

SCTP (Stream Control Transmission Protocol) in 3 minutes



SCTP = ~ TCP + UDP

- Best of both TCP & UDP
- Easy migration : easy to port existing TCP/UDP code to SCTP
 - 1 to 1 mode (TCP like mode)
 - 1 to many mode (UDP like -- simulate "connection-less")

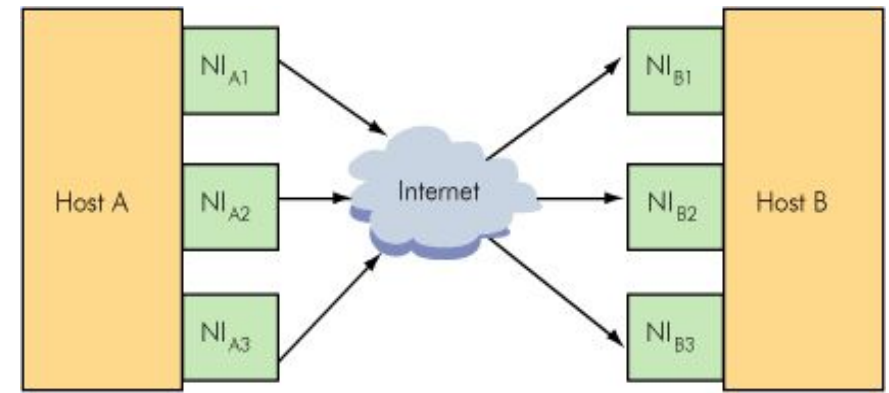
```
void main() { // Example of porting UDP code to SCTP
    int  sk, ret;  const char *buf = "Hello World!";
    struct sockaddr_in addr;
#ifdef USE_SCTP
    sk = socket(PF_INET, SOCK_SEQPACKET, IPPROTO_SCTP);
#else
    sk = socket(PF_INET, SOCK_DGRAM, IPPROTO_UDP);
#endif
    memset(&addr, 0, sizeof(addr));
    addr.sin_len      = sizeof(addr);
    addr.sin_family   = AF_INET;
    addr.sin_addr.s_addr = htonl(0x7f000001);
    addr.sin_port     = htons(5000);
    sendto(sk, buf, strlen(buf)+1, MSG_NOSIGNAL, &addr, sizeof(addr));
    close(sk);
}
```

SCTP = ~ TCP + UDP (continued)

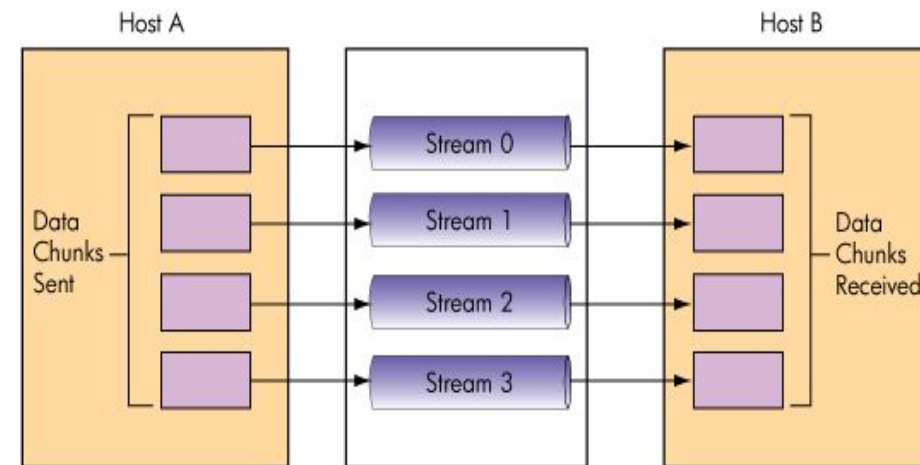
- Connection oriented (like TCP)
 - Connection in TCP is called "Association"
 - 1 to many (UDP like) mode is done by having multiple associations under neath
- Record oriented (like UDP)
 - Data is sent/received as "record", not serial stream
 - No need to loop to ensure the entire data transmission or recipient

Plus more!

- Multi Homing : can use multiple interfaces/paths for fault tolerance
- Multi Streaming : single association can have multiple streams (~= multiple connections in TCP for FTP)
- Unordered delivery option (per stream)
- Event notification : events are notified through receive functions
 - Built-in heartbeat for link loss detection (configurable by sockopt?)



NI_A = Network Interface of Host A
NI_B = Network Interface of Host B



To use these feature, you need sctp_xxxx APIs.

Issues?

- Not widely used (yet?)
 - Defined in year 2000!
 - FreeBSD is the reference implementation but most of the application code samples found on the internet are for Linux
 - No Windows native support
- Performance is not optimized
 - No hardware support for checksum, etc.
- Too many features/options (?)

Links

SCTP for Beginners

- Pretty good introduction - APIs are standard
- http://tdrwww.exp-math.uni-essen.de/inhalt/forschung/sctp_fb/index.html

SCTP Programmer's Guide: HP-UX 11i v2, HP-UX 11i v3

- Very good guide & reference
- <http://docs.hp.com/en/5992-4578/index.html>

Stream Control Transmission Protocol (SCTP) Associations

- Linux journal article -- detail of multi-homing.
- <http://www.linuxjournal.com/article/9749>