Travaux Dirigés N° 3

Ethernet/TCP–IP

Exercice 1 (Désassemblage de trames)

Nous avons la configuration suivante : un ensemble de machines *Sun* et d'ordinateurs compatibles *IBM–PC* reliés par le même réseau Ethernet. L'ingénieur système a configuré trois fichiers sur les machines *Unix* qui pour des raisons de mise en page ont été représentés sur plusieurs colonnes.

`/etc/ethers`

08:00:20:00:61:f3	buro1	02:60:8c:74:10:26	cei8	02:60:8c:75:93:27	cei18	08:00:20:06:20:b8	ctil
08:00:20:00:44:05	buro2	02:60:8c:73:98:31	cei9	02:60:8c:73:86:44	cei19	08:00:20:01:b4:32	ER1
02:60:8c:51:77:70	cei0	02:60:8c:73:96:35	cei10	02:60:8c:75:86:57	cei20	02:60:8c:75:63:20	pcburo1
02:60:8c:73:86:53	cei1	02:60:8c:74:10:18	cei11	02:60:8c:75:85:63	cei21	02:60:8c:75:88:46	pccti
02:60:8c:74:10:24	cei2	02:60:8c:73:99:35	cei12	02:60:8c:73:98:32	cei22	02:60:8c:75:85:17	pcrobot1
02:60:8c:74:10:20	cei3	02:60:8c:73:90:62	cei13	02:60:8c:75:85:22	cei23	08:00:20:00:ad:02	SI1
02:60:8c:73:84:12	cei4	02:60:8c:73:99:40	cei14	02:60:8c:75:88:63	cei24	08:00:20:00:6f:ea	SI
02:60:8c:73:86:49	cei5	02:60:8c:74:03:17	cei15	02:60:8c:75:58:19	cei25		
02:60:8c:73:96:36	cei6	02:60:8c:74:10:22	cei16	02:60:8c:02:41:75	cei28		
02:60:8c:73:87:09	cei7	02:60:8c:74:10:21	cei17	02:60:8c:75:85:27	cei49		

`/etc/hosts`

192.9.200.1	ER1	192.9.200.50	imp0	192.9.200.127	vme7	192.9.200.209	cei9	192.9.200.222	cei22
192.9.200.2	ER2	192.9.200.51	imp1	192.9.200.150	pcburo1	192.9.200.210	cei10	192.9.200.223	cei23
192.9.200.3	pc1	192.9.200.52	imp2	192.9.200.151	pcrobot1	192.9.200.211	cei11	192.9.200.224	cei24
192.9.200.5	SI1 loghost	192.9.200.53	imp3	192.9.200.152	pcctil	192.9.200.212	cei12	192.9.200.225	cei25
192.9.200.6	SI2	192.9.200.54	imp4	192.9.200.200	cei0	192.9.200.213	cei13	192.9.200.226	cei26
192.9.200.7	ER3	192.9.200.55	imp5	192.9.200.201	cei1	192.9.200.214	cei14	192.9.200.227	cei27
192.9.200.8	SI4	192.9.200.56	imp6	192.9.200.202	cei2	192.9.200.215	cei15	192.9.200.228	cei28
192.9.200.9	SI3	192.9.200.57	imp7	192.9.200.203	cei3	192.9.200.216	cei16	192.9.200.249	cei49
192.9.200.10	ER4	192.9.200.58	imp8	192.9.200.204	cei4	192.9.200.217	cei17	192.9.200.250	sysV68
192.9.200.11	buro1	192.9.200.59	imp9	192.9.200.205	cei5	192.9.200.218	cei18	127.0.0.1	localhost
192.9.200.12	buro2	192.9.200.60	imp10	192.9.200.6	cei6	192.9.200.219	cei19		
192.9.200.13	SI5	192.9.200.120	vme0	192.9.200.207	cei7	192.9.200.220	cei20		
192.9.200.14	ctil	192.9.200.121	vme1	192.9.200.208	cei8	192.9.200.221	cei21		

`/etc/services`

echo	7/udp		link	87/tcp	ttylink	
discard	9/udp	sink null	supdup	95/tcp		
systat	11/tcp		csnet–ns	105/tcp		
daytime	13/tcp		uucp–path	117/tcp		
netstat	15/tcp		untp	119/tcp	usenet	
ftp–data	20/tcp		ntp			
ftp	21/tcp		# UNIX specific services			
telnet	23/tcp		exec	512/tcp		
smtp	25/tcp	mail	login	513/tcp		
name	42/tcp	nameserver	shell	514/tcp	cmd # no passwords used	
whois	43/tcp	nickname # usually to sri–nic	printer	515/tcp	spooler # experimental	
domain	53/udp		courier	530/tcp	rpc # experimental	
domain	53/tcp		biff	512/udp	comsat	
hostnames	101/tcp	hostname # usually to sri–nic	who	513/udp	whod	
sunrpc	111/udp		syslog	514/udp		
sunrpc	111/tcp		talk	517/udp		
# HOST specific functions			route	520/udp	router routed	
tftp	69/udp					
finger	79/tcp					

1) Que contiennent ces différents fichiers ?

2) À partir du RFC 1700 *(Assigned Numbers)* pouvez–vous retrouver les constructeurs des cartes Ethernet dont l'adresse figure dans le fichier `/etc/ethers` ?

3) De quelle classe sont les adresses IP ?

Un analyseur de réseau est connecté au réseau, il permet de garder le contenu des trames qui circulent sur le réseau. Pour ne pas avoir trop de données à traiter, nous avons filtrés les trames pour ne garder que celles qui ont un rapport avec la machine

buro1. Nous obtenons le listing suivant :

```
Created on 02/01/07 11:26:15 Elapsed Time 00:01:38 Total Packets 317
```

Number	Len	Absolute_Timestmp	Dest Addr	Source Addr	Ty/L
1	150	11:26:17.938.951	080020008679	0800200061F3	0800
2	142	11:26:17.942.044	0800200061F3	080020008679	0800
3	158	11:26:17.947.242	080020008679	0800200061F3	0800
4	74	11:26:17.950.459	0800200061F3	080020008679	0800
5	86	11:26:18.329.327	0800010166DE	0800200061F3	0800
6	70	11:26:18.333.073	0800200061F3	0800010166DE	0800
7	118	11:26:18.348.309	0800010166DE	0800200061F3	0800
8	110	11:26:18.365.158	0800200061F3	0800010166DE	0800
9	130	11:26:18.373.200	0800010166DE	0800200061F3	0800
10	106	11:26:18.377.789	0800200061F3	0800010166DE	0800
11	130	11:26:18.385.660	0800010166DE	0800200061F3	0800
12	106	11:26:18.390.492	0800200061F3	0800010166DE	0800
13	130	11:26:18.398.220	0800010166DE	0800200061F3	0800
14	134	11:26:18.402.809	0800200061F3	0800010166DE	0800
15	130	11:26:18.411.318	0800010166DE	0800200061F3	0800
16	106	11:26:18.416.453	0800200061F3	0800010166DE	0800
17	130	11:26:18.424.272	0800010166DE	0800200061F3	0800
18	134	11:26:18.431.324	0800200061F3	0800010166DE	0800
19	130	11:26:18.448.885	0800010166DE	0800200061F3	0800
20	64	11:26:18.459.269	FFFFFFFFFFFF	0800200061F3	0806
21	130	11:26:18.480.857	0800010166DE	0800200061F3	0800
22	106	11:26:18.485.456	0800200061F3	0800010166DE	0800
23	130	11:26:18.494.870	0800010166DE	0800200061F3	0800
24	138	11:26:18.499.720	0800200061F3	0800010166DE	0800
25	130	11:26:18.508.281	0800010166DE	0800200061F3	0800
26	106	11:26:18.513.506	0800200061F3	0800010166DE	0800
27	64	11:26:18.463.036	0800200061F3	08002001B432	0806
28	114	11:26:18.526.968	0800200061F3	0800010166DE	0800
29	130	11:26:18.553.912	0800010166DE	0800200061F3	0800
30	106	11:26:18.559.085	0800200061F3	0800010166DE	0800
31	130	11:26:18.567.020	0800010166DE	0800200061F3	0800
32	114	11:26:18.572.694	0800200061F3	0800010166DE	0800
33	130	11:26:18.580.866	0800010166DE	0800200061F3	0800
34	110	11:26:18.585.807	0800200061F3	0800010166DE	0800
35	130	11:26:18.593.924	0800010166DE	0800200061F3	0800
36	106	11:26:18.598.719	0800200061F3	0800010166DE	0800
37	130	11:26:18.606.447	0800010166DE	0800200061F3	0800
38	102	11:26:18.611.474	0800200061F3	0800010166DE	0800
39	130	11:26:18.778.681	0800010166DE	0800200061F3	0800
40	150	11:26:18.791.302	0800200061F3	0800010166DE	0800
41	122	11:26:18.804.776	0800010166DE	0800200061F3	0800
42	94	11:26:18.817.691	0800200061F3	0800010166DE	0800
43	64	11:26:18.826.020	08002001B432	0800200061F3	0800
44	64	11:26:18.828.001	0800200061F3	08002001B432	0800
45	64	11:26:18.830.161	08002001B432	0800200061F3	0800
46	128	11:26:19.324.786	0800200061F3	08002001B432	0800
47	150	11:26:19.435.772	080020008679	0800200061F3	0800
48	142	11:26:19.438.584	0800200061F3	080020008679	0800
49	150	11:26:19.443.647	080020008679	0800200061F3	0800
50	142	11:26:19.446.099	0800200061F3	080020008679	0800
51	142	11:26:19.454.014	0800200061F3	080020008679	0800
52	74	11:26:19.578.939	08002000AD02	0800200061F3	0800
53	130	11:26:19.621.786	0800010166DE	0800200061F3	0800
54	106	11:26:19.798.719	0800200061F3	0800010166DE	0800
55	64	11:26:19.871.514	08002001B432	0800200061F3	0800
56	102	11:26:20.072.706	0800200061F3	08002000AD02	0800
57	74	11:26:20.078.939	08002000AD02	0800200061F3	0800
58	138	11:26:20.083.577	0800200061F3	08002000AD02	0800
59	70	11:26:20.666.457	08002000AD02	0800200061F3	0800
60	86	11:26:20.934.939	0800010166DE	0800200061F3	0800
61	70	11:26:20.938.351	0800200061F3	0800010166DE	0800
62	114	11:26:20.953.542	0800010166DE	0800200061F3	0800
63	82	11:26:20.965.384	0800200061F3	0800010166DE	0800
64	86	11:26:20.982.895	0800010166DE	0800200061F3	0800
65	70	11:26:20.985.865	0800200061F3	0800010166DE	0800
66	122	11:26:21.011.452	0800010166DE	0800200061F3	0800
67	102	11:26:21.023.646	0800200061F3	0800010166DE	0800
68	102	11:26:21.048.747	08002000AD02	0800200061F3	0800
69	74	11:26:21.060.732	0800200061F3	08002000AD02	0800
70	86	11:26:21.068.317	08002000AD02	0800200061F3	0800
71	70	11:26:21.071.362	0800200061F3	08002000AD02	0800
72	114	11:26:21.093.240	08002000AD02	0800200061F3	0800
73	78	11:26:21.106.151	0800200061F3	08002000AD02	0800
74	114	11:26:21.111.842	08002000AD02	0800200061F3	0800
75	82	11:26:21.116.012	0800200061F3	08002000AD02	0800
76	102	11:26:21.470.995	08002000AD02	0800200061F3	0800
77	74	11:26:21.474.126	0800200061F3	08002000AD02	0800
78	64	11:26:21.481.039	08002000AD02	0800200061F3	0800
79	64	11:26:21.483.123	0800200061F3	08002000AD02	0800
80	64	11:26:21.485.405	08002000AD02	0800200061F3	0800
81	130	11:26:21.492.052	08002000AD02	0800200061F3	0800
82	1082	11:26:21.560.486	0800200061F3	08002000AD02	0800
83	632	11:26:21.562.140	0800200061F3	08002000AD02	0800
84	64	11:26:21.574.406	08002000AD02	0800200061F3	0800
85	1082	11:26:21.590.365	0800200061F3	08002000AD02	0800
86	632	11:26:21.591.962	0800200061F3	08002000AD02	0800
87	1082	11:26:21.614.170	0800200061F3	08002000AD02	0800
88	632	11:26:21.615.816	0800200061F3	08002000AD02	0800
89	958	11:26:21.639.337	0800200061F3	08002000AD02	0800
90	64	11:26:21.670.827	08002000AD02	0800200061F3	0800
91	64	11:26:21.790.529	08002000AD02	0800200061F3	0800
92	1082	11:26:21.793.709	0800200061F3	08002000AD02	0800
93	64	11:26:21.870.501	08002000AD02	0800200061F3	0800
94	1082	11:26:21.873.390	0800200061F3	08002000AD02	0800
95	1082	11:26:21.875.219	0800200061F3	08002000AD02	0800
96	984	11:26:21.877.320	0800200061F3	08002000AD02	0800
97	64	11:26:22.071.245	08002000AD02	0800200061F3	0800
98	64	11:26:22.317.640	08002000AD02	0800200061F3	0800
99	1082	11:26:22.320.915	0800200061F3	08002000AD02	0800
100	64	11:26:22.471.033	08002000AD02	0800200061F3	0800
101	1082	11:26:22.474.149	0800200061F3	08002000AD02	0800
102	1082	11:26:22.476.098	0800200061F3	08002000AD02	0800
103	984	11:26:22.478.369	0800200061F3	08002000AD02	0800
104	64	11:26:22.657.940	08002000AD02	0800200061F3	0800
105	1082	11:26:22.661.587	0800200061F3	08002000AD02	0800
106	174	11:26:22.662.213	0800200061F3	08002000AD02	0800
107	1082	11:26:22.664.870	0800200061F3	08002000AD02	0800
108	64	11:26:22.670.542	08002000AD02	0800200061F3	0800
109	632	11:26:22.589.105	0800200061F3	08002000AD02	0800
110	1082	11:26:22.687.507	0800200061F3	08002000AD02	0800
111	632	11:26:22.689.105	0800200061F3	08002000AD02	0800
112	64	11:26:22.870.596	08002000AD02	0800200061F3	0800
113	64	11:26:22.984.588	08002000AD02	0800200061F3	0800
114	1082	11:26:22.987.054	0800200061F3	08002000AD02	0800
115	64	11:26:23.071.151	08002000AD02	0800200061F3	0800
116	1082	11:26:23.074.632	0800200061F3	08002000AD02	0800
117	1082	11:26:23.077.127	0800200061F3	08002000AD02	0800
118	1082	11:26:23.079.012	0800200061F3	08002000AD02	0800
119	64	11:26:23.270.702	08002000AD02	0800200061F3	0800
120	64	11:26:23.392.167	08002000AD02	0800200061F3	0800
121	1082	11:26:23.396.141	0800200061F3	08002000AD02	0800
122	64	11:26:23.470.715	08002000AD02	0800200061F3	0800
123	1082	11:26:23.473.348	0800200061F3	08002000AD02	0800
124	1082	11:26:23.475.111	0800200061F3	08002000AD02	0800
125	984	11:26:23.477.208	0800200061F3	08002000AD02	0800
126	64	11:26:23.671.000	08002000AD02	0800200061F3	0800
127	64	11:26:23.746.399	08002000AD02	0800200061F3	0800
128	1082	11:26:23.750.120	0800200061F3	08002000AD02	0800
129	1082	11:26:23.760.227	0800200061F3	08002000AD02	0800
130	1082	11:26:23.762.387	0800200061F3	08002000AD02	0800
131	984	11:26:23.764.894	0800200061F3	08002000AD02	0800
132	64	11:26:23.870.546	08002000AD02	0800200061F3	0800
133	64	11:26:24.172.604	08002000AD02	0800200061F3	0800
134	1082	11:26:24.175.814	0800200061F3	08002000AD02	0800
135	64	11:26:24.270.697	08002000AD02	0800200061F3	0800
136	1082	11:26:24.273.557	0800200061F3	08002000AD02	0800
137	1082	11:26:24.275.321	0800200061F3	08002000AD02	0800
138	984	11:26:24.277.393	0800200061F3	08002000AD02	0800
139	64	11:26:24.470.912	08002000AD02	0800200061F3	0800
140	64	11:26:24.533.726	08002000AD02	0800200061F3	0800
141	1082	11:26:24.537.091	0800200061F3	08002000AD02	0800
142	64	11:26:24.671.602	08002000AD02	0800200061F3	0800
143	1082	11:26:24.674.720	0800200061F3	08002000AD02	0800
144	1082	11:26:24.676.799	0800200061F3	08002000AD02	0800
145	984	11:26:24.679.075	0800200061F3	08002000AD02	0800
146	64	11:26:24.872.460	08002000AD02	0800200061F3	0800
147	64	11:26:24.964.252	08002000AD02	0800200061F3	0800
148	1082	11:26:24.967.692	0800200061F3	08002000AD02	0800
149	64	11:26:25.071.118	08002000AD02	0800200061F3	0800
150	1082	11:26:25.073.783	0800200061F3	08002000AD02	0800
151	1082	11:26:25.075.488	0800200061F3	08002000AD02	0800
152	984	11:26:25.077.586	0800200061F3	08002000AD02	0800
153	64	11:26:25.271.589	08002000AD02	0800200061F3	0800
154	64	11:26:25.335.991	08002000AD02	0800200061F3	0800
155	1082	11:26:25.339.442	0800200061F3	08002000AD02	0800
156	64	11:26:25.471.096	08002000AD02	0800200061F3	0800
157	1082	11:26:25.474.221	0800200061F3	08002000AD02	0800
158	1082	11:26:25.476.256	0800200061F3	08002000AD02	0800
159	984	11:26:25.478.498	0800200061F3	08002000AD02	0800
160	64	11:26:25.652.335	08002000AD02	0800200061F3	0800
161	1082	11:26:25.656.150	0800200061F3	08002000AD02	0800
162	158	11:26:25.656.801	0800200061F3	08002000AD02	0800
163	1082	11:26:25.659.439	0800200061F3	08002000AD02	0800

#	Taille	Timestamp	Source	Destination	Type
164	64	11:26:25.672.902	08002000AD02	0800200061F3	0800
165	184	11:26:25.674.684	0800200061F3	08002000AD02	0800
166	1082	11:26:25.683.162	0800200061F3	08002000AD02	0800
167	632	11:26:25.684.738	0800200061F3	08002000AD02	0800
168	64	11:26:25.872.062	08002000AD02	0800200061F3	0800
169	72	11:26:26.054.296	08002001B432	0800200061F3	0800
170	94	11:26:26.137.506	0800200061F3	08002001B432	0800
171	73	11:26:26.195.526	08002001B432	0800200061F3	0800
172	64	11:26:26.201.993	08002000AD02	0800200061F3	0800
173	1082	11:26:26.204.326	0800200061F3	08002000AD02	0800
174	64	11:26:26.271.195	08002000AD02	0800200061F3	0800
175	1082	11:26:26.274.883	0800200061F3	08002000AD02	0800
176	1082	11:26:26.277.417	0800200061F3	08002000AD02	0800
177	1082	11:26:26.280.149	0800200061F3	08002000AD02	0800
178	64	11:26:26.393.615	0800200061F3	08002001B432	0800
179	80	11:26:26.409.541	0800200061F3	08002001B432	0800
180	64	11:26:26.470.855	08002000AD02	0800200061F3	0800
181	64	11:26:26.472.114	08002001B432	0800200061F3	0800
182	64	11:26:26.625.311	08002000AD02	0800200061F3	0800
183	1082	11:26:26.628.662	0800200061F3	08002000AD02	0800
184	64	11:26:26.670.722	08002000AD02	0800200061F3	0800
185	1082	11:26:26.673.262	0800200061F3	08002000AD02	0800
186	1082	11:26:26.675.027	0800200061F3	08002000AD02	0800
187	984	11:26:26.677.061	0800200061F3	08002000AD02	0800
188	64	11:26:26.871.082	08002000AD02	0800200061F3	0800
189	64	11:26:26.990.875	08002000AD02	0800200061F3	0800
190	1082	11:26:26.994.518	0800200061F3	08002000AD02	0800
191	64	11:26:27.070.930	08002000AD02	0800200061F3	0800
192	1082	11:26:27.074.453	0800200061F3	08002000AD02	0800
193	458	11:26:27.075.740	0800200061F3	08002000AD02	0800
194	64	11:26:27.270.795	08002000AD02	0800200061F3	0800
195	64	11:26:28.729.067	08002000AD02	0800200061F3	0800
196	64	11:26:28.870.896	08002000AD02	0800200061F3	0800
197	64	11:26:29.872.406	08002000AD02	0800200061F3	0800
198	64	11:26:29.878.607	0800200061F3	08002000AD02	0800
199	64	11:26:29.881.094	08002000AD02	0800200061F3	0800
200	114	11:26:29.887.041	08002000AD02	0800200061F3	0800
201	78	11:26:29.930.230	0800200061F3	08002000AD02	0800
202	72	11:26:30.274.823	08002001B432	0800200061F3	0800
203	94	11:26:30.324.165	0800200061F3	08002001B432	0800
204	64	11:26:30.471.311	08002001B432	0800200061F3	0800
205	94	11:26:32.188.449	08002000AD02	0800200061F3	0800
206	70	11:26:32.193.896	0800200061F3	08002000AD02	0800
207	73	11:26:32.986.956	08002001B432	0800200061F3	0800
208	64	11:26:32.994.484	0800200061F3	08002001B432	0800
209	87	11:26:33.328.629	0800200061F3	08002001B432	0800
210	64	11:26:33.470.974	08002001B432	0800200061F3	0800
211	82	11:26:33.244.290	08002001B432	0800200061F3	0800
212	82	11:26:36.247.810	0800200061F3	08002001B432	0800
213	64	11:26:36.254.639	08002001B432	0800200061F3	0800
214	130	11:26:36.311.889	0800200061F3	08002001B432	0800
215	64	11:26:36.313.364	0800200061F3	08002001B432	0800
216	64	11:26:36.316.456	08002001B432	0800200061F3	0800
217	64	11:26:36.317.989	0800200061F3	08002001B432	0800
218	64	11:26:36.471.261	08002001B432	0800200061F3	0800
219	570	11:26:37.103.420	0800200061F3	08002001B432	0800
220	570	11:26:37.104.622	0800200061F3	08002001B432	0800
221	570	11:26:37.105.797	0800200061F3	08002001B432	0800
222	570	11:26:37.106.963	0800200061F3	08002001B432	0800
223	64	11:26:37.112.702	08002001B432	0800200061F3	0800
224	82	11:26:37.129.420	0800200061F3	08002001B432	0800
225	570	11:26:37.132.191	0800200061F3	08002001B432	0800
226	115	11:26:37.133.135	0800200061F3	08002001B432	0800
227	64	11:26:37.134.269	0800200061F3	08002001B432	0800
228	64	11:26:37.136.432	08002001B432	0800200061F3	0800
229	64	11:26:37.271.291	08002001B432	0800200061F3	0800
230	64	11:26:37.986.482	08002001B432	0800200061F3	0800
231	64	11:26:37.987.927	0800200061F3	08002001B432	0800
232	80	11:26:55.749.584	08002001B432	0800200061F3	0800
233	108	11:26:55.770.081	0800200061F3	08002001B432	0800
234	64	11:26:55.872.660	08002001B432	0800200061F3	0800
235	150	11:27:00.977.981	08002000B473	0800200061F3	0800
236	142	11:27:01.027.533	0800200061F3	08002000B473	0800
237	142	11:27:01.036.395	08002000B473	0800200061F3	0800
238	74	11:27:01.057.940	0800200061F3	08002000B473	0800
239	81	11:27:02.504.108	08002001B432	0800200061F3	0800
240	81	11:27:02.516.125	0800200061F3	08002001B432	0800
241	64	11:27:02.672.447	08002001B432	0800200061F3	0800
242	82	11:27:04.108.997	08002001B432	0800200061F3	0800
243	82	11:27:04.112.588	08002001B432	0800200061F3	0800
244	64	11:27:04.118.347	08002001B432	0800200061F3	0800
245	130	11:27:04.170.347	0800200061F3	08002001B432	0800
246	64	11:27:04.171.846	0800200061F3	08002001B432	0800
247	64	11:27:04.175.312	08002001B432	0800200061F3	0800
248	64	11:27:04.176.901	0800200061F3	08002001B432	0800
249	64	11:27:04.272.408	08002001B432	0800200061F3	0800
250	82	11:27:04.366.814	0800200061F3	08002001B432	0800
251	79	11:27:04.368.227	0800200061F3	08002001B432	0800
252	64	11:27:04.369.241	08002001B432	0800200061F3	0800
253	64	11:27:04.371.193	08002001B432	0800200061F3	0800
254	64	11:27:04.449.714	08002001B432	0800200061F3	0800
255	64	11:27:04.451.138	0800200061F3	08002001B432	0800
256	64	11:27:04.473.232	08002001B432	0800200061F3	0800
257	146	11:27:06.370.511	0800200061F3	0800010166DE	0800
258	94	11:27:06.496.679	0800010166DE	0800200061F3	0800
259	150	11:27:13.395.135	08002000008679	0800200061F3	0800
260	142	11:27:13.398.034	0800200061F3	08002000008679	0800
261	166	11:27:13.403.255	08002000008679	0800200061F3	0800
262	174	11:27:13.406.492	0800200061F3	08002000008679	0800
263	82	11:27:13.416.546	08002001B432	0800200061F3	0800
264	82	11:27:13.422.351	0800200061F3	08002001B432	0800
265	75	11:27:13.452.076	08002001B432	0800200061F3	0800
266	136	11:27:13.471.474	0800200061F3	08002001B432	0800
267	64	11:27:13.472.871	0800200061F3	08002001B432	0800
268	64	11:27:13.477.039	08002001B432	0800200061F3	0800
269	64	11:27:13.478.441	0800200061F3	08002001B432	0800
270	198	11:27:13.486.867	08002000008679	0800200061F3	0800
271	570	11:27:13.556.255	0800200061F3	08002001B432	0800
272	570	11:27:13.557.473	0800200061F3	08002001B432	0800
273	570	11:27:13.558.730	0800200061F3	08002001B432	0800
274	570	11:27:13.565.879	0800200061F3	08002001B432	0800
275	486	11:27:13.568.137	0800200061F3	08002001B432	0800
276	64	11:27:13.613.531	08002001B432	0800200061F3	0800
277	174	11:27:13.620.249	0800200061F3	08002000008679	0800
278	150	11:27:13.622.897	08002000008679	0800200061F3	0800
279	142	11:27:13.631.858	0800200061F3	08002000008679	0800
280	64	11:27:13.665.490	08002001B432	0800200061F3	0800
281	64	11:27:13.666.727	08002001B432	0800200061F3	0800
282	64	11:27:13.670.129	0800200061F3	08002001B432	0800
283	162	11:27:13.672.491	08002000008679	0800200061F3	0800
284	64	11:27:13.673.438	08002001B432	0800200061F3	0800
285	146	11:27:13.673.701	0800200061F3	08002000008679	0800
286	82	11:27:13.751.565	0800200061F3	08002001B432	0800
287	1518	11:27:13.753.057	08002000008679	0800200061F3	0800
288	1082	11:27:13.793.360	08002000008679	0800200061F3	0800
289	142	11:27:13.793.360	0800200061F3	08002000008679	0800
290	64	11:27:13.872.539	08002001B432	0800200061F3	0800
291	65	11:27:22.535.331	08002001B432	0800200061F3	0800
292	81	11:27:22.561.684	0800200061F3	08002001B432	0800
293	64	11:27:22.672.863	08002001B432	0800200061F3	0800
294	64	11:27:32.866.863	08002001B432	0800200061F3	0800
295	125	11:27:32.870.484	0800200061F3	08002001B432	0800
296	64	11:27:32.873.583	08002001B432	0800200061F3	0800
297	410	11:27:33.066.342	0800200061F3	08002001B432	0800
298	64	11:27:33.074.095	08002001B432	0800200061F3	0800
299	96	11:27:33.075.510	0800200061F3	08002001B432	0800
300	64	11:27:33.273.479	08002001B432	0800200061F3	0800
301	70	11:27:37.454.830	08002001B432	0800200061F3	0800
302	64	11:27:37.600.867	0800200061F3	08002001B432	0800
303	83	11:27:37.893.774	0800200061F3	08002001B432	0800
304	64	11:27:38.073.544	08002001B432	0800200061F3	0800
305	69	11:27:40.815.580	08002001B432	0800200061F3	0800
306	81	11:27:40.819.546	0800200061F3	08002001B432	0800
307	64	11:27:40.874.331	08002001B432	0800200061F3	0800
308	64	11:27:44.705.934	08002001B432	0800200061F3	0800
309	64	11:27:44.801.501	0800200061F3	08002001B432	0800
310	114	11:27:45.039.038	0800200061F3	08002001B432	0800
311	64	11:27:45.074.470	08002001B432	0800200061F3	0800
312	64	11:27:48.655.840	08002001B432	0800200061F3	0800
313	72	11:27:48.660.606	0800200061F3	08002001B432	0800
314	64	11:27:48.665.411	08002001B432	0800200061F3	0800
315	64	11:27:48.666.750	0800200061F3	08002001B432	0800
316	64	11:27:48.703.100	08002001B432	0800200061F3	0800
317	64	11:27:48.706.556	0800200061F3	08002001B432	0800

4) Quels champs sont générés par l'analyseur de réseau et quels sont ceux faisant partie des trames Ethernet ?

5) Quelles sont les tailles maximale et minimale des trames Ethernet ?

6) avec combien de stations buro1 établit–elle un dialogue ?

7) Pouvez–vous donner le nom, l'adresse physique et l'adresse IP de ces machines ?

L'analyseur de réseau permet d'obtenir le contenu complet des trames qui ont circulé sur le réseau. Voici un exemple de ce que l'on peut obtenir :

```
Packet 20
0000  FF FF FF FF FF FF 08 00  20 00 61 F3 08 06 00 01  |.. ..... .as....|   Packet 43
0010  08 00 06 04 00 01 08 00  20 00 61 F3 C0 09 C8 0B  |.,.3......as@.H.|   0000  08 00 20 01 B4 32 08 00  20 00 61 F3 08 00 45 00  |.. .42.. .as..E.|
0020  00 00 00 00 00 00 C0 09  C8 01 00 00 00 00 60 02  |......@.......'.|   0010  00 2C 0C 33 00 00 1E 06  80 79 C0 09 C8 0B C0 09  |.,.3.....y@.H.@.|
0030  10 00 8D 4D 00 00 02 04  04 00 00 00               |...M........   |   0020  C8 01 04 50 00 15 00 06  E8 01 00 00 00 00 60 02  |H..P....h.....'.|
                                                                            0030  10 00 8D 4D 00 00 02 04  04 00 00 00               |...M........   |
Packet 27
0000  08 00 20 00 61 F3 08 00  20 01 B4 32 08 06 00 01  |.. .as.. .as..E.|
0010  08 00 06 04 00 02 08 00  20 01 B4 32 C0 09 C8 01  |.,.3.....y@.H.@.|   Packet 55
0020  08 00 20 00 61 F3 C0 09  C8 0B 00 00 00 00 60 02  |H..P....h.....'.|   0000  08 00 20 01 B4 32 08 00  20 00 61 F3 08 00 45 00  |.. .42.. .as..E.|
0030  10 00 8D 4D 00 00 02 04  04 00 00 00               |...M........   |   0010  00 28 0C 39 00 00 1E 06  80 77 C0 09 C8 0B C0 09  |.(.9.....w@.H.@.|
                                                                            0020  C8 01 04 50 00 15 00 06  E8 02 00 80 3E 08 50 10  |H..P....h..>.P.|
Packet 40                                                                   0030  10 00 64 BE 00 00 00 01  86 A3 00 00               |..d>.....#..   |
0000  08 00 20 00 61 F3 08 00  01 01 66 DE 08 00 45 00  |.. .as....f^..E.|
0010  00 84 25 05 00 00 FF 11  86 3A C0 09 C8 0A C0 09  |..%......:@.H.@.|
0020  C8 0B 04 0A 05 6B 00 70  00 00 24 13 F2 13 00 00  |H....k.p..$.r...|   Packet 56
0030  00 01 00 00 00 00 00 00  00 00 00 00 00 00 00 00  |................|   0000  08 00 20 00 61 F3 08 00  20 00 AD 02 08 00 45 00  |.. .as.. .-...E.|
0040  00 00 00 00 00 01 00 00  00 45 74 6F 75 74 61 69  |.........Etoutai|   0010  00 54 AB B3 00 00 FF 11  FF C0 C0 09 C8 05 C0 09  |.T+3.....@@.H.@.|
0050  6E 3A 56 53 43 49 77 76  33 45 4B 4E 6B 73 32 3A  |n:VSCIwv3EKNks2:|   0020  C8 0B 0E 31 00 6F 00 40  00 00 24 02 24 DF 00 00  |H..1.o.@..$.$_..|
0060  33 30 31 38 3A 33 30 31  3A 53 43 49 45 4E 54 49  |3018:301:SCIENTI|   0030  00 00 00 00 00 02 00 01  86 A0 00 00 00 02 00 00  |......... ......|
0070  46 3A 2F 75 73 72 2F 75  34 2F 6C 61 62 6F 2F 74  |F:/usr/u4/labo/t|   0040  00 03 00 00 00 00 00 00  00 00 00 00 00 00 00 00  |................|
0080  6F 75 74 61 69 6E 3A 2F  62 69 6E 2F 63 73 68 00  |outain:/bin/csh.|   0050  00 00 00 01 86 A4 00 00  00 02 00 00 00 11 00 00  |.....$..........|
0090  00 00                                             |..             |   0060  00 00                                             |..             |
```

8) Désassemblez les trames précédentes en vous aidant des formats de paquets IP et des messages UDP/TCP

9) Quels sont les protocoles de niveau 3 contenus dans ces différentes trames ?

10) À quoi correspond l'adresse FF.FF.FF.FF.FF.FF ?

11) Pourquoi le paquet 43 est–il plus long que prévu dans l'en–tête IP ?

12) Pouvez–vous en tirer des informations au sujet des stations dont on ne connaissait pas le nom par l'adressage Ethernet ?

En fait lanalyseur de réseau est beaucoup plus performant et peut faire le désassemblage automatique des trames jusqu'au niveau 4. Nous ne nous intéressons plus maintenant qu'aux trames ayant participé au trafic FTP entre buro1 et ER1 correspondant aux actions données dans le listing suivant :

```
toutain@buro1 [4]</usr/u4/labo/toutain/VME> :ftp ER1
Connected to ER1.
220 ER1 FTP server (Version 4.7 Sun Sep 14 12:44:57 PDT 1986) ready.
Name (ER1:toutain):
Password (ER1:toutain):
331 Password required for toutain.
530 Login incorrect.
Login failed.
ftp> user toutain
331 Password required for toutain.
Password:
230 User toutain logged in.
ftp> dir
200 PORT command okay.
150 Opening data connection for /bin/ls (192.9.200.11,1107) (0 bytes).
total 86
-rw-r--r--  1 toutain  wheel        8668 Jan 26 15:38 .XXXdef
-rw-r--r--  1 toutain  wheel        3013 Feb  3 11:19 .Xdefaults
-rw-r--r--  1 toutain  wheel         204 Feb 20 09:34 .appointment
drwxr-xr-x  2 toutain  wheel         512 Feb 21 09:03 transfert
drwxrwxrwx  2 toutain  wheel        1044 Feb 20 14:58 wrk
226 Transfer complete.
2617 bytes received in 1.66 seconds (1.5 Kbytes/s)
ftp> cd commandes/source
550 commandes/source: No such file or directory.
ftp> cd commandes/sources
200 CWD command okay.
ftp> ls
200 PORT command okay.
150 Opening data connection for /bin/ls (192.9.200.11,1108) (0 bytes).
dmp.c.Z
sun_fond.c
226 Transfer complete.
21 bytes received in 0.26 seconds (0.079 Kbytes/s)
ftp> recv sun_fond.c
200 PORT command okay.
150 Opening data connection for sun_fond.c (192.9.200.11,1109) (2394 bytes).
226 Transfer complete.
2476 bytes received in 0.04 seconds (60 Kbytes/s)
```

```
ftp> cd
(remote-directory) ~
200 CWD command okay.
ftp> remotehelp
214-The following commands are recognized (* =>'s unimplemented).
   USER    PORT    RETR    MSND*   ALLO    DELE    SITE*   XRMD
   PASS    PASV*   STOR    MSOM*   REST*   CWD     STAT*   XPWD
   ACCT*   TYPE    APPE    MSAM*   RNFR    XCWD    HELP    XCUP
   REIN*   STRU    MLFL*   MRSQ*   RNTO    LIST    NOOP
   QUIT    MODE    MAIL*   MRCP*   ABOR*   NLST    XMKD
214 Direct comments to ftp-bugs@ER1.
ftp> mkdir essai
200 MKDIR command okay.
ftp> cd essai
200 CWD command okay.
ftp> pwd
251 "/usr/u4/labo/toutain/essai" is current directory.
ftp> quit
221 Goodbye.
toutain@buro1 [5]</usr/u4/labo/toutain/VME> :
```

Les trames ayant circulé pour cette application sont les su ivantes:

```
Packet 43 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11   ->  192 9    200 1
 tcp: Port: 1104            ->  FTP                    SYN
      seq:      452609   ack:        0   win:  4096
      Options
          Maximum Segment Size
              Size                     1024
          End of Option List
Packet 44  Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    ->  192 9    200 11
 tcp: Port: FTP            ->  1104                   SYN ACK
      seq:     8404417   ack:    452610   win:  4096
Packet 45  Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11   ->  192 9    200 1
 tcp: Port: 1104            ->  FTP                   ACK
      seq:      452610   ack:    8404418   win:  4096
Packet 46  Frame Length: 128       Slice Length: 124
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    ->  192 9    200 11
 tcp: Port: FTP            ->  1104             PSH ACK
      seq:     8404418   ack:    452610   win:  4096
0000  32 32 30 20 45 52 31 20  46 54 50 20 73 65 72 76  |220 ER1 FTP serv|
0010  65 72 20 28 56 65 72 73  69 6F 6E 20 34 2E 37 20  |er (Version 4.7 |
0020  53 75 6E 20 53 65 70 20  31 34 20 31 32 3A 34 34  |Sun Sep 14 12:44|
0030  3A 35 37 20 50 44 54 20  31 39 38 36 29 20 72 65  |:57 PDT 1986) re|
0040  61 64 79 2E 0D 0A                                 |ady...          |
Packet 55  Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11   ->  192 9    200 1
 tcp: Port: 1104            ->  FTP                   ACK
      seq:      452610   ack:    8404488   win:  4096
Packet 169 Frame Length: 72        Slice Length: 68
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11   ->  192 9    200 1
 tcp: Port: 1104            ->  FTP              PSH ACK
      seq:      452610   ack:    8404488   win:  4096
0000  55 53 45 52 20 74 6F 75  74 61 69 6E 0D 0A        |USER toutain..  |
Packet 170 Frame Length: 94        Slice Length: 90
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    ->  192 9    200 11
 tcp: Port: FTP            ->  1104             PSH ACK
      seq:     8404488   ack:    452624   win:  4096
0000  33 33 31 20 50 61 73 73  77 6F 72 64 20 72 65 71  |331 Password req|
0010  75 69 72 65 64 20 66 6F  72 20 74 6F 75 74 61 69  |uired for toutai|
0020  6E 2E 0D 0A                                       |n...            |
Packet 171 Frame Length: 73        Slice Length: 69
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11   ->  192 9    200 1
 tcp: Port: 1104            ->  FTP              PSH ACK
      seq:      452624   ack:    8404524   win:  4096
0000  50 41 53 53 20 74 6F 6B  65 6E 62 75 73 0D 0A     |PASS tokenbus.. |
Packet 178 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    ->  192 9    200 11
 tcp: Port: FTP            ->  1104             ACK
      seq:     8404524   ack:    452639   win:  4096
Packet 179 Frame Length: 80        Slice Length: 76
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    ->  192 9    200 11
 tcp: Port: FTP            ->  1104             PSH ACK
      seq:     8404524   ack:    452639   win:  4096
0000  35 33 30 20 4C 6F 67 69  6E 20 69 6E 63 6F 72 72  |530 Login incorr|
0010  65 63 74 2E 0D 0A                                 |ect...          |
```

```
Packet 181 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32
       Type    IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               ACK
       seq:     452639   ack:      8404546   win:  4096
Packet 202 Frame Length: 72        Slice Length: 68
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               PSH ACK
       seq:     452639   ack:      8404546   win:  4096
0000  55 53 45 52 20 74 6F 75  74 61 69 6E 0D 0A        |USER toutain..  |
Packet 203 Frame Length: 94        Slice Length: 90
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3   Type IP
  ip: TCP          192 9   200 1     ->  192 9   200 11
 tcp: Port: FTP                ->  1104              PSH ACK
       seq:     8404546   ack:      452653   win:  4096
0000  33 33 31 20 50 61 73 73  77 6F 72 64 20 72 65 71  |331 Password req|
0010  75 69 72 65 64 20 66 6F  72 20 74 6F 75 74 61 69  |uired for toutai|
0020  6E 2E 0D 0A                                        |n...            |
Packet 204 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               ACK
       seq:     452653   ack:      8404582   win:  4096
Packet 207 Frame Length: 73        Slice Length: 69
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               PSH ACK
       seq:     452653   ack:      8404582   win:  4096
0000  50 41 53 53 20 65 74 68  65 72 6E 65 74 0D 0A     |PASS ethernet.. |
Packet 208 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3   Type IP
  ip: TCP          192 9   200 1     ->  192 9   200 11
 tcp: Port: FTP                ->  1104              ACK
       seq:     8404582   ack:      452668   win:  4096
Packet 209 Frame Length: 87        Slice Length: 8|
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3   Type IP
  ip: TCP          192 9   200 1     ->  192 9   200 11
 tcp: Port: FTP                ->  1104              PSH ACK
       seq:     8404582   ack:      452668   win:  4096
0000  32 33 30 20 55 73 65 72  20 74 6F 75 74 61 69 6E  |230 User toutain|
0010  20 6C 6F 67 67 65 64 20  69 6E 2E 0D 0A           | logged in...   |
Packet 210 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               ACK
       seq:     452668   ack:      8404611   win:  4096
Packet 211 Frame Length: 82        Slice Length: 78
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               PSH ACK
       seq:     452668   ack:      8404611   win:  4096
0000  50 4F 52 54 20 31 39 32  2C 39 2C 32 30 30 2C 31  |PORT 192,9,200,1|
0010  31 2C 34 2C 38 33 0D 0A                           |1,4,83...       |
Packet 212 Frame Length: 82        Slice Length: 78
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3   Type IP
  ip: TCP          192 9   200 1     ->  192 9   200 11
 tcp: Port: FTP                ->  1104              PSH ACK
       seq:     8404611   ack:      452692   win:  4096
0000  32 30 30 20 50 4F 52 54  20 63 6F 6D 6D 61 6E 64  |200 PORT command|
0010  20 6F 6B 61 79 2E 0D 0A                           | okay...        |
Packet 213 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1104               ->  FTP               PSH ACK
       seq:     452692   ack:      8404635   win:  4096
0000  4C 49 53 54 0D 0A                                 |LIST..          |
Packet 214 Frame Length: 130       Slice Length: 126
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3   Type IP
  ip: TCP          192 9   200 1     ->  192 9   200 11
 tcp: Port: FTP                ->  1104              PSH ACK
       seq:     8404635   ack:      452698   win:  4096
0000  31 35 30 20 4F 70 65 6E  69 6E 67 20 64 61 74 61  |150 Opening data|
0010  20 63 6F 6E 6E 65 63 74  69 6F 6E 20 66 6F 72 20  | connection for |
0020  2F 62 69 6E 2F 6C 73 20  28 31 39 32 2E 39 2E 32  |/bin/ls (192.9.2|
0030  30 30 2E 31 31 2C 31 31  30 37 29 20 28 30 20 62  |00.11,1107) (0 b|
0040  79 74 65 73 29 2E 0D 0A                           |ytes)...        |
Packet 215 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3   Type IP
  ip: TCP          192 9   200 1     ->  192 9   200 11
 tcp: Port: FTP-DATA           ->  1107              SYN
       seq:     8406849   ack:        0   win:  4096
Packet 216 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32   Type IP
  ip: TCP          192 9   200 11    ->  192 9   200 1
 tcp: Port: 1107               ->  FTP-DATA          SYN ACK
       seq:     455105   ack:      8406850   win:  4096
       Options
            Maximum Segment Size
                 Size                     1024
            End of Option List
```

```
Packet 217 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1107              ACK
      seq:     8406850   ack:     455106   win:  4096

Packet 218 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9    200 11    -> 192 9    200 1
 tcp: Port: 1104              -> FTP              ACK
      seq:      452698   ack:     8404707   win:  4096

Packet 219 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1107              ACK
      seq:     8406850   ack:     455106   win:  4096
0000  74 6F 74 61 6C 20 38 36  0D 0A 2D 72 77 2D 72 2D  |total 86..-rw-r-|
0010  2D 72 2D 2D 20 20 31 20  74 6F 75 74 61 69 6E 20  |-r--  1 toutain |
0020  20 77 68 65 65 6C 20 20  20 20 20 20 20 20 38 36  | wheel        86|
0030  36 38 20 4A 61 6E 20 32  36 20 31 35 3A 33 38 20  |68 Jan 26 15:38 |
0040  2E 58 58 58 64 65 66 0D  0A 2D 72 77 2D 72 2D 2D  |.XXXdef..-rw-r--|
0050  72 2D 2D 20 20 31 20 74  6F 75 74 61 69 6E 20 20  |r--  1 toutain  |
0060  77 68 65 65 6C 20 20 20  20 20 20 20 20 33 30 31  |wheel        301|
0070  33 20 46 65 62 20 20 33  20 31 31 3A 31 39 20 2E  |3 Feb  3 11:19 .|
0080  58 64 65 66 61 75 6C 74  73 0D 0A 2D 72 77 2D 72  |Xdefaults..-rw-r|

Packet 220 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1107              ACK
      seq:     8407362   ack:     455106   win:  4096
0000  2E 64 65 66 61 75 6C 74  73 0D 0A 2D 72 77 2D 72  |.defaults..-rw-r|
0010  2D 2D 72 2D 2D 20 20 31  20 74 6F 75 74 61 69 6E  |--r--  1 toutain|
0020  20 20 77 68 65 65 6C 20  20 20 20 20 20 20 20 34  |  wheel        4|
0030  35 31 37 20 4A 61 6E 20  32 36 20 31 35 3A 33 34  |517 Jan 26 15:34|
0040  20 2E 65 6D 61 63 73 0D  0A 2D 72 77 78 72 2D 78  | .emacs..-rwxr-x|
0050  72 2D 78 20 20 31 20 74  6F 75 74 61 69 6E 20 20  |r-x  1 toutain  |
0060  77 68 65 65 6C 20 20 20  20 20 20 20 20 33 35 35  |wheel        35|
0070  31 20 4A 61 6E 20 32 36  20 31 35 3A 33 34 20 2E  |1 Jan 26 15:34 .|
0080  65 78 72 63 0D 0A 2D 72  77 2D 72 2D 2D 72 2D 2D  |exrc..-rw-r--r--|

Packet 221 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1107              ACK
      seq:     8407874   ack:     455106   win:  4096
0000  65 65 6C 20 20 20 20 20  20 20 20 20 34 39 36 20  |eel        496 |
0010  4A 61 6E 20 32 36 20 31  35 3A 33 34 20 2E 70 6C  |Jan 26 15:34 .pl|
0020  61 6E 0D 0A 64 72 77 78  72 2D 78 72 2D 78 20 20  |an..drwxr-xr-x  |
0030  32 20 74 6F 75 74 61 69  6E 20 20 77 68 65 65 6C  |2 toutain  wheel|
0040  20 20 20 20 20 20 20 20  20 35 31 32 20 4A 61 6E  |        512 Jan|
0050  20 32 36 20 31 35 3A 33  34 20 2E 70 6F 75 62 65  | 26 15:34 .poube|
0060  6C 6C 65 0D 0A 2D 72 77  2D 2D 2D 2D 2D 2D 2D 20  |lle..-rw------- |
0070  20 31 20 74 6F 75 74 61  69 6E 20 20 77 68 65 65  | 1 toutain  whee|
0080  6C 20 20 20 20 20 20 20  32 38 32 39 36 20 46 65  |l        28296 Fe|

Packet 222 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1107              PSH ACK
      seq:     8408386   ack:     455106   win:  4096
0000  2D 2D 20 20 31 20 74 6F  75 74 61 69 6E 20 20 77  |--  1 toutain  w|
0010  68 65 65 6C 20 20 20 20  20 20 20 20 20 33 37 34  |heel        374|
0020  20 46 65 62 20 20 33 20  30 39 3A 34 37 20 2E 72  | Feb  3 09:47 .r|
0030  6F 6F 74 6D 65 6E 75 2E  75 74 69 6C 0D 0A 2D 72  |ootmenu.util..-r|
0040  77 2D 72 2D 2D 72 2D 2D  20 20 31 20 74 6F 75 74  |w-r--r--  1 tout|
0050  61 69 6E 20 20 77 68 65  65 6C 20 20 20 20 20 20  |ain  wheel      |
0060  20 20 20 35 38 30 20 46  65 62 20 31 33 20 31 30  |   580 Feb 13 10|
0070  3A 33 36 20 2E 72 6F 6F  74 6D 65 6E 75 2E 75 74  |:36 .rootmenu.ut|
0080  69 6C 32 0D 0A 2D 72 77  72 2D 2D 72 2D 2D 20 20  |il2..-rw-r--r-- |

Packet 223 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9    200 11    -> 192 9    200 1
 tcp: Port: 1107              -> FTP-DATA          ACK
      seq:      455106   ack:     8408898   win:  4096

Packet 224 Frame Length: 82        Slice Length: 78
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP              -> 1104              PSH ACK
      seq:     8404707   ack:     452698   win:  4096
0000  32 32 36 20 54 72 61 6E  73 66 65 72 20 63 6F 6D  |226 Transfer com|
0010  70 6C 65 74 65 2E 0D 0A                           |plete...        |

Packet 225 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9    200 1     -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1107              ACK
      seq:     8408898   ack:     455106   win:  4096
0000  39 20 2E 77 69 6E 64 72  63 0D 0A 2D 72 77 2D 72  |9 .windrc..-rw-r|
0010  2D 2D 72 2D 2D 20 20 31  20 74 6F 75 74 61 69 6E  |--r--  1 toutain|
0020  20 20 77 68 65 65 6C 20  20 20 20 20 20 20 20 20  |  wheel         |
0030  32 34 36 20 46 65 62 20  20 33 20 31 30 3A 30 39  |246 Feb  3 10:09|
0040  20 2E 78 69 6E 69 74 72  63 0D 0A 64 72 77 78 2D  | .xinitrc..drwx-|
0050  2D 2D 2D 2D 20 20 32 20  74 6F 75 74 61 69 6E 20  |-----  2 toutain|
0060  20 20 77 68 65 65 6C 20  20 20 20 20 20 20 20 20  |  wheel         |
0070  35 31 32 20 46 65 62 20  32 30 20 30 39 3A 35 33  |512 Feb 20 09:53|
0080  20 54 44 0D 0A 64 72 77  78 72 2D 78 72 2D 78 20  | TD..drwxr-xr-x |
```

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Packet 226 Frame Length: 115      Slice Length: 111
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9   200 1      -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1107              PSH ACK
       seq:    8409410  ack:    455106   win:  4096
0000  77 78 72 77 78 72 77 78  20 20 32 20 74 6F 75 74  |wxrwxrwx  2 tout|
0010  61 69 6E 20 20 77 68 65  65 6C 20 20 20 20 20 20  |ain  wheel      |
0020  20 20 31 30 34 34 20 46  65 62 20 32 30 20 31 34  |  1044 Feb 20 14|
0030  3A 35 38 20 77 72 6B 0D  0A                       |:58 wrk..       |

Packet 227 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9   200 1      -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1107              FIN ACK
       seq:    8409467  ack:    455106   win:  4096

Packet 228 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1107                -> FTP-DATA           ACK
       seq:     455106  ack:    8409468   win:  3527

Packet 229 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1104                -> FTP                ACK
       seq:     452698  ack:    8404731   win:  4072

Packet 230 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1107                -> FTP-DATA           FIN ACK
       seq:     455106  ack:    8409468   win:  4096

Packet 231 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9   200 1      -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1107               ACK
       seq:    8409468  ack:    455107   win:  4096

Packet 232 Frame Length: 80       Slice Length: 76
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1104                -> FTP                PSH ACK
       seq:     452698  ack:    8404731   win:  4096
0000  43 57 44 20 63 6F 6D 6D  61 6E 64 65 73 2F 73 6F  |CWD commandes/so|
0010  75 72 63 65 0D 0A                                 |urce..          |

Packet 233 Frame Length: 108      Slice Length: 104
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9   200 1      -> 192 9   200 11
 tcp: Port: FTP                 -> 1104               PSH ACK
       seq:    8404731  ack:    452720   win:  4096
0000  35 35 30 20 63 6F 6D 6D  61 6E 64 65 73 2F 73 6F  |550 commandes/so|
0010  75 72 63 65 3A 20 4E 6F  20 73 75 63 68 20 66 69  |urce: No such fi|
0020  6C 65 20 6F 72 20 64 69  72 65 63 74 6F 72 79 2E  |le or directory.|
0030  0D 0A                                             |..              |

Packet 234 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1104                -> FTP                ACK
       seq:     452720  ack:    8404781   win:  4096

Packet 239 Frame Length: 81       Slice Length: 77
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1104                -> FTP                PSH ACK
       seq:     452720  ack:    8404781   win:  4096
0000  43 57 44 20 63 6F 6D 6D  61 6E 64 65 73 2F 73 6F  |CWD commandes/so|
0010  75 72 63 65 73 0D 0A                              |urces..         |

Packet 240 Frame Length: 81       Slice Length: 77
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9   200 1      -> 192 9   200 11
 tcp: Port: FTP                 -> 1104               PSH ACK
       seq:    8404781  ack:    452743   win:  4096
0000  32 30 30 20 43 57 44 20  63 6F 6D 6D 61 6E 64 20  |200 CWD command |
0010  6F 6B 61 79 2E 0D 0A                              |okay...         |

Packet 241 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1104                -> FTP                ACK
       seq:     452743  ack:    8404804   win:  4096

Packet 242 Frame Length: 82       Slice Length: 78
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9   200 11     -> 192 9   200 1
 tcp: Port: 1104                -> FTP                PSH ACK
       seq:     452743  ack:    8404804   win:  4096
0000  50 4F 52 54 20 31 39 32  2C 39 2C 32 30 30 2C 31  |PORT 192,9,200,1|
0010  31 2C 34 2C 38 34 0D 0A                           |1,4,84..        |

Packet 243 Frame Length: 82       Slice Length: 78
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9   200 1      -> 192 9   200 11
 tcp: Port: FTP                 -> 1104               PSH ACK
       seq:    8404804  ack:    452767   win:  4096
0000  32 30 30 20 50 4F 52 54  20 63 6F 6D 6D 61 6E 64  |200 PORT command|
0010  20 6F 6B 61 79 2E 0D 0A                           | okay...        |
```

```
Packet 244 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104                -> FTP                    PSH ACK
      seq:      452767   ack:      8404828  win:  4096
0000  4E 4C 53 54 0D 0A                              3NLST..            |
Packet 245 Frame Length: 130      Slice Length: 126
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP                -> 1104                    PSH ACK
      seq:     8404828   ack:     452773  win:  4096
0000  31 35 30 20 4F 70 65 6E  69 6E 67 20 64 61 74 61  |150 Opening data|
0010  20 63 6F 6E 6E 65 63 74  69 6F 6E 20 66 6F 72 20  | connection for |
0020  2F 62 69 6E 2F 6C 73 20  28 31 39 32 2E 39 2E 32  |/bin/ls (192.9.2|
0030  30 30 2E 31 31 2C 31 31  30 38 29 20 28 30 20 62  |00.11,1108) (0 b|
0040  79 74 65 73 29 2E 0D 0A                           |ytes)...        |
Packet 246 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1108                    SYN
      seq:     8410561   ack:          0  win:  4096
Packet 247 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1108                -> FTP-DATA               SYN ACK
      seq:      458753   ack:     8410562  win:  4096
      Options
          Maximum Segment Size
               Size                        1024
          End of Option List
Packet 248 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1108                    ACK
      seq:     8410562   ack:     458754  win:  4096
Packet 249 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104                -> FTP                    ACK
      seq:      452773   ack:     8404900  win:  4096
Packet 250 Frame Length: 82       Slice Length: 78
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP                -> 1104                    PSH ACK
      seq:     8404900   ack:     452773  win:  4096
0000  32 32 36 20 54 72 61 6E  73 66 65 72 20 63 6F 6D  |226 Transfer com|
0010  70 6C 65 74 65 2E 0D 0A                           |plete...        |
Packet 251 Frame Length: 79       Slice Length: 75
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1108                    PSH ACK
      seq:     8410562   ack:     458754  win:  4096
0000  64 6D 70 2E 63 2E 5A 0D  0A 73 75 6E 5F 66 6F 6E  |dmp.c.Z..sun_fon|
0010  64 2E 63 0D 0A                                    |d.c..           |
Packet 252 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1108                    FIN ACK
      seq:     8410583   ack:     458754  win:  4096
Packet 253 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1108                -> FTP-DATA               ACK
      seq:      458754   ack:     8410584  win:  4075
Packet 254 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1108                -> FTP-DATA               FIN ACK
      seq:      458754   ack:     8410584  win:  4096
Packet 255 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9   200 1     -> 192 9   200 11
 tcp: Port: FTP-DATA            -> 1108                    ACK
      seq:     8410584   ack:     458755  win:  4096
Packet 256 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104                -> FTP                    ACK
      seq:      452773   ack:     8404924  win:  4096
Packet 263 Frame Length: 82       Slice Length: 78
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104                -> FTP                    PSH ACK
      seq:      452773   ack:     8404924  win:  4096
0000  50 4F 52 54 20 31 39 32  2C 39 2C 32 30 30 2C 31  |PORT 192,9,200,1|
0010  31 2C 34 2C 38 35 0D 0A                           |1,4,85..        |
```

```
Packet 264 Frame Length: 82        Slice Length: 78
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                 -> 1104                 PSH ACK
      seq:      8404924   ack:      452797   win:  4096
0000  32 30 30 20 50 4F 52 54  20 63 6F 6D 6D 61 6E 64  |200 PORT command|
0010  20 6F 6B 61 79 2E 0D 0A                           | okay...        |

Packet 265 Frame Length: 75        Slice Length: 71
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104               -> FTP                   PSH ACK
      seq:       452797   ack:     8404948   win:  4096
0000  52 45 54 52 20 73 75 6E  5F 66 6F 6E 64 2E 63 0D  |RETR sun_fond.c.|
0010  0A                                                |.               |

Packet 266 Frame Length: 136       Slice Length: 132
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                 -> 1104                 PSH ACK
      seq:      8404948   ack:      452814   win:  4096
0000  31 35 30 20 4F 70 65 6E  69 6E 67 20 64 61 74 61  |150 Opening data|
0010  20 63 6F 6E 6E 65 63 74  69 6F 6E 20 66 6F 72 20  | connection for |
0020  73 75 6E 5F 66 6F 6E 64  2E 63 20 28 31 39 32 2E  |sun_fond.c (192.|
0030  39 2E 32 30 30 2E 31 31  2C 31 31 30 39 29 20 28  |9.200.11,1109) (|
0040  32 33 39 34 20 62 79 74  65 73 29 2E 0D 0A        |2394 bytes)...  |

Packet 267 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA           -> 1109                 SYN
      seq:      8411969   ack:           0   win:  4096

Packet 268 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1109               -> FTP-DATA             SYN ACK
      seq:       460033   ack:     8411970   win:  4096
      Options
         Maximum Segment Size
             Size                      1024
         End of Option List

Packet 269 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA           -> 1109                 ACK
      seq:      8411970   ack:      460034   win:  4096

Packet 271 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA           -> 1109                 ACK
      seq:      8411970   ack:      460034   win:  4096
0000  23 69 6E 63 6C 75 64 65  20 3C 73 74 64 69 6F 2E  |#include <stdio.|
0010  68 3E 0D 0A 23 69 6E 63  6C 75 64 65 20 3C 73 79  |h>..#include <sy|
0020  73 2F 74 79 70 65 73 2E  68 3E 0D 0A 23 69 6E 63  |s/types.h>..#inc|
0030  6C 75 64 65 20 3C 73 79  73 2F 74 69 6D 65 62 2E  |lude <sys/timeb.|
0040  68 3E 0D 0A 73 74 72 75  63 74 20 74 69 6D 65 62  |h>..struct timeb|
0050  20 2A 74 70 3B 0D 0A 0D  0A 6D 61 69 6E 20 28 6E  | *tp;....main (n|
0060  2C 76 29 0D 0A 69 6E 74  20 6E 3B 0D 0A 63 68 61  |,v)..int n;..cha|
0070  72 2A 2A 20 76 3B 0D 0A  7B 0D 0A 63 68 61 72 2A  |r** v;..{..char*|
0080  20 69 6D 20 5B 31 30 30  5D 3B 0D 0A 69 6E 74 09  | im [100];..int.|

Packet 272 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA           -> 1109                 ACK
      seq:      8412482   ack:      460034   win:  4096
0000  5D 20 3D 20 22 63 68 65  72 79 6C 2E 69 6D 31 22  |] = "cheryl.im1"|
0010  3B 0D 0A 09 64 69 72 5B  69 5D 20 3D 20 30 3B 20  |;...dir[i] = 0; |
0020  69 6D 5B 69 2B 2B 5D 20  3D 20 22 63 69 72 63 6C  |im[i++] = "circl|
0030  65 73 2E 69 6D 31 22 3B  0D 0A 09 64 69 72 5B 69  |es.im1";...dir[i|
0040  5D 20 3D 20 30 3B 20 69  6D 5B 69 2B 2B 5D 20 3D  |] = 0; im[i++] =|
0050  20 22 64 61 6D 61 31 2E  69 6D 31 22 3B 0D 0A 09  | "dama1.im1";...|
0060  64 69 72 5B 69 5D 20 3D  20 30 3B 20 69 6D 5B 69  |dir[i] = 0; im[i|
0070  2B 2B 5D 20 3D 20 22 64  61 6D 61 32 2E 69 6D 31  |++] = "dama2.im1|
0080  22 3B 0D 0A 09 64 69 72  5B 69 5D 20 3D 20 30 3B  |";...dir[i] = 0;|

Packet 273 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA           -> 1109                 ACK
      seq:      8412994   ack:      460034   win:  4096
0000  64 69 72 5B 69 5D 20 3D  20 30 3B 20 69 6D 5B 69  |dir[i] = 0; im[i|
0010  2B 2B 5D 20 3D 20 22 66  6F 75 6E 64 65 72 73 2E  |++] = "founders.|
0020  69 6D 31 22 3B 0D 0A 09  64 69 72 5B 69 5D 20 3D  |im1";...dir[i] =|
0030  20 30 3B 20 69 6D 5B 69  2B 2B 5D 20 3D 20 22 67  | 0; im[i++] = "g|
0040  61 6C 61 78 69 65 2E 69  6D 31 22 3B 0D 0A 09 64  |alaxie.im1";...d|
0050  69 72 5B 69 5D 20 3D 20  30 3B 20 69 6D 5B 69 2B  |ir[i] = 0; im[i+|
0060  2B 5D 20 3D 20 22 67 6C  6F 62 65 2E 69 6D 31 22  |+] = "globe.im1"|
0070  3B 0D 0A 09 64 69 72 5B  69 5D 20 3D 20 30 3B 20  |;...dir[i] = 0; |
0080  69 6D 5B 69 2B 2B 5D 20  3D 20 22 67 6F 64 7A 69  |im[i++] = "godzi|
```

```
Packet 274 Frame Length: 570       Slice Length: 566
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1109                  PSH ACK
      seq:     8413506   ack:     460034   win:   4096
0000   20 30 3B 20 69 6D 5B 69   2B 2B 5D 20 3D 20 22 69   | 0; im[i++] = "i|
0010   74 61 6C 69 61 2E 69 6D   31 22 3B 0D 0A 09 64 69   |talia.im1";...di|
0020   72 5B 69 5D 20 3D 20 30   3B 20 69 6D 5B 69 2B 2B   |r[i] = 0; im[i++|
0030   5D 20 3D 20 22 6B 65 79   6C 6F 63 6B 2E 69 6D 31   |] = "keylock.im1|
0040   22 3B 0D 0A 09 64 69 72   5B 69 5D 20 3D 20 30 3B   |";...dir[i] = 0;|
0050   20 69 6D 5B 69 2B 2B 5D   20 3D 20 22 6C 61 6B 65   | im[i++] = "lake|
0060   2E 69 6D 31 22 3B 0D 0A   09 64 69 72 5B 69 5D 20   |.im1";...dir[i] |
0070   3D 20 30 3B 20 69 6D 5B   69 2B 2B 5D 20 3D 20 22   |= 0; im[i++] = "|
0080   6C 65 6E 6E 6F 6E 2E 69   6D 31 22 3B 0D 0A 09 64   |lennon.im1";...d|

Packet 275 Frame Length: 486       Slice Length: 482
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1109                  PSH FIN ACK
      seq:     8414018   ack:     460034   win:   4096
0000   3D 20 22 73 68 61 6B 65   73 70 2E 69 6D 31 22 3B   |= "shakesp.im1";|
0010   0D 0A 09 64 69 72 5B 69   5D 20 3D 20 30 3B 20 69   |...dir[i] = 0; i|
0020   6D 5B 69 2B 2B 5D 20 3D   20 22 73 70 61 63 65 2E   |m[i++] = "space.|
0030   69 6D 31 22 3B 0D 0A 09   64 69 72 5B 69 5D 20 3D   |im1";...dir[i] =|
0040   20 30 3B 20 69 6D 5B 69   2B 2B 5D 20 3D 20 22 73   | 0; im[i++] = "s|
0050   75 6E 66 6C 2E 69 6D 31   22 3B 0D 0A 09 64 69 72   |unfl.im1";...dir|
0060   5B 69 5D 20 3D 20 30 3B   20 69 6D 5B 69 2B 2B 5D   |[i] = 0; im[i++]|
0070   20 3D 20 22 77 70 73 31   2E 69 6D 31 22 3B 0D 0A   | = "wps1.im1";..|
0080   0D 0A 09 74 70 20 3D 20   6D 61 6C 6C 6F 63 20 28   |...tp = malloc (|

Packet 276 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1109              -> FTP-DATA             ACK
      seq:      460034   ack:     8414447   win:   1620

Packet 280 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1109              -> FTP-DATA             ACK
      seq:      460034   ack:     8414447   win:   3668

Packet 281 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1109              -> FTP-DATA             FIN ACK
      seq:      460034   ack:     8414447   win:   4096

Packet 282 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP-DATA          -> 1109                  ACK
      seq:     8414447   ack:     460035   win:   4096

Packet 284 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104              -> FTP                  ACK
      seq:      452814   ack:     8405026   win:   4096

Packet 286 Frame Length: 82        Slice Length: 78
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP              -> 1104                  PSH ACK
      seq:     8405026   ack:     452814   win:   4096
0000   32 32 36 20 54 72 61 6E   73 66 65 72 20 63 6F 6D   |226 Transfer com|
0010   70 6C 65 74 65 2E 0D 0A                             |plete...        |

Packet 290 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104              -> FTP                  ACK
      seq:      452814   ack:     8405050   win:   4096

Packet 291 Frame Length: 65        Slice Length: 61
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104              -> FTP                  PSH ACK
      seq:      452814   ack:     8405050   win:   4096
0000   43 57 44 20 7E 0D 0A                                |CWD ~..         |

Packet 292 Frame Length: 81        Slice Length: 77
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP            192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP              -> 1104                  PSH ACK
      seq:     8405050   ack:     452821   win:   4096
0000   32 30 30 20 43 57 44 20   63 6F 6D 6D 61 6E 64 20   |200 CWD command |
0010   6F 6B 61 79 2E 0D 0A                                |okay...         |

Packet 293 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104              -> FTP                  ACK
      seq:      452821   ack:     8405073   win:   4096

Packet 294 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP            192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104              -> FTP                  PSH ACK
      seq:      452821   ack:     8405073   win:   4096
0000   48 45 4C 50 0D 0A                                   |HELP..          |
```

```
Packet 295 Frame Length: 125      Slice Length: 121
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    -> 192 9   200 11
 tcp: Port: FTP              -> 1104              PSH ACK
      seq:    8405073   ack:     452827   win:  4096
0000  32 31 34 2D 54 68 65 20  66 6F 6C 6C 6F 77 69 6E  |214-The followin|
0010  67 20 63 6F 6D 6D 61 6E  64 73 20 61 72 65 20 72  |g commands are r|
0020  65 63 6F 67 6E 69 7A 65  64 20 28 2A 20 3D 3E 27  |ecognized (* =>'|
0030  73 20 75 6E 69 6D 70 6C  65 6D 65 6E 74 65 64 29  |s unimplemented)|
0040  2E 0D 0A                                           |...             |
Packet 296 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP               ACK
      seq:     452827   ack:    8405140   win:  4029
Packet 297 Frame Length: 410      Slice Length: 406
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    -> 192 9   200 11
 tcp: Port: FTP              -> 1104              PSH ACK
      seq:    8405140   ack:     452827   win:  4096
0000  20 20 20 20 55 53 45 52  20 20 20 20 20 50 4F 52  |    USER     POR|
0010  54 20 20 20 20 20 52 45  54 52 20 20 20 20 20 4D  |T     RETR     M|
0020  53 4E 44 2A 20 20 20 20  41 4C 4C 4F 20 20 20 20  |SND*    ALLO    |
0030  20 44 45 4C 45 20 20 20  20 20 53 49 54 45 2A 20  | DELE     SITE* |
0040  20 20 20 58 52 4D 44 20  0D 0A 20 20 20 20 50 41  |   XRMD .. 20 PA|
0050  53 53 20 20 20 20 20 50  41 53 56 2A 20 20 20 20  |SS     PASV*    |
0060  53 54 4F 52 20 20 20 20  20 4D 53 4F 4D 2A 20 20  |STOR     MSOM*  |
0070  20 20 52 45 53 54 2A 20  20 20 20 43 57 44 20 20  |  REST*    CWD  |
0080  20 20 20 20 53 54 41 54  2A 20 20 20 20 58 50 57  |    STAT*    XPW|
Packet 298 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP               ACK
      seq:     452827   ack:    8405492   win:  4096
Packet 299 Frame Length: 96       Slice Length: 92
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    -> 192 9   200 11
 tcp: Port: FTP              -> 1104              PSH ACK
      seq:    8405492   ack:     452827   win:  4096
0000  32 31 34 20 44 69 72 65  63 74 20 63 6F 6D 6D 65  |214 Direct comme|
0010  6E 74 73 20 74 6F 20 66  74 70 2D 62 75 67 73 40  |nts to ftp-bugs@|
0020  45 52 31 2E 0D 0A                                 |ER1...          |
Packet 300 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP               ACK
      seq:     452827   ack:    8405530   win:  4096
Packet 301 Frame Length: 70       Slice Length: 66
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP              PSH ACK
      seq:     452827   ack:    8405530   win:  4096
0000  58 4D 4B 44 20 65 73 73  61 69 0D 0A              |XMKD essai..    |
Packet 302 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    -> 192 9   200 11
 tcp: Port: FTP              -> 1104               ACK
      seq:    8405530   ack:     452839   win:  4096
Packet 303 Frame Length: 83       Slice Length: 79
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    -> 192 9   200 11
 tcp: Port: FTP              -> 1104              PSH ACK
      seq:    8405530   ack:     452839   win:  4096
0000  32 30 30 20 4D 4B 44 49  52 20 63 6F 6D 6D 61 6E  |200 MKDIR comman|
0010  64 20 6F 6B 61 79 2E 0D  0A                       |d okay...       |
Packet 304 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP               ACK
      seq:     452839   ack:    8405555   win:  4096
Packet 305 Frame Length: 69       Slice Length: 65
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP              PSH ACK
      seq:     452839   ack:    8405555   win:  4096
0000  43 57 44 20 65 73 73 61  69 0D 0A                 |CWD essai..     |
Packet 306 Frame Length: 81       Slice Length: 77
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP          192 9   200 1    -> 192 9   200 11
 tcp: Port: FTP              -> 1104              PSH ACK
      seq:    8405555   ack:     452850   win:  4096
0000  32 30 30 20 43 57 44 20  63 6F 6D 6D 61 6E 64 20  |200 CWD command |
0010  6F 6B 61 79 2E 0D 0A                              |okay...         |
Packet 307 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP               ACK
      seq:     452850   ack:    8405578   win:  4096
Packet 308 Frame Length: 64       Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP          192 9   200 11    -> 192 9   200 1
 tcp: Port: 1104             -> FTP              PSH ACK
      seq:     452850   ack:    8405578   win:  4096
0000  58 50 57 44 0D 0A                                 |XPWD..          |
```

```
Packet 309 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                  ->  1104                   ACK
       seq:      8405578    ack:      452856   win:  4096
Packet 310 Frame Length: 114       Slice Length: 110
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                  ->  1104               PSH ACK
       seq:      8405578    ack:      452856   win:  4096
0000  32 35 31 20 22 2F 75 73   72 2F 75 34 2F 6C 61 62  |251 "/usr/u4/lab|
0010  6F 2F 74 6F 75 74 61 69   6E 2F 65 73 73 61 69 22  |o/toutain/essai"|
0020  20 69 73 20 63 75 72 72   65 6E 74 20 64 69 72 65  | is current dire|
0030  63 74 6F 72 79 2E 0D 0A                            |ctory...        |
Packet 311 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104                 ->  FTP                    ACK
       seq:       452856    ack:     8405634   win:  4096
Packet 312 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104                 ->  FTP                PSH ACK
       seq:       452856    ack:     8405634   win:  4096
0000  51 55 49 54 0D 0A                                  |QUIT..          |
Packet 313 Frame Length: 72        Slice Length: 68
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                  ->  1104               PSH ACK
       seq:      8405634    ack:      452862   win:  4096
0000  32 32 31 20 47 6F 6F 64   62 79 65 2E 0D 0A        |221 Goodbye...  |
Packet 314 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104                 ->  FTP                FIN ACK
       seq:       452862    ack:     8405648   win:  4096
Packet 315 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                  ->  1104                   ACK
       seq:      8405648    ack:      452863   win:  4096
Packet 316 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 01 B4 32  ---->  08 00 20 00 61 F3  Type IP
  ip: TCP           192 9    200 1      -> 192 9    200 11
 tcp: Port: FTP                  ->  1104               FIN ACK
       seq:      8405648    ack:      452863   win:  4096
Packet 317 Frame Length: 64        Slice Length: 60
ethr: Station 08 00 20 00 61 F3  ---->  08 00 20 01 B4 32  Type IP
  ip: TCP           192 9    200 11     -> 192 9    200 1
 tcp: Port: 1104                 ->  FTP                    ACK
       seq:       452863    ack:     8405649   win:  4096
```

13) Repérez les séquences d'ouverture de connexion, de fermeture et de transfert de données.

14) Mettez en correspondance, à l'aide d'un diagramme temporel, les actions de l'utilisateur et les trames émises ou reçues.