

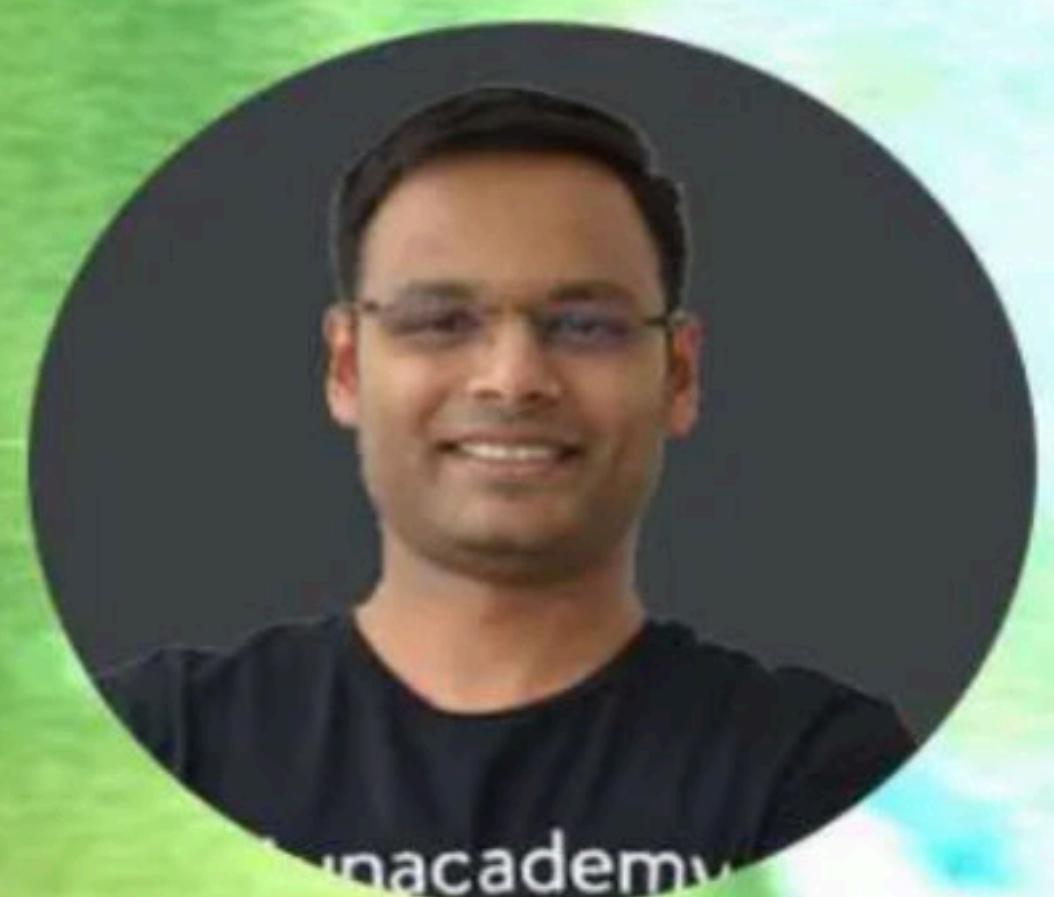
LSR,TCP Header Part 1

Complete Course on Computer Networks - Part III



02-04-2021 Classes by RavindrababuRavula

Lecture Name	Time
Minimal Cover with Examples, Lossless Decomposition, FD Preserving and Decomposition Examples DBMS	6:00 - 7:00AM
LSR, TCP Header Part-1 CN	07:00 - 08:00 AM
Pointer to Functions L:30 C-Programming GATE CS Ravindrababu Ravula	08:05 - 9:05 AM
Process Management Set-3 Practice Questions OS	5:00- 6:00 PM
Classes & objects Access modifiers Frequently asked Java interview questions JAVA	6:00 - 7:00PM
Linux Course	7:00 - 8:00PM
Web Technologies Course	8:00 - 9:00 PM



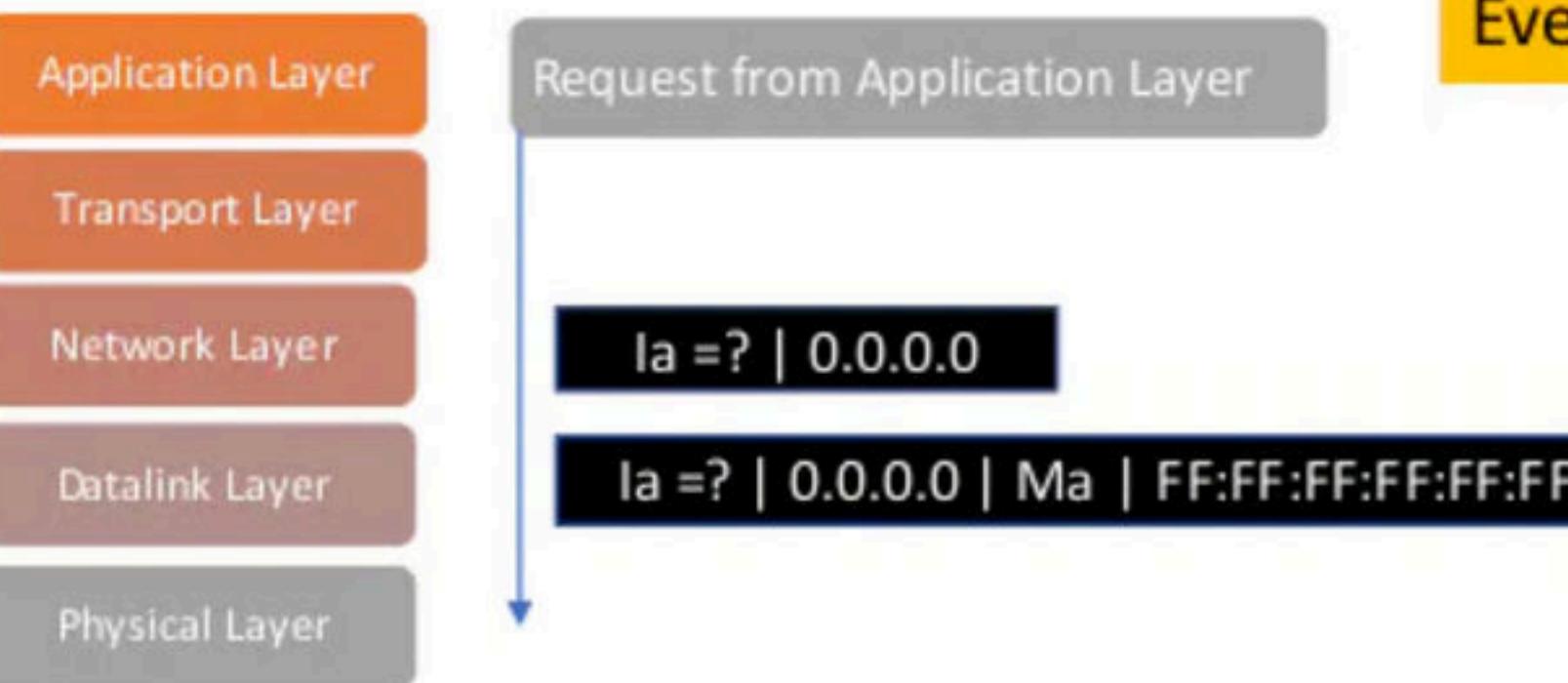
LEARN FROM TOP EDUCATORS



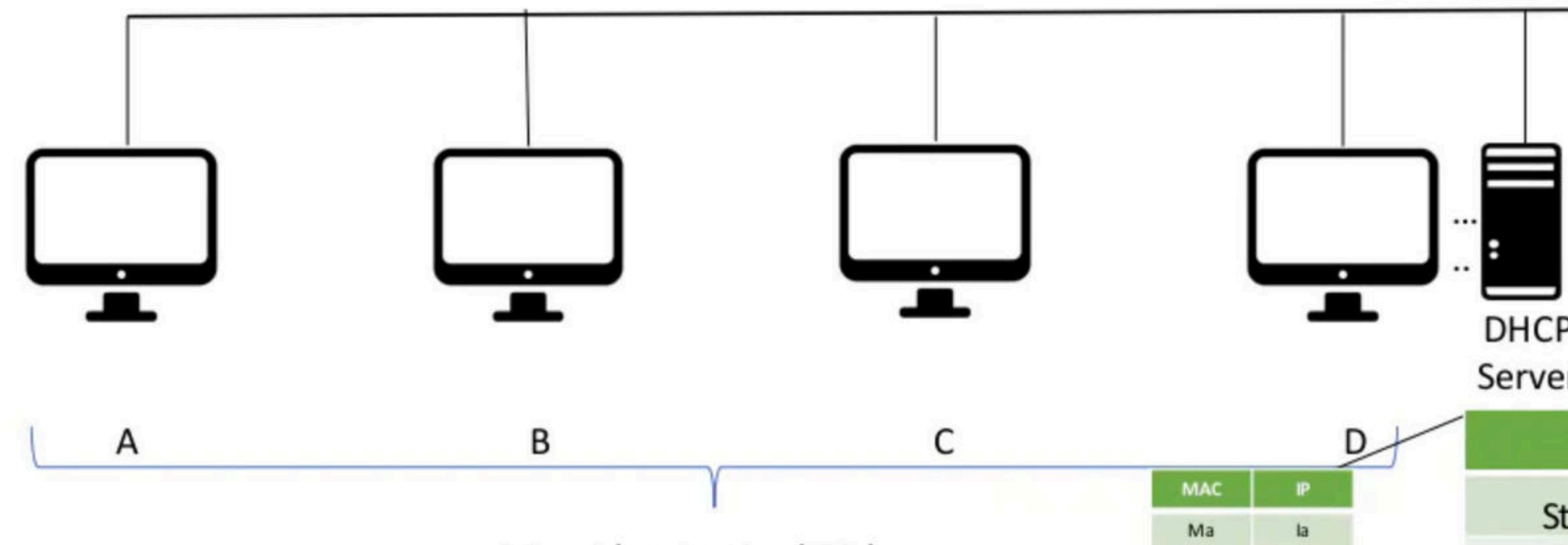
1-04-2021 Classes by Ravindrababu Ravula

Lecture Name	Time	
Checking Additional FDs and Equivalence of FDs with Examples DBMS	6.:00 AM	
Count to Infinity and Split Horizon CN	7:00 AM	
Process Management Part-2 Practice Questions OS	8:05 AM	 
Process Management Set-3 Practice Questions OS	5:00PM	 
OOPS Concepts Frequently Asked Java Interview Questions	6:00PM	
Linux System Calls L:4 Google Interview Questions	7:00PM	
B.Tech Project in Web Technologies L:4 HTML Web Technologies Course for Engg and UGC-NET	8:00PM	

DHCP – Dynamic Host Configuration Protocol



Every thing is same as BOOTP except that the mapping table need not be static



Network which does not have a DHCP server has a Relay Agent



MAC	IP
Ma	la
Mb	lb
Mc	lc
..	..

D

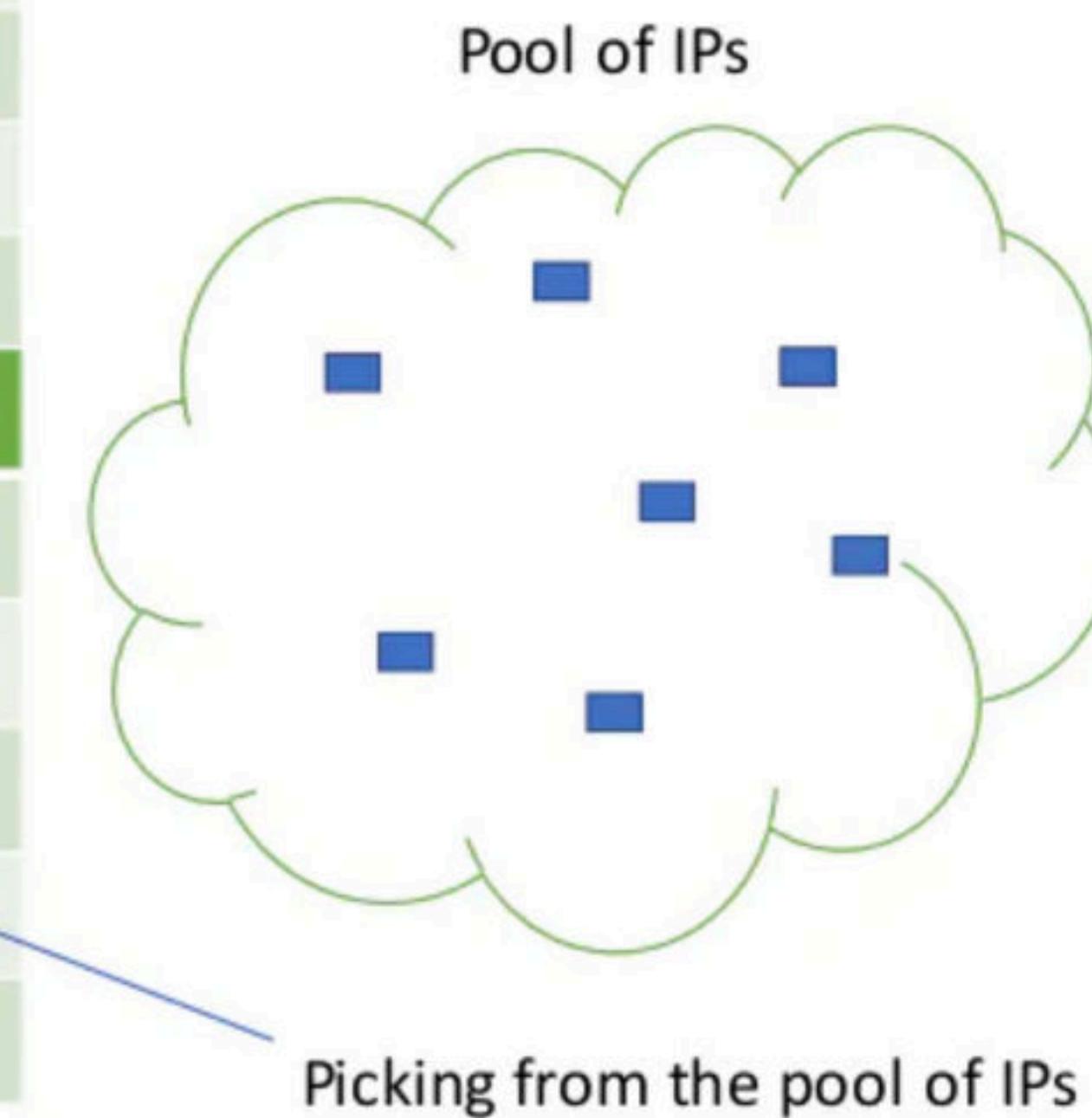
Generally servers will be given permanent IP

All others

DHCP MAPPING TABLE

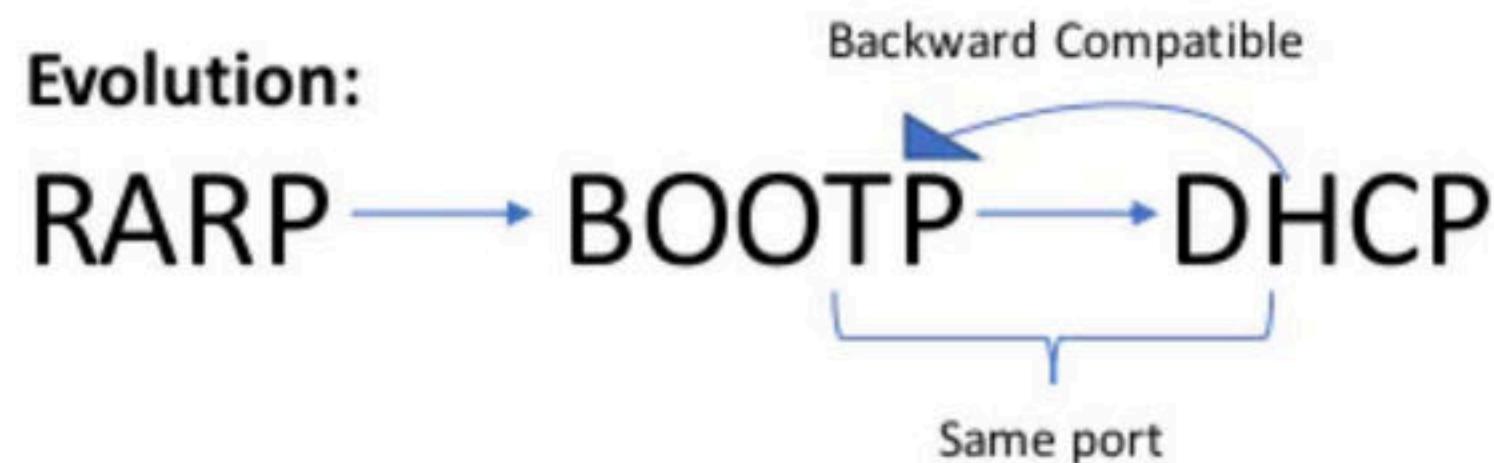
	MAC	IP	
Static	Ma	Ia	
	Mb	Ib	
	Mc	Ic	
	Md	Id	
	
	MAC	IP	Least Time
Dynamic	Ms	Is	10 mins

Note : If renew requests is not sent the IP is pulled and added back to the pool



Advantage and points to remember:

- Only One DHCP server is enough.
- Dynamic Table

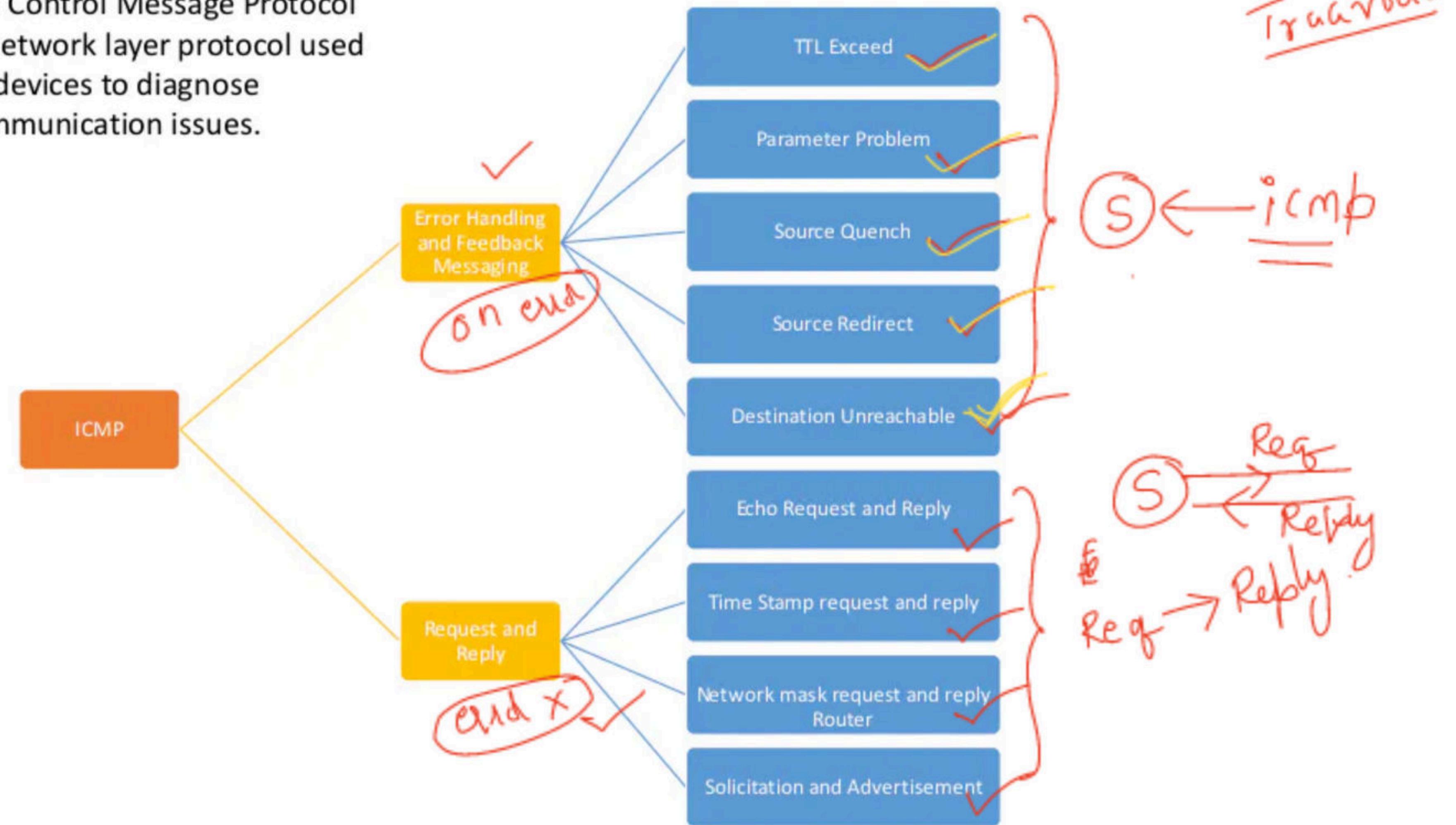


Computer Networks

ICMP

Internet Control Message Protocol (ICMP)

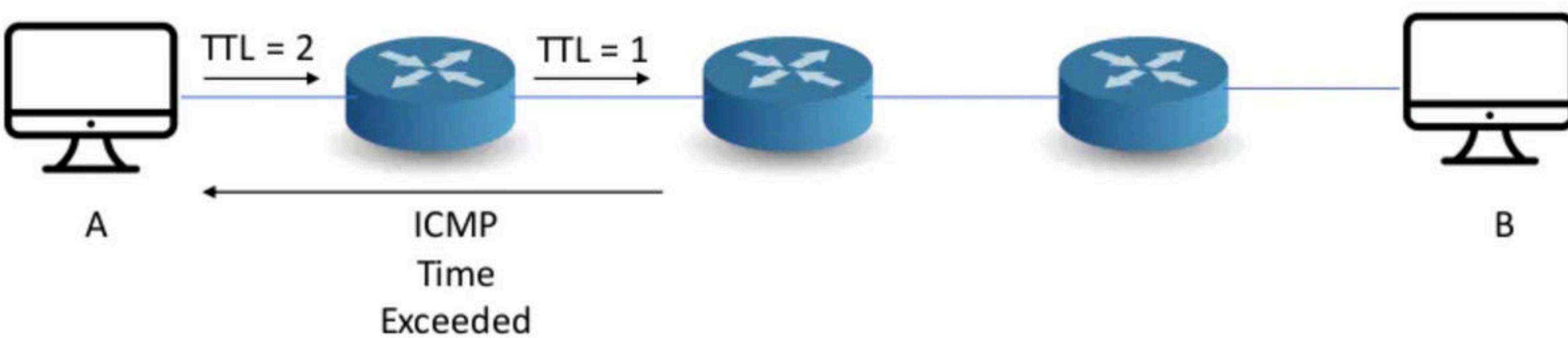
The Internet Control Message Protocol (ICMP) is a network layer protocol used by network devices to diagnose network communication issues.



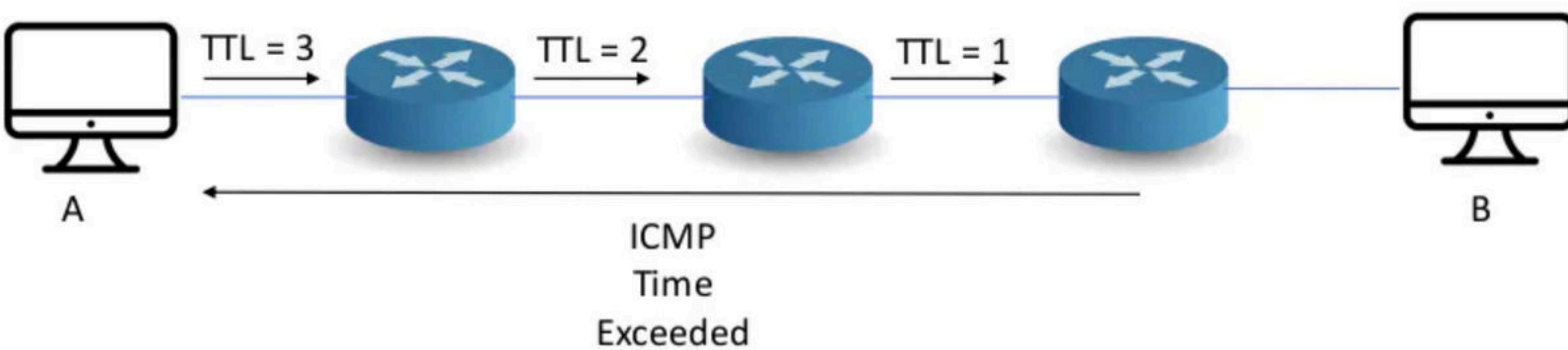
TTL Exceed



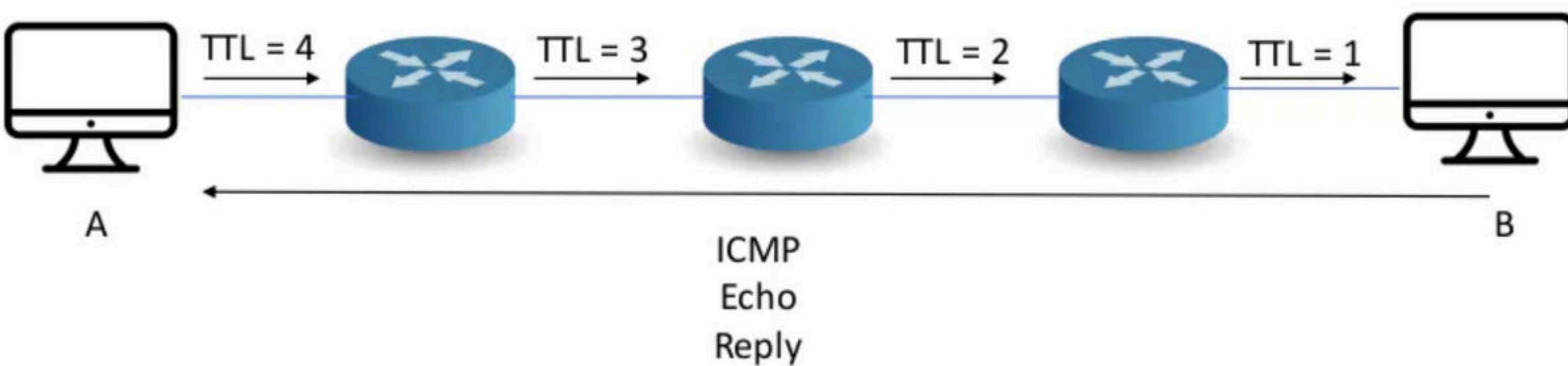
TTL Exceeded



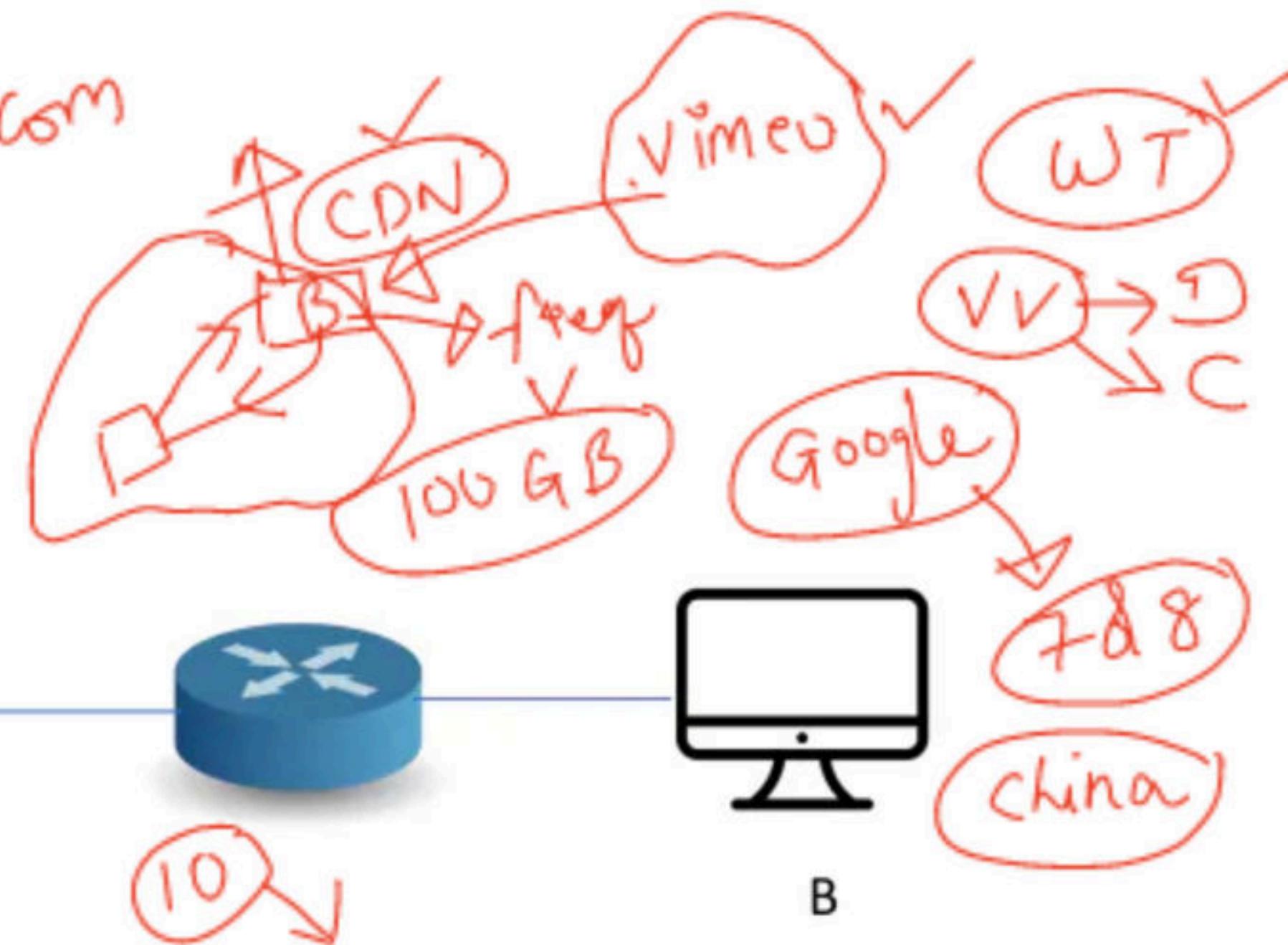
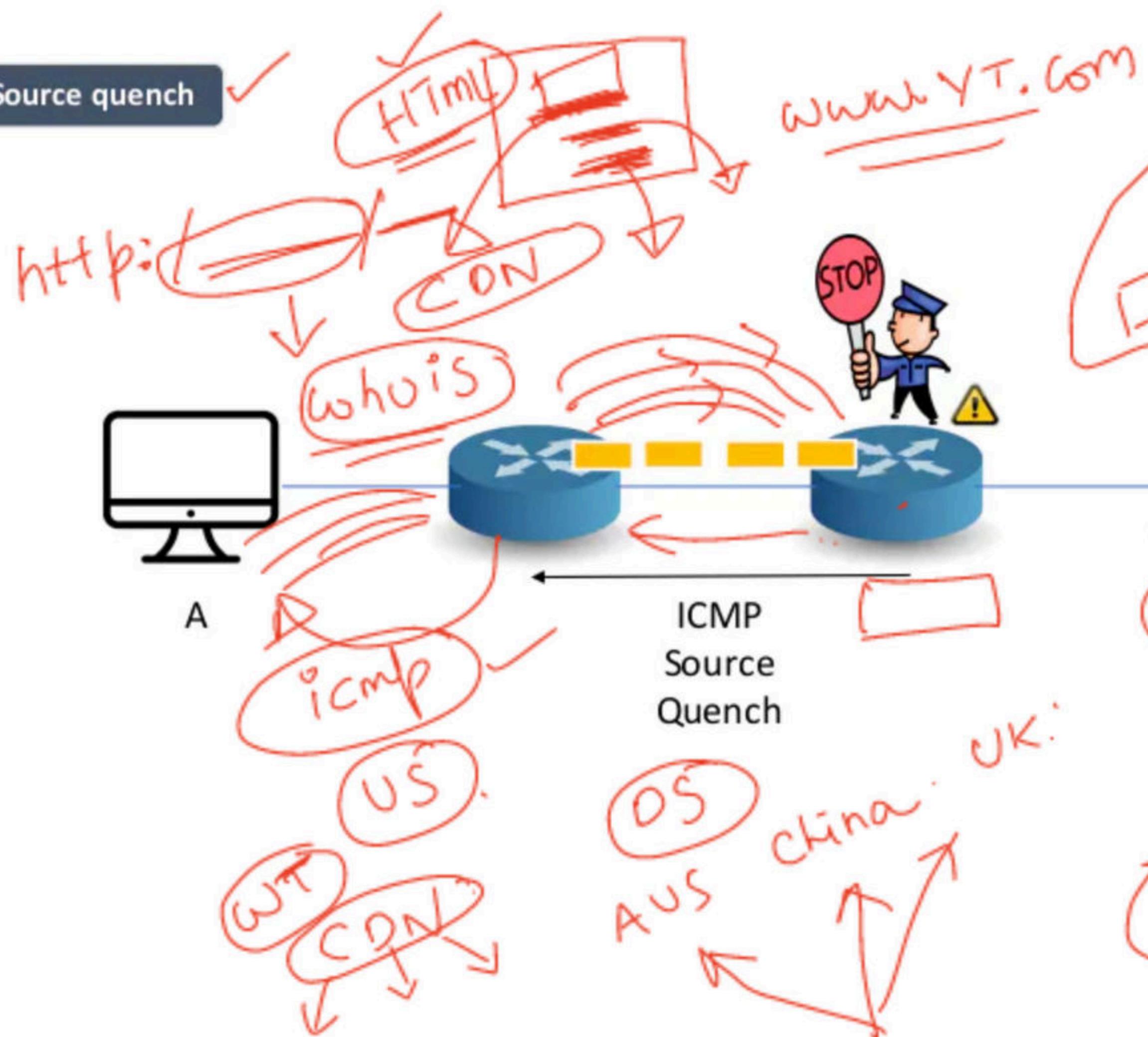
TTL Exceed



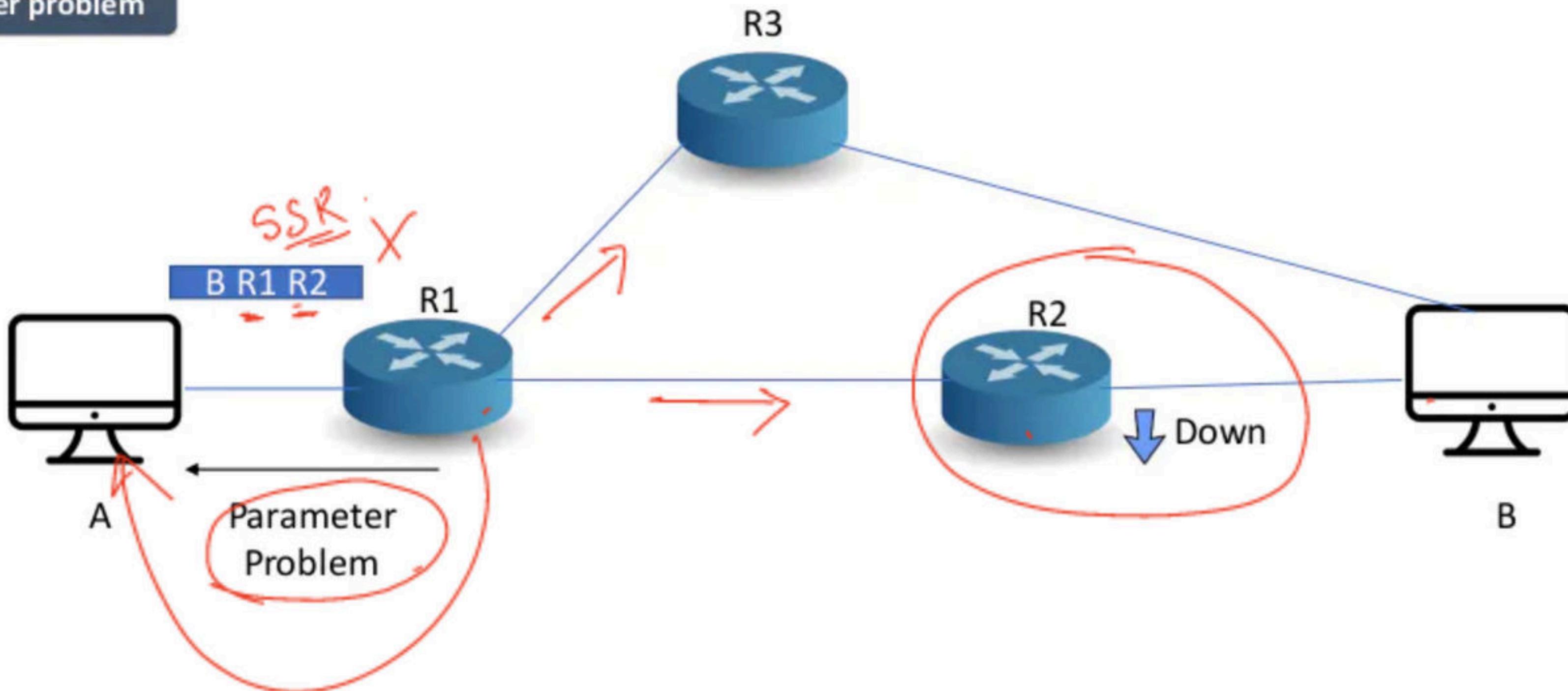
TTL Exceed

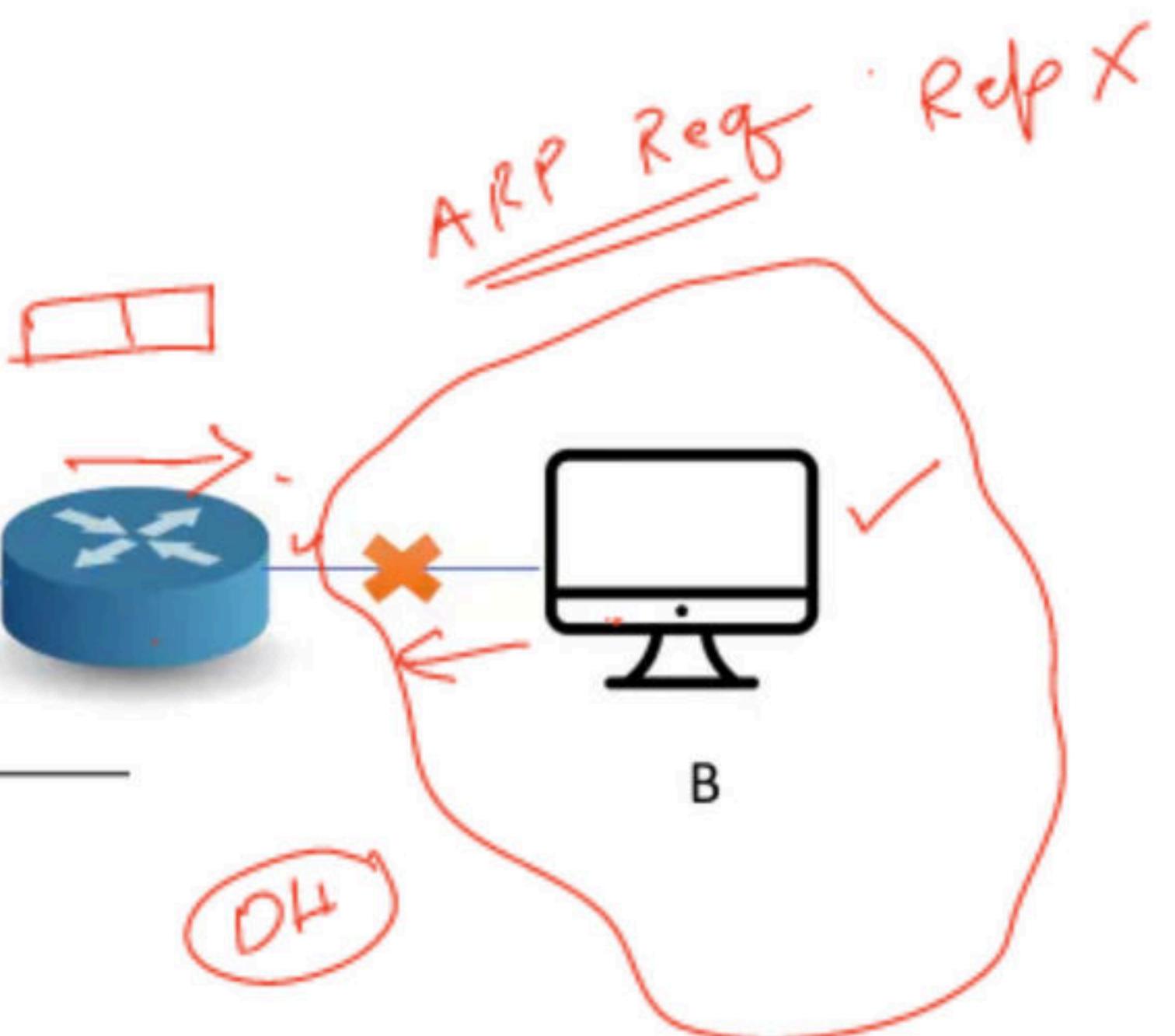
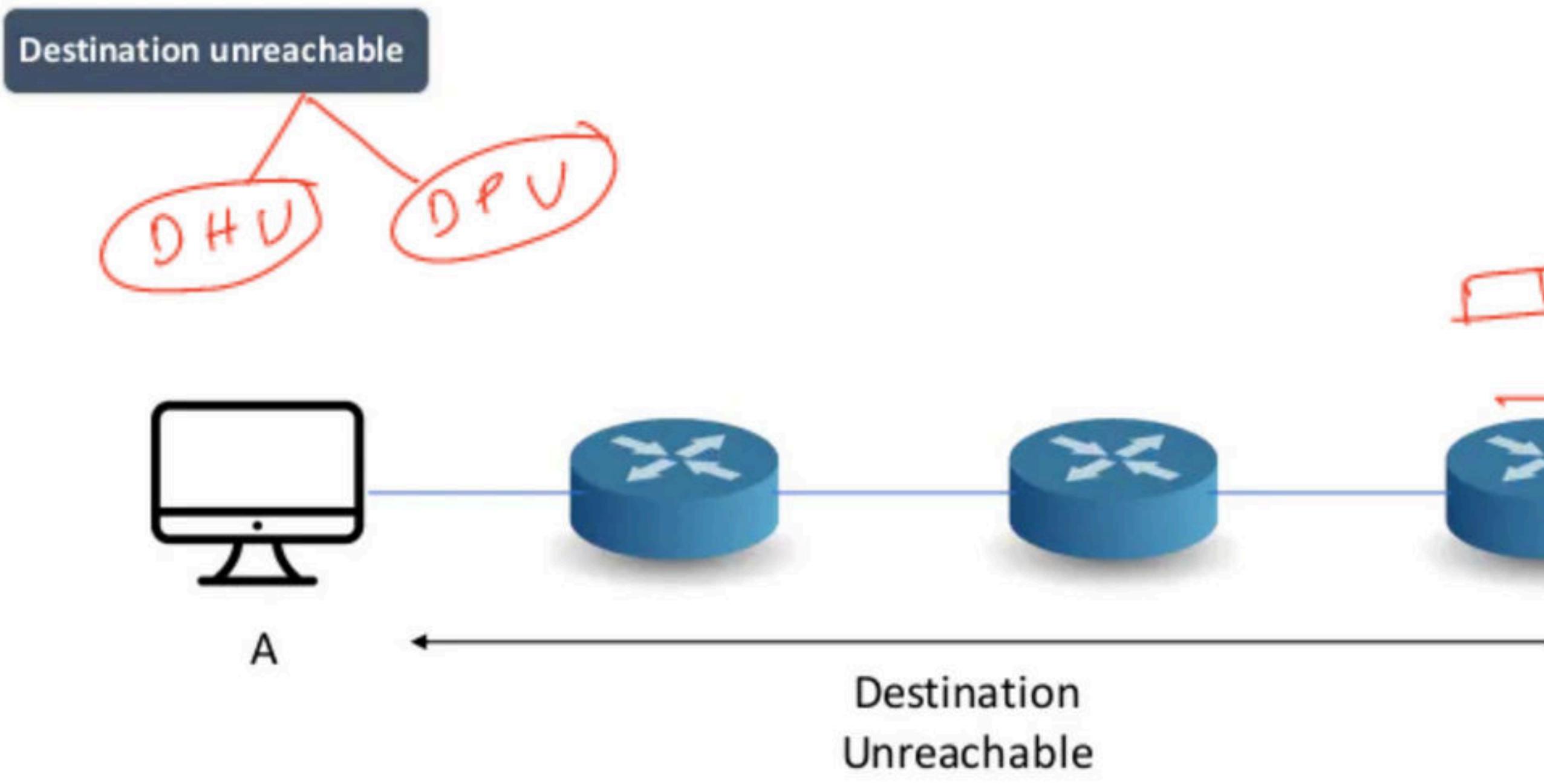


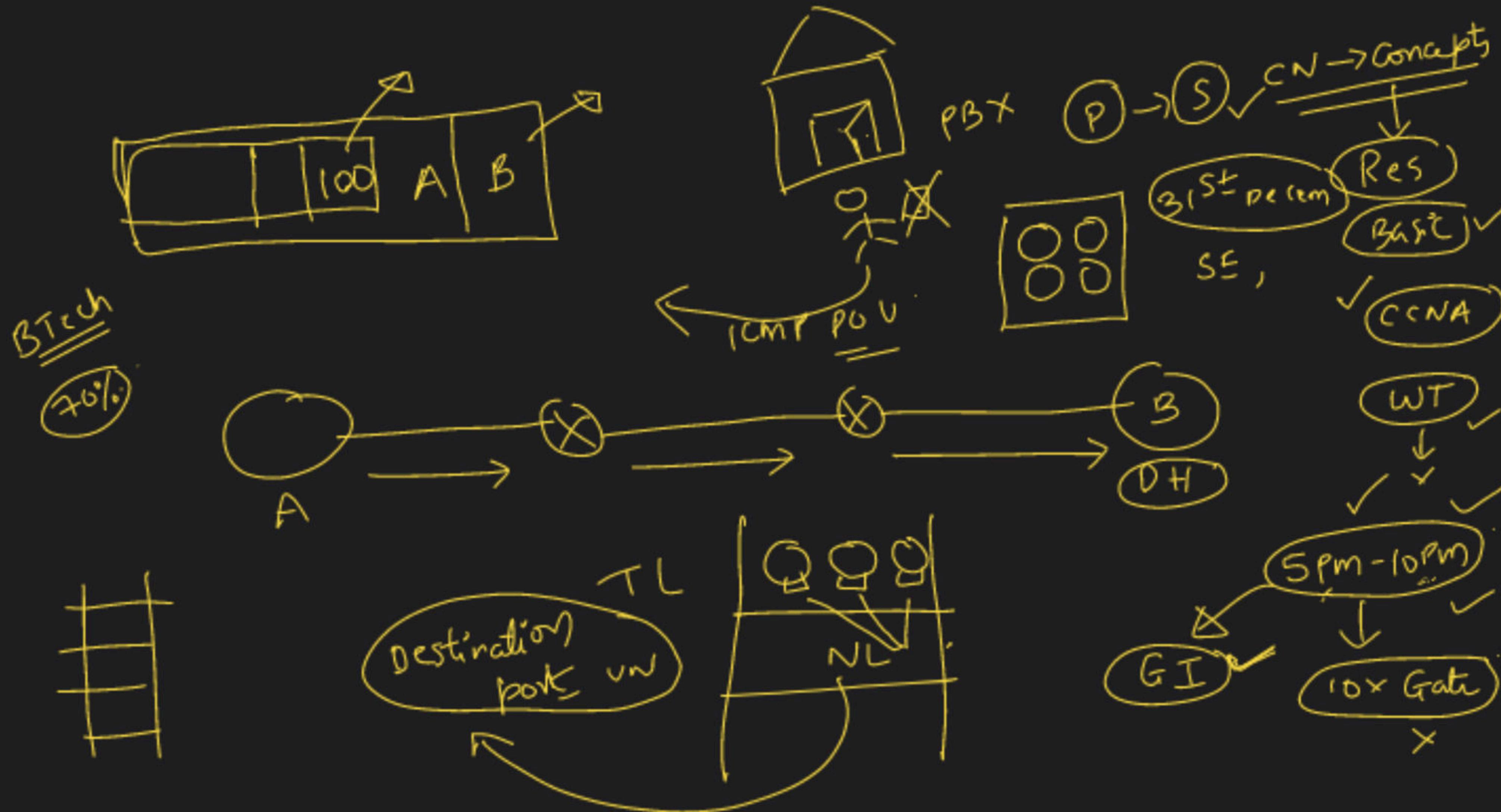
Source quench



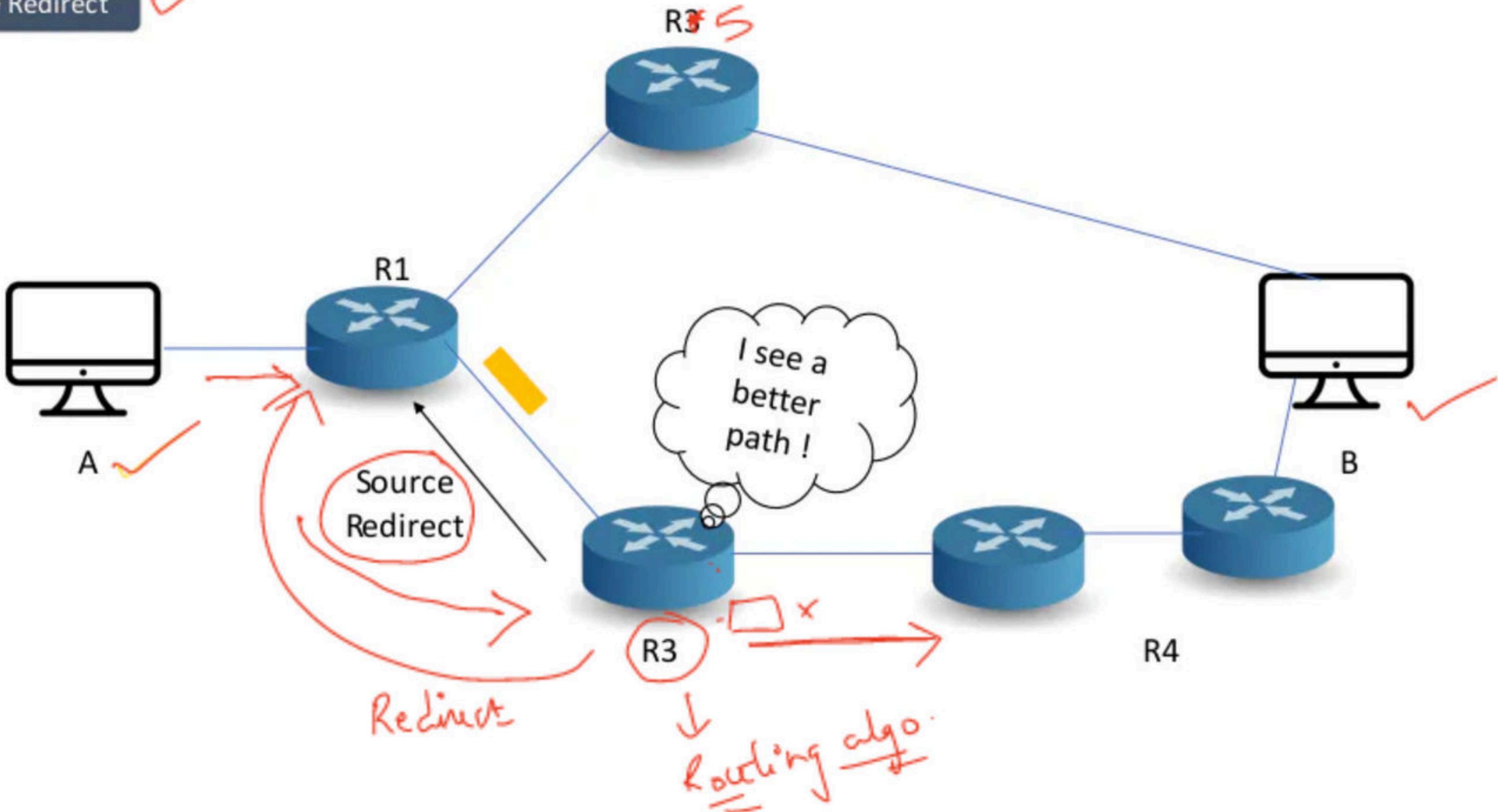
Parameter problem







Source Redirect ✓



These are things that sender should know:

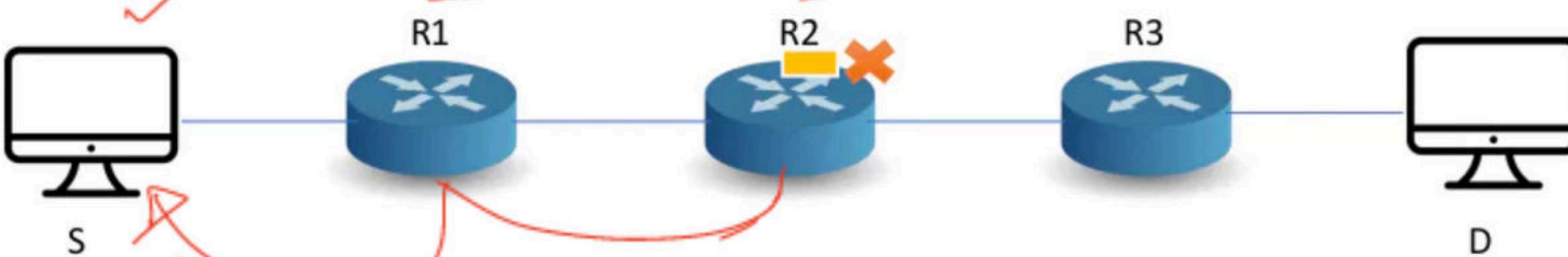
Who discarded ?

Why it got discarded ?

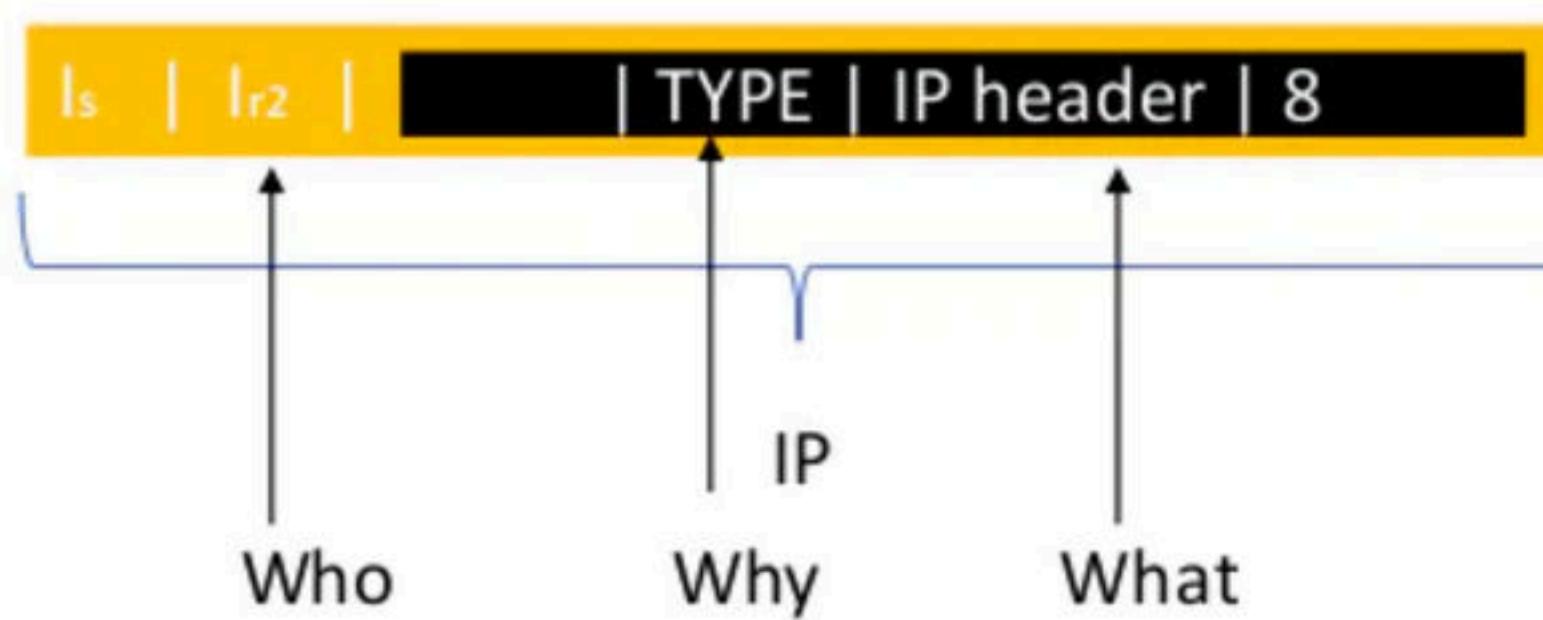
What packet did you discard?

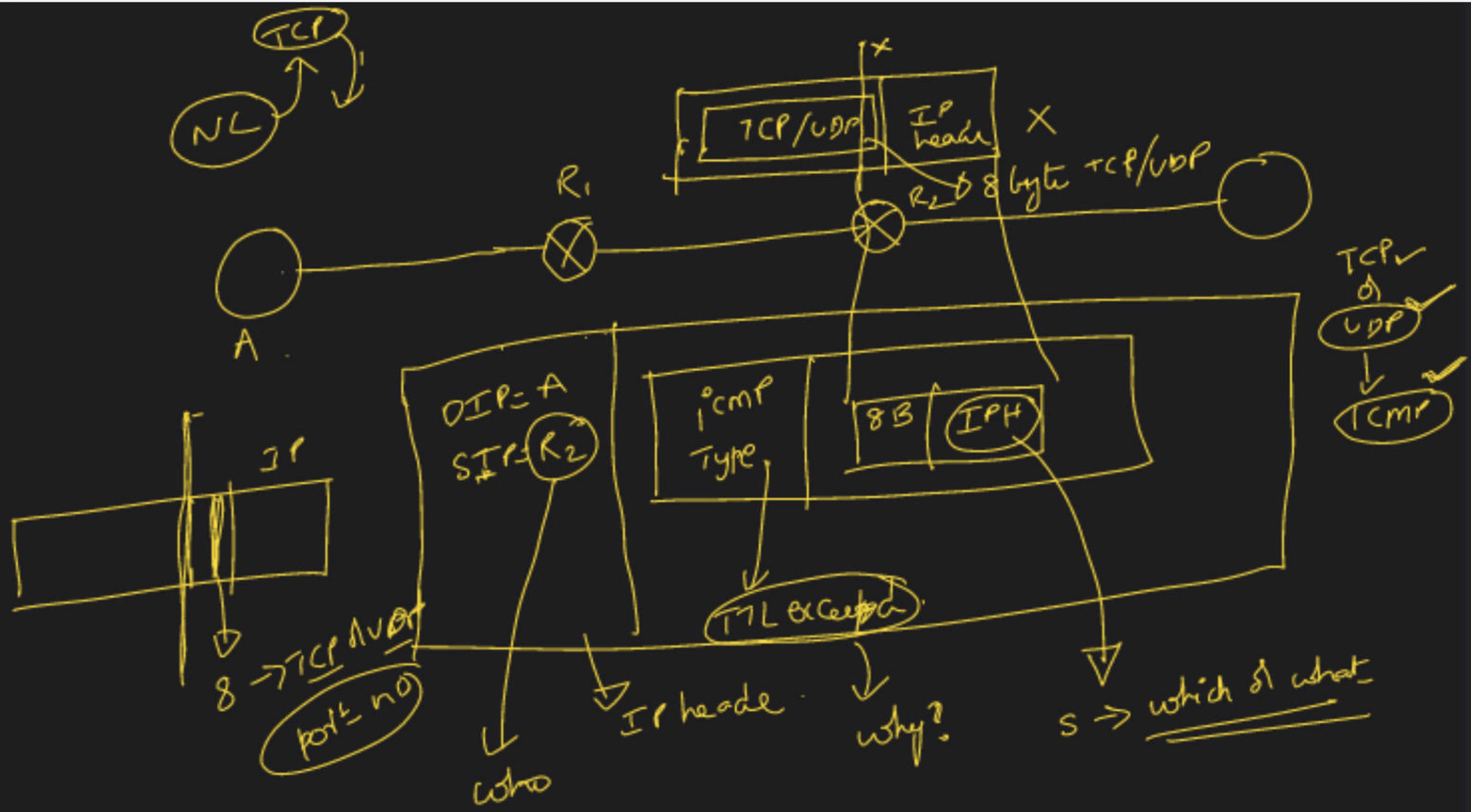


18⁺
=



Who?
Why?
What?
With?





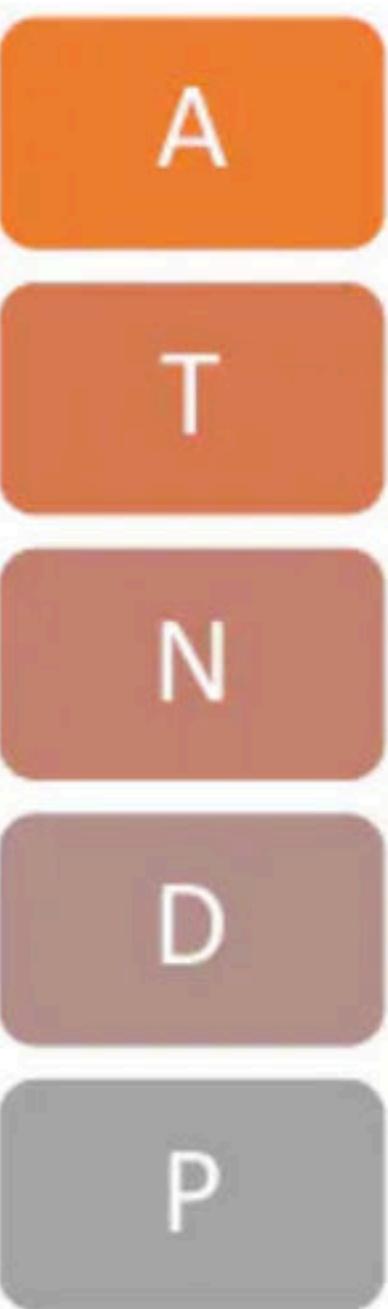
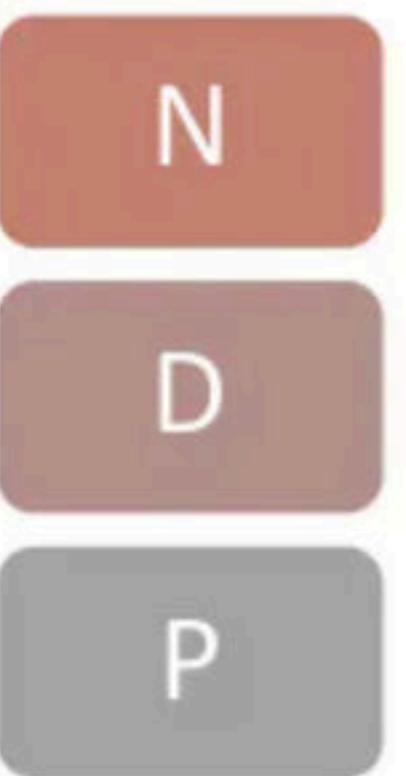
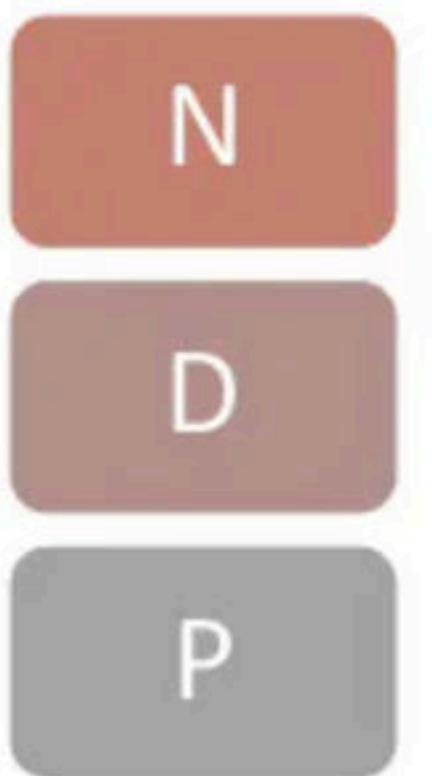
Computer Networks

ICMP Part 2

Echo Request and Reply



Echo Req and Reply
CS



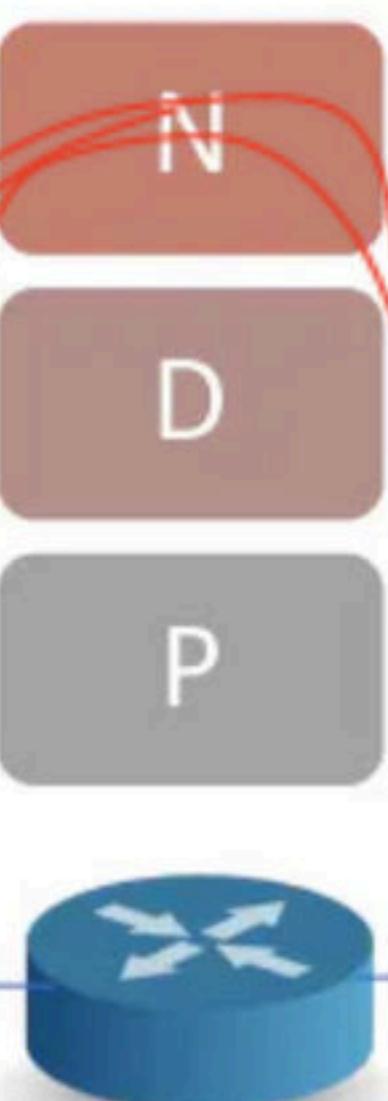
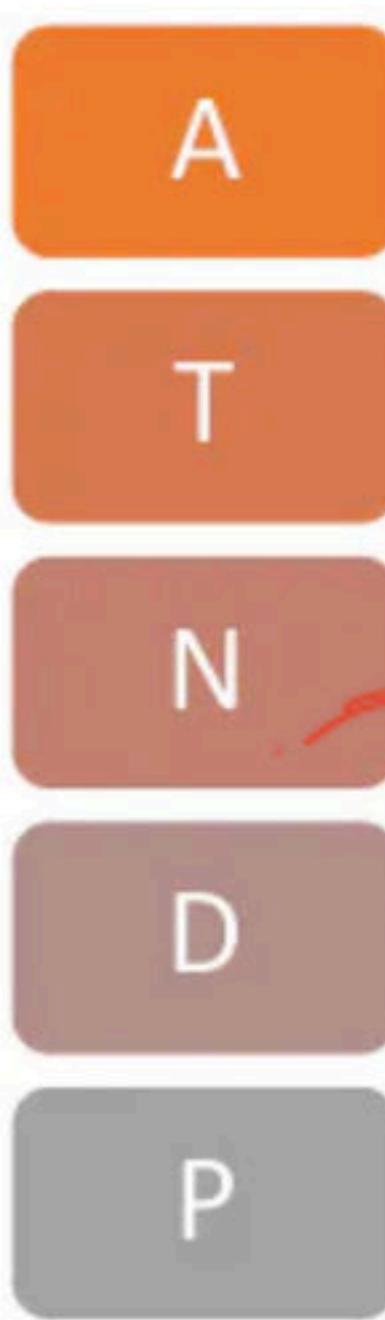
Echo Request and Reply

CCNBR

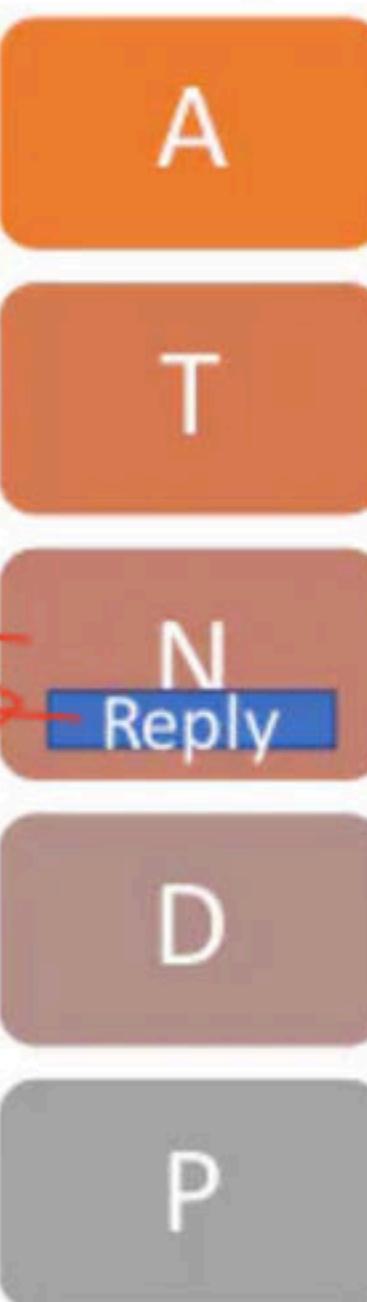
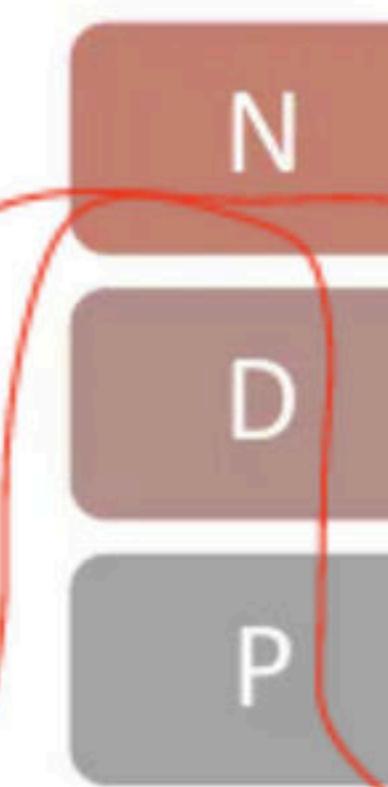
ER & Reply → all the routers are working

working & up
Connectivity

DN → up
DT → up
all the routes → up

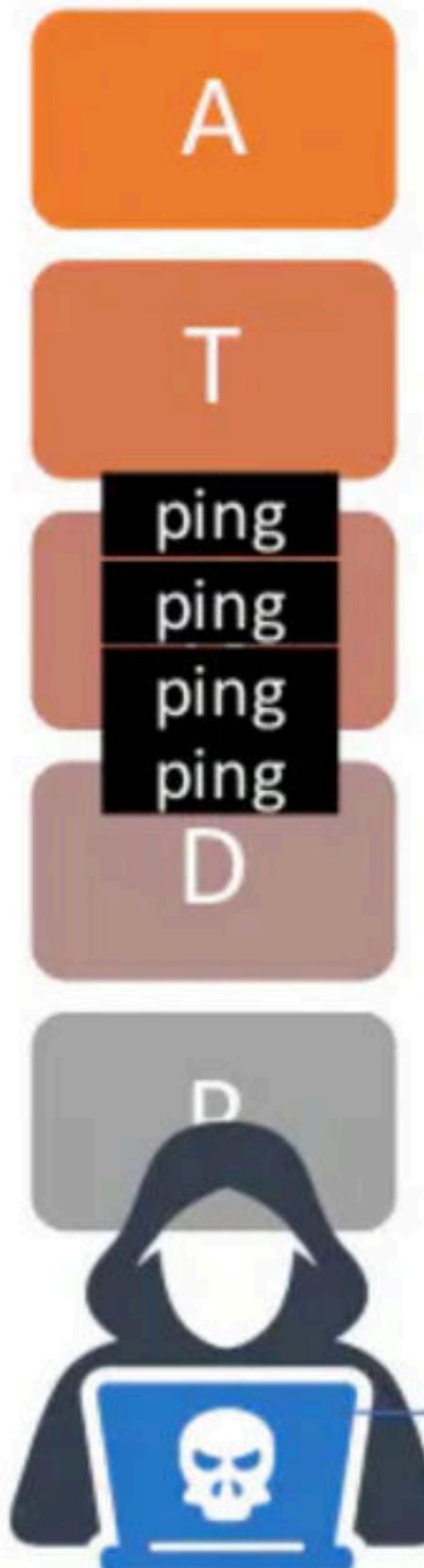


Ping ✓



Echo Request and Reply

Attack possible
DENIAL OF SERVICE



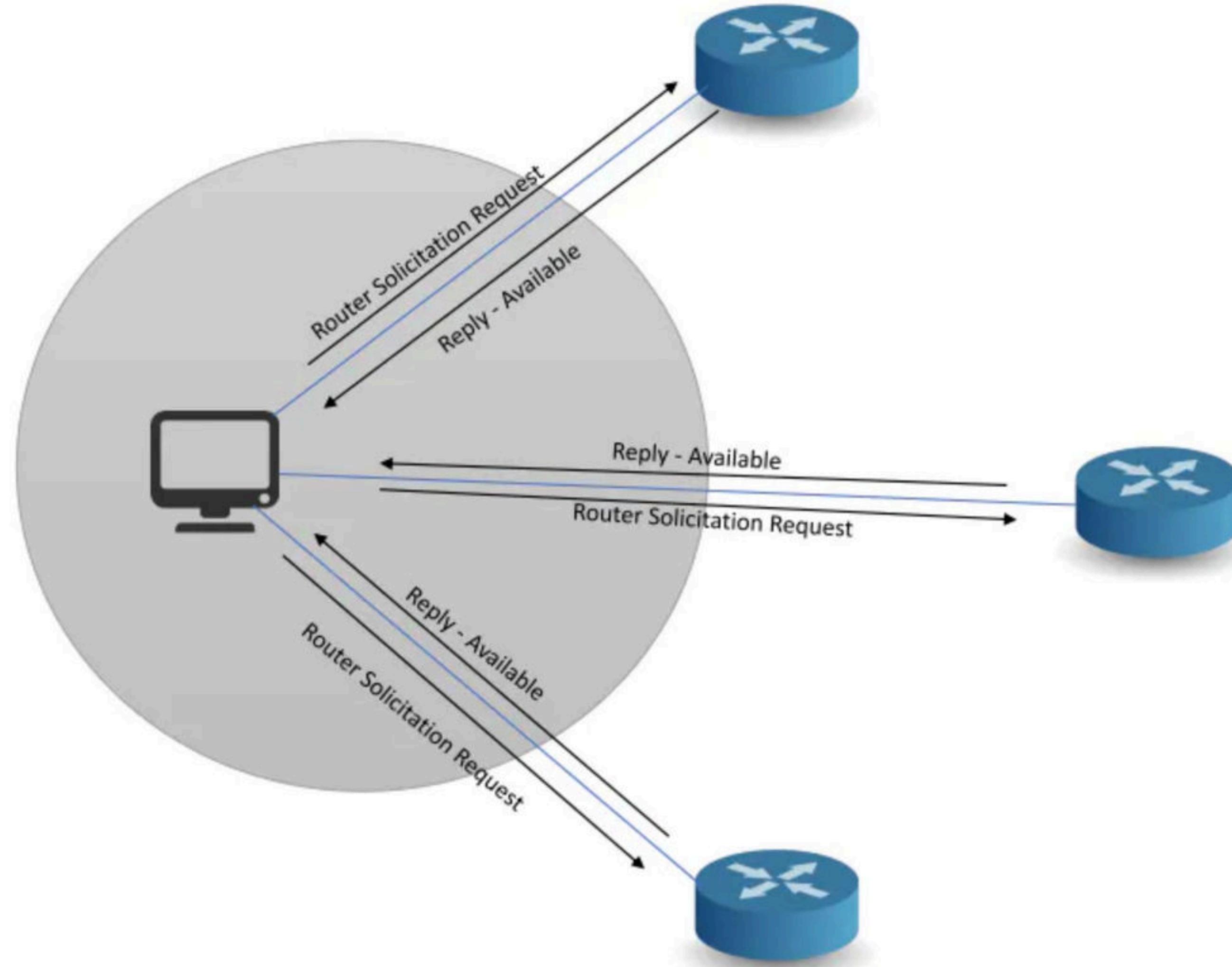
PING is the Packet InterNet Grope

searching in the dark

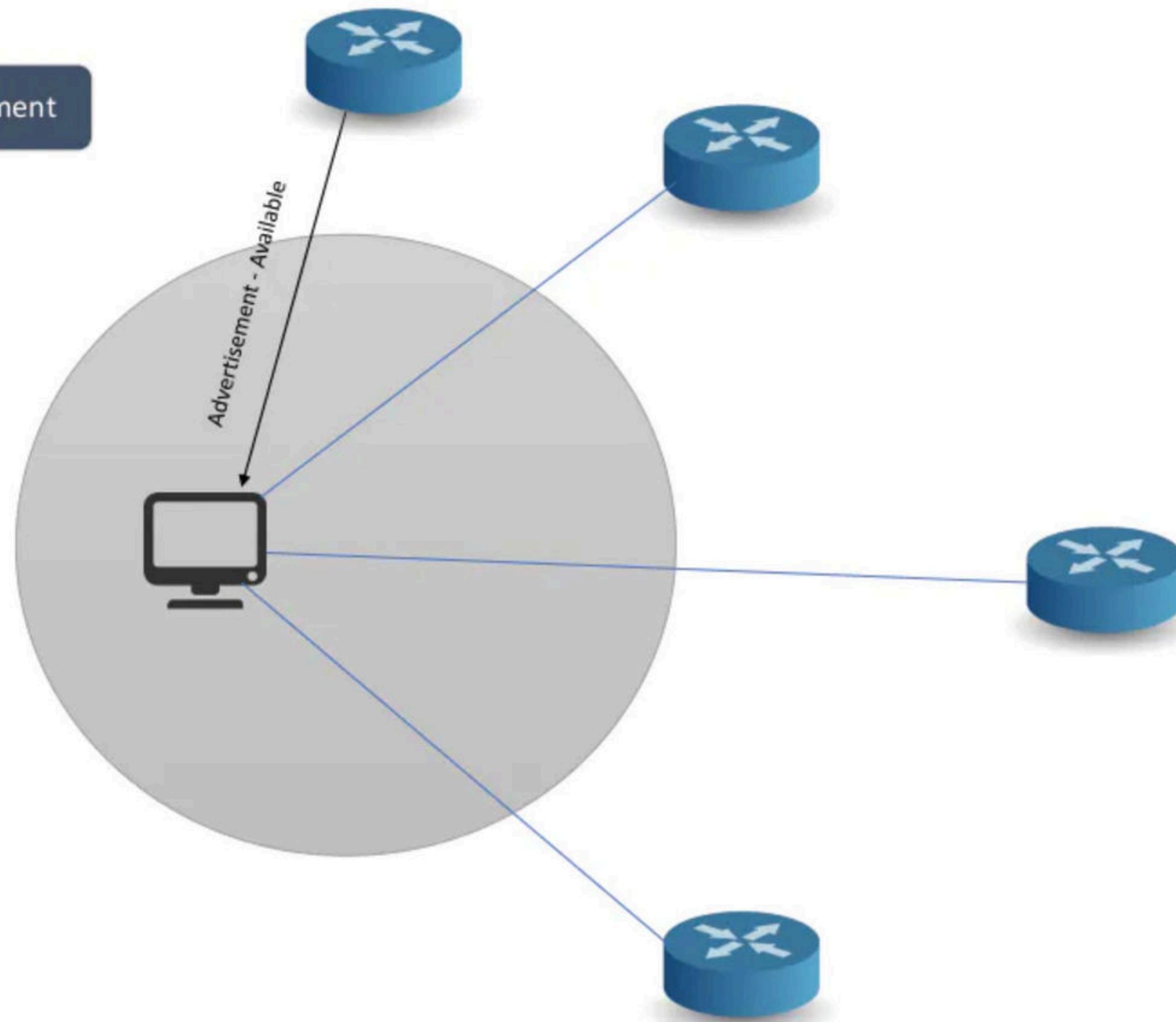


BUSY REPLYING PING

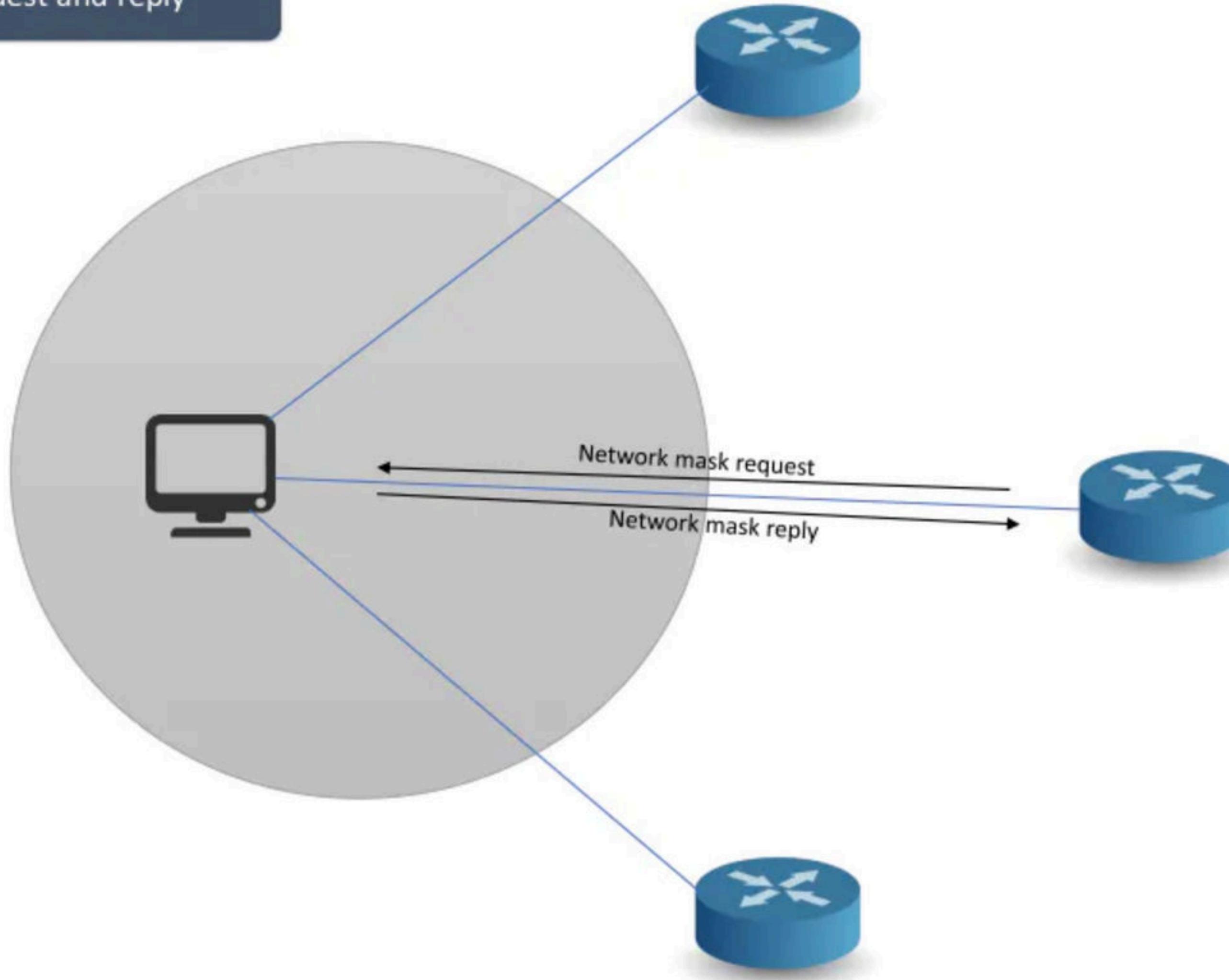
Router Solicitation



Router Advertisement



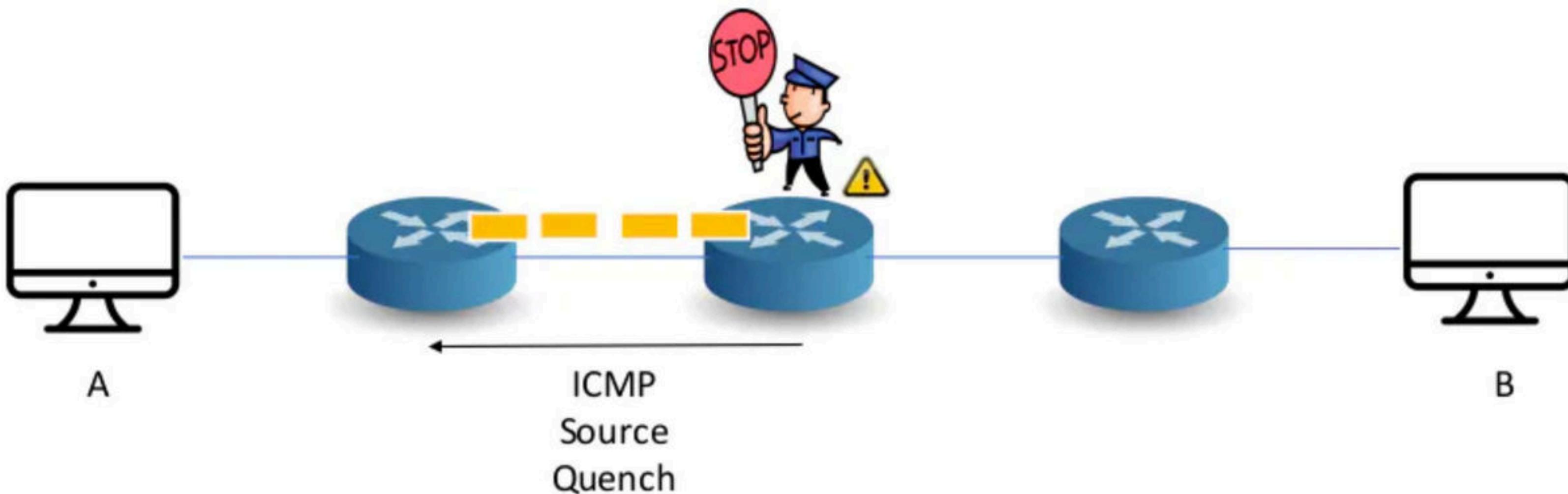
Network mask request and reply



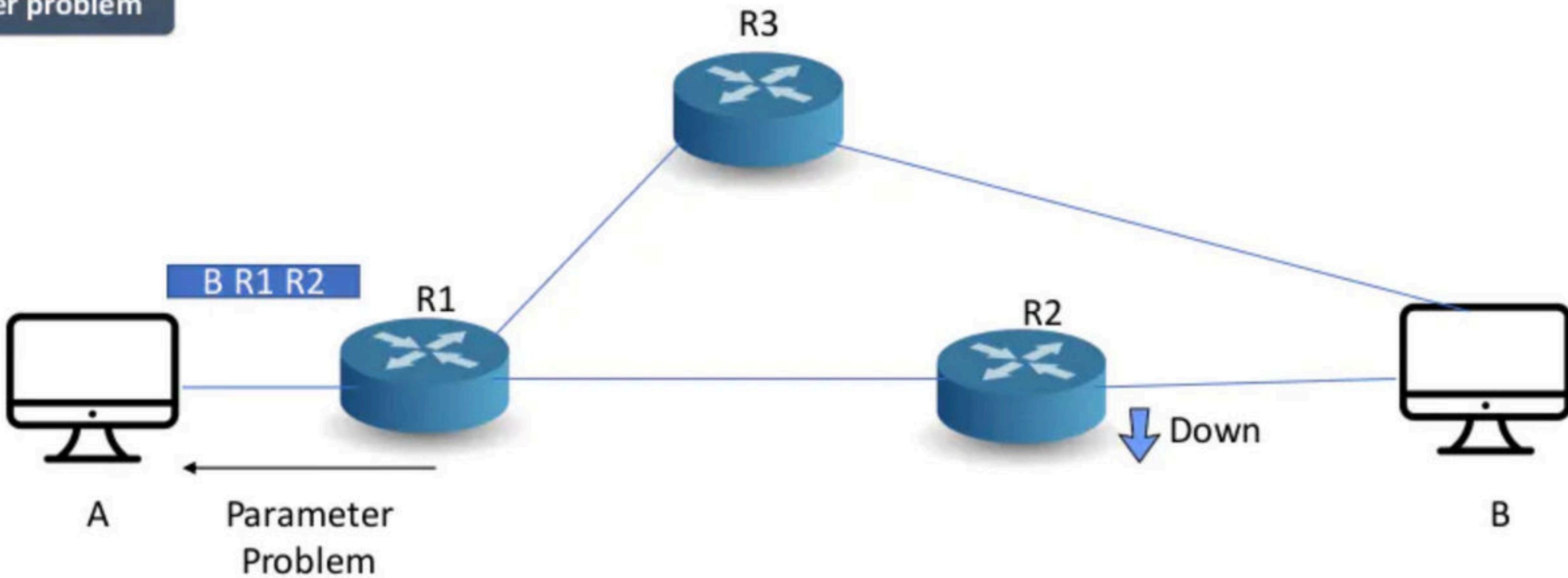
Timestamp request and reply

- ICMP Timestamp Request and Timestamp Reply messages are used by network routers to synchronize their system clocks for time and date.
- When a router needs to synchronize its system time, it sends an ICMP Timestamp Request message to the other router.
- Once the ICMP Timestamp Request message is received by the other router, it will respond back with an ICMP Timestamp Reply message.
- Timestamp Reply message contains other router's date and time.
- ICMP Timestamp Request and Timestamp Reply messages are not used much these days, because there an entire protocol itself is dedicated for network device time synchronization.

Source quench



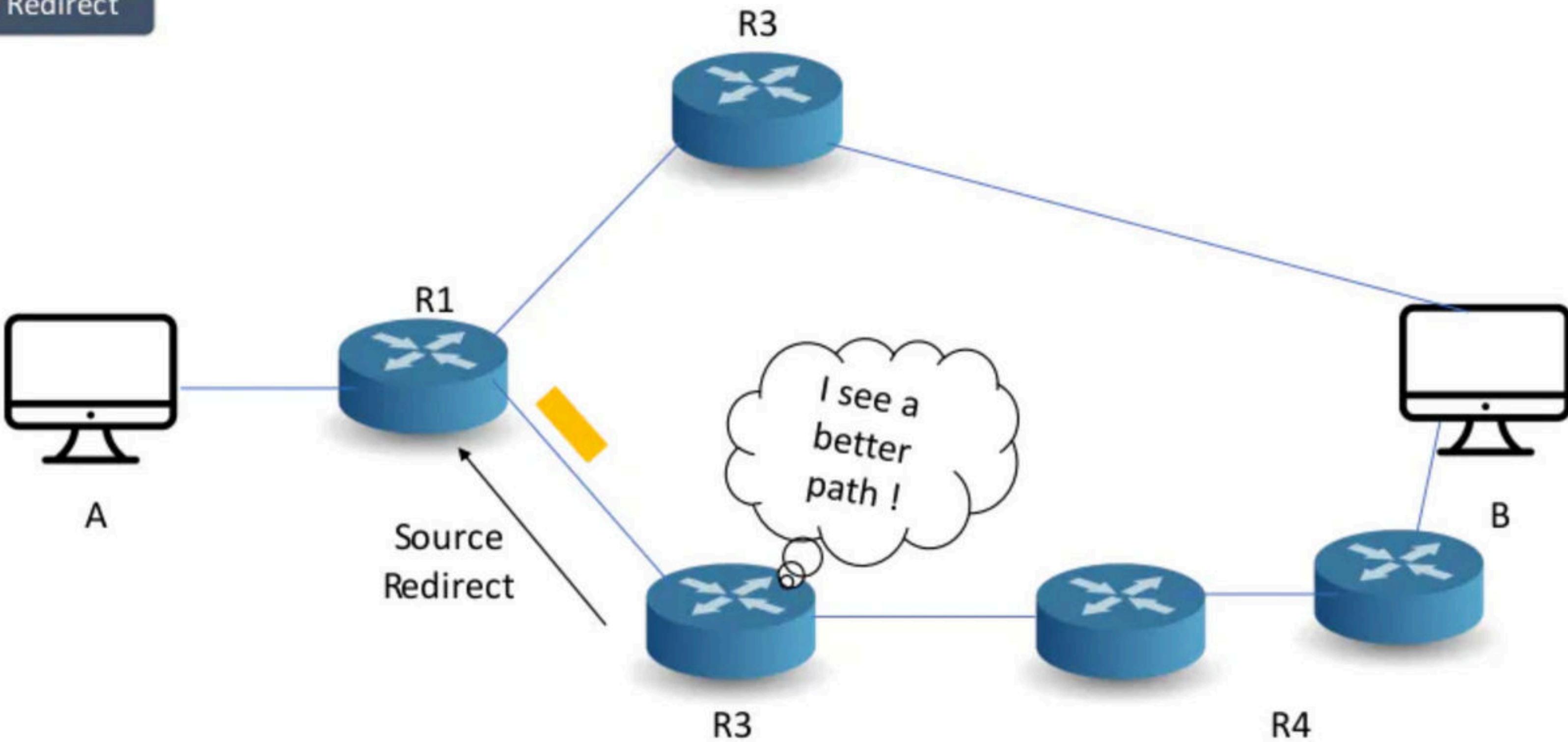
Parameter problem



Destination unreachable



Source Redirect

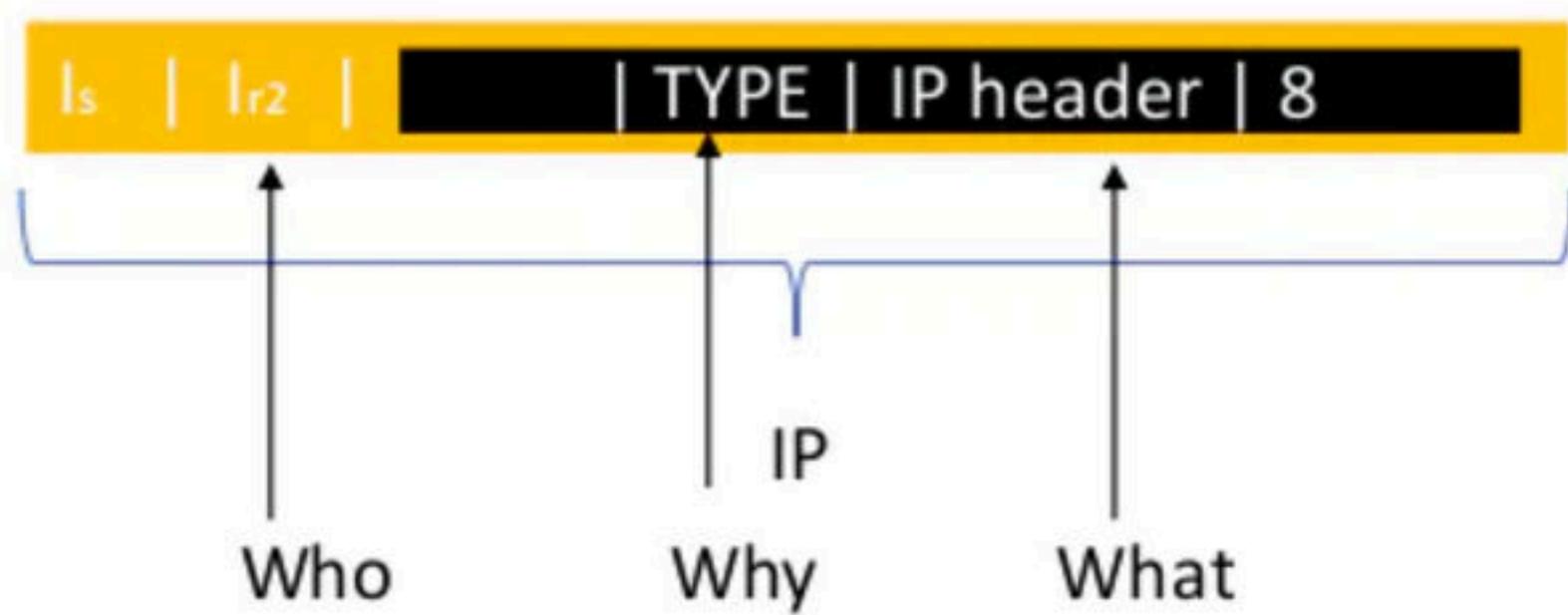
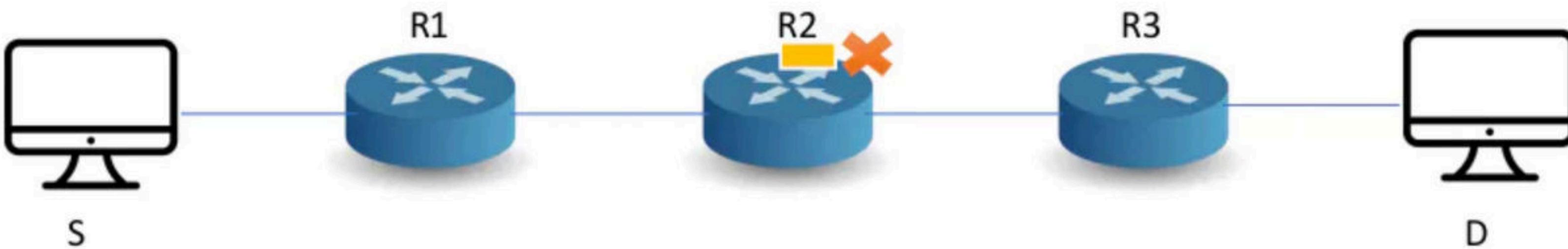


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Why it got discarded ?

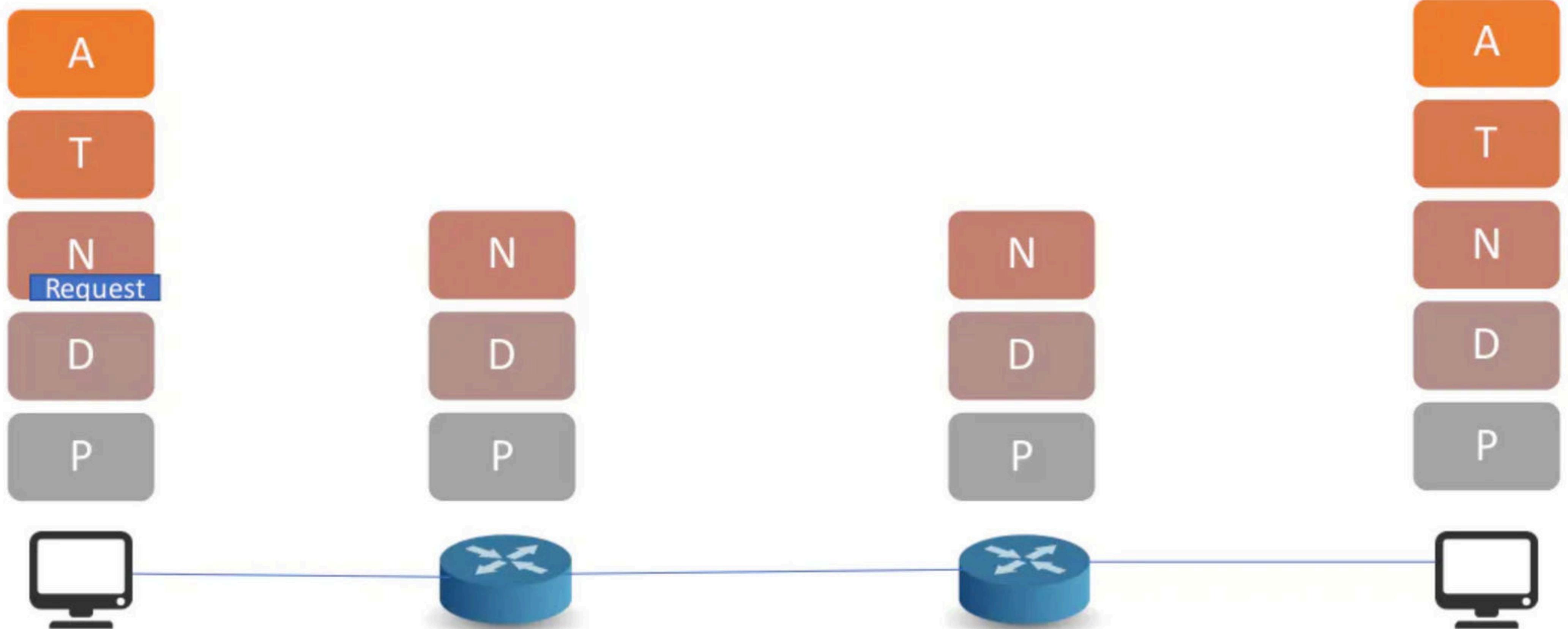
What packet did you discard?



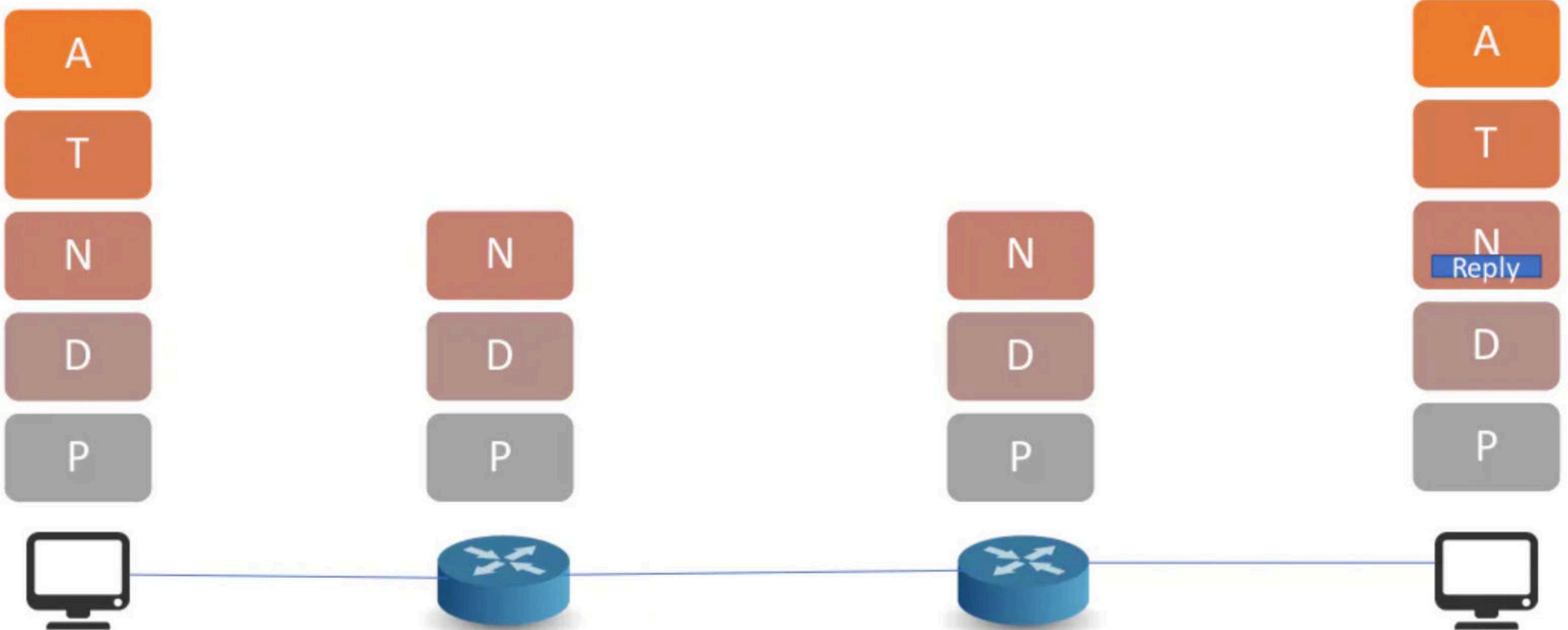
Computer Networks

ICMP Part 2

Echo Request and Reply



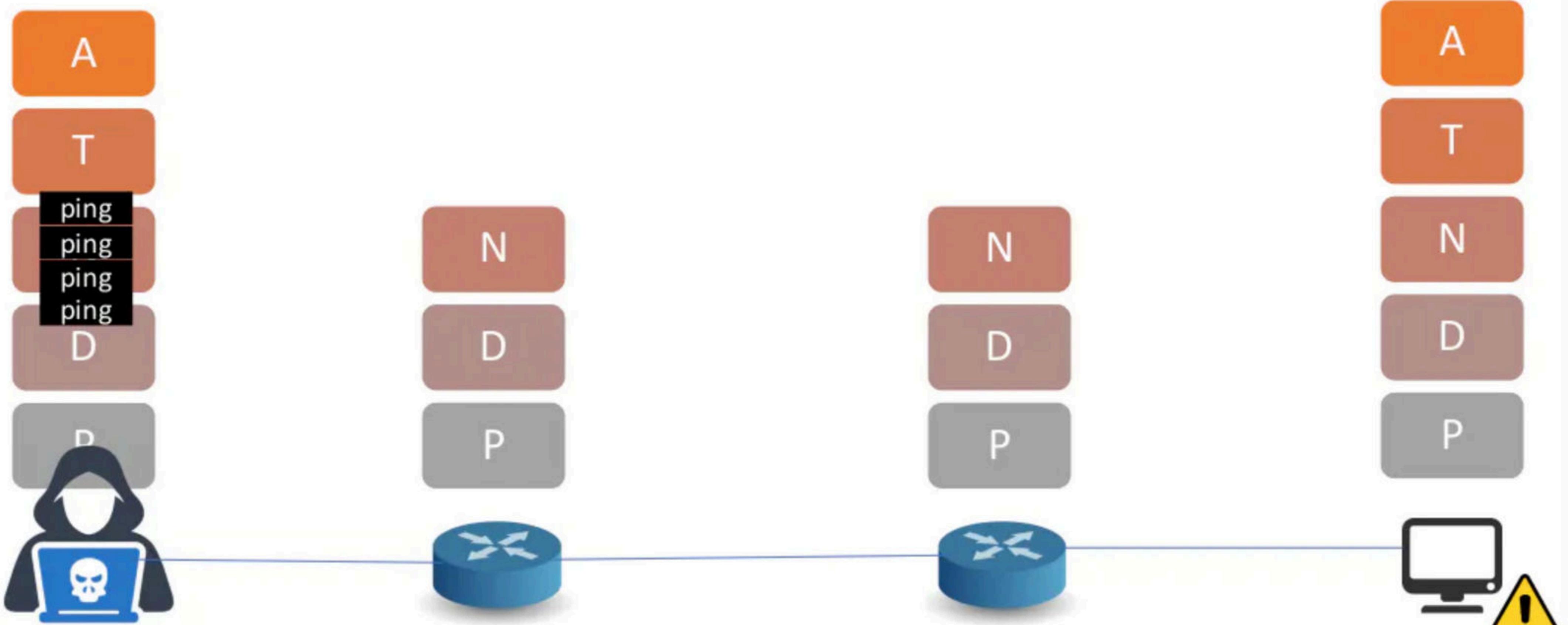
Echo Request and Reply



Echo Request and Reply

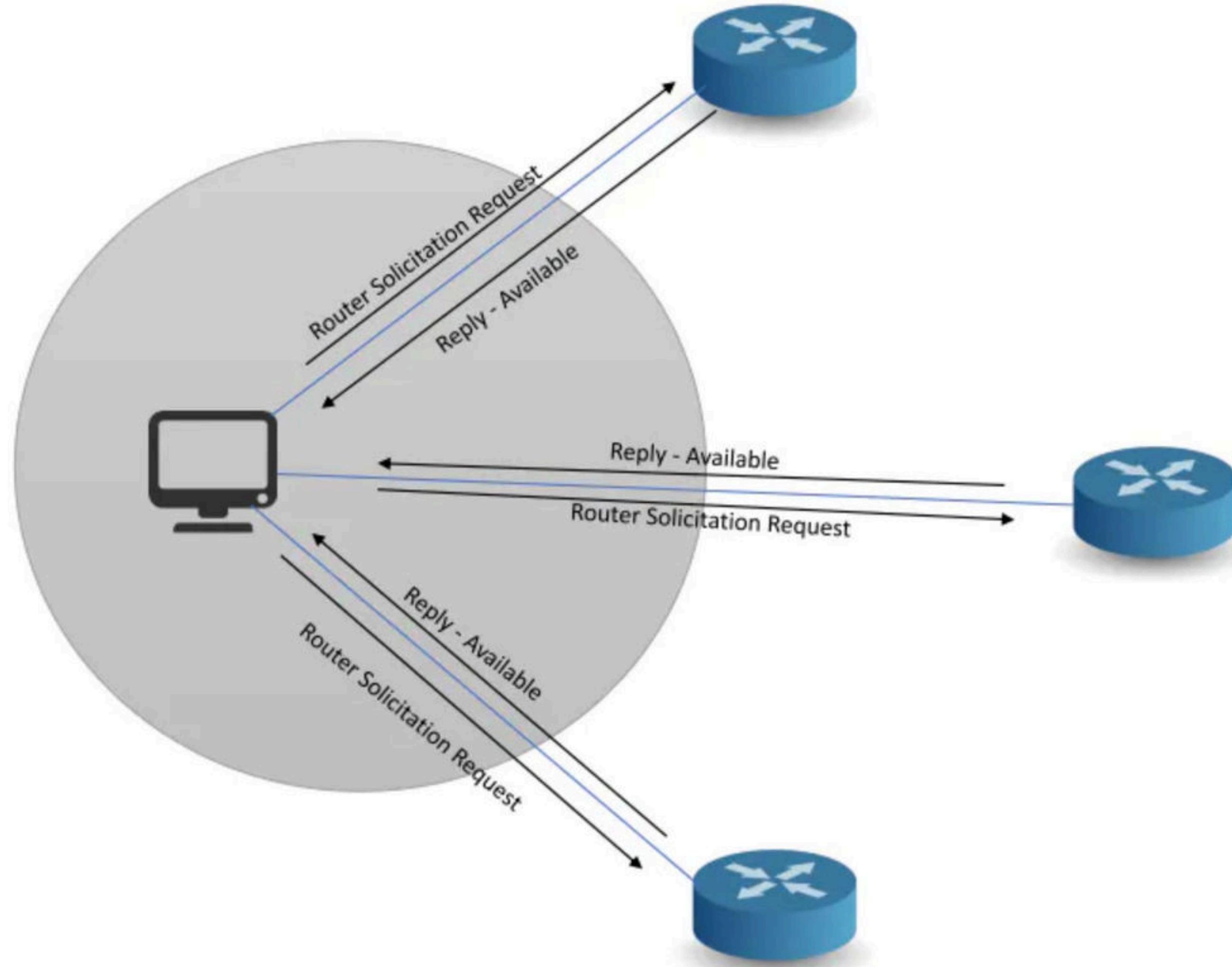
Attack possible
DENIAL OF SERVICE

PING is the Packet InterNet Grope

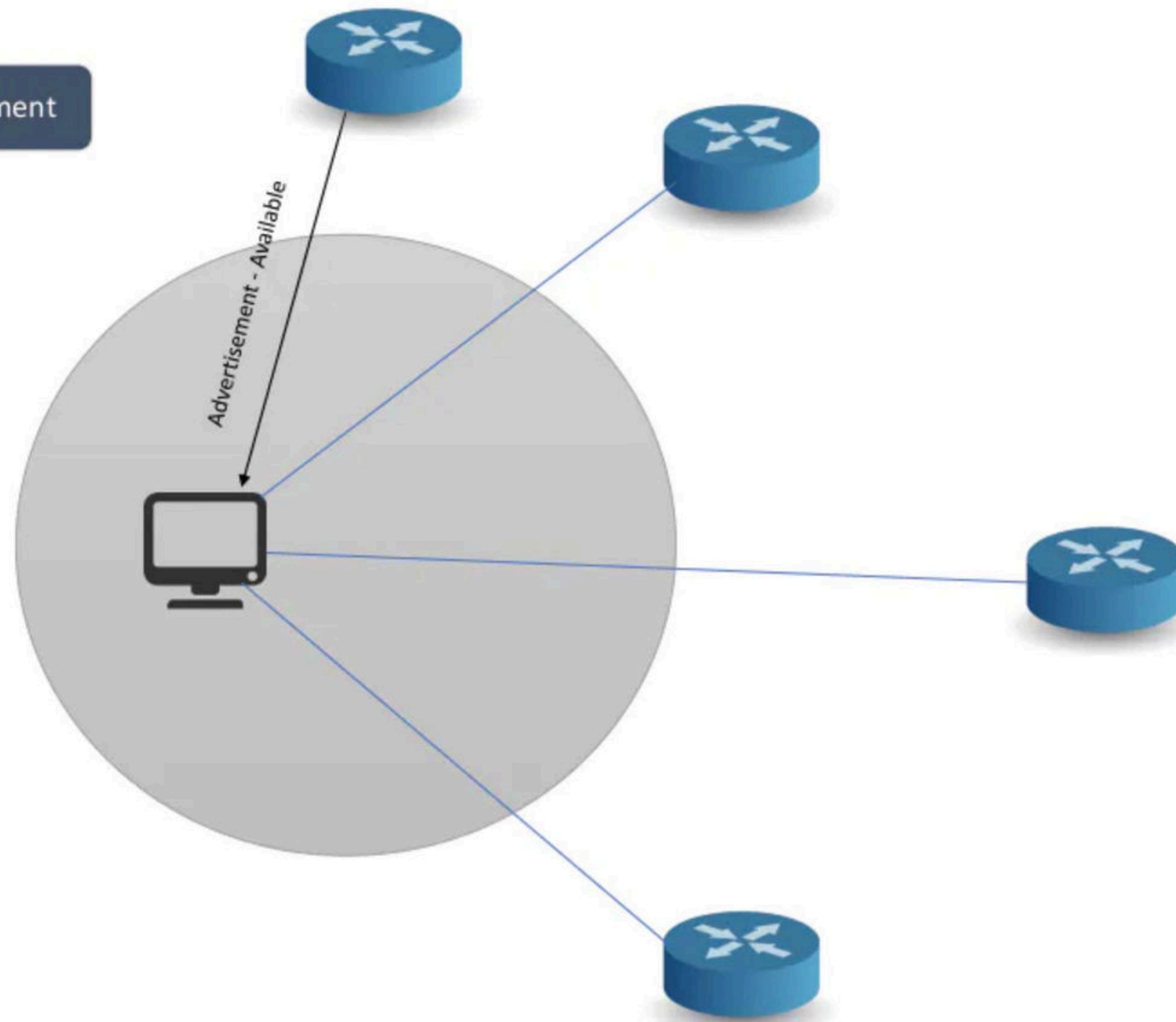


BUSY REPLYING PING

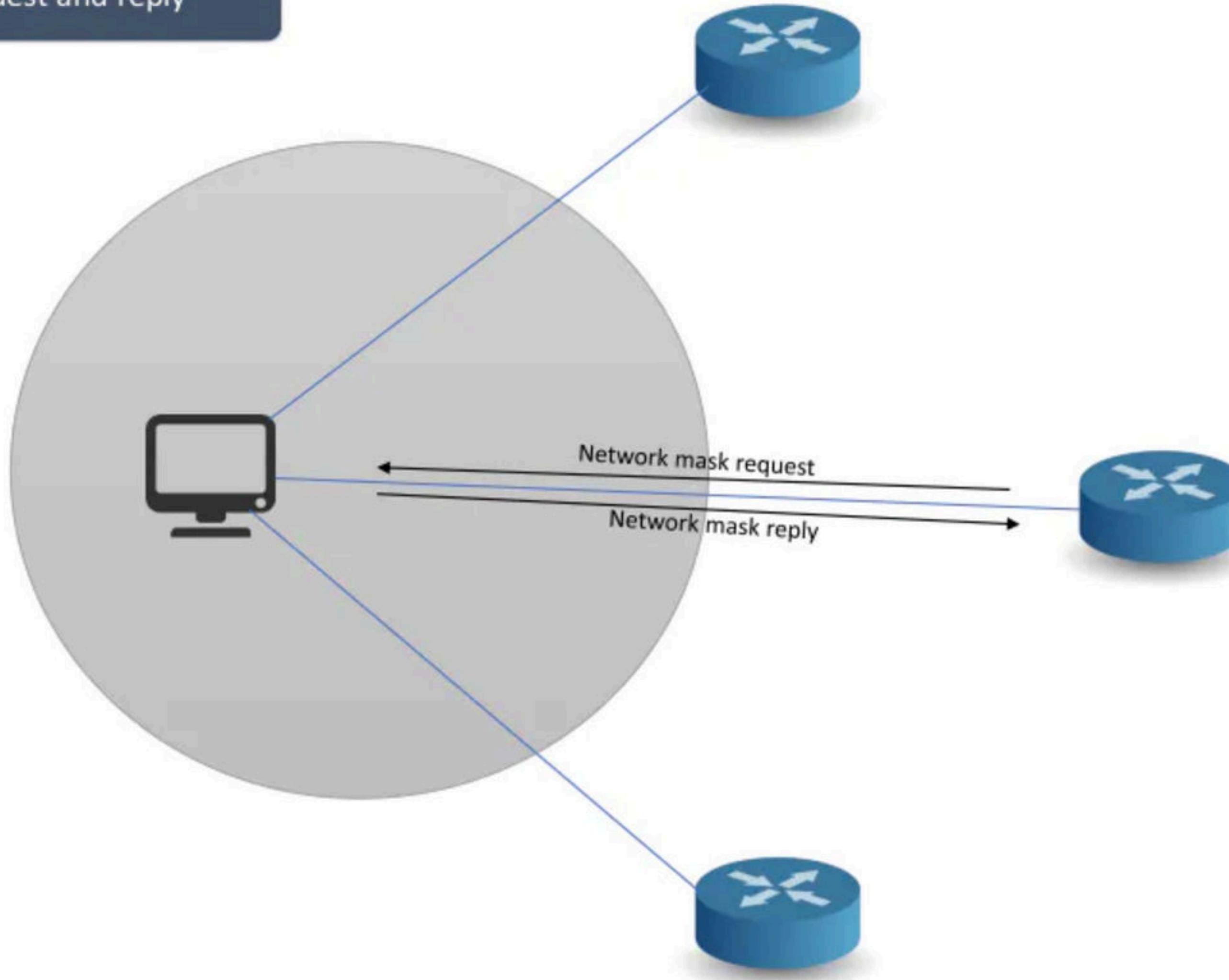
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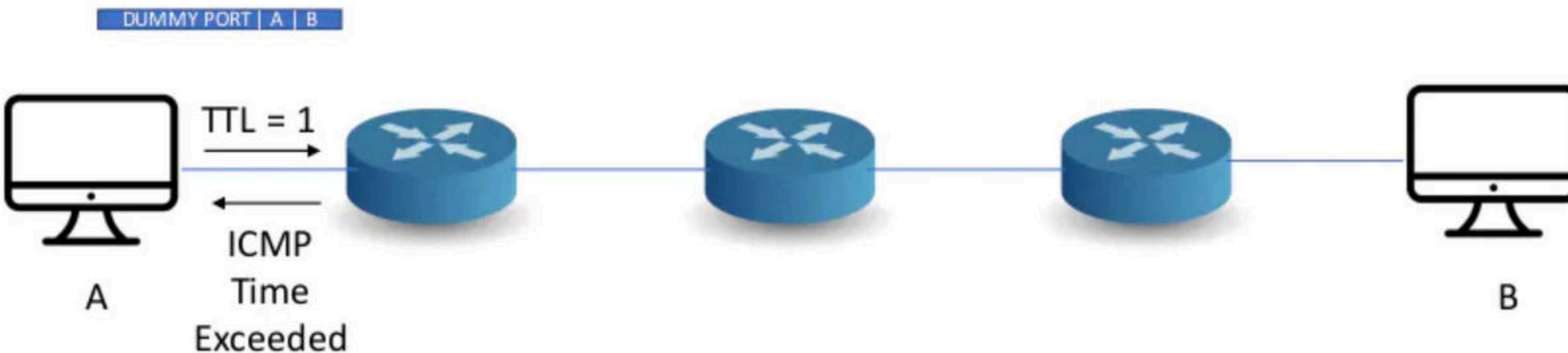
Computer Network

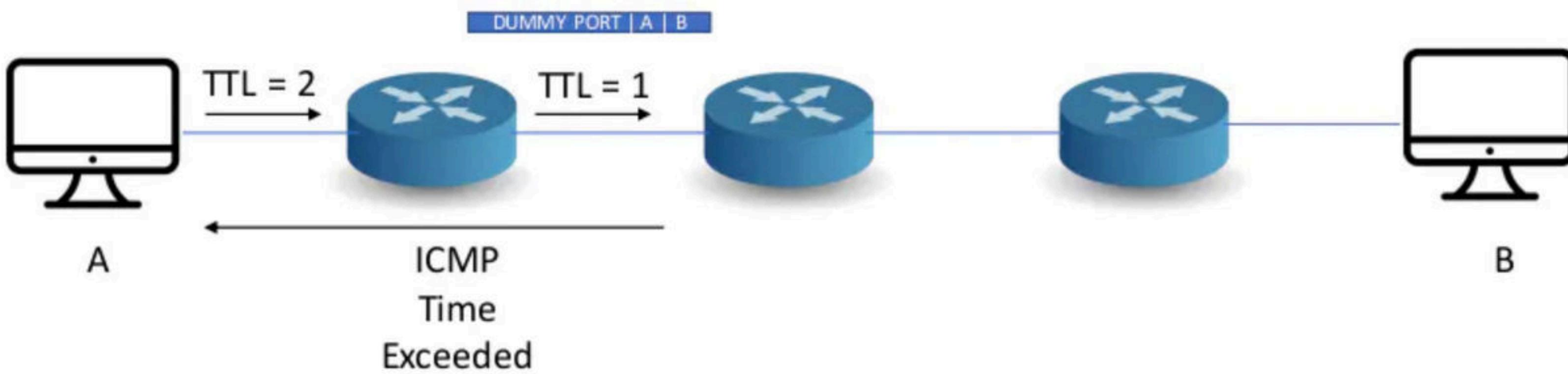
Trace route

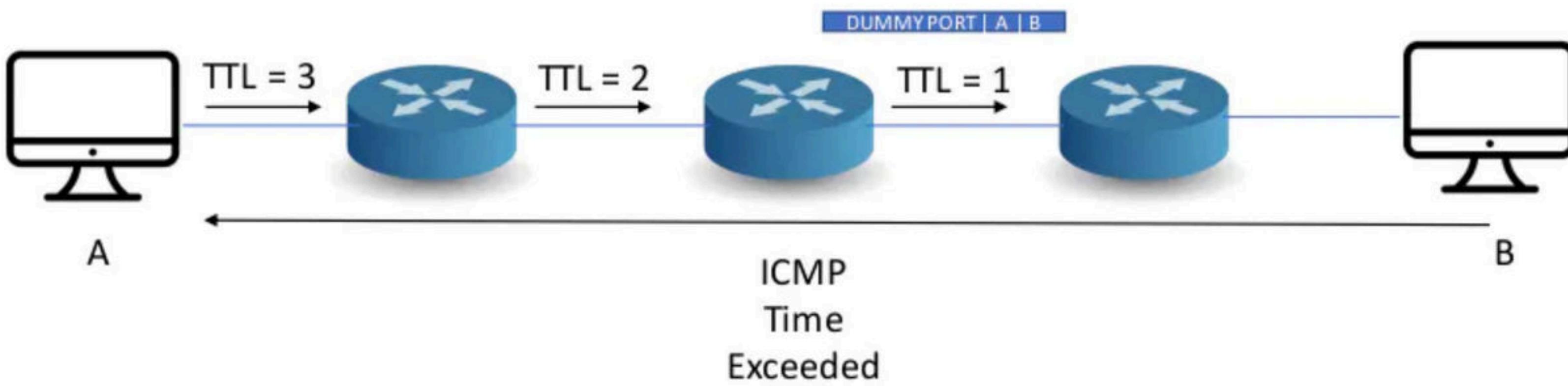
Trace route

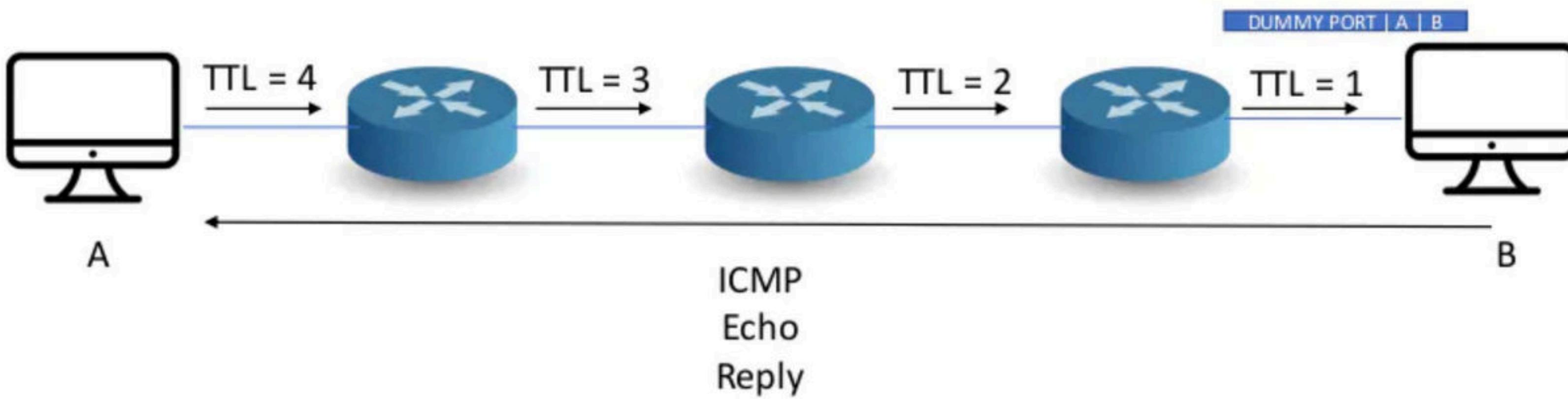
Command on Linux

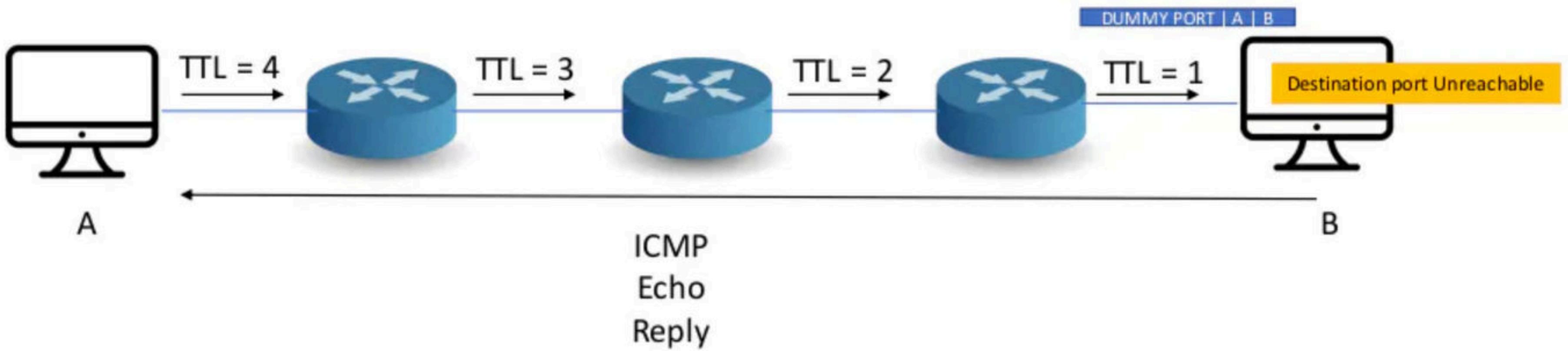
traceroute domain



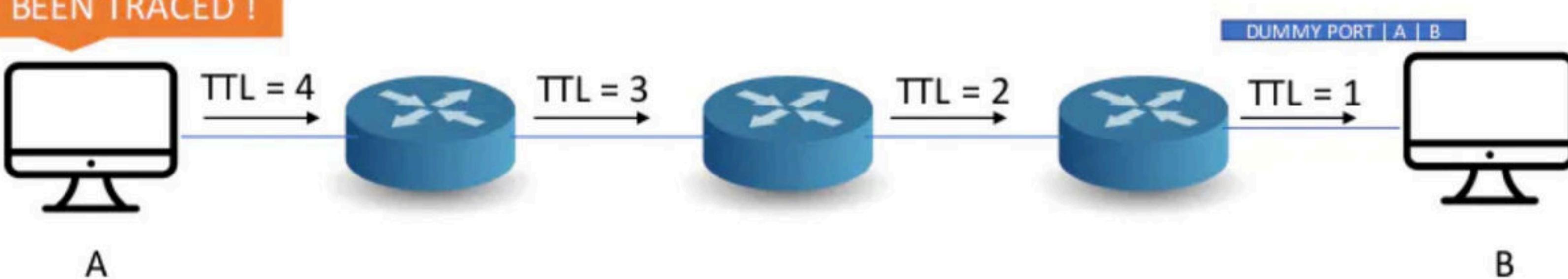






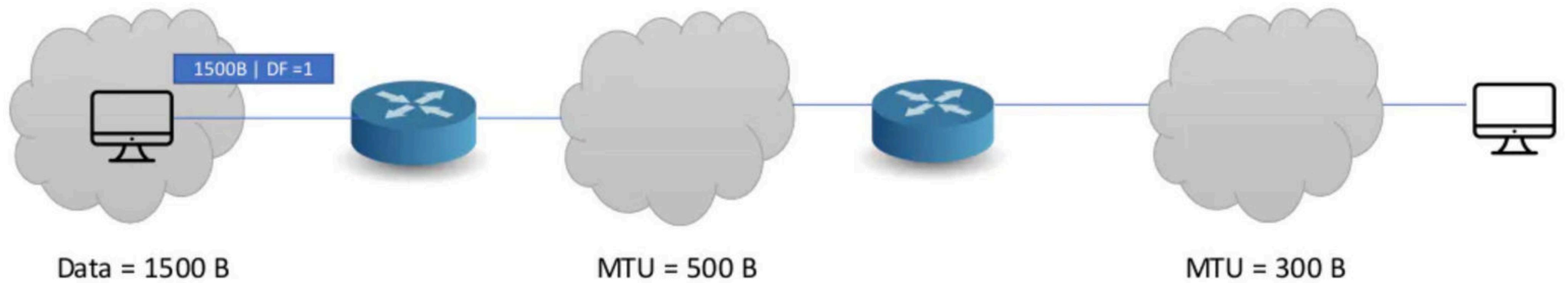


MY ROUTE HAS
BEEN TRACED !



Computer Networks

Path MTU Discovery



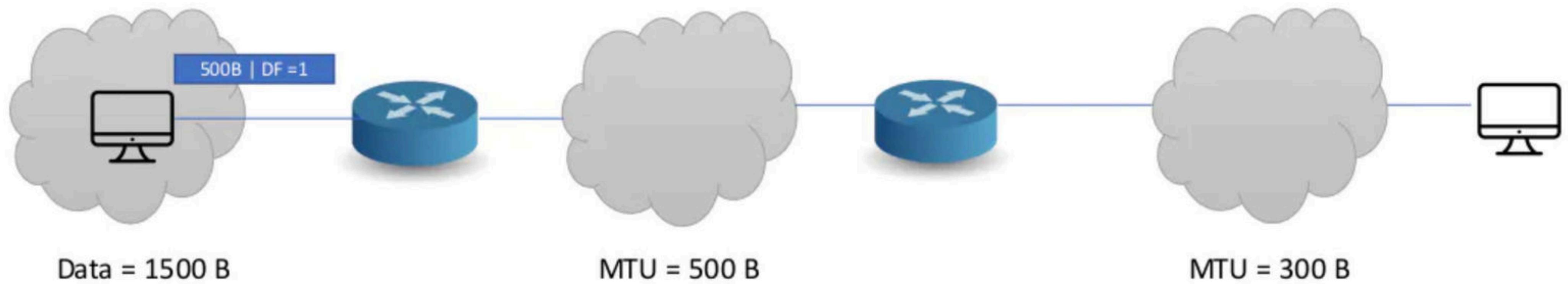


Data = 1500 B

MTU = 500 B

MTU = 300 B

ICMP – DESTINATION
UNREACHABLE, FRAGMENTATION,
DF =1
MTU =500B





Data = 1500 B

MTU = 500 B

MTU = 300 B

ICMP – DESTINATION
UNREACHABLE, FRAGMENTATION,
DF =1
MTU =300B

