

Question 3: End-to-End Protocols

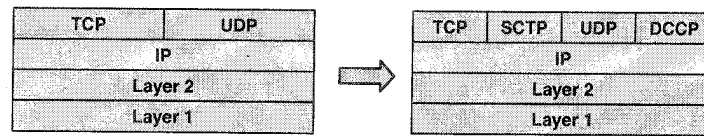
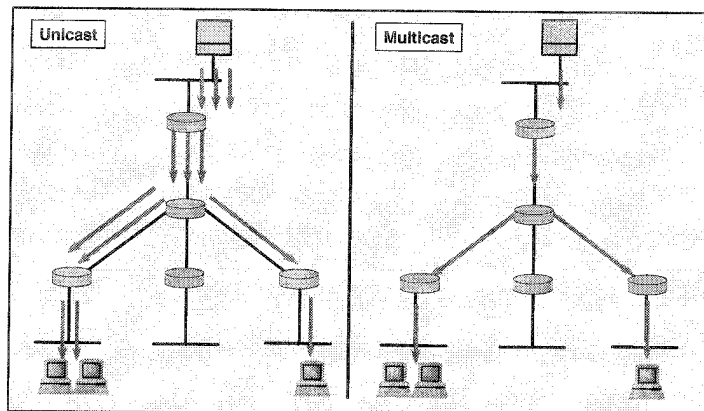


Figure 1.1: Traditional and current transport protocols

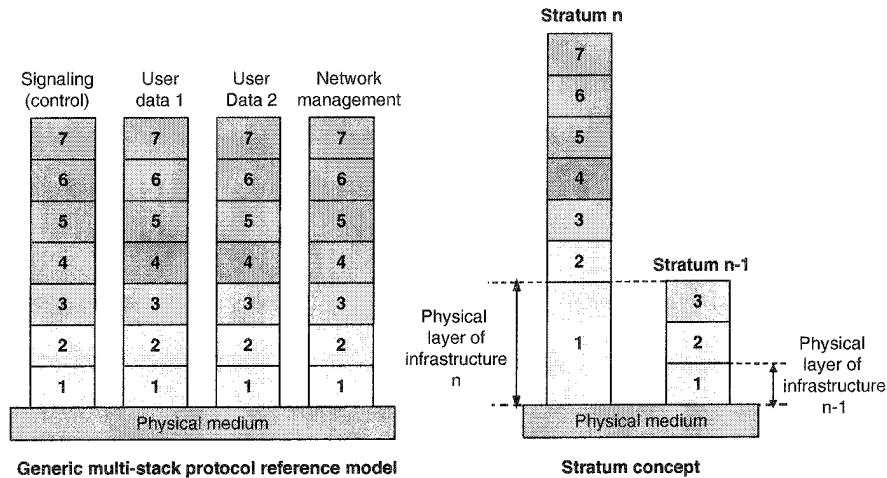
- 1) Characterize the data units transported by UDP, TCP, SCTP, and DCCP with respect to
  - a) Original PDU-boundaries.
  - b) Connection type.
  - c) Number of destinations from one protocol instance.
- 2) Give the full names of the **four** protocol acronyms.
- 3) Which fields are used to obtain the 16-bit checksum field in UDP or TCP?
- 4) What is a pseudo-header?
- 5) What is the main reason for using AQM-mechanisms like RED? Hint: Consider many TCP-flows that pass the same router.
- 6) Why does a TCP-flow has a sending window and a receiving window?
- 7) How is in TCP the RTT value determined and what is the its purpose?
- 8) What are chunks, cookies, and heartbeats in SCTP?

Question 4: Multicast



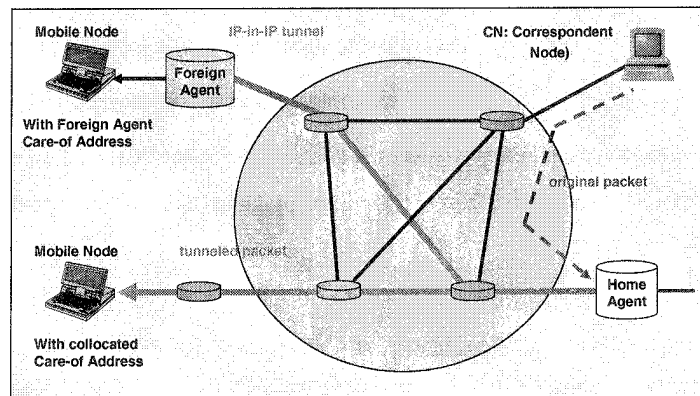
- 1) Which **two** protocol families form the architecture of a multicast environment?
- 2) Which protocols (one for IPv4 and one for IPv6) allow an end system to be part of the information distribution?
- 3) Give **two** basic methods to organize the information distribution over the network?
- 4) What is the main difficulty for operating reliable multicast?
- 5) Give **three** methods to cope with this difficulty.

### Question 1: Protocol Architectures and Properties



- 1) What is the purpose of the above **two** extended protocol architectures?
- 2) Assign the protocol layer(s) to segments, frames, cells, and packets.
- 3) Characterize the **three** most important transport addresses.
- 4) Characterize the **two** most important application and user addresses.
- 5) What is a protocol entity, a SDU, and a PDU?
- 6) Why a TLV easily allows to define additional protocol options or extensions?  
What is the full-name of the acronym?
- 7) What is a path MTU?
- 8) What are AVPs?

### Question 2: Mobile IP



- 1) What is micro-mobility and what is macro-mobility?
- 2) Which communication environments are involved in the two cases?
- 3) Which **two** protocols have been designed to minimized handover-times?
- 4) Describe the basic properties of **each** of these two protocols.
- 5) Explain what is meant by a mobile IP tunnel?
- 6) In which way the mobile node obtains a CoA in case of IPv4 and IPv6?
- 7) Explain the acronyms MAP, LCoA, and RCoA and give their full names