

Samostatné projekty

1. Přenos souboru prostřednictvím UDP
2. Zabezpečený (CRC32+hash) přenos souboru z bodu 1
 - **1. bonus**
3. Náhrada ARQ metody stop-and-wait metodou selective-repeat
 - **2. bonus**

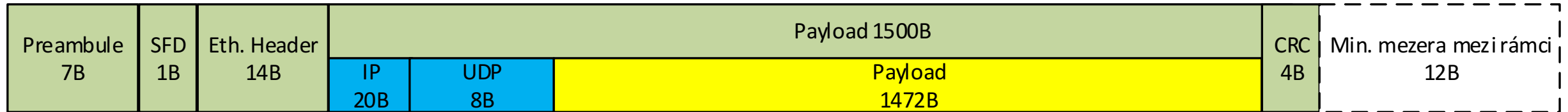
**Každý projekt trvá 2-3 týdny. Deadliny na odevzdání upřesní
cvičící.**

WireShark, Hercules a VisualStudio

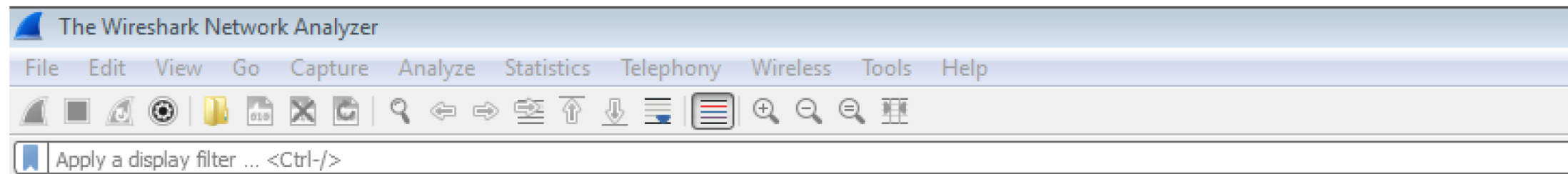
- WireShark
 - <https://www.wireshark.org/download.html>
- Hercules
 - http://www.hw-group.com/products/hercules/index_cz.html
- VisualStudio
 - <https://www.visualstudio.com/cs/>

UDP Datagram

- Pro nás důležité:
 - IP hlavička – IP adresy
 - UDP hlavička – cílový a zdrojový port






Zachycení http komunikace

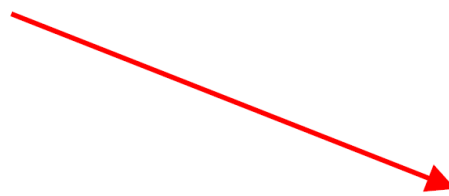


Welcome to Wireshark

Capture

...using this filter:

Bezdátové připojení k síti _____
VMware Network Adapter VMnet1 
Připojení k místní síti 
VMware Network Adapter VMnet8 
Bezdátové připojení k síti 2 _____
Připojení k místní síti 2 _____



Start záznamu

Stop záznamu

Filtr

Expression

The image shows the Wireshark network traffic analysis interface. The title bar indicates the connection is to a local network (*Připojení k místní síti). The menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. The toolbar contains icons for starting/stopping capture, saving, opening, and filtering. The filter bar shows 'http' as the active filter. The packet list pane displays a list of captured packets, with packet 175 selected. The packet details pane shows the structure of the selected packet, including Ethernet II, Internet Protocol Version 4, Transmission Control Protocol, and Hypertext Transfer Protocol. The packet bytes pane shows the raw data in hexadecimal and ASCII. The status bar at the bottom indicates the current protocol is Hypertext Transfer Protocol: Protocol, with 3249 packets captured and 187 displayed (5.8%).

Start záznamu

Stop záznamu

Filtr

Expression

http

No.	Time	Source	Destination	Protocol	Length	Info
175	22.263254	192.168.0.11	147.32.193.19	HTTP	854	GET / HTTP/1.1
194	22.344193	147.32.193.19	192.168.0.11	HTTP	60	HTTP/1.1 200 OK (text/html)
197	22.344855	192.168.0.11	147.32.193.19	HTTP	917	GET /modules/aggregator/aggregator.css?4 HTTP/1.1
202	22.348318	192.168.0.11	147.32.193.19	HTTP	905	GET /modules/node/node.css?4 HTTP/1.1
205	22.352652	192.168.0.11	147.32.193.19	HTTP	905	GET /modules/poll/poll.css?4 HTTP/1.1
210	22.354592	192.168.0.11	147.32.193.19	HTTP	909	GET /modules/system/system.css?4 HTTP/1.1
211	22.354650	192.168.0.11	147.32.193.19	HTTP	911	GET /modules/system/defaults.css?4 HTTP/1.1
215	22.359102	192.168.0.11	147.32.193.19	HTTP	915	GET /modules/system/system-menus.css?4 HTTP/1.1
216	22.370482	147.32.193.19	192.168.0.11	HTTP	1086	HTTP/1.1 200 OK (text/css)
218	22.371750	192.168.0.11	147.32.193.19	HTTP	905	GET /modules/user/user.css?4 HTTP/1.1
219	22.372888	147.32.193.19	192.168.0.11	HTTP	1115	HTTP/1.1 200 OK (text/css)
221	22.374159	192.168.0.11	147.32.193.19	HTTP	930	GET /sites/all/modules/cck/theme/content-module.css?4 HTTP/1.1
226	22.386609	147.32.193.19	192.168.0.11	HTTP	1074	HTTP/1.1 200 OK (text/css)
228	22.387512	192.168.0.11	147.32.193.19	HTTP	923	GET /sites/all/modules/ctools/css/ctools.css?4 HTTP/1.1
237	22.395591	147.32.193.19	192.168.0.11	HTTP	1267	HTTP/1.1 200 OK (text/css)
239	22.395741	147.32.193.19	192.168.0.11	HTTP	1005	HTTP/1.1 200 OK (text/css)
241	22.396877	192.168.0.11	147.32.193.19	HTTP	915	GET /sites/all/modules/date/date.css?4 HTTP/1.1
242	22.397092	192.168.0.11	147.32.193.19	HTTP	939	GET /sites/all/modules/date/date_popup/themes/datepicker.css?4 HTTP/1.1

Frame 175: 854 bytes on wire (6832 bits), 854 bytes captured (6832 bits) on interface 0

Ethernet II, Src: WistronI_b3:0d:f2 (f0:de:f1:b3:0d:f2), Dst: Technico_df:72:11 (cc:35:40:df:72:11)

Internet Protocol Version 4, Src: 192.168.0.11, Dst: 147.32.193.19

Transmission Control Protocol, Src Port: 55728, Dst Port: 80, Seq: 1, Ack: 1, Len: 800

Hypertext Transfer Protocol

GET / HTTP/1.1\r\n

0000 cc 35 40 df 72 11 f0 de f1 b3 0d f2 08 00 45 00 .5@.r... ..E.

0010 03 48 12 ee 40 00 80 06 00 00 c0 a8 00 0b 93 20 .H..@... ..

0020 c1 13 d9 b0 00 50 9a 54 da 65 d7 53 fc c5 50 18P.T.e.S..P.

0030 01 00 18 22 00 00 47 45 54 20 2f 20 48 54 54 50 ...".GE T / HTTP

0040 2f 31 2e 31 0d 0a 48 6f 73 74 3a 20 6d 65 61 73 /1.1..Ho st: meas

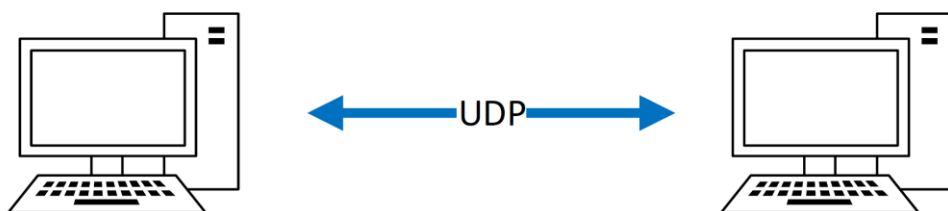
0050 75 72 65 2e 66 65 6c 2e 63 76 75 74 2e 63 7a 0d ure.fel.cvut.cz.

Hypertext Transfer Protocol: Protocol

Packets: 3249 · Displayed: 187 (5.8%)

Profile: Default

Zachycení UDP komunikace (ukázka)



192.168.0.11

Hercules UDP setting:

Module IP: 192.168.0.15
Port: 5001
Local port: 5000

192.168.0.15

Hercules UDP setting:

Module IP: 192.168.0.11
Port: 5000
Local port: 5001

