Number:	9. Assignment
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Tutorial:	06.01.11
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Exercise 1, Evolution of the IP Model:

Read the Internet draft *Evolution of the IP Model* by Dave Thaler.

1. Host A intends to establish a video conference with host B. Assume that host B can reach host A. Why it is not ensured that A can start the video conference? Discuss your answer with respect to the network layer.

2. What is a multi-homed host?

3. Discuss how addresses, host names, and routing are correlated and if an application programmer should use addresses or names to establish a connection?

Exercise 2, IPv6:

1. Discuss the differences of the Internet Protocol version 4 and 6.

2. How long does the IPv6 address space last, when an IPv6 address is assigned every pico-second.

3. How can the two versions of IP coexist?

4. Is ARP required for IPv6 and does ICMP still exist?

Exercise 3, Stateless vs. Stateful Address Auto Configuration:

Discuss the difference between *stateless* and *stateful* address configuration!

Exercise 4, Routing:

1. Discuss the terms routing and forwarding.

2. Where are the corresponding services implemented in an hierarchical network architecture?

3. Which devices that are between a source and destination node participate in the routing?

Exercise 5, Static vs. Dynamic Routing:

Discuss the advantages and disadvantages of static and dynamic routing.

Exercise 6, Routing Protocol Types:

Classify the different routing approaches. Consider aspects like maintenance, scope, and information distribution.

Exercise 7, Routing Metrics:

List metrics that can be used by routing protocols. Discuss suitable application scenarios where these metrics could be used.

Exercise 8, Routing Table:

A router has the following routing table:

Destination	Router	Genmask	iface
160.45.0.0	134.14.13.1	255.255.0.0	eth0
160.45.12.0	134.14.14.1	255.255.255.0	eth1
164.13.128.0	74.125.128.1	255.255.128.0	eth2
164.13.0.0	74.125.122.1	255.255.0.0	eth2
default		0.0.0.0	eth0

Over which output interfaces are the datagrams with destination addresses 160.45.1.1, 193.99.144.80, 164.13.130.0, and 160.45.12.1 forwarded?

Exercise 9, Policy Routing:

What is policy routing and why is it necessary in todays networks? Have a look at the book *Policy Routing With Linux - Online Edition* by Matthew G. Marsh.

Exercise 10, Symmetric Paths:

Assume that all intra-domain routing protocols use a shortest paths metric. Why can we not assume symmetric paths within the Internet?

Exercise 11, Mobile Nodes:

Discuss how mobility is considered by IP version 4 and 6 as well as routing in general!

Exercise 12, IPv5:

There is IPv4 and IPv6 but what happened to IPv5?!?