

Example: creating a tunnel in linux: R1#  
`ip tunnel add tun0 mode gre remote 180.0.0.30 local 160.0.0.20 ttl 255`

## Tunnel configuration

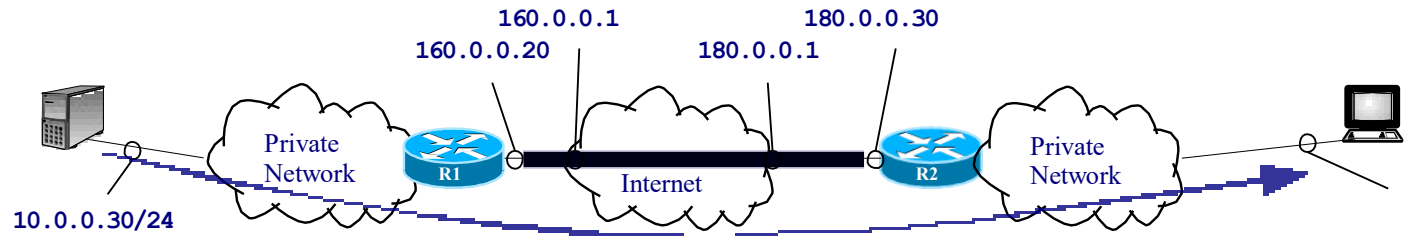
Destination	Gateway	Genmask	Iface	Destination	Gateway	Genmask	Iface
10.0.0.0	0.0.0.0	255.255.255.0	eth0	10.0.1.0	0.0.0.0	255.255.255.0	eth0
160.0.0.1	0.0.0.0	255.255.255.255	ppp0	180.0.0.1	0.0.0.0	255.255.255.255	ppp0
0.0.0.0	160.0.0.1	0.0.0.0	ppp0	0.0.0.0	180.0.0.1	0.0.0.0	ppp0
192.168.0.0	0.0.0.0	255.255.255.0	tunl0	192.168.0.0	0.0.0.0	255.255.255.0	tunl0
10.0.1.0	192.168.0.2	255.255.255.0	tunl0	10.0.0.0	192.168.0.1	255.255.255.0	tunl0

R1 Routing Table

Virtual interface for the tunnel  
 Static route to remote network

R2 Routing Table

# Exercise

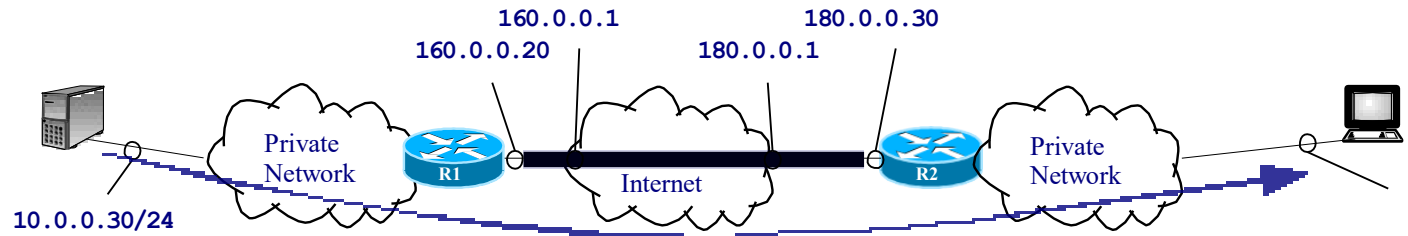


What is the header and contents of the datagram going through the Internet in the following cases:

A) Host 10.0.0.30 executes the command “ping 10.0.1.12”

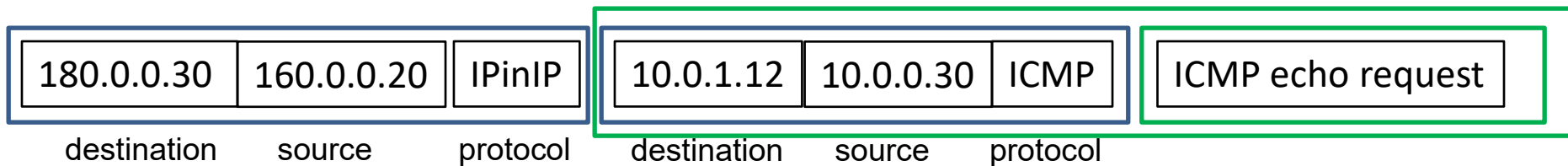
B) Host 10.0.0.30 executes the command “ping 80.88.123.115”

# Exercise

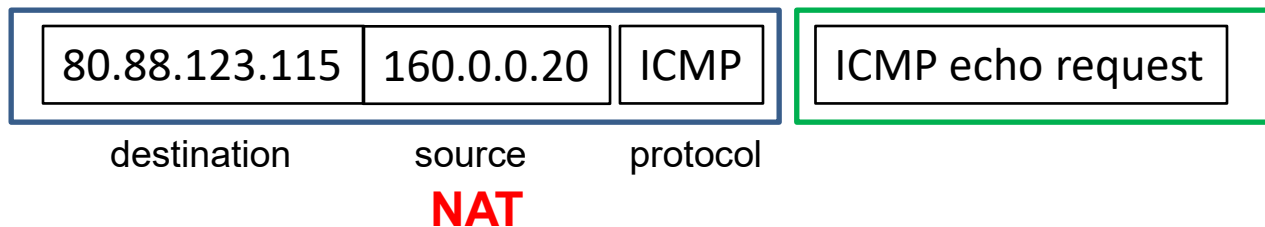


What is the header and contents of the datagram going through the Internet in the following cases:

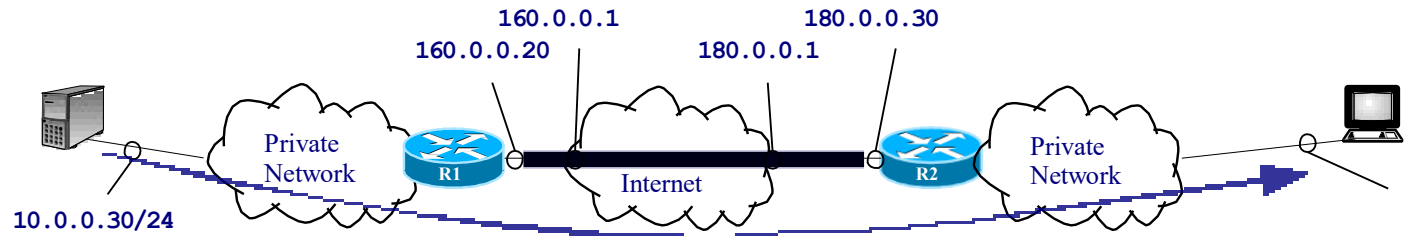
A) Host 10.0.0.30 executes the command “ping 10.0.1.12”



B) Host 10.0.0.30 executes the command “ping 80.88.123.115”



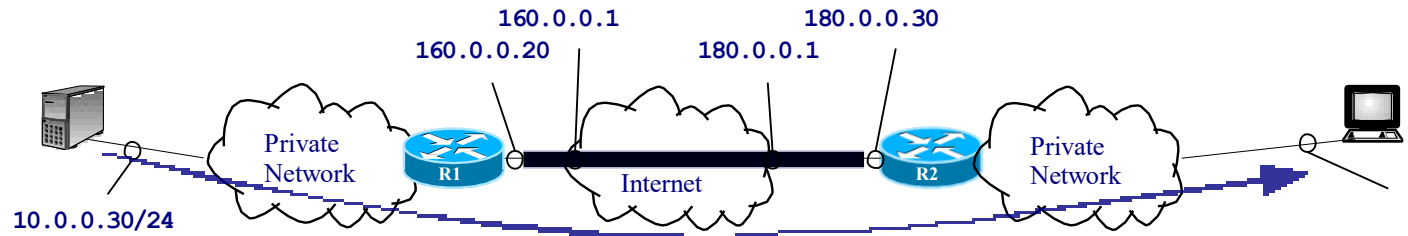
# Exercise



What is the header and contents of the datagram going through the Internet in the following cases:

C) Host 10.0.0.30 executes the command “ping 160.0.0.20”

# Exercise



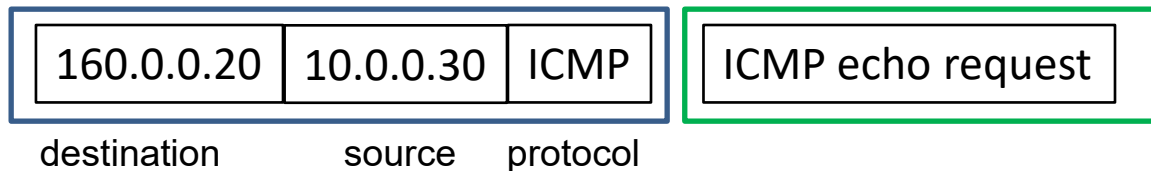
What is the header and contents of the datagram going through the Internet in the following cases:

C) Host 10.0.0.30 executes the command “ping 160.0.0.20”

No datagram at all.

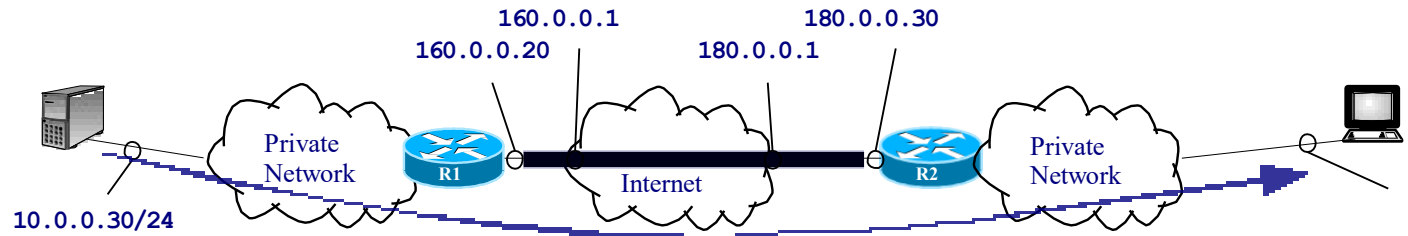
The destination is the public interface of R1.

The datagram generated is



And does not exit the router.

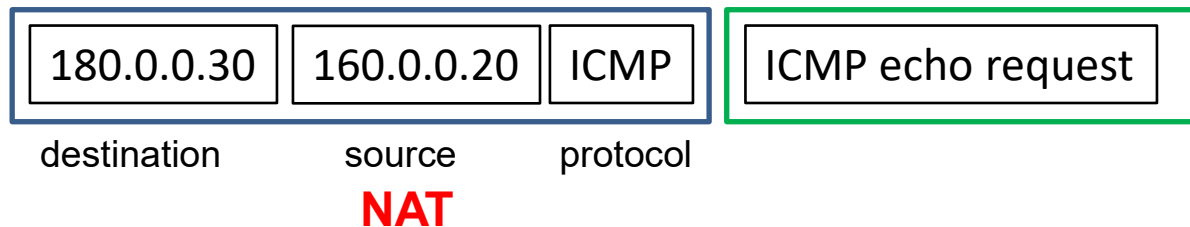
# Exercise



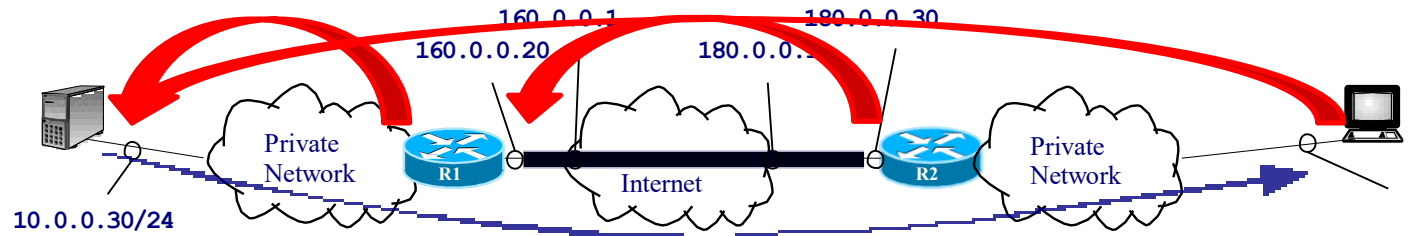
What is the header and contents of the datagram going through the Internet in the following cases:

D) Host 10.0.0.30 executes the command “ping 180.0.0.30”

As the destination is a public IP address, the datagram goes through the default route and through NAT.



# Exercise



What is the list of router interfaces that generate ICMP error messages in the following case:

E) Host 10.0.0.30 executes the command “traceroute 10.0.1.12”

The destination is in the remote private network.  
Packets go through the tunnel.

10.0.0.1 internal (private) interface of R1

180.0.0.30 public interface of R2 (tunnel's end point)

In this case if R1 does not forward ICMP messages explicitly, the source host will not receive the message (it is directed to 160.0.0.20)

10.0.1.12 destination host interface