C-ID Descriptor
Computer Network Fundamentals

Descriptor Details

- **Descriptor Title**: Computer Network Fundamentals
- **C-ID Number**: 150
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General Description

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. Students achieve a basic understanding of how networks operate and how to build simple local area networks (LAN), perform basic configurations for routers and switches, implement Internet Protocol (IP) and enterprise technologies, including cloud and virtualization. Students will apply the knowledge and skills required to troubleshoot, configure, and manage common network devices; establish basic network connectivity; and implement network security, standards, and protocols. Preparation for the CompTIA Network+ certification exam.

Prerequisites

No information provided

Corequisites

No information provided

Advisories

No information provided

Content

1. Networking Concepts

2. Network Operations
    a. Protocols and Models
    b. Physical Layer
    c. Number Systems
    d. Data Link Layer
    e. Ethernet Switching
3. Network Layer
    a. Address Resolution
    b. Internet Protocol version 4 (IPv4) Addressing
    c. Internet Protocol version 6 (IPv6) Addressing
    d. Internet Control Message Protocol (ICMP)
4. Transport Layer
5. Application Layer
6. Network Troubleshooting and Tools
7. Network Security Fundamentals

Lab Activities

No information provided

Objectives

At the conclusion of this course, the student should be able to:

1. Configure switches and end devices to provide access to local and remote network resources.
2. Explain how physical and data link layer protocols support the operation of Ethernet in a switched network.
3. Configure routers to enable end-to-end connectivity between remote devices.
4. Create IPv4 and IPv6 addressing schemes and verify network connectivity between devices.
5. Explain how the upper layers of the OSI model support network applications.
6. Configure a small network with security best practices.
7. Troubleshoot connectivity in a small network.

Evaluation Methods

Evaluation will include hands-on projects and a combination of examinations, presentations, discussions, or problem-solving assignments.

Textbooks

- West, J., et al., Network+ Guide to Networks, Cengage
- Tomsho, G., Guide to Networking Essentials, Cengage
- Cisco Academy Program – Introduction to Networks Version 7, CCNA Academy Companion Guide, Cisco Press