SNS COLLEGE OF ENGINEERING

Department of Information Technology

Course Name – 23ITT204 & Computer Networks

II Year / IV Semester

UNIT 2 – Transport Layer

Topic 6 : Transport layer Protocols

Stream Control Transmission Protocol - (SCTP)
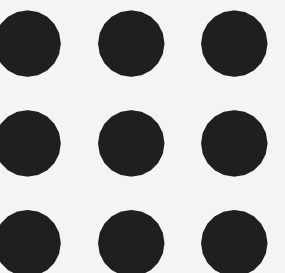
Stream Control Transmission Protocol

- SCTP is a reliable transport protocol operating on top of a connectionless packet network such as IP

- Has built-in support for multi-homed hosts

- Is message-based – conserves the message boundaries.

- Classifies messages as:

- sequenced delivery of user messages within multiple streams

- with an option for un-ordered delivery of individual user messages

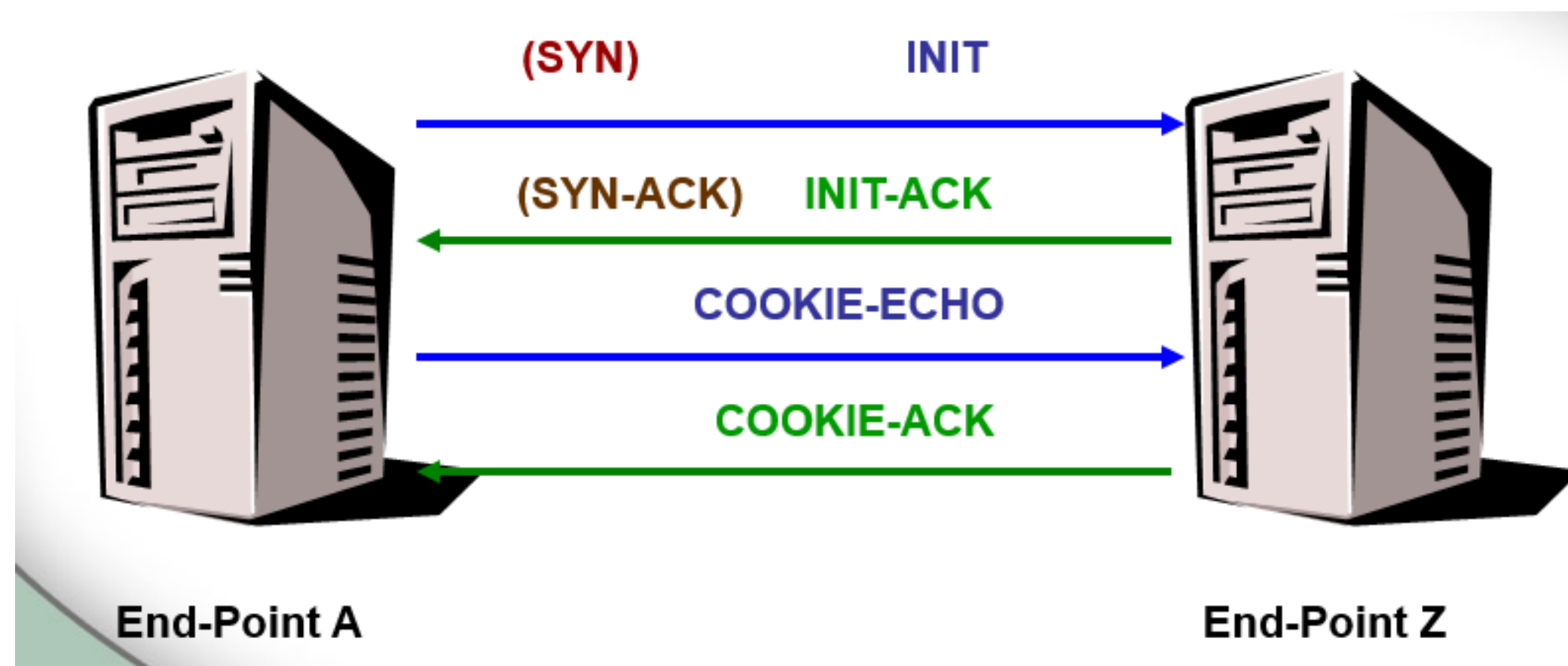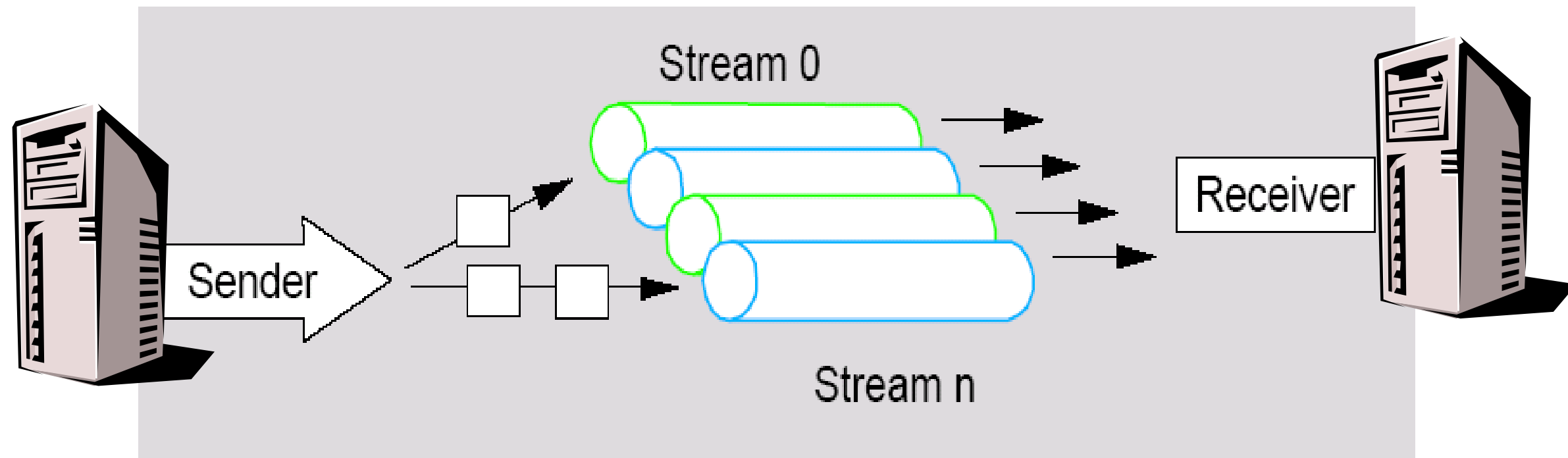- Additional security mechanisms

Message Format
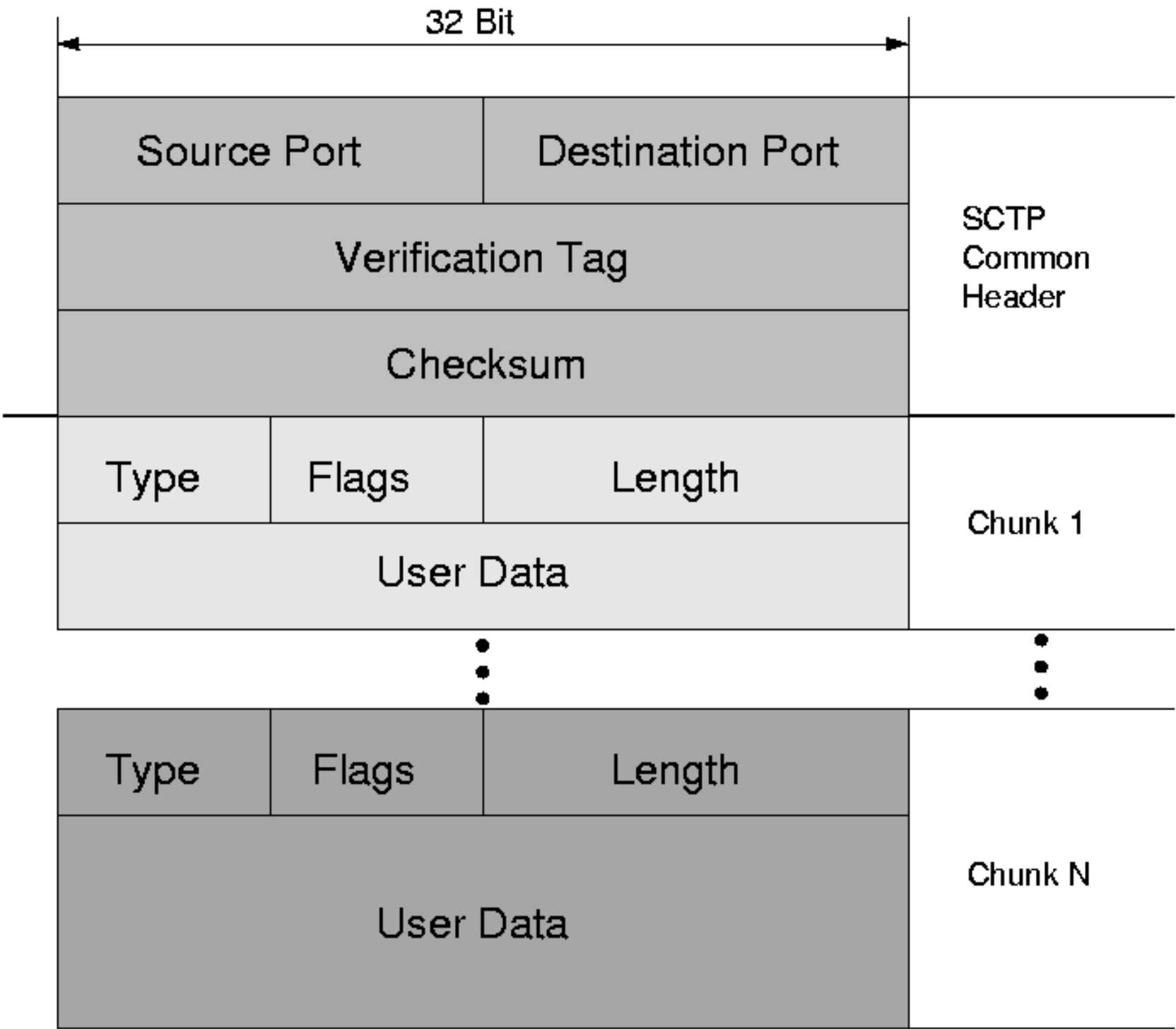
SCTP – Key Features

- Connection set-up

- Multi-streaming

- Multi-homing

- Selective ACKs in Data sending
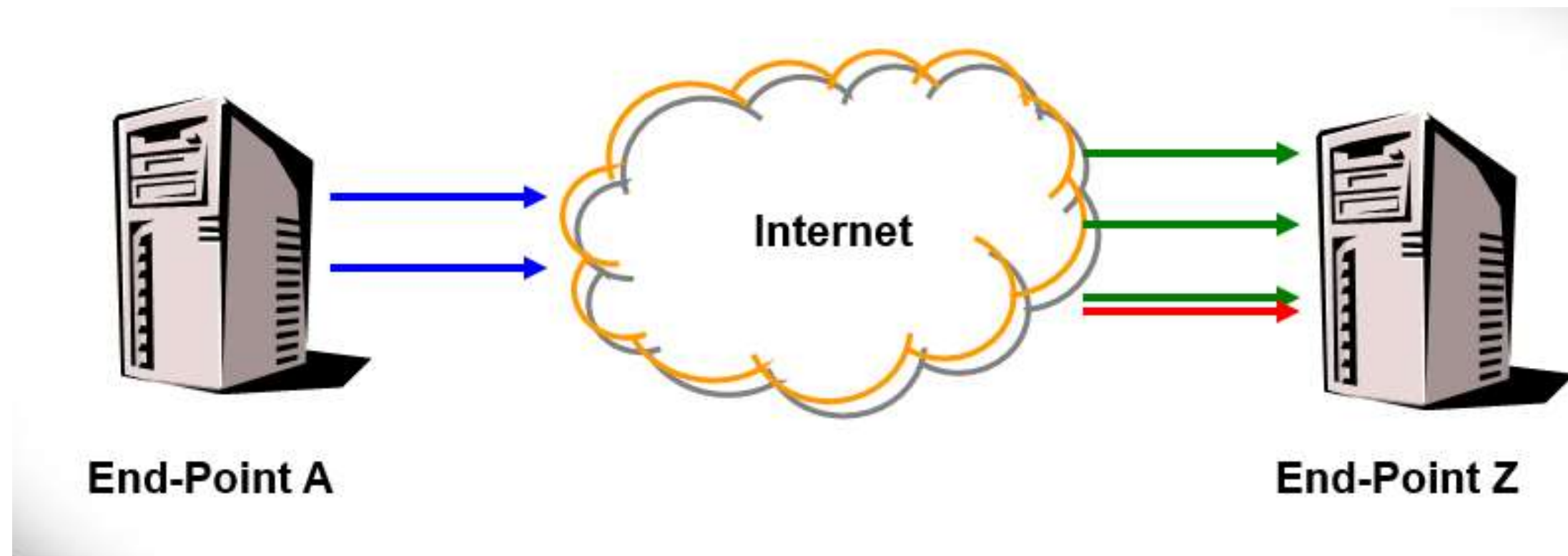
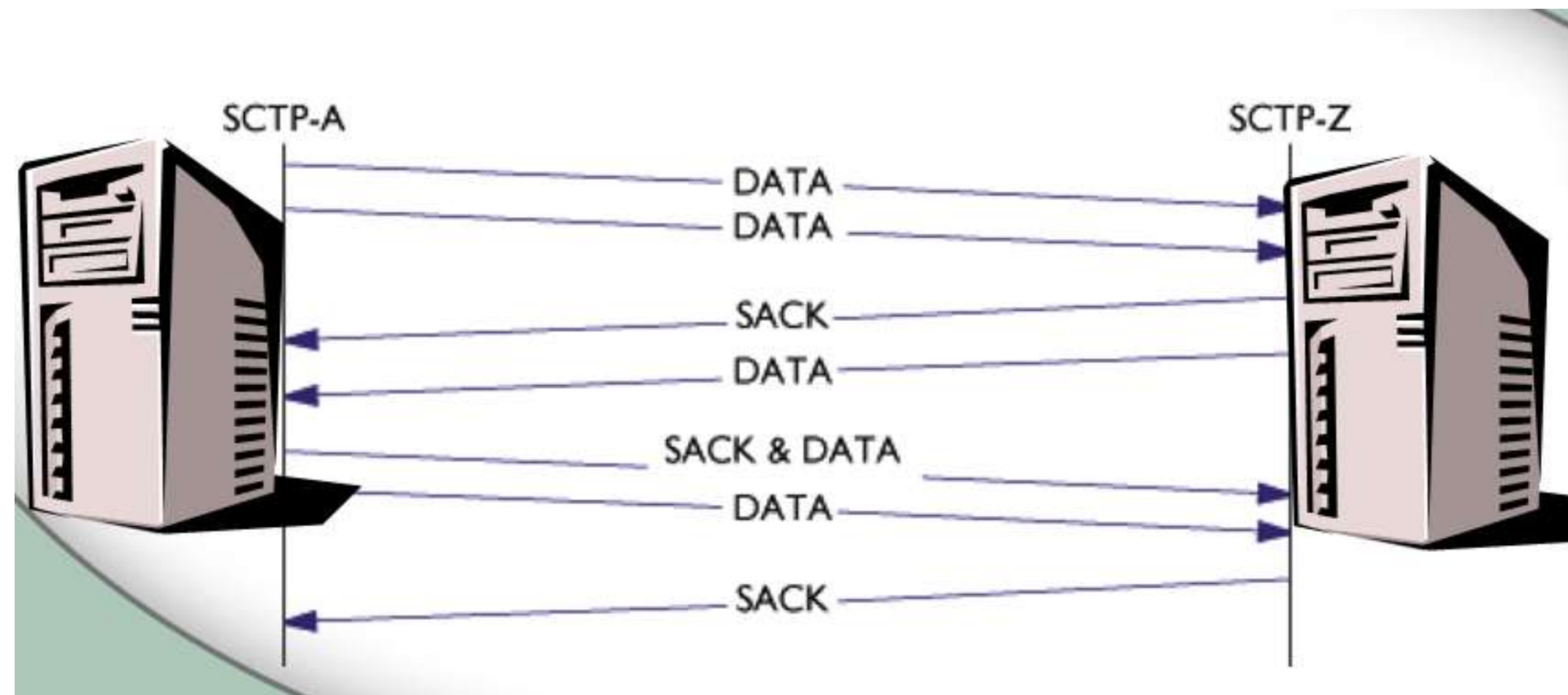- Connection shut-down

Connection setup
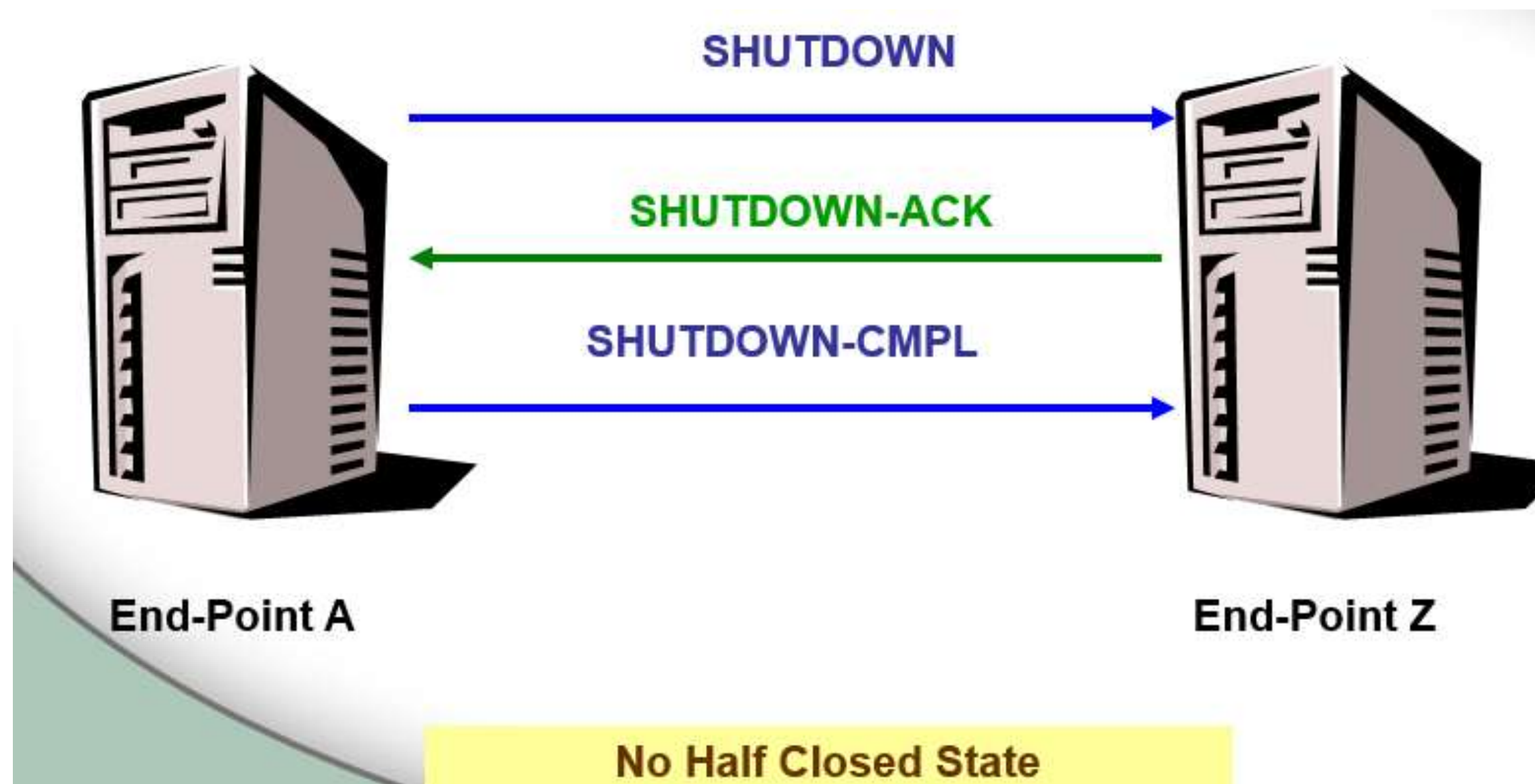
Multi-streaming

Multi-homing

SACK in Data sending

Connection close

SCTP – Special Features

- Heartbeat keep-alive mechanism

- Selective acknowledgments

- Security perspective

  - Connection based

    DoS attack prevention

  - Data based

    IPSec – under SCTP

    TLS – over SCTP

SCTP – Implementations

- Implementation
  - Kernel Level - Highly scalable
    - Platforms: Linux, Solaris, FreeBSD, Unix,
    - Several Implementations in progress in the
    - The Linux Kernel SCTP
  - User Level - Easy maintenance
    - Randall Stewart's reference implementation
    - http://www.sctp.org/
    - Ported to many platforms - Linux, Solaris,
    - FreeBSD, AIX, Tru64(Compaq), Windows, etc.

SCTP – Comparison

Comparison of features with TCP and UDP

Protocol Feature	SCTP	TCP	UDP
State required at each endpoint	yes	yes	no
Reliable data transfer	yes	yes	no
Congestion control and avoidance	yes	yes	no
Message boundary conservation	yes	no	yes
Path MTU discovery and message fragmentation	yes	yes	no
Message bundling	yes	yes	no
Multi-homed hosts support	yes	no	no
Multi-stream support	yes	no	no
Unordered data delivery	yes	no	yes
Security cookie against SYN flood attack	yes	no	no
Built-in heartbeat (reachability check)	yes	no	no

Like TCP

• Provides connection establishment

• Ensures Reliability

• Provisions for ordered and un-ordered data

• Provides Congestion Control

In *addition to* TCP features

• Provides multi-homing

• Provides multi-streaming

• Has security features

THANK YOU