



3-Month Networking & Telecommunication Learning Path



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Month 1: Networking Fundamentals

1. Introduction to Networking

- What is Networking? Types of Networks (LAN, WAN, MAN)
- OSI Model & TCP/IP Model Overview
- Networking Devices (Routers, Switches, Hubs, Modems)
- ✂ Hands-on: Setting up a Basic LAN Network

2. IP Addressing & Subnetting

- IPv4 vs. IPv6 Addressing
- Private vs. Public IP, Static vs. Dynamic IP
- Subnetting & CIDR Notation
- ✂ Hands-on: Calculating Subnets & Assigning IPs

3. Network Configuration & Protocols

- DHCP, DNS, ARP, ICMP (Ping, Traceroute)
- NAT & Port Forwarding
- ✂ Hands-on: Configuring a Router & Network Services

4. Wireless & Network Security Basics

- Wi-Fi Standards (802.11a/b/g/n/ac/ax)
- Encryption Protocols (WEP, WPA, WPA2, WPA3)
- Firewall Basics & VPN Concepts
- ✂ Hands-on: Configuring a Secure Wireless Network

Month 2: Advanced Networking Techniques

1. VLANs & Network Segmentation

- What are VLANs? Benefits of Network Segmentation
- Inter-VLAN Routing & Trunking (802.1Q)
- ✂ Hands-on: Configuring VLANs on a Switch

2. Routing Protocols & WAN Technologies 🖨️

- RIP, OSPF, EIGRP, and BGP Overview
- MPLS, Metro Ethernet, and Leased Lines

🔧 Hands-on: Configuring Static & Dynamic Routing

3. Network Monitoring & Troubleshooting 🛠️

- Network Performance Tools (Wireshark, Netstat, Ping, Traceroute)
- Common Network Issues & Troubleshooting Methods

🔧 Hands-on: Analyzing Network Traffic with Wireshark

4. Cable Making Techniques 🔌

- LAN (Cat6e) Crimping & Testing
- Optical Fiber (Splicing Techniques)

🔧 Hands-on: Creating and Testing Network Cables

Month 3: Telecommunication & Security 📞

1. Telecommunication Basics 📡

- PSTN, ISDN, VoIP, and SIP Protocols
- Cellular Networks (2G to 5G) Overview

🔧 Hands-on: Setting Up a VoIP System

2. Network Security & Firewall Configurations 🛡️

- IDS/IPS Systems and Security Policies
- Configuring Firewalls (Cisco ASA, pfSense)
- VPN Setup (Site-to-Site, Remote Access)

🔧 Hands-on: Implementing Network Security

3. Cloud Networking & Virtualization ☁️

- Virtual LANs (VLANs) and VXLAN
- Cloud Network Architecture (AWS, Azure)

🔧 Hands-on: Setting Up Cloud Networks & VPNs

4. Project & Final Exam 🏠

- Project: Build a Secure Network Infrastructure
 - Exam:
 - Written Test
 - Viva/Oral Examination
 - Practical Assessment
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Key Features

- Comprehensive coverage of networking & telecom fundamentals.
- Practical labs with real-world scenarios.
- Security-focused approach with firewall and VPN setups.
- Cloud networking essentials.
- Final project to build hands-on experience.

Eligibility Criteria

- Basic understanding of computer networks.
- Familiarity with Windows or Linux OS.
- No prior networking certification required.

This learning path is designed for beginners and IT professionals aiming to specialize in networking and telecommunication! 🚀