

TP 1 — Fondamentaux des réseaux

Tâche 1 : ping

Étape 1

```
PC>ipconfig
```

```
IP Address.....: 172.16.1.1  
Subnet Mask.....: 255.255.0.0  
Default Gateway.....: 172.16.255.254
```

Adresse IP : 172.16.1.1
Masque de sous-réseau : 255.255.0.0
Passerelle par défaut : 172.16.255.254

```
PC>ping 172.16.1.2
```

Pinging 172.16.1.2 with 32 bytes of data:

```
Reply from 172.16.1.2: bytes=32 time=8ms TTL=128  
Reply from 172.16.1.2: bytes=32 time=4ms TTL=128  
Reply from 172.16.1.2: bytes=32 time=4ms TTL=128  
Reply from 172.16.1.2: bytes=32 time=4ms TTL=128
```

```
Ping statistics for 172.16.1.2:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 4ms, Maximum = 8ms, Average = 5ms
```

Taille du paquet : 32 octets
Nombre de paquets envoyés : 4
Nombre de réponses : 4
Nombre de paquets perdus : 0
Latence minimum : 4 ms
Latence maximum : 8 ms
Latence moyenne : 5 ms

Étape 2

```
PC>ping 192.168.254.254
```

Pinging 192.168.254.254 with 32 bytes of data:

```
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126  
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
```

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```
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
```

```
Ping statistics for 192.168.254.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 10ms, Average = 10ms
```

Taille du paquet : 32 octets
Nombre de paquets envoyés : 4
Nombre de réponses : 4
Nombre de paquets perdus : 0
Latence minimum : 10 ms
Latence maximum : 10 ms
Latence moyenne : 10 ms
TTL : 126

Tâche 2 : tracert

Étape 1

```
PC>tracert 192.168.254.254
```

Tracing route to 192.168.254.254 over a maximum of 30 hops:

1	4 ms	4 ms	4 ms	172.16.255.254
2	6 ms	6 ms	6 ms	10.10.5.2
3	10 ms	11 ms	10 ms	192.168.254.254

Trace complete.

Nombre maximum de sauts	3
Première adresse IP du routeur	172.16.255.254
Deuxième adresse IP du routeur	10.10.5.2
Destination atteinte	192.168.254.254

Étape 2

Tracert avec le PC-Bastion fonctionnel

```
PC>tracert 192.168.254.252
```

Tracing route to 192.168.254.252 over a maximum of 30 hops:

1	4 ms	4 ms	4 ms	172.16.255.254
2	6 ms	6 ms	6 ms	10.10.5.2
3	10 ms	10 ms	10 ms	192.168.254.252

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Trace complete.

Tracert avec le PC-Bastion non fonctionnel

```
PC>tracert 192.168.254.252
```

Tracing route to 192.168.254.252 over a maximum of 30 hops:

1	4 ms	4 ms	4 ms	172.16.255.254
2	6 ms	6 ms	6 ms	10.10.5.2
3	*	*	*	Request timed out.
4	*	*	*	Request timed out.
5	*	*	*	Request timed out.
6	*	*	*	Request timed out.
7	*	*	*	Request timed out.
8	*	*	*	Request timed out.
9	*	*	*	Request timed out.
10	*	*	*	Request timed out.
11	*	*	*	Request timed out.
12	*	*	*	Request timed out.
13	*	*	*	Request timed out.
14	*	*	*	Request timed out.
15	*	*	*	Request timed out.
16	*	*	*	Request timed out.
17	*	*	*	Request timed out.
18	*	*	*	Request timed out.
19	*	*	*	Request timed out.
20	*	*	*	Request timed out.

Nombre maximum de sauts	20
Première adresse IP du routeur	172.16.255.254
Deuxième adresse IP du routeur	10.10.5.2
Destination atteinte	Aucune (time out)

Tâche 3 : quelques options

L'option -t permet de pinguer sans limite.

```
PC>ping -t 192.168.254.254
```

Pinging 192.168.254.254 with 32 bytes of data:

```
Reply from 192.168.254.254: bytes=32 time=12ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
```

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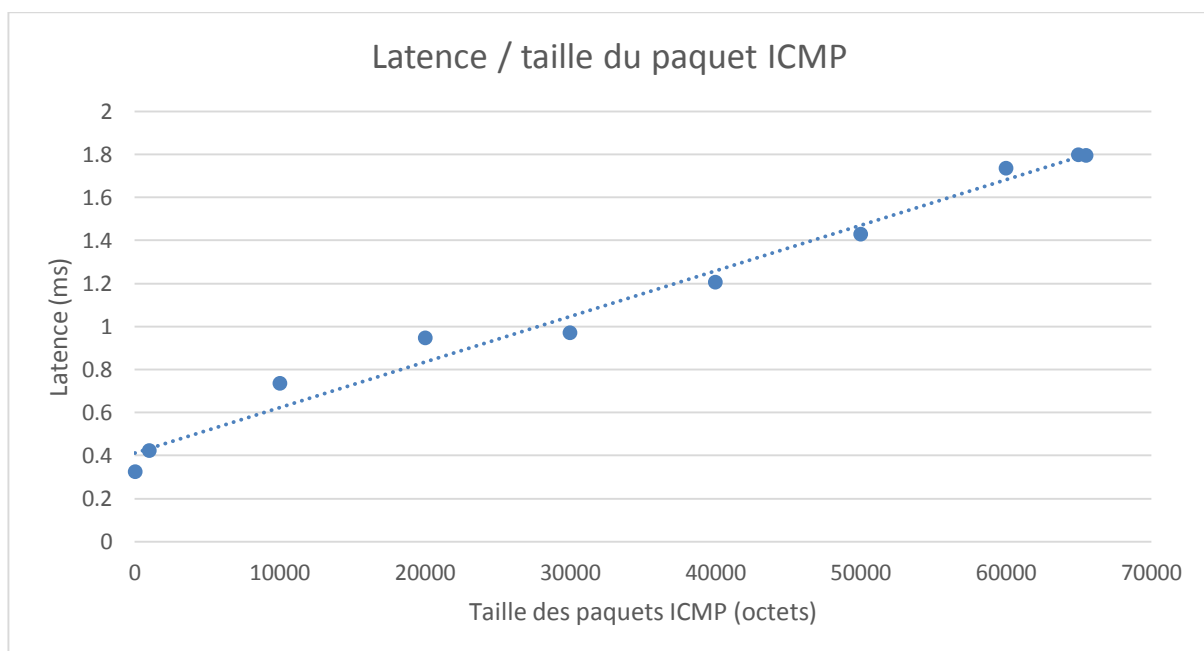
```
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
Reply from 192.168.254.254: bytes=32 time=10ms TTL=126
```

```
Ping statistics for 192.168.254.254:
    Packets: Sent = 12, Received = 11, Lost = 1 (9% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 12ms, Average = 10ms
```

```
Control-C
^C
```

L'option `-n` spécifie le nombre de pings lancés.

Exercice : latence / taille du paquet ICMP



Tâche 4 : ajout d'un poste

On ajoute le PC 22A (ip statique : 172.16.22.1).

```
PC>ping 192.168.254.253
```

```
Pinging 192.168.254.253 with 32 bytes of data:
```

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```
Reply from 192.168.254.253: bytes=32 time=7ms TTL=254
Reply from 192.168.254.253: bytes=32 time=6ms TTL=254
Reply from 192.168.254.253: bytes=32 time=6ms TTL=254
Reply from 192.168.254.253: bytes=32 time=6ms TTL=254
```

```
Ping statistics for 192.168.254.253:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 6ms, Maximum = 7ms, Average = 6ms
```

Tâche 5 : DHCP

On ajoute un ordinateur portable et on active le serveur DHCP sur SRV-DHCP.

Le DHCP assigne des adresses dans 192.168.254.0/24.

L'ordinateur reçoit l'adresse IP 192.168.254.1.

Quand on tape `ipconfig /renew`, il reçoit à nouveau 192.168.254.1.