

# Day 1 – Introduction to CN & Cybersecurity

## 1. What Is Computer Networking?

- Definition: Interconnecting devices to share data & resources.
- Key components: Hosts, switches, routers, links.
- Why it matters: Enables Internet, cloud services, IoT.

## 2. What Is Cybersecurity?

- Definition: Protecting systems/networks/data from digital attacks.
- CIA triad:
  - Confidentiality: only authorized parties can read.
  - Integrity: data isn't tampered with.
  - Availability: services are up when needed.

## 3. OSI vs TCP/IP Models

Layer (OSI)	Function	TCP/IP Layer
7. Application	User-apps (HTTP, FTP...)	Application
6. Presentation	Data formatting, encryption	
5. Session	Sessions & dialogues	
4. Transport	End-to-end (TCP/UDP)	Transport (TCP/UDP)
3. Network	Routing (IP)	Internet (IP)
2. Data Link	MAC, switches	Link (Ethernet/Wi-Fi)
1. Physical	Cables, hubs, bits	

*Note: TCP/IP collapsed Presentation & Session into Application.*

## Lab 1 – Exploring Basic Connectivity

### Objectives:

1. Verify basic reachability with ping.
2. Map your network path with traceroute (Linux/macOS) or tracert (Windows).

### **Ping Test:**

```
ping 8.8.8.8 -c 4
```

### ***Traceroute:***

```
traceroute google.com (Linux/macOS)
tracert google.com (Windows)
```

### ***Save Your Output:***

Redirect output to files for later review and commit.

## **Challenge – OSI Layer Mapping**

Name the OSI layer(s) involved for each:

- 1. Fragmenting an IP packet
- 2. Establishing a TCP connection (3-way handshake)
- 3. Encrypting an HTTPS session
- 4. MAC address learning on a switch
- 5. Rendering a web page in your browser

## **Day 1 Resources**

- OSI vs TCP/IP Explained – <https://www.cloudflare.com/learning/ddos/glossary/open-systems-interconnection-model-osi/>
- Ping & Traceroute Tutorial – <https://www.computerhope.com/issues/ch001283.htm>
- Intro to Cybersecurity (video) – <https://www.youtube.com/watch?v=OtzGMSAy7Qo>
- The CIA Triad article – <https://www.varonis.com/blog/cia-triad/>