

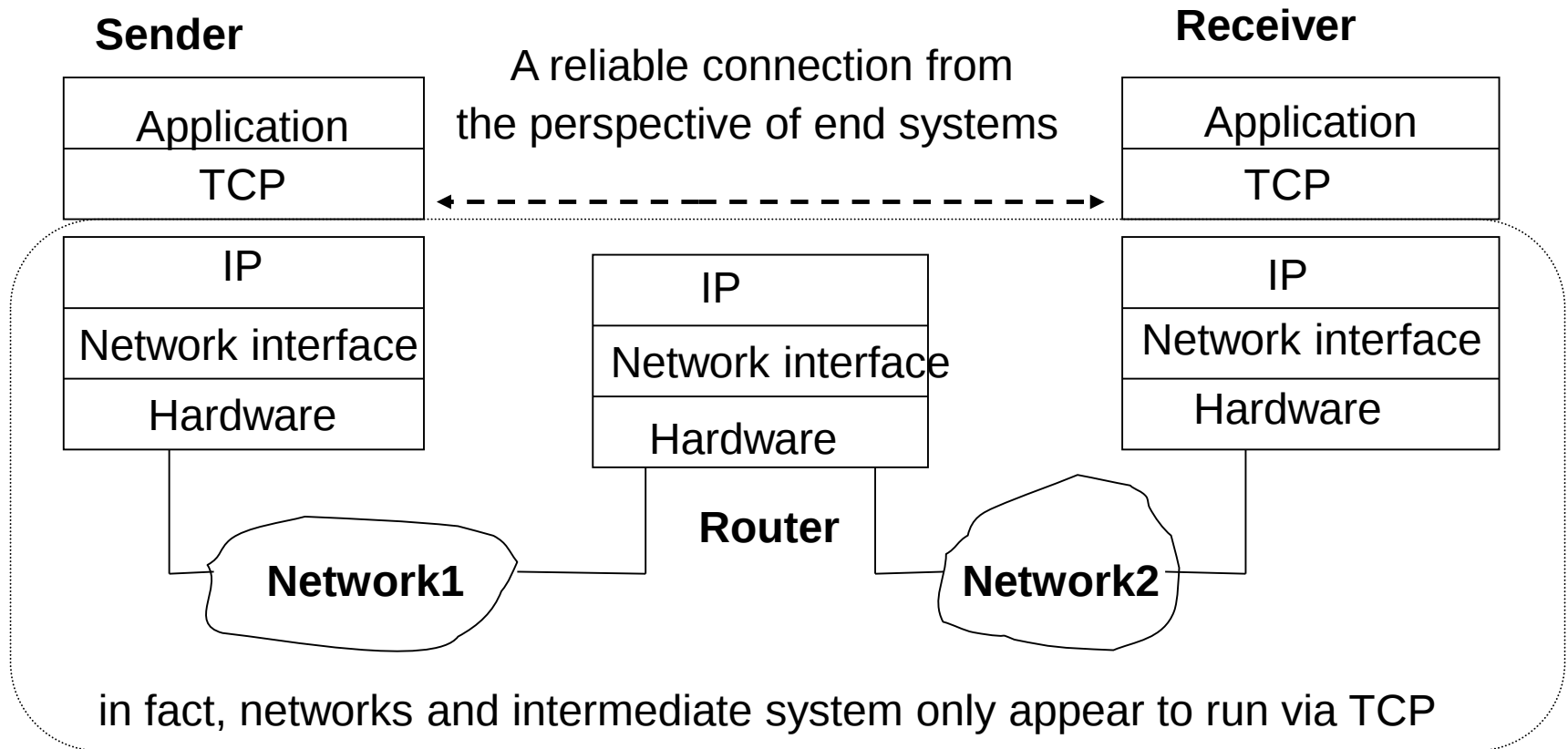
Virtual Connection with TCP (1/5)

1

- Before actual data transfer, TCP **establishes a connection** to the designated recipient, which will be dismantled after the data transfer has been completed
- TCP provides “just” a **virtual connection**, i.e. the TCP processes at the end systems provide a “connection” via software-technical means that only appears to be physical
- TCP uses IP datagram service for data transmission :
TCP messages are transferred over the Internet encapsulated in IP datagrams
- IP treats TCP messages like user data
- TCP must only be implemented at the end systems and not at the intermediate systems

Virtual Connection with TCP (2/5)

2



Virtual Connection with TCP (3/5)

3

End-to-End Transfer

- TCP only allows data transmission between two dedicated end systems
- Connection runs from the application at the sender to the application at the receiver
- Setup of the virtual connection is solely the task of the two end systems; the networks to be bridged and intermediate systems only forward messages in the form of datagrams
- Multicast or broadcast is not possible with TCP

Virtual Connection with TCP (4/5)

4

Full-duplex Transmission

- TCP allows bi-directional end-to-end data transmission
- Both equipped with input buffers, sender and receiver can transmit at the same time

Virtual Connection with TCP (5/5)

5

Reliable transmission

TCP guarantees

- Error-free data transmission,
- No data loss,
- No misordered data packets,
- ...

TCP uses the following technology to achieve this:

- Retransmission
- Adaptive new transmission
- Congestion control