

Computer Networks, Spring 2026

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Lab 3: Introduction and Familiarity with Ethernet

In this lab, you will explore the physical and data link layer properties of your computer's network interfaces. *This lab can be done in individually or in pairs.*

1 Identifying Network Interfaces

Use command-line tools to identify the active network interfaces on your machine.

1. Run `ip addr` or `ifconfig`. Identify the loopback interface (`lo`) and the Ethernet/Wireless interfaces.
2. What is the Hardware Address (MAC address) of your Ethernet interface? How many bits is it?
3. What is the maximum transmission unit (MTU) of your Ethernet interface?

2 Physical Layer Connectivity

1. Connect two computers directly using an Ethernet cable. Observe if the link-layer status changes to UP.
2. Check the speed of the connection using `ethtool` or by checking system logs (`dmesg | grep eth`).

3 Ethernet Frame Observation

Open Wireshark and start capturing on the Ethernet interface.

1. Find a broadcast frame (e.g., an ARP request).
2. Identify the Destination MAC address of the broadcast frame. What is it in hex?
3. Identify the **Type** field in the Ethernet header. What does it signify?
4. Capture a frame sent from your computer. Verify that the Source MAC address in the frame matches your Hardware Address.

4 Evaluation

- ☐ Can identify MAC address and MTU. TA: _____
- ☐ Can identify broadcast frames in Wireshark. TA: _____
- ☐ Understands the Ethernet header structure. TA: _____