Master Course Computer Networks

Exercise 5
(submission until January 14th, 10:30 CET via SVN)
(submission of corrected version until January 17th, 10:30 CET via SVN)

Note: Each subproblem gives you 0, 1 or 2 points. See the slides from October 29th for more information on the 0.3 bonus.

Note 2: Subproblems marked by * can be solved without preceding results.

IPv6 (AutoConf FTW?)

a)* IPv6 hosts can configure their network addresses automagically using stateless auto configuration. Describe how this process works!

b) What other forms of address configuration are available with IPv6? What are their advantages and disadvantages compared to IPv6 stateless address autoconfiguration?

c)* How do the IPv6 privacy extensions work? Describe their purpose and use case!

Routing (BGPotaroo)

Figure 1 shows a topology with the Autonomous Systems A,…,G. The arrows show the connections between the ASes and also their relationship. A ← C means that A is a provider AS for the customer AS C. C ↔ F means that C and F are peering ASes.

a)* Which routes are announced by B in Figure 1 if the goal is to make as much financial profit as possible while avoiding loss?

b)* What does the k-core algorithm determine? Apply the k-core algorithm applied to the topology in Figure 1! Which are the remaining ASes?

c)* How would the connectivity of Autonomous Systems be organized when the diameter (maximum path length) is logarithmically to the number of ASes?

d)* What is the difference between prefix hijacking and AS hijacking?
Figure 1: Autonomous System topology.