are naturally at the same layer as TCP or UDP services:



Overview

The following section [SCTP Packets](#) will explain shortly the structure of network packets as sent by an SCTP endpoint, as well as the different types of data that can be sent. Section [SCTP States](#) will then detail the way an association is established or taken down and present some typical message flow scenarios, explaining the states of the respective endpoints. In section [SCTP Data Exchange](#) we will present the rules for reliable transmission, selective acknowledgement and flow and congestion control. Then we will look at another very interesting SCTP feature: [Multihoming](#). The requirements and implications of the [RFC2960](#) are mentioned, and some examples presented.

Finally in the last sections we will present the concept of [SCTP streams](#) as opposed to TCP bytestreams, talk about the [API](#) that is described in [RFC2960](#), and explain the general [SCTP terminology](#) where needed. For all those that are interested in learning more about SCTP, our [Link Section](#) gives interesting pointers and links related to SCTP, applications, papers and much more.

