

C:\Users\Yannick DELAUNAY>arp -a

```

Interface : 192.168.1.32 --- 0x14
  Adresse Internet    Adresse physique    Type
  192.168.1.1         30-7e-cb-4e-55-28   dynamique
  192.168.1.67        30-7e-cb-36-48-e0   dynamique
  192.168.1.97        a4-77-33-e7-c6-76   dynamique
  192.168.1.255       ff-ff-ff-ff-ff-ff   statique
  224.0.0.2           01-00-5e-00-00-02   statique
  224.0.0.22          01-00-5e-00-00-16   statique
  224.0.0.251         01-00-5e-00-00-fb   statique
  224.0.0.252         01-00-5e-00-00-fc   statique
  239.255.255.250     01-00-5e-7f-ff-fa   statique
  239.255.255.253     01-00-5e-7f-ff-fd   statique
  255.255.255.255     ff-ff-ff-ff-ff-ff   statique

```

Sender MAC address: Sfr\_4e:55:28 (30:7e:cb:4e:55:28)  
 Sender IP address: 192.168.1.1 (192.168.1.1)  
 Target MAC address: IntelCor\_cd:39:d8 (74:e5:0b:cd:39:d8)  
 Target IP address: 192.168.1.32 (192.168.1.32)

```

0000  74 e5 0b cd 39 d8 30 7e  cb 4e 55 28 08 06 00 01  t...9.0~ .NU(....
0010  08 00 06 04 00 02 30 7e  cb 4e 55 28 c0 a8 01 01  .....0~ .NU(....
0020  74 e5 0b cd 39 d8 c0 a8  01 20  t...9... .
0010  08 00 06 04 00 01 74 e5  0b cd 39 d8 c0 a8 01 20  .....t. .9....
0020  00 00 00 00 00 00 c0 a8  01 01  .....

```

```

Serveur DHCP . . . . . : 192.168.1.1
IAID DHCPv6 . . . . . : 292873483
DUID de client DHCPv6. . . . . : 00-01-00-01-16-F7-9C-1C-74-E5-0B-CD-39-D8
Serveurs DNS. . . . . : 192.168.1.1
NetBIOS sur Tcpip. . . . . : Activé

```

A partir de votre Poste de travail, vous avez la possibilité de le connecter votre au réseau soit par une carte ethernet filaire ou carte sans fil wifi.

Indiquer votre mode de connexion ☐ Sans fil ☒ filaire

Faire un bilan de la configuration IP de votre poste :

Lancer le logiciel Wireshark. Puis double cliquer sur Connexion au réseau local et sélectionner la carte souhaitée.

Indiquer votre mode de connexion ☐ Sans fil ☒ filaire

Faire un bilan de la configuration IP de votre poste :

```
Microsoft Windows [version 10.0.15063]
(c) 2017 Microsoft Corporation. Tous droits réservés.

C:\Users\prepareateur>ipconfig/all

Configuration IP de Windows

    Nom de l'hôte . . . . . : BTSSI059
    Suffixe DNS principal . . . . . :
    Type de noeud . . . . . : Hybride
    Routage IP activé . . . . . : Non
    Proxy WINS activé . . . . . : Non
    Liste de recherche du suffixe DNS.: home

Carte Ethernet Ethernet :

    Suffixe DNS propre à la connexion. . . : home
    Description. . . . . : Realtek PCIe GBE Family Controller
    Adresse physique . . . . . : F8-BC-12-A2-65-90
    DHCP activé. . . . . : Non
    Configuration automatique activée. . . : Oui
    Adresse IPv6. . . . . : 2a01:cb08:876c:3800:35d1:b05e:8fd7:1036(préfééré)
    Adresse IPv6 temporaire . . . . . : 2a01:cb08:876c:3800:8cc8:6217:3a78:e775(préfééré)
    Adresse IPv6 de liaison locale. . . . : fe80::35d1:b05e:8fd7:1036%9(préfééré)
    Adresse IPv4. . . . . : 172.20.1.59(préfééré)
    Masque de sous-réseau. . . . . : 255.255.0.0
    Passerelle par défaut. . . . . : fe80::3ab5:c9ff:fefb:58f0%9
                                         172.20.255.254
    IAID DHCPv6 . . . . . : 66632722
    DUID de client DHCPv6. . . . . : 00-01-00-01-2E-A1-69-3A-F8-BC-12-A2-65-90
    Serveurs DNS. . . . . : 2a01:cb08:876c:3800:3ab5:c9ff:fefb:58f0
                                         8.8.8.8
    NetBIOS sur Tcpiip. . . . . : Activé
    Liste de recherche de suffixes DNS propres à la connexion :
                                         home

Carte Tunnel Connexion au réseau local* 1 :

    Suffixe DNS propre à la connexion. . . :
    Description. . . . . : Teredo Tunneling Pseudo-Interface
    Adresse physique . . . . . : 00-00-00-00-00-00-E0
    DHCP activé. . . . . : Non
    Configuration automatique activée. . . : Oui
    Adresse IPv6. . . . . : 2001:0:2851:782c:209b:fbd4:a5c0:76b0(préfééré)
    Adresse IPv6 de liaison locale. . . . : fe80::209b:fbd4:a5c0:76b0%6(préfééré)
    Passerelle par défaut. . . . . :
    IAID DHCPv6 . . . . . : 117440512
    DUID de client DHCPv6. . . . . : 00-01-00-01-2E-A1-69-3A-F8-BC-12-A2-65-90
    NetBIOS sur TCPIP. . . . . : Désactivé

C:\Users\prepareateur>
```

**Relever** l'adresse IP de votre PC : 172.20.1.59

Revenir à la page de départ. Puis **lancer** la capture en cliquant sur Start.

# 1- La page suivante s'affiche :

FileEditViewGoCaptureAnalyzeStatisticsTelephonyToolsInternalsHelp

Filter:

Expression...ClearApplySave

No.

Time

Source

Destination

Protocol

Length

Info

47

5.154001000

2a00:1450:4007:80d::2

2a01:cb08:876c:3800:8:UDP

87

Source port: https

Destination port: 64640

48

5.154523000

2a01:cb08:876c:3800:8:2a00:1450:4007:80d::2

UDP

98

Source port: 64640

Destination port: https

49

5.193325000

2a00:1450:4007:80d::2

2a01:cb08:876c:3800:8:UDP

89

Source port: https

Destination port: 64640

50

5.193328000

Cisco\_2c:90:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)

51

5.478480000

Cisco\_a5:2c:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply)

52

5.478917000

Cisco\_2c:90:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)

53

6.178292000

9c:a2:f4:e8:6b:62

Broadcast

0x8899

60 Ethernet II

54

6.485111000

Cisco\_a5:2c:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply)

55

7.076632000

Atlinks\_00:4b:fe

Broadcast

ARP

60

who has 172.20.6.5? Tell 172.20.6.33

56

7.203188000

Cisco\_2c:90:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)

57

7.203634000

Cisco\_a5:2c:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply)

58

7.863428000

2a01:cb08:876c:3800:8:2a00:1450:4007:80d::2

UDP

339

Source port: 64640

Destination port: https

59

7.884639000

2a00:1450:4007:80d::2

2a01:cb08:876c:3800:8:UDP

215

Source port: https

Destination port: 64640

60

7.885066000

2a01:cb08:876c:3800:8:2a00:1450:4007:80d::2

UDP

103

Source port: 64640

Destination port: https

61

7.886416000

2a00:1450:4007:80d::2

2a01:cb08:876c:3800:8:UDP

87

Source port: https

Destination port: 64640

62

7.894401000

2a00:1450:4007:80d::2

2a01:cb08:876c:3800:8:UDP

94

Source port: https

Destination port: 64640

63

7.894638000

2a01:cb08:876c:3800:8:2a00:1450:4007:80d::2

UDP

93

Source port: 64640

Destination port: https

64

8.076380000

Atlinks\_00:4b:fe

Broadcast

ARP

60

who has 172.20.6.5? Tell 172.20.6.33

65

8.183663000

9c:a2:f4:e8:6b:62

Broadcast

0x8899

60 Ethernet II

66

8.209810000

Cisco\_2c:90:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)

67

8.498401000

Cisco\_a5:2c:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply)

68

8.498852000

Cisco\_2c:90:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)

69

8.715433000

2a01:cb08:876c:3800:8:2a01:cb08:876c:3800:3:ICMPv6

86

Neighbor Solicitation for 2a01:cb08:876c:3800:3ab5:c9ff:febf:58f0 from f8:bc:12:a2:65:90

70

8.715487000

fe80::35d1:b05e:8fd7::fe80::3ab5:c9ff:febf:58f0

ICMPv6

86

Neighbor Solicitation for fe80::3ab5:c9ff:febf:58f0 from f8:bc:12:a2:65:90

71

8.716997000

2a01:cb08:876c:3800:3:2a01:cb08:876c:3800:8:ICMPv6

78

Neighbor Advertisement 2a01:cb08:876c:3800:3ab5:c9ff:febf:58f0 (rtr, sol)

72

8.716997000

fe80::3ab5:c9ff:febf:58f0

ICMPv6

78

Neighbor Advertisement fe80::3ab5:c9ff:febf:58f0 (rtr, sol)

73

8.893949000

172.20.255.254

224.0.0.1

IGMPv2

60

Membership query, general

74

9.077773000

Atlinks\_00:4b:fe

Broadcast

ARP

60

who has 172.20.6.5? Tell 172.20.6.33

75

9.352401000

172.20.20.55

224.0.0.251

IGMPv2

60

Membership Report group 224.0.0.251

76

9.405068000

fe80::3ab5:c9ff:febf:58f0

2a01:cb08:876c:3800:8:ICMPv6

86

Neighbor Solicitation for 2a01:cb08:876c:3800:8cc8:6217:3a78:e775 from 38:b5:c9:fb:58:f0

77

9.405258000

2a01:cb08:876c:3800:8:fe80::3ab5:c9ff:febf:58f0

ICMPv6

86

Neighbor Advertisement 2a01:cb08:876c:3800:8cc8:6217:3a78:e775 (sol, ovr) is at f8:bc:12:a2:65:90

78

9.458263000

172.20.20.54

239.255.255.250

IGMPv2

60

Membership Report group 239.255.255.250

79

9.505059000

Cisco\_a5:2c:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply)

80

9.947690000

172.20.20.62

172.20.255.255

BROWSER

243

Host Announcement BTSSIO62, workstation, Server, NT workstation, Potential Browser

81

10.194042000

9c:a2:f4:e8:6b:62

Broadcast

0x8899

60 Ethernet II

82

10.208936000

172.20.1.164

224.0.0.252

IGMPv2

60

Membership Report group 224.0.0.252

83

10.222762000

Cisco\_2c:90:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)

84

10.223200000

Cisco\_a5:2c:40

Broadcast

ARP

60

Gratuitous ARP for 172.20.0.254 (Reply)

85

10.293847000

Cisco\_2c:e0:82

CDP/VTP/DTP/PagP/UDLD DTP

60

Dynamic Trunking Protocol

86

10.304050000

Cisco\_2c:e0:82

CDP/VTP/DTP/PagP/UDLD DTP

60

Dynamic Trunking Protocol

Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0

Ethernet II, Src: 38:b5:c9:fb:58:f0 (38:b5:c9:fb:58:f0), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

Address Resolution Protocol (request)

```
0000 ff ff ff ff ff ff 38 b5 c9 fb 58 f0 08 06 00 01 .....8. .X.....
0010 08 00 06 04 00 01 38 b5 c9 fb 58 f0 ac 14 ff fe .....8. .X.....
0020 00 00 00 00 00 00 ac 14 06 20 00 00 00 00 00 .....
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
```

## A partir du tutoriel fourni, donner le rôle des 3 fenêtres 1, 2 et 3 :

- 1- Fenêtre de résumé d'informations
- 2- Fenêtre d'arborescence de protocole
- 3-Fenêtre de vue des données

## Partie 2 : Analyse de Trames ARP

### A- Requête ARP (REQUEST)

- 1- Débrancher votre câble réseau ou déconnecter (ne pas désactiver la



carte sans réseau ) votre carte sans fil (panneau de configuration / centre de réseau et partage).

Arrêter puis relancer la capture des trames.

Continuer sans sauvegarder. Repositionner votre câble réseau ou reconnecter votre carte réseau sans fil.

Un certain nombre de trames s'affiche :

No.	Time	Source	Destination	Protocol	Length	Info
867	61.33261600	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
868	61.34412000	2a01:cb08:876c:3800:82a01:1450:4007:810::2	TLsv1.2			168 Application Data
869	61.35291700	2a00:1450:4007:810::2	2a01:cb08:876c:3800:8	TCP		74 https > 54104 [ACK] Seq=7865 Ack=3480 Win=267264 Len=0
870	61.35870500	2a00:1450:4007:810::2	2a01:cb08:876c:3800:8	TLsv1.2		282 Application Data, Application Data, Application Data
871	61.35934400	2a01:cb08:876c:3800:82a01:1450:4007:810::2	TLsv1.2			113 Application Data
872	61.37319200	2a00:1450:4007:810::2	2a01:cb08:876c:3800:8	TCP		74 https > 54104 [ACK] Seq=8073 Ack=3519 Win=267264 Len=0
873	61.53718900	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
874	61.73081000	172.20.1.164	172.20.255.255	NBNS		110 Registration NB BTSSIO60<2>
875	61.73081100	172.20.1.164	172.20.255.255	NBNS		110 Registration NB BTSSIO60<0>
876	61.73118500	172.20.1.164	172.20.255.255	NBNS		110 Registration NB WORKGROUP<0>
877	61.79230800	172.20.20.62	172.20.255.255	NBNS		92 Name query NB WORKGROUP<1b>
878	62.05623500	Cisco_2e:f1:02	CDP/VTP/DTP/PagP/UDLD DTP			60 Dynamic Trunking Protocol
879	62.05647600	Cisco_2e:f1:02	CDP/VTP/DTP/PagP/UDLD DTP			90 Dynamic Trunking Protocol
880	62.05968600	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
881	62.06015200	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
882	62.08419900	9c:a2:f4:e8:6b:62	Broadcast	0x8899		60 Ethernet II
883	62.48796600	172.20.1.164	172.20.255.255	NBNS		110 Registration NB WORKGROUP<0>
884	62.48831800	172.20.1.164	172.20.255.255	NBNS		110 Registration NB BTSSIO60<0>
885	62.48832000	172.20.1.164	172.20.255.255	NBNS		110 Registration NB BTSSIO60<2>
886	62.53693000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
887	62.57876200	172.20.20.62	172.20.255.255	NBNS		92 Name query NB WORKGROUP<1b>
888	62.72427400	172.20.1.164	239.255.255.250	SSDP		179 M-SEARCH => HTTP/1.1
889	62.73389900	172.20.6.2	172.20.255.255	BROWSER		243 Host Announcement RCO-SERVER, workstation, Server, NT workstation, NT Server
890	63.06633500	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
891	63.14844800	38:b5:c9:fb:58:f0	Broadcast	ARP		60 Ethernet II
892	63.14845100	WesternD_ea:64:ec	Broadcast	ARP		60 who has 172.20.0.1? Tell 172.20.0.115
893	63.25138000	172.20.1.164	172.20.255.255	NBNS		110 Registration NB WORKGROUP<1e>
894	63.25444300	Fe80::3ab5:c9ff:feb3:2a01:cb08:876c:3800:8	ICMPv6			86 Neighbor Solicitation for 2a01:cb08:876c:3800:8cc8:6217:3a78:e775 from 38:b5:c9:fb:58:f0
895	63.25449100	2a01:cb08:876c:3800:8fe80::3ab5:c9ff:feb3:2a01:cb08:876c:3800:8cc8:6217:3a78:e775	ICMPv6			86 Neighbor Advertisement 2a01:cb08:876c:3800:8cc8:6217:3a78:e775 (sol, ovr) is at f8:bc:12:a2:65:90
896	63.34589700	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
897	63.34635400	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
898	63.53691500	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
899	64.01362700	172.20.1.164	172.20.255.255	NBNS		110 Registration NB WORKGROUP<1e>
900	64.05462100	9c:a2:f4:e8:6b:62	Broadcast	0x8899		60 Ethernet II
901	64.13928500	WesternD_ea:64:ec	Broadcast	ARP		60 who has 172.20.0.1? Tell 172.20.0.115
902	64.35267500	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
903	64.37110600	172.20.20.62	172.20.255.255	BROWSER		225 Browser Election Request
904	64.52842400	172.20.11.4	224.0.1.60	IGMPv2		60 Membership Report group 224.0.1.60
905	64.78452800	172.20.1.164	172.20.255.255	NBNS		110 Registration NB WORKGROUP<1e>
906	65.07991300	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
907	65.08035800	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
908	65.13925400	WesternD_ea:64:ec	Broadcast	ARP		60 who has 172.20.0.1? Tell 172.20.0.115
909	65.54391300	172.20.1.164	172.20.255.255	NBNS		110 Registration NB WORKGROUP<1e>
Frame 867: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0						
Ethernet II, Src: Cisco_a5:2c:40 (00:19:e8:a5:2c:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)						
Address Resolution Protocol (reply/gratuitous ARP)						

```

0000  ff ff ff ff ff ff 00 19  e8 a5 2c 40 08 06 00 01  .....@....
0010  08 00 06 04 00 02 00 19  e8 a5 2c 40 ac 14 00 fe  ....@.....
0020  00 19 e8 a5 2c 40 ac 14  00 fe 00 00 00 00 00 00  .....@.....
0030  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  .....

```

On souhaite capturer une trame ARP. Pour cela, **saisir** ARP dans la partie Filter puis **appliquer**.  
Que se passe-t-il ? **Penser** à arrêter l'acquisition des trames au moment de la réponse à la requête.

On peut voir que les protocoles ARP

No.	Time	Source	Destination	Protocol	Length	Info
6	0.026177000	de11_a2:65:90	Broadcast	ARP		42 who has 172.20.255.254? Tell 172.20.1.59
7	0.028252000	38:b5:c9:fb:58:f0	de11_a2:65:90	ARP		60 172.20.255.254 is at 38:b5:c9:fb:58:f0
8	0.035929000	de11_a2:65:90	Broadcast	ARP		42 who has 172.20.255.254? Tell 172.20.1.59
9	0.038997000	38:b5:c9:fb:58:f0	de11_a2:65:90	ARP		60 172.20.255.254 is at 38:b5:c9:fb:58:f0
26	0.115125000	de11_a2:65:90	Broadcast	ARP		42 who has 172.20.1.59? Tell 0.0.0.0
44	0.130739000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
46	0.166602000	38:b5:c9:fb:58:f0	Broadcast	ARP		60 who has 172.20.1.59? Tell 172.20.255.254
47	0.166623000	de11_a2:65:90	38:b5:c9:fb:58:f0	ARP		42 172.20.1.59 is at f8:bc:12:a2:65:90
48	0.311920000	38:b5:c9:fb:58:f0	Broadcast	ARP		60 who has 172.20.1.59? Tell 172.20.255.254
49	0.311942000	de11_a2:65:90	38:b5:c9:fb:58:f0	ARP		42 172.20.1.59 is at f8:bc:12:a2:65:90
50	0.312650000	38:b5:c9:fb:58:f0	Broadcast	ARP		60 who has 172.20.1.59? Tell 172.20.255.254
51	0.312664000	de11_a2:65:90	38:b5:c9:fb:58:f0	ARP		42 172.20.1.59 is at f8:bc:12:a2:65:90
52	0.426811000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
55	0.532031000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
62	0.938256000	Cisco_a5:2c:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply)
86	1.111831000	de11_a2:65:90	Broadcast	ARP		42 who has 172.20.1.59? Tell 0.0.0.0
102	1.123289000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
147	1.426734000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
164	1.497817000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.251? Tell 10.229.233.160
165	1.497818000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.251? Tell 10.229.233.160
166	1.497818000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
172	1.537400000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
184	1.661625000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
185	1.662047000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
219	1.960841000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
244	2.115500000	de11_a2:65:90	Broadcast	ARP		42 who has 172.20.1.59? Tell 0.0.0.0
339	2.418608000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
353	2.668326000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
354	2.951558000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
355	2.951994000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
359	3.111251000	de11_a2:65:90	Broadcast	ARP		42 Gratuitous ARP for 172.20.1.59 (Request)
371	3.143979000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
381	3.574202000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
388	3.958628000	Cisco_a5:2c:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply)
395	3.982864000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
401	4.404180000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
402	4.681795000	Cisco_2c:90:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
403	4.682240000	Cisco_a5:2c:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply)
413	5.457095000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
418	5.698084000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
420	5.971497000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
421	5.971943000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
443	6.456803000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
Frame 867: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0						
Ethernet II, Src: Cisco_a5:2c:40 (00:19:e8:a5:2c:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)						
Address Resolution Protocol (reply/gratuitous ARP)						

```

0000  ff ff ff ff ff ff 00 19  e8 a5 2c 40 08 06 00 01  .....@....
0010  08 00 06 04 00 02 00 19  e8 a5 2c 40 ac 14 00 fe  ....@.....
0020  00 19 e8 a5 2c 40 ac 14  00 fe 00 00 00 00 00 00  .....@.....
0030  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  .....

```



2- **Sélectionner** la première trame ARP. **Donner** la source et la destination.

No.	Time	Source	Destination	Protocol	Length	Info
6	0.026177000	Dell_a2:65:90	Broadcast	ARP		42 Who has 172.20.255.254? Tell 172.20.1.59

La source provient de mon PC et il a pour destination du broadcast, qui permet d'envoyer un message aux autres machines sur tout le réseau.

3- A partir de la fenêtre 1, **expliquer** ce qu'il se passe.

La machine en se connectant au réseau local, demande via l'adresse de broadcast qui possède une certaine adresse ip et l'autre machine en se reconnaissant envoie en réponse son adresse MAC.

4- Dans la fenêtre 2, **cliquer** sur le + de Ethernet 2 afin de détailler le contenu du paquet.

5- **Relever** l'adresse MAC destination et l'adresse MAC source. **Expliquer** pourquoi l'adresse Mac de destination possède la valeur précédente.

Frame 6: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0						
[-] Ethernet II, Src: Dell_a2:65:90 (f8:bc:12:a2:65:90), Dst: Broadcast (ff:ff:ff:ff:ff:ff)						
[+] Destination: Broadcast (ff:ff:ff:ff:ff:ff)						
[+] Source: Dell_a2:65:90 (f8:bc:12:a2:65:90)						
Type: ARP (0x0806)						
[+] Address Resolution Protocol (request)						

L'adresse de destination est la même que la précédente car c'est l'adresse de broadcast.

6- Donner la signification des 3 premiers octets de l'adresse MAC.

Les 3 premiers octets de l'adresse Mac est le numéro de constructeur.

7- Dans la fenêtre 2, **cliquer** sur Destination, puis sur Source.

Que se passe t-il dans la fenêtre 3. Si on clique sur l'adresse de destination ou la source dans la fenêtre 2 alors dans la fenêtre 3 on nous montre l'adresse MAC associé.

```

+ Frame 6: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
- Ethernet II, Src: Dell_a2:65:90 (f8:bc:12:a2:65:90), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  - Destination: Broadcast (ff:ff:ff:ff:ff:ff)
    Address: Broadcast (ff:ff:ff:ff:ff:ff)
    .... 1. .... = LG bit: Locally administered address (this is NOT the factory default)
    .... 1. .... = IG bit: Group address (multicast/broadcast)
+ Frame 6: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
- Ethernet II, Src: Dell_a2:65:90 (f8:bc:12:a2:65:90), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  - Destination: Broadcast (ff:ff:ff:ff:ff:ff)
    Address: Broadcast (ff:ff:ff:ff:ff:ff)
    .... 1. .... = LG bit: Locally administered address (this is NOT the factory default)
    .... 1. .... = IG bit: Group address (multicast/broadcast)
  - Source: Dell_a2:65:90 (f8:bc:12:a2:65:90)
    Type: ARP (0x0806)
  - Address Resolution Protocol (request)

```

```

0000  ff ff ff ff ff ff f8 bc 12 a2 65 90 08 06 00 01  .... ..e....
0010  08 00 06 04 00 01 f8 bc 12 a2 65 90 ac 14 01 3b  .... ..e....;
0020  00 00 00 00 00 00 ac 14  ff fe  .... ..

```

- 8- Faire une capture d'écran de la fenêtre 3 dans un document texte et y surligner les adresses MAC destination et source

capture du 18/11/24

```

0000  ff ff ff ff ff ff f8 bc 12 a2 65 90 08 06 00 01  .... ..e....
0010  08 00 06 04 00 01 f8 bc 12 a2 65 90 ac 14 01 3b  .... ..e....;
0020  00 00 00 00 00 00 ac 14  ff fe  .... ..

```

capture du 25/11/24

```

0000  ff ff ff ff ff ff 18 33 9d 2c 90 40 08 06 00 01  ....3.,@....
0010  08 00 06 04 00 02 18 33 9d 2c 90 40 ac 14 00 fe  ....3.,@....
0020  18 33 9d 2c 90 40 ac 14 00 fe 00 00 00 00 00 00  .3.,@..
0030  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  ....

```

- 9- Relever également la valeur hexadécimale du type de protocole et entourer sur la fenêtre précédente cette valeur.

- 10- Dans la fenêtre 2, cliquer sur le + de ARP request afin détailler le contenu du paquet. Relever l'adresse IP destination et l'adresse IP source.

```

Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0
Ethernet II, Src: Cisco_2c:90:40 (18:33:9d:2c:90:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (reply/gratuitous ARP)
  Hardware type: Ethernet (1)
  Protocol type: IP (0x0800)
  Hardware size: 6
  Protocol size: 4
  Opcode: reply (2)
  [Is gratuitous: True]
  Sender MAC address: Cisco_2c:90:40 (18:33:9d:2c:90:40)
  Sender IP address: 172.20.0.254 (172.20.0.254)
  Target MAC address: Cisco_2c:90:40 (18:33:9d:2c:90:40)
  Target IP address: 172.20.0.254 (172.20.0.254)

```

L'adresse ip de destination et source sont 172.20.0.254

11- Cliquer sur sender IP address.

Rappeler l'adresse IP : 172.20.0.254 et relever cette information en hexadécimal : ac 14 00 fe

No.	Time	Source	Destination	Protocol	Length	Info
16817	116.7696400	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
16818	116.7700830	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
16831	117.7755960	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
16833	117.8654480	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
16834	117.8689490	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17767	118.8722970	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
17790	119.7913580	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17791	119.7913590	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
17795	120.7955220	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17796	120.8853350	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
17797	120.8859380	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17799	121.8918380	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19600	122.8088100	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19601	122.8092540	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19602	123.8153630	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19603	123.9051070	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19604	123.9055360	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19606	124.6738030	38:b5:c9:fb:58:f0	Broadcast	ARP	60	who has 172.20.3.10? Tell 172.20.255.254
19607	124.8785190	38:b5:c9:fb:58:f0	Broadcast	ARP	60	who has 172.20.3.10? Tell 172.20.255.254
19608	124.9118430	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19612	125.8286600	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19613	125.8290880	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19627	126.3556210	Tp-LinkT_e5:e9:a0	Broadcast	ARP	60	who has 224.0.0.251? Tell 10.229.233.160
19628	126.3556210	Tp-LinkT_e5:e9:a0	Broadcast	ARP	60	who has 224.0.0.251? Tell 10.229.233.160
19629	126.3593470	Tp-LinkT_e5:e9:a0	Broadcast	ARP	60	who has 224.0.0.252? Tell 10.229.233.160
19633	126.8355920	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19635	126.9250040	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19636	126.9254280	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19646	127.0217120	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
Frame 19600: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0						
Ethernet II, Src: Cisco_2c:90:40 (18:33:9d:2c:90:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)						
Address Resolution Protocol (reply/gratuitous ARP)						
Hardware type: Ethernet (1)						
Protocol type: IP (0x0800)						
Hardware size: 6						
Protocol size: 4						
Opcode: reply (2)						
[Is gratuitous: True]						
Sender MAC address: Cisco_2c:90:40 (18:33:9d:2c:90:40)						
Sender IP address: 172.20.0.254 (172.20.0.254)						
Target MAC address: Cisco_2c:90:40 (18:33:9d:2c:90:40)						
Target IP address: 172.20.0.254 (172.20.0.254)						

```

0000  ff ff ff ff ff ff 18 33 9d 2c 90 40 08 06 00 01  ....3...@....
0010  08 00 06 04 00 02 18 33 9d 2c 90 40 ac 14 00 fe  ....3...@....
0020  18 33 9d 2c 90 40 ac 14 00 fe 00 00 00 00  .3...@.....
0030  00 00 00 00 00 00 00 00 00 00 00 00  ....

```

12- **Cliquer** sur target IP address.

**Rappeler** l'adresse IP et **relever** cette information en hexadécimal.

172.20.0.254 ac-14-00-fe

**Entourer** la valeur sur la fenêtre Q8.

Io.	Time	Source	Destination	Protocol	Length	Info
16817	116.7696400	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
16818	116.7700830	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
16831	117.7755960	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
16833	117.8654480	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
16834	117.8689490	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17767	118.8722970	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
17790	119.7913580	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17791	119.7913590	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
17795	120.7955220	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17796	120.8853350	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
17797	120.8859380	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
17799	121.8918380	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19600	122.8088100	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19601	122.8092540	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19602	123.8153630	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19603	123.9051070	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19604	123.9055360	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19606	124.6738030	38:b5:c9:fb:58:f0	Broadcast	ARP	60	who has 172.20.3.10? Tell 172.20.255.254
19607	124.8785190	38:b5:c9:fb:58:f0	Broadcast	ARP	60	who has 172.20.3.10? Tell 172.20.255.254
19608	124.9118430	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19612	125.8286600	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19613	125.8290880	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19627	126.3556210	Tp-LinkT_e5:e9:a0	Broadcast	ARP	60	who has 224.0.0.251? Tell 10.229.233.160
19628	126.3556210	Tp-LinkT_e5:e9:a0	Broadcast	ARP	60	who has 224.0.0.251? Tell 10.229.233.160
19629	126.3593470	Tp-LinkT_e5:e9:a0	Broadcast	ARP	60	who has 224.0.0.252? Tell 10.229.233.160
19633	126.8355920	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
19635	126.9250040	Cisco_a5:2c:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
19636	126.9254280	Cisco_2c:90:40	Broadcast	ARP	60	Gratuitous ARP for 172.20.0.254 (Reply)
Frame 19600: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0						
Ethernet II, Src: Cisco_2c:90:40 (18:33:9d:2c:90:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)						
Address Resolution Protocol (reply/gratuitous ARP)						
Hardware type: Ethernet (1)						
Protocol type: IP (0x0800)						
Hardware size: 6						
Protocol size: 4						
Opcode: reply (2)						
[Is gratuitous: True]						
Sender MAC address: Cisco_2c:90:40 (18:33:9d:2c:90:40)						
Sender IP address: 172.20.0.254 (172.20.0.254)						
Target MAC address: Cisco_2c:90:40 (18:33:9d:2c:90:40)						
Target IP address: 172.20.0.254 (172.20.0.254)						
0000	ff	ff	ff	ff	ff	ff
0010	08	00	06	04	00	02
0020	18	33	9d	2c	90	40
0030	00	00	00	00	00	00

13- **Donner** l'adresse IP de la source en binaire, puis **en déduire** sa valeur hexadécimale.

**Comparer** votre résultat à la question Q11.

Binaire : 1010 1100 0001 0100 0000 0000 1111 1110

hex : A C 1 4 0 0 F E

Le résultat est similaire à la question 11.

14- **Donner** l'adresse IP de la source en binaire, puis **en déduire** sa valeur hexadécimale.

**Comparer** votre résultat à la question Q12.

Binaire : 1010 1100 0001 0100 0000 0000 1111 1110

hex : A C 1 4 0 0 F E

Le résultat est similaire à la question 12.

## **B- Réponse ARP (REPLY)**

1- **Identifier** et **relever** la réponse ARP (reply) se trouvant dans la fenêtre 1. (....is at.....)

Entourer cette valeur sur la fenêtre question Q8.



No.	Time	Source	Destination	Protocol	Length	Info
8	0.057153000	Dell_a2:65:90	Broadcast	ARP		42 who has 172.20.255.254? Tell 172.20.7.114
9	0.058389000	38:b5:c9:fb:58:f0	Dell_a2:65:90	ARP		60 172.20.255.254 is at 38:b5:c9:fb:58:f0
10	0.081865000	Dell_a2:65:90	Broadcast	ARP		42 who has 172.20.255.254? Tell 172.20.7.114
11	0.083288000	38:b5:c9:fb:58:f0	Dell_a2:65:90	ARP		60 172.20.255.254 is at 38:b5:c9:fb:58:f0
34	0.095578000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
153	0.255638000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
154	0.279645000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
162	0.386764000	Dell_a2:65:90	Broadcast	ARP		42 who has 172.20.7.114? Tell 0.0.0.0
184	0.497337000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
195	0.914275000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
230	1.262187000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
231	1.262656000	Cisco_a5:2c:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
232	1.263108000	Cisco_2c:90:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply)
233	1.285655000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
236	1.335541000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
237	1.381015000	Dell_a2:65:90	Broadcast	ARP		42 who has 172.20.7.114? Tell 0.0.0.0
287	1.756635000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
297	1.981238000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
326	2.168832000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
332	2.268812000	Cisco_2c:90:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply)
333	2.292606000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
334	2.382410000	Dell_a2:65:90	Broadcast	ARP		42 who has 172.20.7.114? Tell 0.0.0.0
336	2.980986000	Atlinks_00:4b:fe	Broadcast	ARP		60 who has 172.20.6.5? Tell 172.20.6.33
338	2.754570000	Cisco_2c:90:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply)
339	3.275904000	Cisco_a5:2c:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
340	3.276345000	Cisco_2c:90:40	Broadcast	ARP		60 gratuitous ARP for 172.20.0.254 (Reply)
341	3.298911000	Cisco_a5:2c:40	Broadcast	ARP		60 Gratuitous ARP for 172.20.0.254 (Reply) (duplicate use of 172.20.0.254 detected!)
342	3.382689000	Dell_a2:65:90	Broadcast	ARP		42 Gratuitous ARP for 172.20.7.114 (Request)
353	3.406617000	Tp-LinkT_e5:e9:a0	Broadcast	ARP		60 who has 224.0.0.252? Tell 10.229.233.160
Frame 11: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0						
Ethernet II, Src: 38:b5:c9:fb:58:f0 (38:b5:c9:fb:58:f0), Dst: Dell_a2:65:90 (f8:bc:12:a2:65:90)						
Address Resolution Protocol (reply)						
Hardware type: Ethernet (1)						
Protocol type: IP (0x0800)						
Hardware size: 6						
Protocol size: 4						
Opcode: reply (2)						
Sender MAC address: 38:b5:c9:fb:58:f0 (38:b5:c9:fb:58:f0)						
Sender IP address: 172.20.255.254 (172.20.255.254)						
Target MAC address: Dell_a2:65:90 (f8:bc:12:a2:65:90)						
Target IP address: 172.20.7.114 (172.20.7.114)						

0000	f8	bc	12	a2	65	90	38	b5	c9	fb	58	f0	08	06	00	01	.....e.8. .X.....
0010	08	00	06	04	00	02	38	b5	c9	fb	58	f0	ac	14	ff	f6	.....8. .X. ....
0020	f8	bc	12	a2	65	90	ac	14	07	72	00	00	00	00	00	00	..... .r.....
0030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	..... .....

ip sender : 172.20.0.254

Capturing from Connexion réseau sans fil [Wireshark 1.10.8 (v1.10.8-2-g52a5244 from master-1.10)]

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Filter: **arp** Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
3	0.013321000	IntelCor_cd:39:d8	Broadcast	ARP		42 who has 192.168.1.1? Tell 192.168.1.32
7	0.023030000	Sfr_4e:55:28	IntelCor_cd:39:d8	ARP		42 192.168.1.1 is at 30:7e:cb:4e:55:28
9	0.091166000	IntelCor_cd:39:d8	Broadcast	ARP		42 who has 192.168.1.1? Tell 192.168.1.32
11	0.099817000	Sfr_4e:55:28	IntelCor_cd:39:d8	ARP		42 192.168.1.1 is at 30:7e:cb:4e:55:28
13	0.131399000	IntelCor_cd:39:d8	Broadcast	ARP		42 who has 192.168.1.1? Tell 192.168.1.32
14	0.133443000	Sfr_4e:55:28	IntelCor_cd:39:d8	ARP		42 192.168.1.1 is at 30:7e:cb:4e:55:28

Frame 7: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0

Ethernet II, Src: Sfr\_4e:55:28 (30:7e:cb:4e:55:28), Dst: IntelCor\_cd:39:d8 (74:e5:0b:cd:39:d8)

Destination: IntelCor\_cd:39:d8 (74:e5:0b:cd:39:d8)  
Address: IntelCor\_cd:39:d8 (74:e5:0b:cd:39:d8)  
.....0. .... = LG bit: Globally unique address (factory default)  
.....0. .... = IG bit: Individual address (unicast)

Source: Sfr\_4e:55:28 (30:7e:cb:4e:55:28)  
Address: Sfr\_4e:55:28 (30:7e:cb:4e:55:28)  
.....0. .... = LG bit: Globally unique address (factory default)  
.....0. .... = IG bit: Individual address (unicast)

Type: ARP (0x0806)

Address Resolution Protocol (reply)  
Hardware type: Ethernet (1)  
Protocol type: IP (0x0800)  
Hardware size: 6  
Protocol size: 4  
Opcode: reply (2)  
Sender MAC address: Sfr\_4e:55:28 (30:7e:cb:4e:55:28)  
Sender IP address: 192.168.1.1 (192.168.1.1)  
Target MAC address: IntelCor\_cd:39:d8 (74:e5:0b:cd:39:d8)  
Target IP address: 192.168.1.32 (192.168.1.32)

0000	74	e5	0b	cd	39	d8	30	7e	cb	4e	55	28	08	06	00	01	t...9.0~ .NU(....
0010	08	00	06	04	00	02	30	7e	cb	4e	55	28	c0	a8	01	01	.....0~ .NU(....
0020	74	e5	0b	cd	39	d8	c0	a8	01	20							t...9... .

A partir de l'analyse de l'étude précédente, (REQUEST), faire un résumé des résultats obtenus lors de la réponse (Reply)

Lors de la réponse, la machine est informé de l'adresse mac et de l'ip de destination d'un appareil sur le réseau.

Comprendre le table arp et le cache arp ( Vidéo 2):

Insérer l'image du résultat sur votre poste et commenter les résultats obtenus de votre table.

```
C:\Users\preparateur>arp -a

Interface : 172.20.7.114 --- 0x9
  Adresse Internet    Adresse physique    Type
  172.20.255.254      38-b5-c9-fb-58-f0   dynamique
  172.20.255.255      ff-ff-ff-ff-ff-ff   statique
  224.0.0.2           01-00-5e-00-00-02   statique
  224.0.0.22          01-00-5e-00-00-16   statique
  224.0.0.251         01-00-5e-00-00-fb   statique
  224.0.0.252         01-00-5e-00-00-fc   statique
  239.255.255.250     01-00-5e-7f-ff-fa   statique
  255.255.255.255     ff-ff-ff-ff-ff-ff   statique
```

Quelle commande faut il effectuer pour vider le cache arp (exécuter cmd en administrateur)?    arp -d