



Partie 3 SAE : Réseau

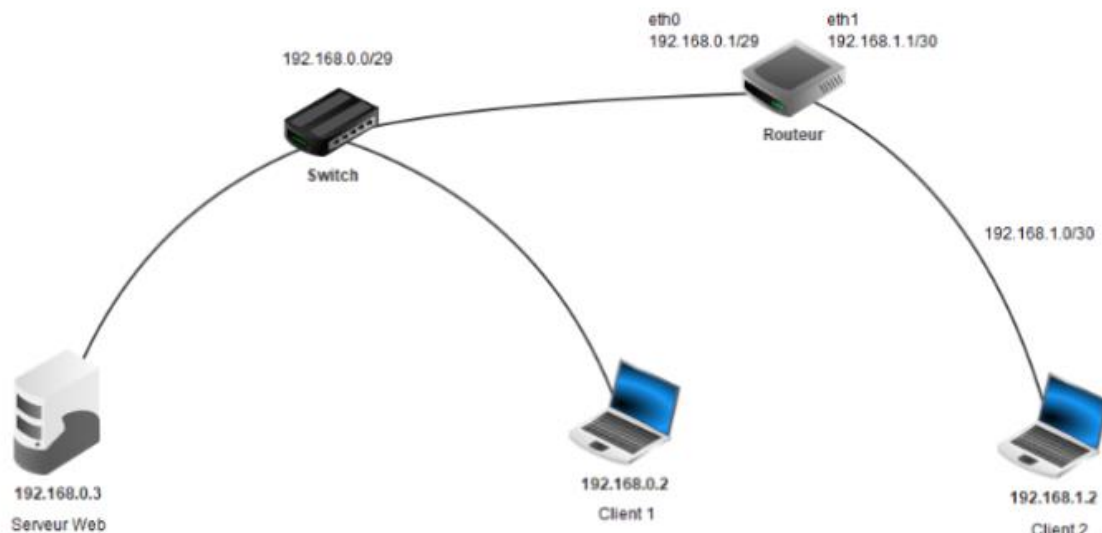
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Connection de deux clients dans des réseaux différents à un serveur web :

1) À la suite de la partie théorique, nous allons passer maintenant à la partie pratique. Faites le câblage indiqué dans la partie théorique.



Voici ci-dessus notre câblage à la différence que notre masque de sous-réseau est en /24. Vous pouvez le reproduire si voulu.

2) Après le câblage, et les configurations sur les machines. Nous allons configurer le routeur. Pour cela lancer l'application Tera Term.

3) Pour commencer, il vous faudra de passer en mode superviseur avec « enable » et en mode configuration avec « configure terminal » ou « conf t ». Tera Term vous répondra normalement :

« Enter configuration commands, one per line. End with CNTL/Z »

4) Nous allons maintenant changer le routage IP. Il vous faudra d'écrire « ip routing ».

5) Configurons l'interface eth0 avec « interface fastethernet 0/0 ».

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip routing
Router(config)#interface fastethernet 0/0
```

6) Mettons l'adresse 192.168.1.1 sur un masque /24 avec la commande

« ip address 192.168.1.1 255.255.255.0 ».

7) Vous pourrez ensuite quitter avec « exit » deux fois. Un message d'information vous indiquera de la mise à jour de l'interface.

```
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
*Jan 1 00:16:42.467: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Jan 1 00:16:43.467: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router(config)#exit
```

8) Refaites les mêmes actions précédentes avec l'interface 1 avec la commande « interface fastethernet 0/1 » et pour l'adresse « ip address 192.168.0.1 255.255.255.0 ».

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fastethernet 0/1
Router(config-if)#ip address 192.168.0.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
*Jan 1 00:17:49.839: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Jan 1 00:17:50.839: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Router(config-if)#exit
```

9) Quittez le mode superviseur avec la commande « disable » puis affichez les interfaces avec la commande « show ip interface brief » afin de vérifier votre routage.

```
Router#disable
Router>show ip interface brief
Interface                IP-Address      OK? Method Status          Protocol
FastEthernet0/0          192.168.1.1     YES manual up              up
FastEthernet0/1          192.168.0.1     YES manual up              up
Router>[]
```

Veillez à bien vérifier votre routage sinon les autres actions n'aboutiront pas.

Maintenant, nous allons analyser les différentes trames.

Tout d'abord, le client 1 qui se connecte au serveur web :

Vu que les clients étaient déjà connectés au serveur web, les informations de celui-ci sont stockées dans le cache des clients. Donc, nous n'avons pas les premières trames de connexion au serveur.

Connexion au serveur depuis le client 1 (situé dans le même réseau). Nous pouvons voir le protocole SSDP lors de la requête vers le serveur.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
2	1.002469437	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
3	1.058644861	fe80::ac4b:c669:1c11::fb	ff02::fb	MDNS	102	Standard query 0x0000 PTR _pgpkey-hkp.tcp.local, "QM" question
4	1.059088756	192.168.0.2	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _pgpkey-hkp.tcp.local, "QM" question
5	2.0020885024	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
6	2.245193913	Cisco_9f:e1:2f	CDP/VTP/DTP/PagP/UD.	CDP	354	Device ID: Router Port ID: FastEthernet0/1
7	2.358912697	Dell_b3:08:8e	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.69.207
8	3.003689579	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
9	3.317459718	Dell_b3:08:8e	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.69.207
10	4.317628314	Dell_b3:08:8e	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.69.207
11	5.343698854	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
12	6.231976873	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
13	7.232544839	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
14	29.209324655	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x124e6d02
15	32.332535536	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x124e6d02
16	35.454977917	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x124e6d02
17	42.699314097	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x124e6d02
18	58.188478526	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x124e6d02
19	62.239674862	Cisco_9f:e1:2f	CDP/VTP/DTP/PagP/UD.	CDP	354	Device ID: Router Port ID: FastEthernet0/1

Voici la partie serveur :

No.	Time	Source	Destination	Protocol	Length	Info
153	399.585386955	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
154	415.434669172	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x08f05961
155	427.086976952	fe80::6c70:1fab:265::12	ff02::1:2	DHCPv6	156	Solicit XID: 0x838750 CID: 0001000120a9a45c81f66b3688e
156	443.531964811	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
157	446.065687453	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
158	447.694047629	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
159	447.251830951	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
160	448.071779597	fe80::228a:2a40:78e::f02:1:2	ff02::1:2	DHCPv6	156	Solicit XID: 0xe894c2 CID: 0001000120a9a45c81f66b3185c
161	448.089562102	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
162	448.393298837	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
163	449.071899262	fe80::228a:2a40:78e::f02:1:2	ff02::1:2	DHCPv6	156	Solicit XID: 0xe894c2 CID: 0001000120a9a45c81f66b3185c
164	449.353974949	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
165	449.572492981	Cisco_9f:e1:2f	CDP/VTP/DTP/PagP/UD.	CDP	354	Device ID: Router Port ID: FastEthernet0/1
166	449.645238896	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
167	450.352197058	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
168	450.583974268	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
169	451.074580442	fe80::228a:2a40:78e::f02:1:2	ff02::1:2	DHCPv6	156	Solicit XID: 0xe894c2 CID: 0001000120a9a45c81f66b3185c
170	451.624009707	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222

Le client 2 (en dehors du réseau du serveur) se connecte à la page web.

Les trames ressemblent beaucoup aux trames du client 1.

Frame 5: 217 bytes on wire (1736 bits), 217 bytes captured (1736 bits) on interface ens33, id 0

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x339d3526
2	3.122574155	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x339d3526
3	10.366431646	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x339d3526
4	25.854895546	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x339d3526
5	29.950543560	169.254.4.243	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
6	30.951730469	169.254.4.243	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
7	31.952529306	169.254.4.243	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
8	32.952761991	169.254.4.243	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
9	57.266654902	Cisco_9f:e1:2e	0.0.0.0	CDP/VTP/DTP/PagP/UD...	354	Device ID: Router Port ID: FastEthernet0/0
10	57.821074544	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xda7d65da
11	57.839639413	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
12	58.358458060	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
13	59.358471442	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
14	60.358860167	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
15	60.943907249	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xda7d65da
16	61.955442829	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
17	62.858724232	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
18	63.858008566	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
19	65.077565997	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
20	65.857956289	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
21	66.858205801	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
22	68.188142078	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xda7d65da
23	68.193938967	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
24	68.858345493	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
25	69.858231446	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
26	83.478944555	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xda7d65da
27	90.478944555	fe80::f05:24cc:3af...	ff02::fb	MDNS	221	Standard query 0x0000 PTR _nfs._tcp.local, "QM" question PTR
28	90.478944555	192.168.1.2	224.0.0.251	MDNS	201	Standard query 0x0000 PTR _nfs._tcp.local, "QM" question PTR
29	98.213021911	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243
30	98.457838705	Dell_b3:6f:2b	Broadcast	ARP	60	who has 192.168.20.254? Tell 169.254.4.243

Voici la partie serveur web :

Frame 1: 343 bytes on wire (2744 bits), 343 bytes captured (2744 bits) on interface ens33, id 0

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0xd8f05981
2	13.4727199205	fe80::6c7b:ffa0:2c5...	ff02::1:2	DHCPv6	156	Solicit XID: 0xe83875b CID: 000100012dba9a0ec81f66b3688e
3	31.957816129	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
4	32.549397838	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
5	33.549697237	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
6	33.817109409	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
7	34.536665796	fe80::228a:2a40:78e...	ff02::1:2	DHCPv6	156	Solicit XID: 0xe894c2 CID: 000100012dba9a45c81f66b3185c
8	34.549364540	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
9	34.818392971	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
10	35.536937135	fe80::228a:2a40:78e...	ff02::1:2	DHCPv6	156	Solicit XID: 0xe894c2 CID: 000100012dba9a45c81f66b3185c
11	35.818826249	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
12	36.937685736	Cisco_9f:e1:2f	CDP/VTP/DTP/PagP/UD...	CDP	354	Device ID: Router Port ID: FastEthernet0/1
13	36.110824881	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
14	36.819725609	169.254.69.207	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
15	37.049504617	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
16	37.537697545	fe80::228a:2a40:78e...	ff02::1:2	DHCPv6	156	Solicit XID: 0xe894c2 CID: 000100012dba9a45c81f66b3185c
17	38.049535426	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
18	39.160406774	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
19	40.049283549	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222

Des pings ont été effectués entre le client 1 et le client 2.

Pour commencer, nous avons ping le client 1 vers le client 2. Nous avons le point de vue du client 1. Nous pouvons voir des requêtes ICMP qui transitent.

Frame 1: 343 bytes on wire (2744 bits), 343 bytes captured (2744 bits) on interface ens33, id 0

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
2	0.888191132	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
3	0.922371486	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=1/256, ttl=64 (reply in 4)
4	0.923514890	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=1/256, ttl=64 (request in 4)
5	1.887874025	Dell_b3:18:5c	Broadcast	ARP	60	who has 192.168.10.254? Tell 169.254.230.222
6	1.923551854	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=2/512, ttl=64 (reply in 7)
7	1.925298408	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=2/512, ttl=64 (request in 7)
8	2.528327884	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=3/768, ttl=64 (reply in 9)
9	2.529463389	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=3/768, ttl=64 (request in 9)
10	3.026119688	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=4/1024, ttl=63 (request in 10)
11	3.927743577	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=4/1024, ttl=63 (request in 10)
12	4.927533671	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=5/1280, ttl=64 (reply in 11)
13	4.928691174	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=5/1280, ttl=64 (request in 11)
14	5.929285262	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=6/1536, ttl=64 (reply in 12)
15	5.930697231	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=6/1536, ttl=63 (request in 12)
16	6.931709341	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=7/1792, ttl=64 (reply in 13)
17	6.933429899	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) reply id=0x0004, seq=7/1792, ttl=63 (request in 13)
18	7.933832180	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=8/2048, ttl=64 (reply in 14)

Voici le point de vue du client 2, les trames ne changent pas

Apply a display filter ... <Ctrl>/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
2	0.04026728	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
3	1.646113565	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
4	3.442894716	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x509abb10
5	4.020856786	Cisco 9f:e1:2e	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=1/256, ttl=63 (reply in 7)
6	4.084566011	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=1/256, ttl=63 (request in 5)
7	4.084613460	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=2/512, ttl=63 (request in 6)
8	5.085888744	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=2/512, ttl=63 (request in 7)
9	5.085950061	192.168.1.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=3/768, ttl=63 (request in 8)
10	6.086275589	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=3/768, ttl=63 (request in 9)
11	6.086338254	192.168.1.2	192.168.0.2	DHCP	343	DHCP Discover - Transaction ID 0x509abb10
12	6.551844499	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x509abb10
13	7.088608968	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=4/1024, ttl=63 (reply in 11)
14	7.088663363	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=4/1024, ttl=63 (request in 13)
15	8.089631274	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=5/1280, ttl=63 (reply in 14)
16	8.089669615	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=5/1280, ttl=63 (request in 15)
17	9.091561893	192.168.0.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=6/1536, ttl=63 (reply in 16)
18	9.091601831	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=6/1536, ttl=63 (request in 17)
19	9.673094865	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x509abb10
20	10.094142073	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=7/1792, ttl=63 (reply in 19)
21	10.094206282	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=7/1792, ttl=63 (request in 20)
22	11.096262098	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0004, seq=8/2048, ttl=63 (reply in 21)
23	11.096324788	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0004, seq=8/2048, ttl=63 (request in 22)
24	15.090315595	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
25	15.646296820	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
26	16.315664387	VMware 3d:5e:92	Broadcast	ARP	60	Who has 192.168.1.1? Tell 192.168.1.2
27	16.316883494	Cisco 9f:e1:2e	VMware 3d:5e:92	ARP	60	Who has 192.168.1.1? Tell 192.168.1.2
28	16.646940342	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
29	16.917318331	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x509abb10

Puis, nous avons ping depuis le client 2 vers le client 1 :

Nous retrouvons les requêtes ICMP. Ceci est le point de vue du client 2.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=1/256, ttl=63 (reply in 2)
2	0.000000784	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=1/256, ttl=63 (request in 1)
3	1.002615700	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=2/512, ttl=63 (reply in 4)
4	1.002619953	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=2/512, ttl=63 (request in 3)
5	1.248665743	0.0.0.0	255.255.255.255	DHCP	343	DHCP Discover - Transaction ID 0x9a77b5a
6	2.094568813	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=3/768, ttl=63 (reply in 7)
7	2.094543692	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=3/768, ttl=63 (request in 6)
8	2.094768046	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.10.254? Tell 169.254.69.207
9	3.096366512	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=4/1024, ttl=63 (reply in 10)
10	3.096366512	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=4/1024, ttl=63 (request in 9)
11	3.096610544	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.10.254? Tell 169.254.69.207
12	4.093425848	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=5/1280, ttl=63 (reply in 11)
13	4.093488065	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=5/1280, ttl=63 (request in 12)
14	4.093488065	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.10.254? Tell 169.254.69.207
15	5.116313493	VMware 3d:5e:92	Broadcast	ARP	60	Who has 192.168.10.254? Tell 169.254.69.207
16	5.116358795	Cisco 9f:e1:2f	VMware 3d:5e:92	ARP	60	Who has 192.168.10.254? Tell 169.254.69.207
17	5.933632996	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.10.254? Tell 169.254.69.207

Et voici le point de vue du client 1. On retrouve les mêmes requêtes ARP.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=1/256, ttl=63 (reply in 2)
2	0.001546653	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=1/256, ttl=63 (request in 1)
3	1.002375980	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=2/512, ttl=63 (reply in 4)
4	1.004434561	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=2/512, ttl=63 (request in 3)
5	2.003983005	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=3/768, ttl=63 (reply in 6)
6	2.006155990	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=3/768, ttl=63 (request in 5)
7	2.777864312	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
8	3.006160537	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=4/1024, ttl=63 (reply in 7)
9	3.008791493	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=4/1024, ttl=63 (request in 8)
10	3.423597327	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
11	4.009189598	192.168.1.2	192.168.0.2	ICMP	98	Echo (ping) request id=0x0003, seq=5/1280, ttl=63 (reply in 10)
12	4.011236227	192.168.0.2	192.168.1.2	ICMP	98	Echo (ping) request id=0x0003, seq=5/1280, ttl=63 (request in 11)
13	4.422991429	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
14	5.077602315	VMware 3d:5e:92	Cisco 9f:e1:2e	ARP	60	Who has 192.168.1.1? Tell 192.168.1.2
15	5.078573901	Cisco 9f:e1:2e	VMware 3d:5e:92	ARP	60	Who has 192.168.1.1? Tell 192.168.1.2
16	5.423057617	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
17	6.423246882	Dell b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
18	6.423246882	Cisco 9f:e1:2e	Cisco 9f:e1:2e	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243

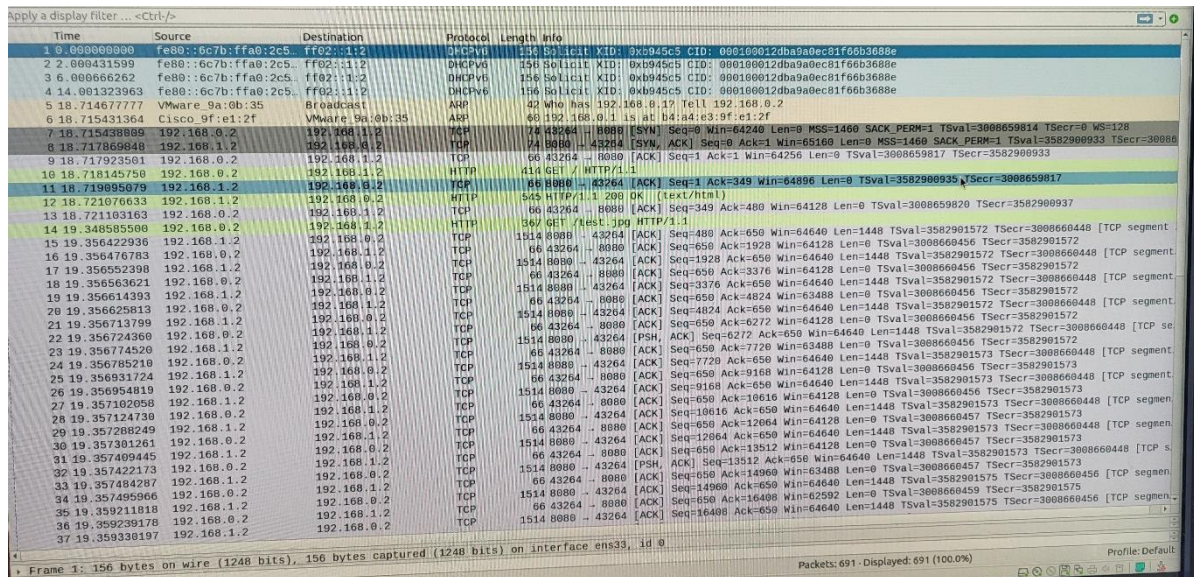
Connection de 3 serveurs web entre eux :

Pour la partie 2, nous avons transformé nos 2 clients en serveur web.

Nous nous sommes connectés depuis l'ancien client 1 au serveur web client 2.

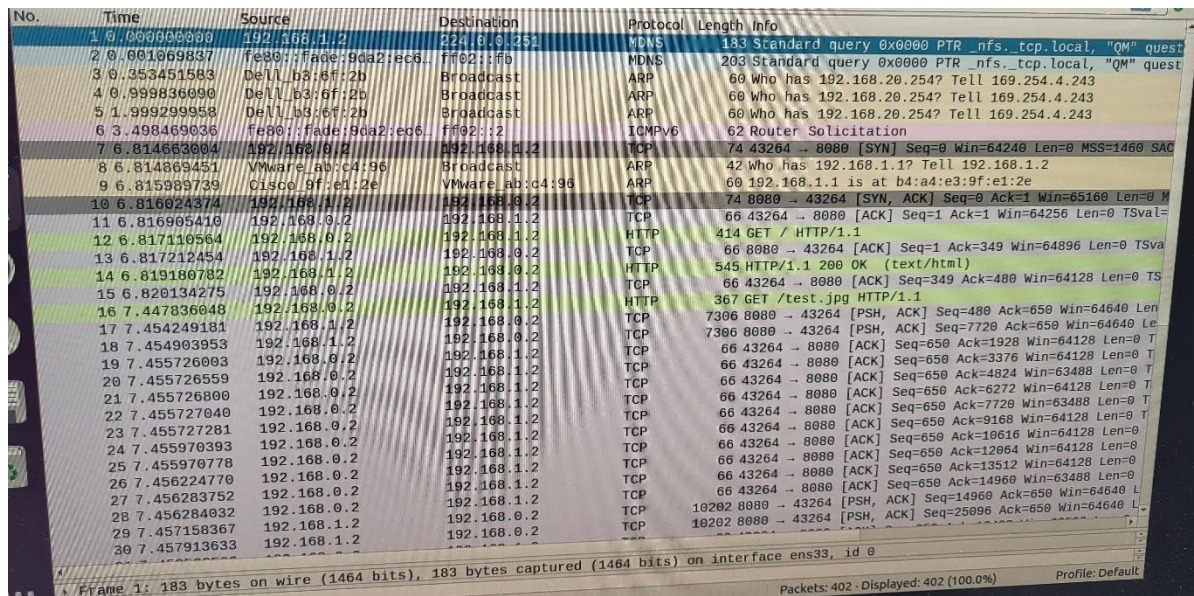
Puisque nous ne nous étions pas encore connectés à la page web, le navigateur n'avait pas en cache le page.

Ceci est le point de vue du client 1. Nous remarquons des requêtes TCP et HTTP. Qui demande les informations de la page web.



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	fe80::6c7b:ffa0:2c5...	ff02::1:2	ICMPv6	156	Solicit XID: 0xb945c5 CID: 000100012dba9a0ec81f66b3688e
2	0.000000000	fe80::6c7b:ffa0:2c5...	ff02::1:2	ICMPv6	156	Solicit XID: 0xb945c5 CID: 000100012dba9a0ec81f66b3688e
3	0.000000000	fe80::6c7b:ffa0:2c5...	ff02::1:2	ICMPv6	156	Solicit XID: 0xb945c5 CID: 000100012dba9a0ec81f66b3688e
4	0.000000000	fe80::6c7b:ffa0:2c5...	ff02::1:2	ICMPv6	156	Solicit XID: 0xb945c5 CID: 000100012dba9a0ec81f66b3688e
5	18.714677777	VMware 9a:0b:35	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.2
6	18.715431364	Cisco 9f:e1:2f	VMware 9a:0b:35	ARP	60	192.168.0.1 is at b4:a4:e3:9f:e1:2f
7	18.715438889	192.168.0.2	192.168.1.2	TCP	74	43264 -> 8080 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=308659814 TSecr=0 WS=128
8	18.717869848	192.168.1.2	192.168.0.2	TCP	74	8080 -> 43264 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 SACK_PERM=1 TSval=358290933 TSecr=308659814
9	18.717923561	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=1 Ack=1 Win=64256 Len=0 TSval=308659817 TSecr=358290933
10	18.719895079	192.168.1.2	192.168.0.2	HTTP	414	GET / HTTP/1.1
11	18.720106363	192.168.1.2	192.168.0.2	TCP	66	43264 -> 8080 [ACK] Seq=1 Ack=349 Win=64896 Len=0 TSval=358290933 TSecr=308659817
12	18.721076633	192.168.1.2	192.168.0.2	HTTP	545	HTTP/1.1 200 OK (text/html)
13	18.721103163	192.168.1.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=349 Ack=480 Win=64128 Len=0 TSval=308659820 TSecr=358290937
14	19.348555000	192.168.0.2	192.168.1.2	TCP	367	GET /test.jpg HTTP/1.1
15	19.356422936	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=480 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
16	19.356476783	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=1928 Win=64128 Len=0 TSval=308660448 TSecr=3582901572
17	19.356523900	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=1928 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
18	19.356563621	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=3376 Win=64640 Len=0 TSval=3582901572 TSecr=3582901572
19	19.356614393	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=3376 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
20	19.356625813	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=4824 Win=63488 Len=0 TSval=3582901572 TSecr=3582901572
21	19.356724360	192.168.0.2	192.168.1.2	TCP	1514	8080 -> 43264 [ACK] Seq=4824 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
22	19.356774520	192.168.1.2	192.168.0.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=6272 Win=64128 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
23	19.356785210	192.168.0.2	192.168.1.2	TCP	1514	8080 -> 43264 [ACK] Seq=6272 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
24	19.356785210	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=7720 Win=63488 Len=0 TSval=3582901572 TSecr=3582901572
25	19.356931724	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=7720 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
26	19.356954819	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=9168 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
27	19.357102058	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=9168 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
28	19.357124730	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=10616 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
29	19.357206249	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=10616 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
30	19.357301261	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=12064 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
31	19.357409445	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=12064 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
32	19.357422173	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=13512 Win=63488 Len=0 TSval=3582901572 TSecr=3582901572
33	19.357484287	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=13512 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
34	19.357495066	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=14960 Win=64640 Len=0 TSval=3582901572 TSecr=3582901572
35	19.359211018	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=14960 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...
36	19.359239178	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=25092 Win=64640 Len=0 TSval=3582901572 TSecr=3582901572
37	19.359338197	192.168.1.2	192.168.0.2	TCP	1514	8080 -> 43264 [ACK] Seq=25092 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448 [TCP segment...

Voici le point de vue du serveur web :



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	192.168.1.2	224.0.0.251	MDNS	183	Standard query 0x0000 PTR _nfs._tcp.local, "QM" quest
2	0.001098837	fe80::fade:90a2:ed6...	ff02::fb	MDNS	203	Standard query 0x0000 PTR _nfs._tcp.local, "QM" quest
3	0.353451583	DeLL_b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
4	0.999836090	DeLL_b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
5	1.999299958	DeLL_b3:6f:2b	Broadcast	ARP	60	Who has 192.168.20.254? Tell 169.254.4.243
6	3.498469036	fe80::fade:90a2:ed6...	ff02::2	ICMPv6	62	Router Solicitation
7	6.814663004	192.168.0.2	192.168.1.2	TCP	74	43264 -> 8080 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=308659814 TSecr=0 WS=128
8	6.814869451	VMware ab:c4:96	Broadcast	ARP	42	Who has 192.168.1.1? Tell 192.168.1.2
9	6.815989739	Cisco 9f:e1:2e	VMware ab:c4:96	ARP	60	192.168.1.1 is at b4:a4:e3:9f:e1:2e
10	6.816024374	192.168.1.2	192.168.0.2	TCP	74	8080 -> 43264 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 SACK_PERM=1 TSval=358290933 TSecr=308659814
11	6.816905410	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=1 Ack=1 Win=64256 Len=0 TSval=308659817 TSecr=358290933
12	6.817110564	192.168.0.2	192.168.1.2	HTTP	414	GET / HTTP/1.1
13	6.817212454	192.168.1.2	192.168.0.2	TCP	66	8080 -> 43264 [ACK] Seq=1 Ack=349 Win=64896 Len=0 TSval=358290933 TSecr=308659817
14	6.819180782	192.168.1.2	192.168.0.2	HTTP	545	HTTP/1.1 200 OK (text/html)
15	6.820134275	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=349 Ack=480 Win=64128 Len=0 TSval=308659820 TSecr=358290937
16	7.447836048	192.168.0.2	192.168.1.2	HTTP	367	GET /test.jpg HTTP/1.1
17	7.452429181	192.168.1.2	192.168.0.2	TCP	7306	8080 -> 43264 [PSH, ACK] Seq=480 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448
18	7.454903953	192.168.1.2	192.168.0.2	TCP	7306	8080 -> 43264 [PSH, ACK] Seq=7720 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=308660448
19	7.455726093	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=1928 Win=64128 Len=0 TSval=308660448 TSecr=3582901572
20	7.455726559	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=3376 Win=64128 Len=0 TSval=308660448 TSecr=3582901572
21	7.455726800	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=4824 Win=63488 Len=0 TSval=3582901572 TSecr=3582901572
22	7.455727040	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=6272 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
23	7.455727281	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=7720 Win=63488 Len=0 TSval=3582901572 TSecr=3582901572
24	7.455970393	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=9168 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
25	7.455970778	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=10616 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
26	7.456224770	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=12064 Win=64128 Len=0 TSval=3582901572 TSecr=3582901572
27	7.456283752	192.168.0.2	192.168.1.2	TCP	66	43264 -> 8080 [ACK] Seq=650 Ack=13512 Win=63488 Len=0 TSval=3582901572 TSecr=3582901572
28	7.456284032	192.168.0.2	192.168.1.2	TCP	10202	8080 -> 43264 [PSH, ACK] Seq=14960 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=3582901572
29	7.457158367	192.168.1.2	192.168.0.2	TCP	10202	8080 -> 43264 [PSH, ACK] Seq=25092 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=3582901572
30	7.457913633	192.168.1.2	192.168.0.2	TCP	10202	8080 -> 43264 [PSH, ACK] Seq=25092 Ack=650 Win=64640 Len=0 TSval=3582901572 TSecr=3582901572