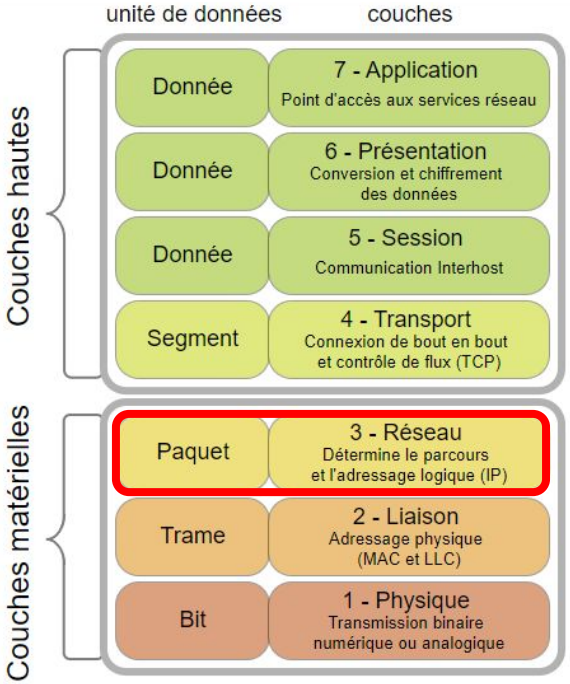
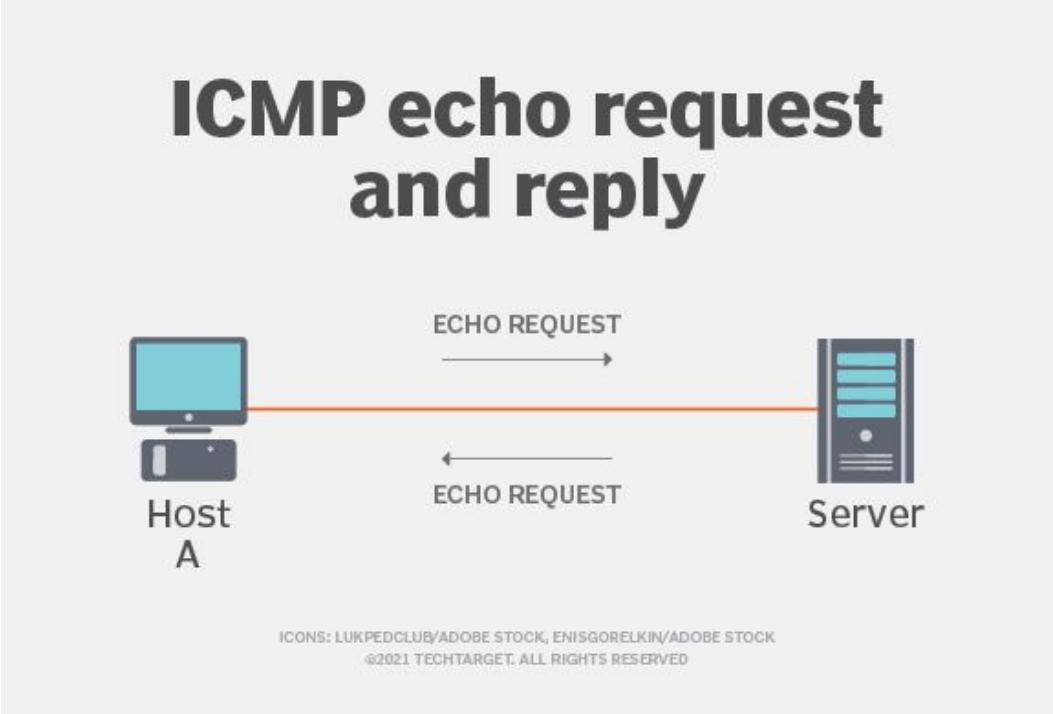
Protocole ICMP

Internet **C**ontrol **M**essage **P**rotocol

Qu’est-ce que le protocole ICMP ?



Qu’est-ce que le protocole ICMP ?



Fonctions principales de l'ICMP

PING

●○○

Test de connectivité

TRACEROUTE

●●○

suivi du chemin des paquets

ERREURS

●●●

Gestion des erreurs

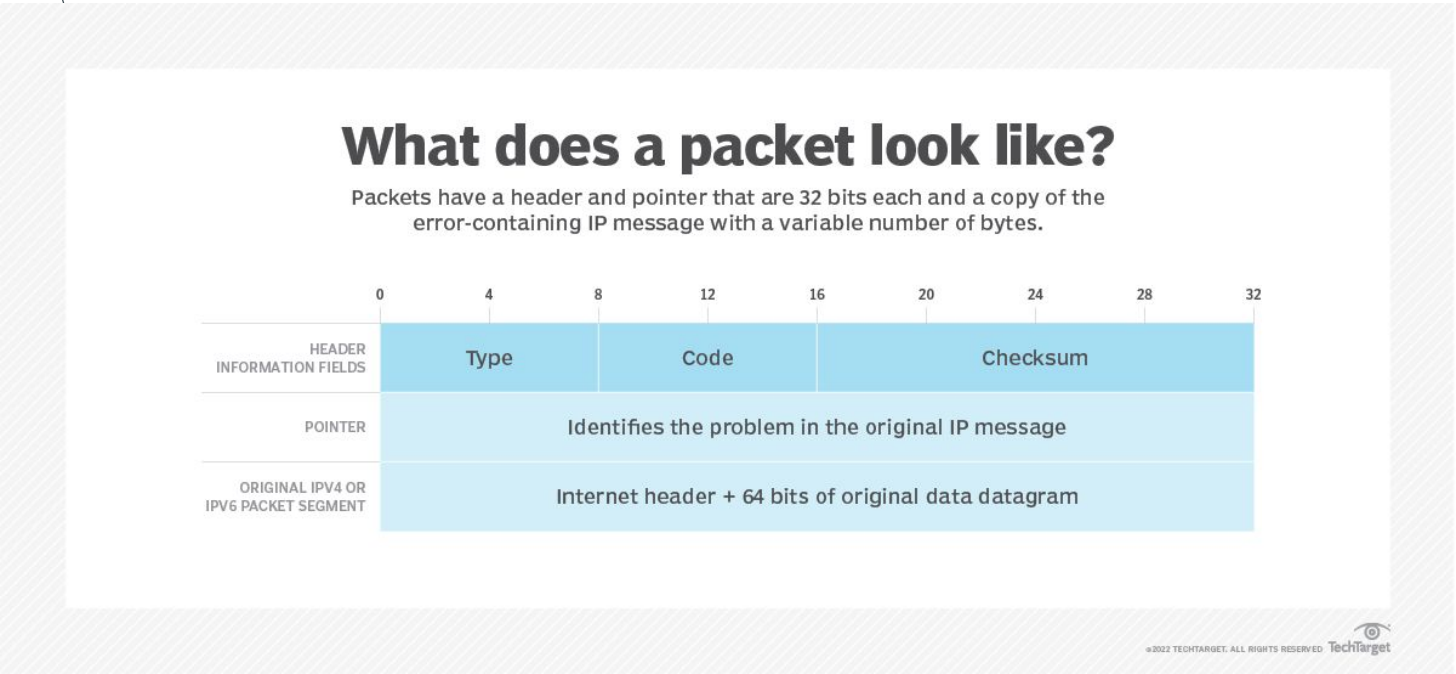
IPV6

NEIGHBOR SOLICITATION

●●○

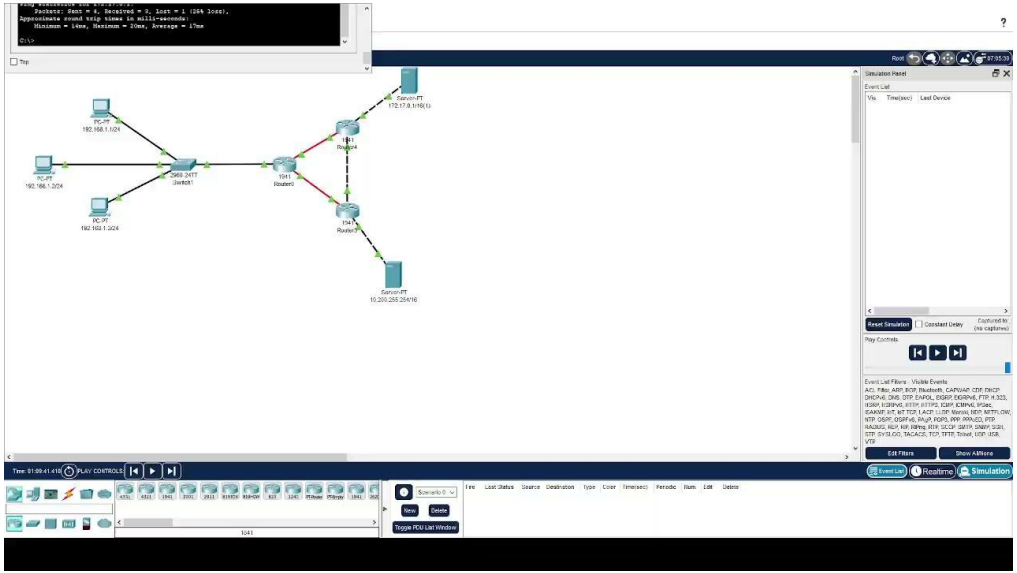
Lie l'adresse IP et MAC
Comme ARP

Analyse d'une trame ICMP



- Type et code: soulève les erreures (16 bits)
- Checksum: la qualité des paquets (16 bits)
- Identifiant: émetteur (16 bits)
  Numéro de séquence: identifie les paquets manquants (16 bits)

Fonctionnement de l'ICMP



PING

```
44 7.157295994   10.216.0.86      72.247.164.170   ICMP     92 Echo (ping) request  id=0x2398,
45 7.173050882   72.247.164.170   10.216.0.86      ICMP     92 Echo (ping) reply    id=0x2398,
50 8.158705773   10.216.0.86      72.247.164.170   ICMP     92 Echo (ping) request  id=0x2398,
51 8.173923266   72.247.164.170   10.216.0.86      ICMP     92 Echo (ping) reply    id=0x2398,
54 9.160334394   10.216.0.86      72.247.164.170   ICMP     92 Echo (ping) request  id=0x2398,
55 9.176027259   72.247.164.170   10.216.0.86      ICMP     92 Echo (ping) reply    id=0x2398,
```

```
Options:
  <destination>      dns name or ip address
  -a                 use audible ping
  -A                 use adaptive ping
  -B                 sticky source address
  -c <count>         stop after <count> replies
  -D                 print timestamps
  -d                 use SO_DEBUG socket option
  -f                 flood ping
  -h                 print help and exit
  -I <interface>     either interface name or address
  -i <interval>      seconds between sending each packet
  -L                 suppress loopback of multicast packets
  -l <preload>       send <preload> number of packages while
                       waiting replies
  -m <mark>          tag the packets going out
  -M <pmtud opt>     define mtu discovery, can be one of
                       <do|dont|want>
  -n                 no dns name resolution
  -O                 report outstanding replies
  -p <pattern>       contents of padding byte
  -q                 quiet output
  -Q <tclass>        use quality of service <tclass> bits
  -s <size>          use <size> as number of data bytes to be
                       sent
  -S <size>          use <size> as SO_SNDBUF socket option
                       value
  -t <ttl>           define time to live
  -U                 print user-to-user latency
  -v                 verbose output
  -V                 print version and exit
  -w <deadline>      reply wait <deadline> in seconds
  -W <timeout>       time to wait for response
```

TRACEROUTE

```
iut@Ubuntu1804:~$ traceroute www.irit.fr
traceroute to www.irit.fr (141.115.28.2), 30 hops max, 60 byte packets
 1  _gateway (10.216.255.254)  2.869 ms  3.158 ms  3.704 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  100.74.100.130 (100.74.100.130)  10.287 ms  6.448 ms  6.655 ms
 7  100.77.255.2 (100.77.255.2)  5.862 ms  5.323 ms  5.377 ms
 8  100.77.255.3 (100.77.255.3)  5.950 ms  5.974 ms  6.187 ms
 9  10.3.0.89 (10.3.0.89)  6.274 ms  6.561 ms  6.299 ms
10  193.50.77.250 (193.50.77.250)  12.422 ms  12.021 ms  10.594 ms
11  * * *
12  rtr-irit-interco.univ-tlse3.fr (195.220.60.5)  7.866 ms  7.177 ms  7.223 ms
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```

ERREURS

-TTL Time to live

-Destination Unreachable

Deny of service