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Practical Exercises
Communication Systems (Rechnernetze II)
Topic 06: PPPoE

Work in groups with two notebooks!

Exercise 1:
Establish a PPPoE connection between two notebooks. One notebook should be configured as
PPPoE server and one as PPPoE client. The following configuration files may be helpful:

- */etc/ppp/pppoe.conf*

- */etc/ppp/pppoe-server-options*

- */etc/ppp/pap-secrets*

Analyse in each step the generated tra?c with wireshark. Which speci?c headers are added either
for PPP and PPPoE? How the whole protocol stack of an average HTTP packet traveling over the
PPPoE connection looks like?

1. Use the man pppoe-server command to learn the main options of the PPPoE server. Take a
   look at -m; -N; -I; -L; -R; -F etc.

2. Try to add a PPPoE server name with the option S name, and now try to connect with the
   servername.

Exercise 2:
Modify the */etc/ppp/pppoe-server-options*, so that a connection with pap or chap is possible. Add
two lines to the configuration file

- *auth*

- *require-pap* or *require-chap*

and specify a username and a password. Restart the PPPoE server and reconfigure your client. Is
the username/password exchange seen in any packet captures?

Exercise 3:
PPPoE operates with dedicated serial links. Is the Address Resolution Protocol still needed (Why/not)?

Exercise 4:
Check the MTU of your different interfaces! What do you observe? Try to re-configure your PP-
PoE connection to a different MTU, e.g. of 1000 Bytes! Why would it be desirable to set a MTU
of 1500 Bytes to your PPP interface too? Would it be possible to use the MTU of 1500 Bytes there
(Why/not)?

Exercise 5:
Calculate roughly the overhead introduced by PPPoE compared to standard Ethernet connection
taking ARP and PPP control protocols and headers into account!