

Practical Exercises

Communication Systems (Rechnernetze II)

Topic: IPv6

Question 1

What is the IPv6 address on your loopback (lo) interface and Ethernet interface? Compare your standard desktop system settings to the settings in your virtual machine? Which are the differences? Show where your MAC address is in automatically assigned IPv6 address.

Question 2

What distinguishes link-local and global IPv6 addresses? How are the IPv6 addresses for the link-local type composed? Try to ping (send an ICMP packet) your neighbors machine and capture the network traffic with wireshark!

Question 3

How should a global routeable address for the Ethernet interface look like for a machine here (The IPv6 address range for the campus network is 2001:07C0:0100::/48) ? Try to assign such an address to your Ethernet interface!(don't use 2001:07C0:0100::1 and 2001:07C0:0100::2!) Ask your neighbor for his/her address and try to ping6 to that machine.

Question 4

Neighboring discovery is the IPv6 successor for ARP in IPv4, find a command to show IPv6 neighboring discovery! Try to ping some of your neighbors before and take a look in wireshark!

Question 5

Theory questions

Homework: here some theory questions to think about!

- What are the differences in IPv4 and IPv6 fragmentation? Why were they introduced? Explain the strategies how IPv4 and IPv6 adapt to different MTU sizes!
- Explain the concept of jumbograms! Why were they introduced? Which problems might occur with higher level protocols?
- In IP v6 header, header length, type of service and header checksum were removed. Why? How does the host know the payload in the IPv6 packet should be delivered to TCP, UDP or other protocols?