EECS 489 - FA 21

Discussion 10

Announcements

Assignment 4 is out.

Due date: **12/10 2021, 11:59 PM**

Lateday policy:

You have 3 group latedays in total for assignment 2 - 4.

Please compile your code in the VM and test it carefully.

About Assignment 4

- ICMP (Internet Control Message Protocol)
- traceroute
- Environment Setup

ICMP msgs

Type	Code	Description
0	0	echo reply (ping)
3	0	dest network unreachable
3	1	dest host unreachable
3	2	dest protocol unreachable
3	3	dest port unreachable
3	4	frag needed but DF set
3	6	dest network unknown
3	7	dest host unknown
8	0	echo request (ping)
9	0	route advertisement
10	0	router discovery
11	0	TTL expired
12	0	bad IP header

ICMP common usage

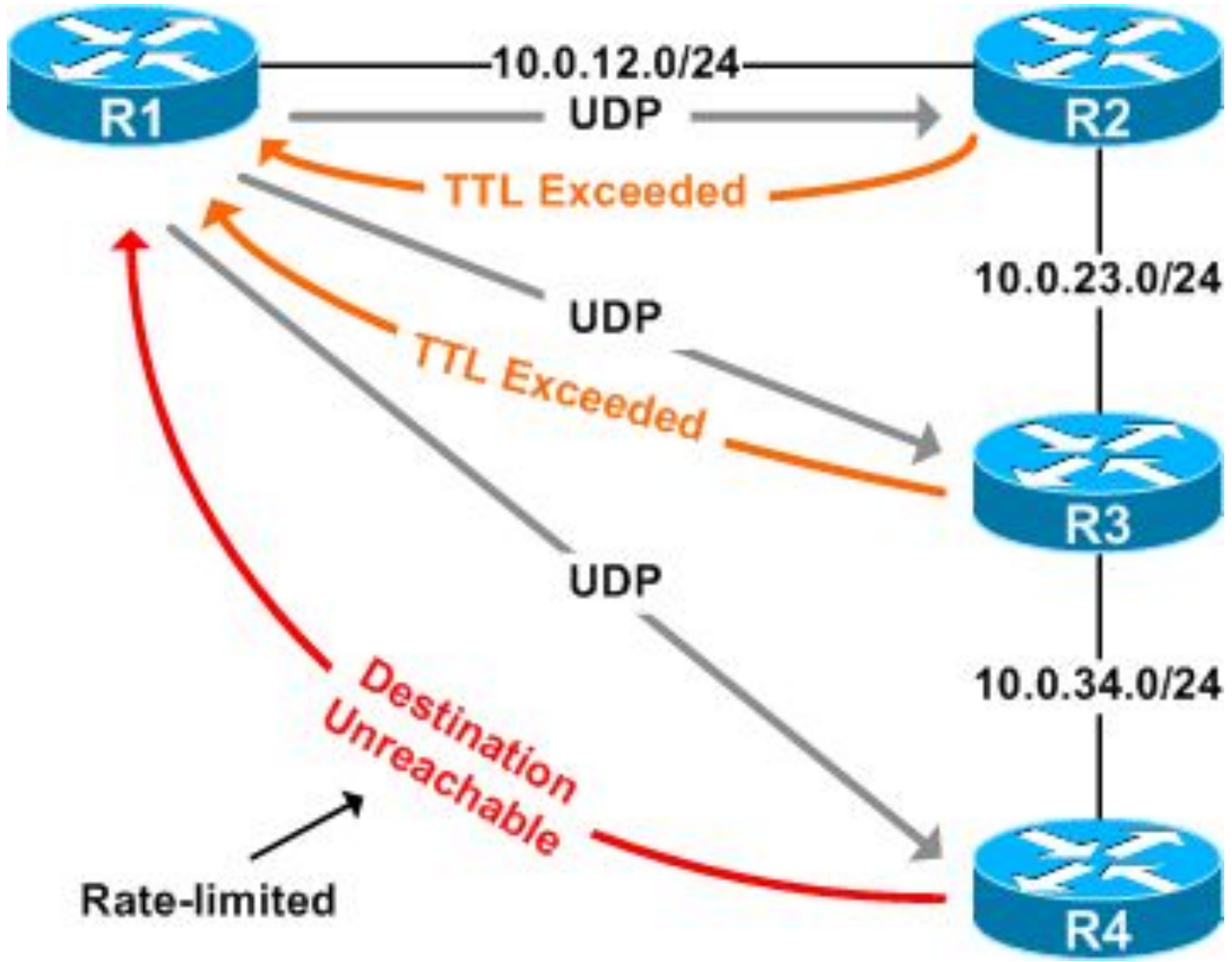
- Echo Reply (0) and Echo Request (8): this is ping.
- Destination Unreachable (3)
- Time Exceeded (11):
  - It is used to send an error to the sending system when the IP TTL has been exceeded.

How traceroute works

- Live Demo of traceroute

- Source sends a series of UDP packets:
  - First 3 packets have TTL set to 1
  - Next 3 packets have TTL set to 2, and so on.

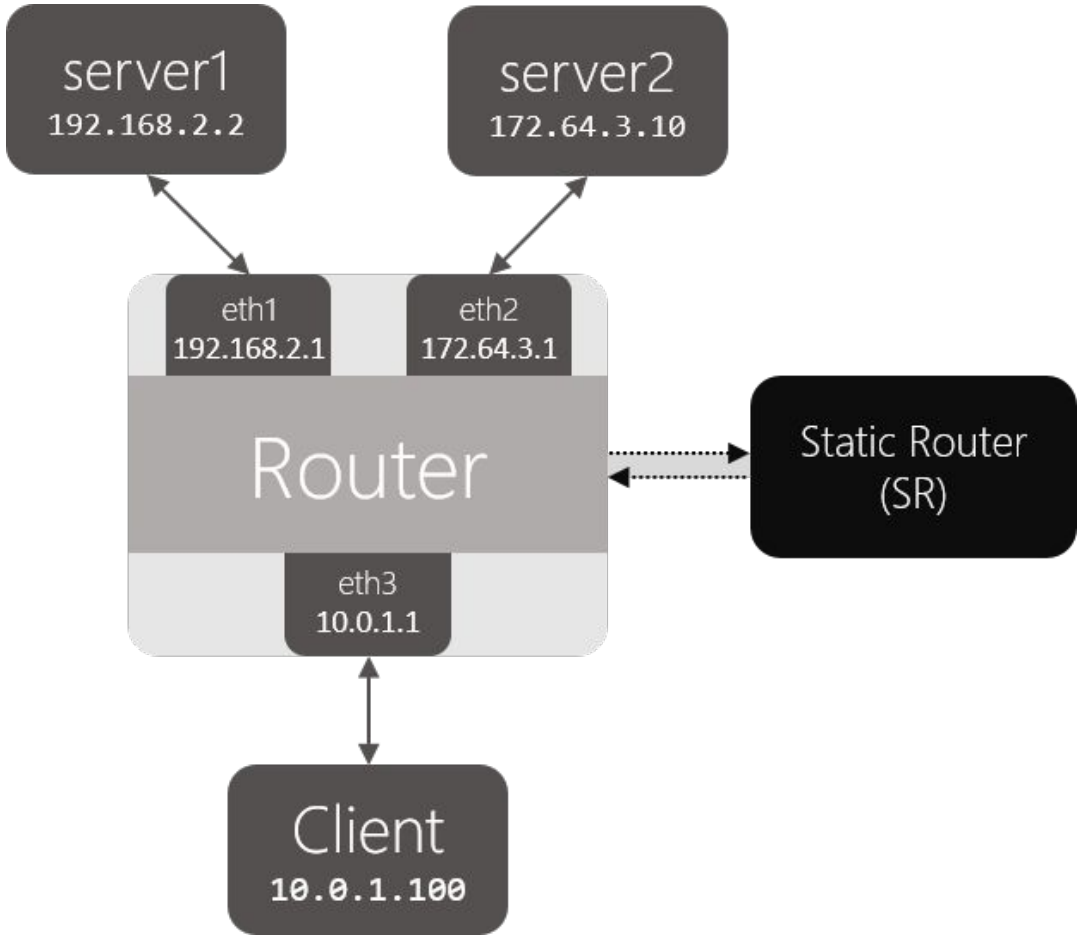
How traceroute works



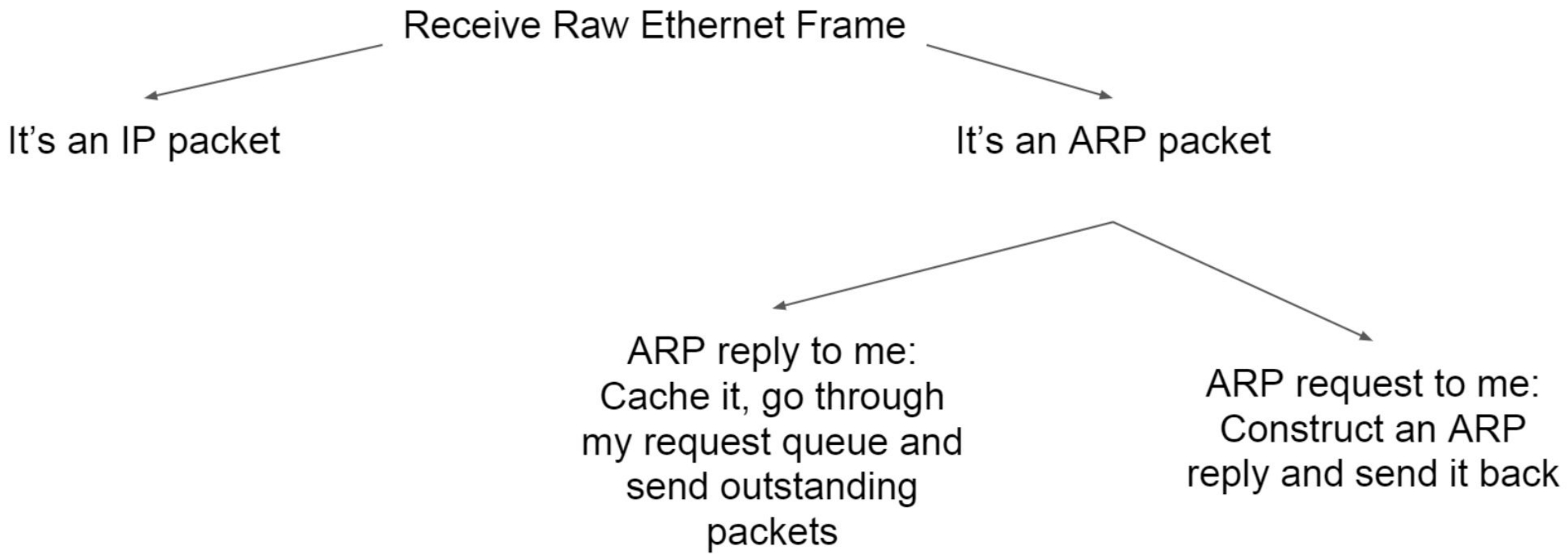
A4 environment setup

- The **Router** is a software-defined switch/router.
  - controlled by an external controller (POX)

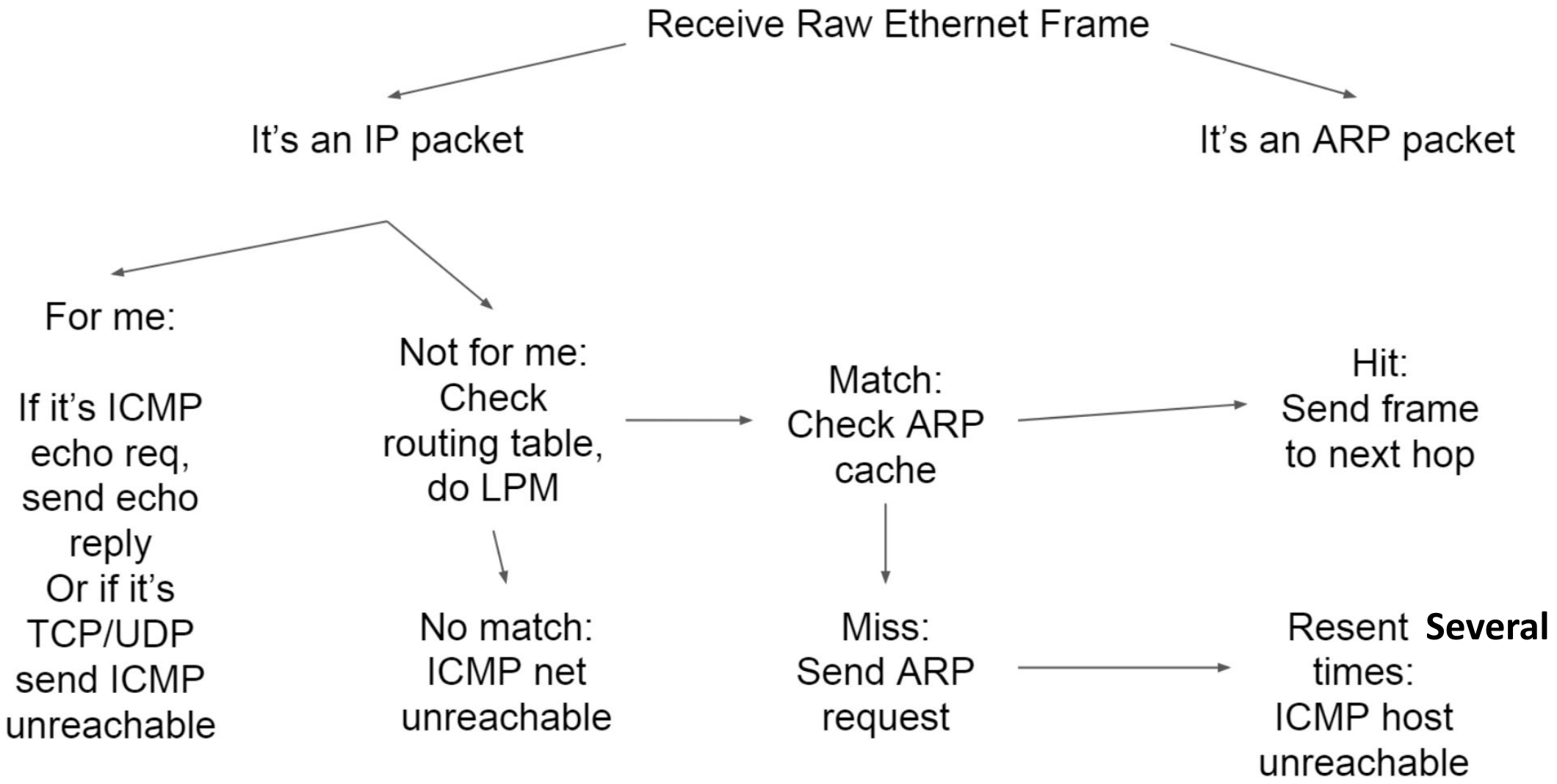
- **SR** talks to POX to control the **Router**.



A4 SR Flow Chart – handling ARP



A4 SR Flow Chart – handling IP



A4 Tips

- Wireshark
- Don’t forget to use htonl, htons, ntohl, ntohs
- We have debug functions setup in sr_utils.c
  - print_hdrs(), print_addr_ip_int(), etc.
- Test your sr with ping, traceroute, wget, etc.

Thanks

Have a good one!