

# Scholastic ClayTarget Program(SCTP)

**BY**  
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# **STREAM CONTROL TRANSMISSION PROTOCOL**

**BY**

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# AGENDA

- **Motivation for a New Protocol**
- **What is SCTP?**
- **SCTP Header**
- **What does it provide.**
- **Comparision with TCP**
- **Conclusion**
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# MOTIVATION

- **Telephone users want/need access to Internet**  
**VoIP: cheap local calls + cheap long distance IP-transport**
- **Want to reduce additional infrastructure costs**  
**combine circuit-switched telephone signalling networks**  
**(PSTN) and packet-switched IP-based networks**  
**need gateways between different technologies**
- **Need to establish, monitor and terminate calls**  
**signalling more delay sensitive, best-effort is not QoS**

# MOTIVATION

- Applications need reliable message delivery uses TCP stream.
- TCP provides guaranteed delivery and ordering byte stream-oriented, no msg boundaries
- Many applications do not require that, like HTTP.

- **UDP Limitations**
- **unreliable, no acknowledgements**
- **no congestion control**
- **multicasting adds unnecessary traffic**

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- **SCTP can be used here.**

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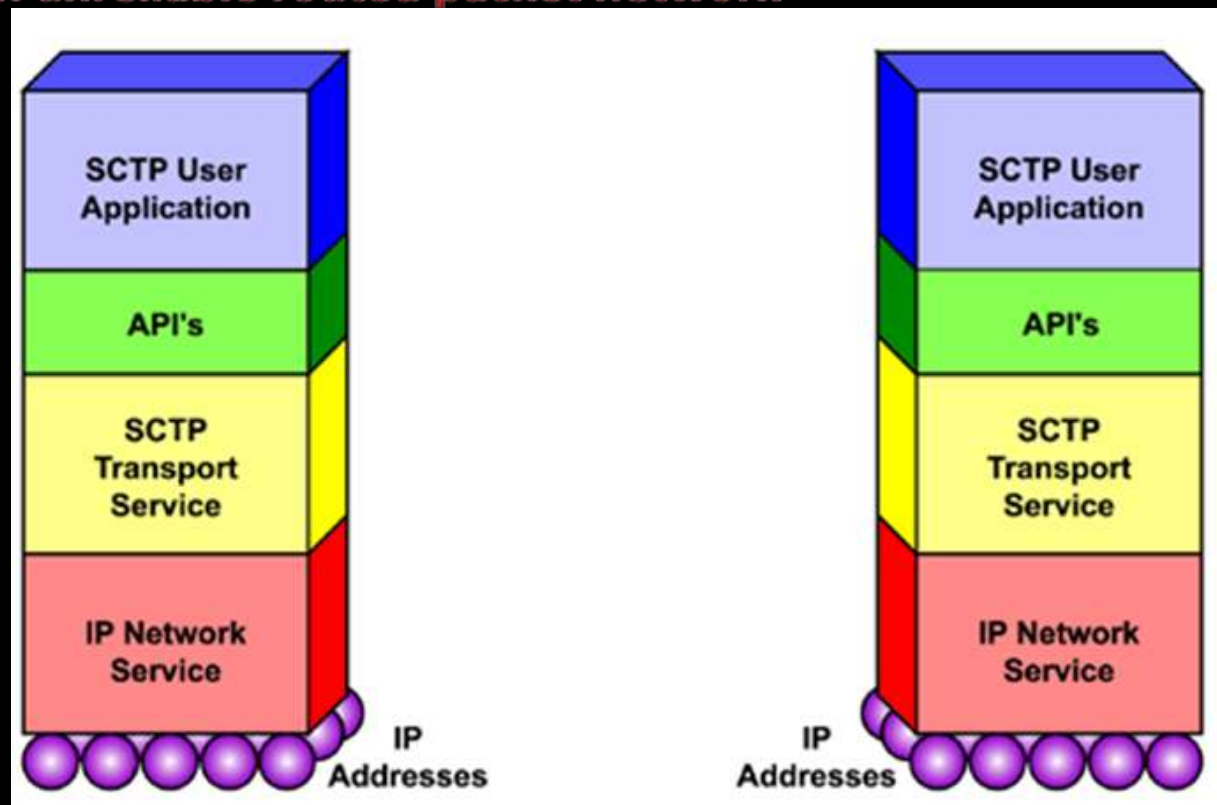
# WHAT IS SCTP?

- **SCTP is a reliable transport protocol which operates on top of a connectionless packet network such as IP**
- **The IETF defined the Stream Control Transmission Protocol (SCTP) as a transport layer protocol in 2000. [RFC 2960](#)**

- **A reliable datagram transfer protocol operating on top of an unreliable routed packet network such as IP.**

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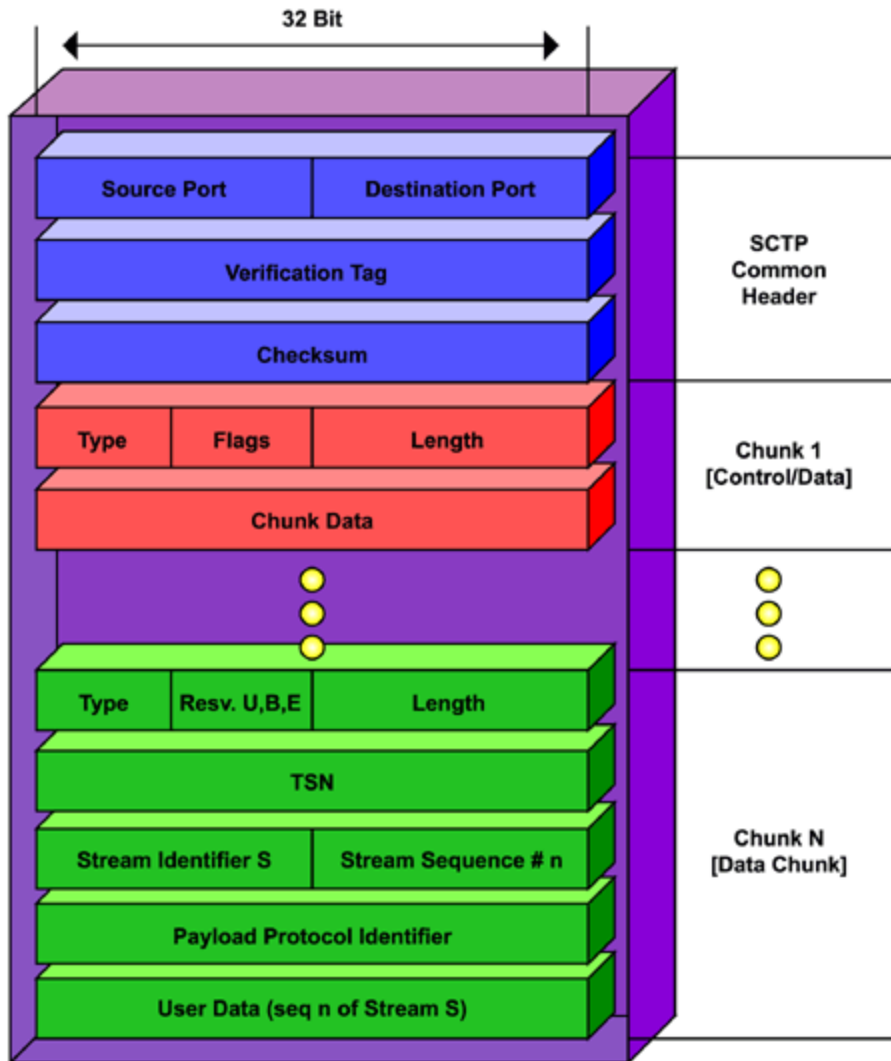
- **A common set of reliable transport level functions for signaling transport.**



- **Preservation of msg boundaries (like UDP)**  
**data fragmentation / bundling to conform to the path MTU**
- **Reliable error-free non-duplicated transfer (like TCP)**  
**sequence numbers, acknowledgments, timers**
- **Delivery of user msgs within multiple streams in an association**  
**can avoid head-of-line blocking**

- **Multiple delivery modes**
  - strict order-of-transmission (like TCP)**
  - partially ordered (per stream)**
  - unordered delivery (like UDP)**
- **Multiplexing of user msgs into one SCTP packet**
  - multiple chunks in a packet**

# SCTP HEADER



The source port address

The destination port address

The verification tag

The checksum of the entire packet

The chunk-type field: identifies the type of chunk being transmitted

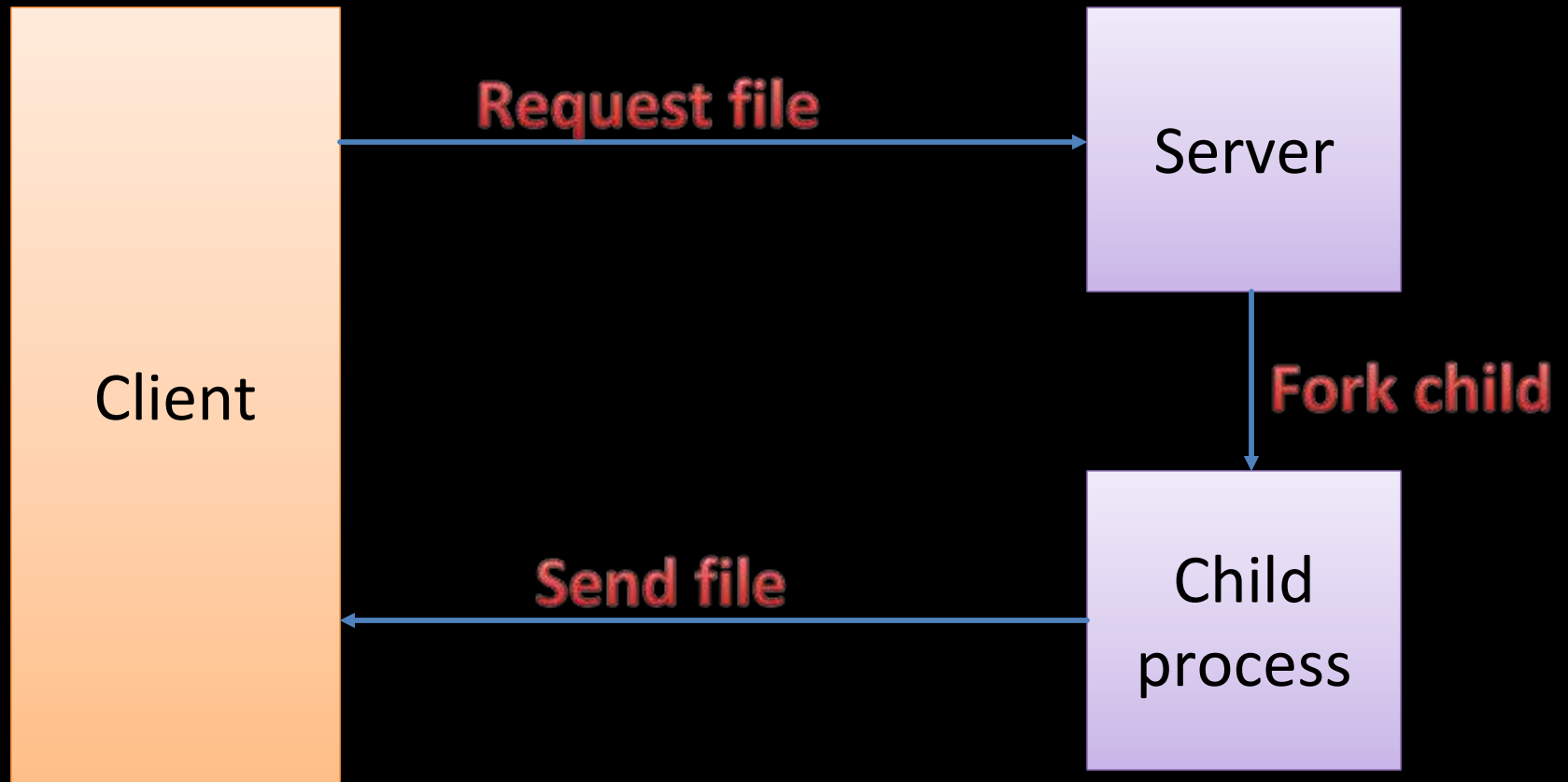
The chunk flag: specifies whether bits will be used in the association

The chunk length: determines the size of the entire chunk in bytes

The chunk data: includes the actual data payload of the chunk

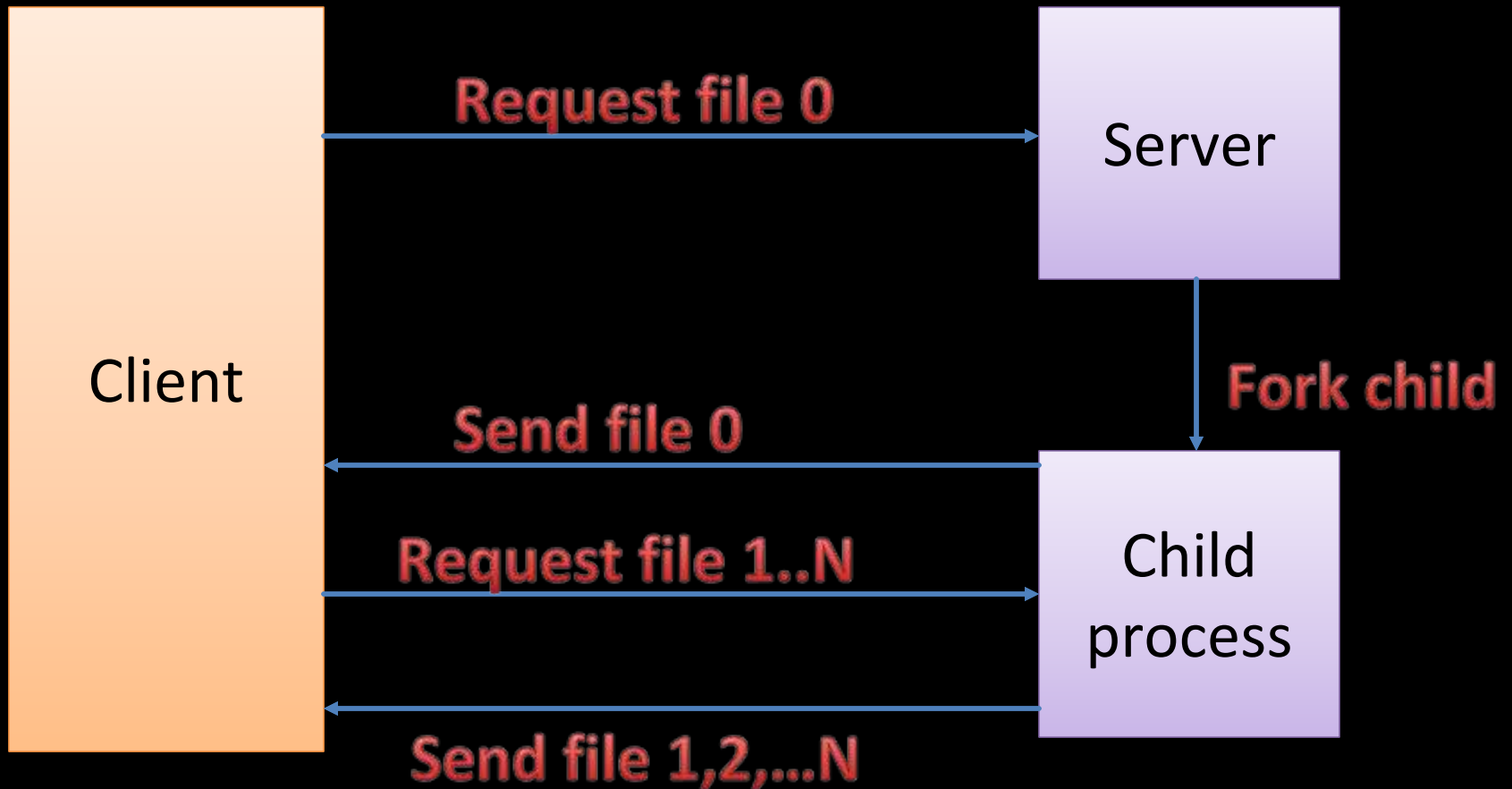
# HTTP SERVER ARCHITECTURE

Single File Transfer ( Both TCP and SCTP are same)



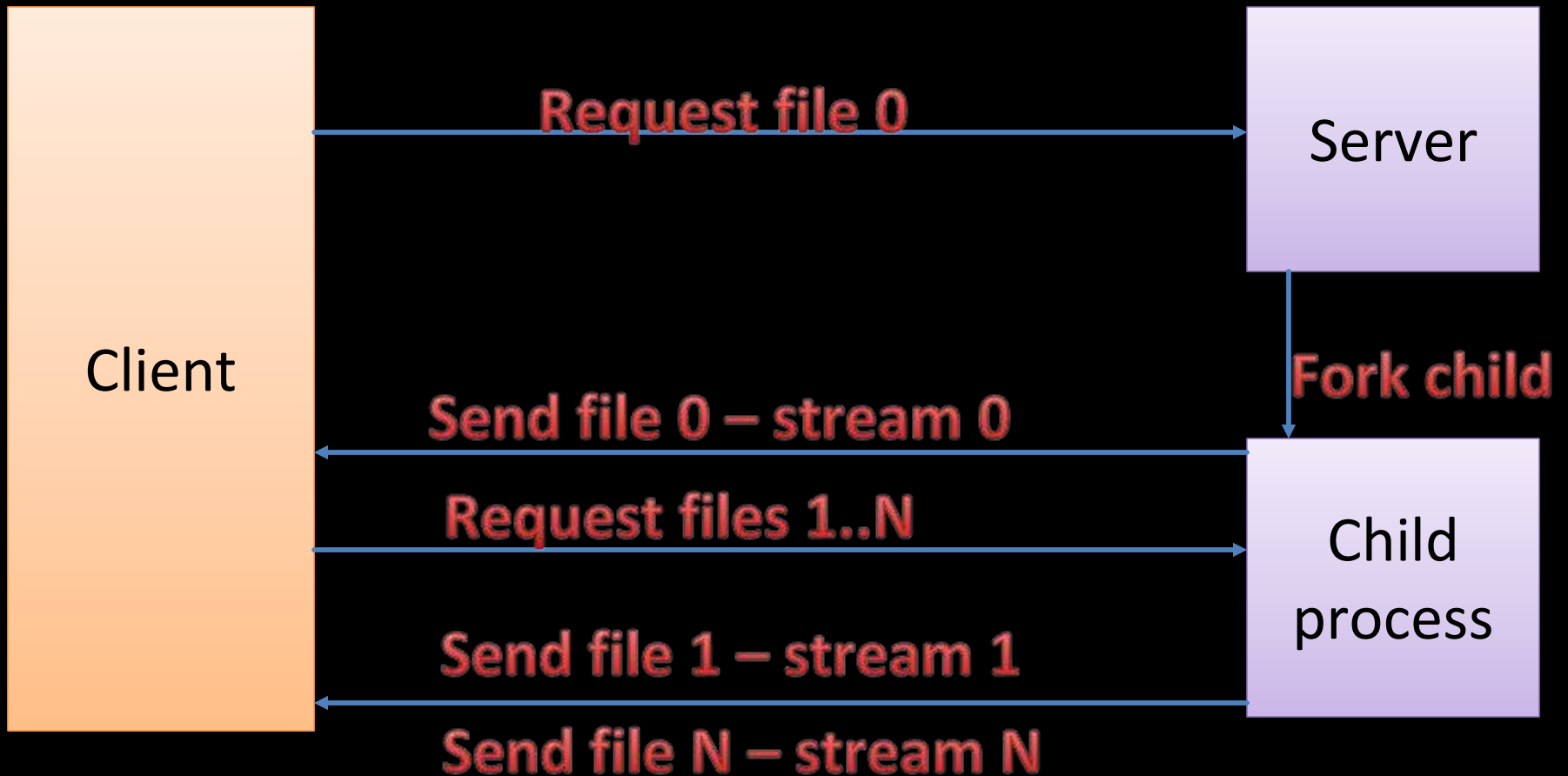
# HTTP SERVER ARCHITECTURE

## Multiple File Transfer (Embedded files) - TCP



# HTTP SERVER ARCHITECTURE

## Multiple Files Transfer (Embedded Files) - SCTP

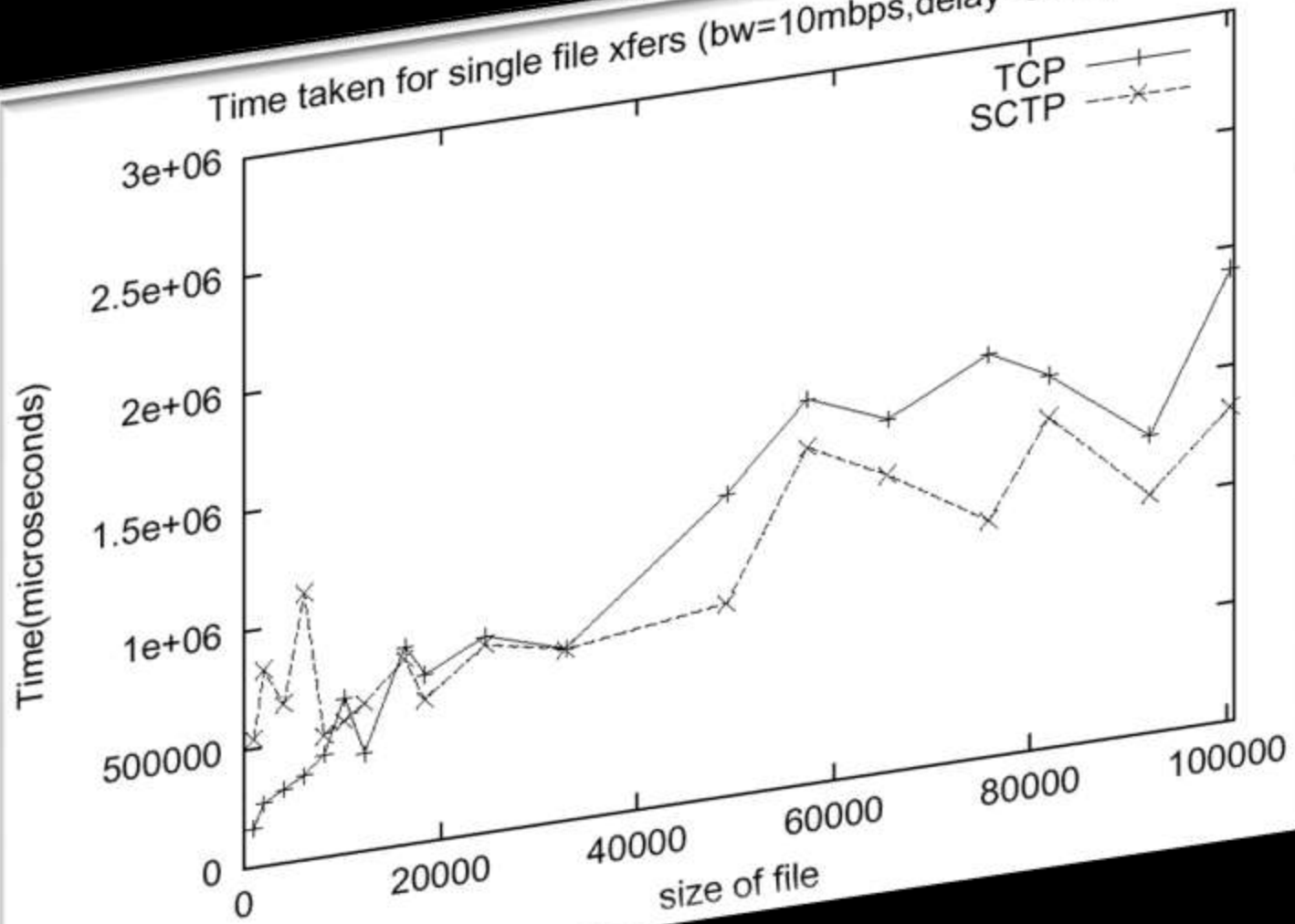


# OBSERVATIONS

**HTTP does not require strict-order of delivery, when fetching embedded links. Also, HTTP is message-oriented protocol**

**SCTP provides partially ordered delivery and guarantees reliability. This can reduce user-perceived latency and improve throughput**

Time taken for single file xfers (bw=10mbps, delay=80ms, loss=1%)



# CONCLUSION

The current SCTP implementation performs almost as well as TCP when there are no losses – However, there is an extra overhead in sending messages instead of just a stream of bytes

SCTP seems to perform better in the presence of losses, because it does not enforce strictly ordered delivery

# REFERENCES

- [1. HTTP://TDRWWW.EXP-MATH.UNI-ESSEN.DE/INHALT/FORSCHUNG/SCTP\\_FB/SCTP\\_INTRO.HTML](http://TDRWWW.EXP-MATH.UNI-ESSEN.DE/INHALT/FORSCHUNG/SCTP_FB/SCTP_INTRO.HTML)
- [2. HTTP://WWW.IEC.ORG/ONLINE/TUTORIALS/SCTP/](http://WWW.IEC.ORG/ONLINE/TUTORIALS/SCTP/)
- [3. HTTP://EN.WIKIPEDIA.ORG/WIKI/STREAM\\_CONTROL\\_TRANSMISSION\\_PROTOCOL](http://EN.WIKIPEDIA.ORG/WIKI/STREAM_CONTROL_TRANSMISSION_PROTOCOL)
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- [5. HTTP://WWW.GOOGLE.COM/SEARCH?HL=EN&LR=&RLS=DVFB%2CDVFB%3A1970--2%2CDVFB%3AEN&Q=SCTP.PPT&BTNG=SEARCH](http://WWW.GOOGLE.COM/SEARCH?HL=EN&LR=&RLS=DVFB%2CDVFB%3A1970--2%2CDVFB%3AEN&Q=SCTP.PPT&BTNG=SEARCH)