Peer-to-peer networks – (due till April 1, 2009)

Exercise 5.1:

You have been hired as pirate buster by the content producing industry.

1) Your costumer suggests to generate packets with a maximum value for the TTL field. What is this supposed to cause and why will it be unsuccessful?

2) Can you think of ways to attack the network without violating the protocol?

3) The next attempt to attack could be to insert fake clients into the network. Can you think of ways how to harm the network in this case?

Exercise 5.2: Distributed Hash Tables

1) In P2P networks, files are usually identified by their hash values. Nodes are responsible for an entire range of values. What happens if a new node joins the network or if it leaves?

2) How does a P2P system ensure that every node stores the same amount of data? Can that be ensured at all?

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Exercise 5.2: Distributed Hash Tables

3) Everything seems to well-balanced. Can you think of situation or modes of use of the network which is less well-balanced?

4) A node was shutdown by a sudden power failure. How would you store information redundantly in order to be more robust against the loss of data?

Exercise 5.3: Gnutella analysis

Install a protocol analyzer like „Wireshark“ in your own home-network and run a Gnutella client. Which kinds of packets do you see? Check whether they conform to the protocol definitions presented in the lecture.