

Cybersecurity & Networking Competency Profile

Cisco Networking Academy



Operation of IP Data Networks

- Recognize the purpose and functions of various network devices such as routers, switches, bridges, and hubs.
- Select the components required to meet a given network specification.
- Identify common applications and their impact on the network.
- Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models.
- Predict the data flow between two hosts across a network.
- Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN.

LAN Switching Technologies

- Determine the technology and media access control method for Ethernet networks.
- Identify basic switching concepts and the operation of Cisco switches.
- Configure and verify initial switch configuration including remote access management.
- Verify network status and switch operation using basic utilities such as ping, telnet, SSH.
- Describe how VLANs create logically separate networks and the need for routing between them.
- Configure and verify VLANs.
- Configure and verify trunking on Cisco switches.
- Identify enhanced switching technologies such as RSTP, PVSTP, and Etherchannels.
- Configure and verify PVSTP operation.

IP Addressing (IPv4/IPv6)

- Describe the operation and necessity of using private and public IP addresses for IPv4 addressing.
- Identify the appropriate IPV6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment.
- Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment.
- Describe the technological requirements for running IPV6 in conjunction with IPv4. (dual stack)
- Describe IPv6 addresses.

IP Routing Technologies

- Describe basic routing concepts.
- Configure and verify utilizing the CLI to set basic Router configuration.
- Configure and verify operation status of a device interface.
- Verify router configuration and network connectivity using ping, traceroute, telnet, SSH, sh cdp neighbors.
- Configure and verify routing configuration for a static or default router given specific routing requirements.
- Differentiate methods of routing and routing protocols.
- Configure and verify OSPF.
- Configure and verify interVLAN routing (Router on a stick).
- Configure SVI interfaces.

- Manage Cisco IOS Files.
- Configure and verify EIGRP (single AS).

IP Services

- Configure and verify DHCP (IOS Router).
- Describe the types, features, and applications of ACLs.
- Configure and verify ACLs in a network environment.
- Identify the basic operation of NAT.
- Configure and verify NAT for given network requirements.
- Configure and verify NTP as a client.
- Recognize High availability (FHRP) to include VRRP, HSRP, and GLBP.
- Configure and verify syslog.
- Describe SNMP v2 and v3.

Network Device Security

- Configure and verify network device security features.
- Configure and verify Switch Port Security.
- Configure and verify ACLs to filter network traffic.
- Configure and verify ACLs to limit telnet and SSH access to the router.

Troubleshooting

- Troubleshoot and correct common problems associated with IP addressing and host configurations.
- Troubleshoot and resolve VLAN problems.
- Troubleshoot and resolve trunking problems on Cisco switches.
- Troubleshoot and resolve ACL issues.
- Troubleshoot and resolve layer 1 problems.
- Identify and correct common network problems.
- Troubleshoot and resolve spanning tree operation issues.
- Troubleshoot and resolve routing issues.
- Troubleshoot and resolve OSPF problems.
- Troubleshoot and resolve EIGRP problems.
- Troubleshoot and resolve interVLAN routing problems.
- Troubleshoot and resolve WAN implementation issues.
- Monitor NetFlow statistics.
- TS EtherChannel Problems.

WAN Technologies

- Identify different WAN technologies.
- Configure and verify basic WAN serial connection, PPP, and Frame Relay.
- Troubleshoot PPPoE.

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Computer Hardware & Software



Hardware

- Given a scenario, configure settings and use BIOS/UEFI tools on a PC.
- Explain the importance of motherboard components, their purpose, and properties.
- Compare and contrast various RAM types and their features.
- Install and configure PC expansion cards.
- Install and configure storage devices and use appropriate media.
- Install various types of CPUs and apply the appropriate cooling methods.
- Compare and contrast various PC connection interfaces, their characteristics and purpose.
- Install a power supply based on given specifications.
- Given a scenario, select the appropriate components for a custom PC configuration, to meet customer specifications or needs.
- Compare and contrast types of display devices and their features.
- Identify common PC connector types and associated cables.
- Install and configure common peripheral devices.
- Install SOHO multifunction device/printers and configure appropriate settings.
- Compare and contrast differences between the various print technologies and the associated imaging process.
- Given a scenario, perform appropriate printer maintenance.

Networking

- Identify the various types of network cables and connectors.
- Compare and contrast the characteristics of connectors and cabling.
- Explain the properties and characteristics of TCP/IP.
- Explain the common TCP and UDP ports, protocols, and their purpose.
- Compare and contrast various Wi-Fi networking standards and encryption types.
- Given a scenario, install and configure SOHO wireless/wired router and apply appropriate settings.
- Compare and contrast Internet connection types, network types, and their features.
- Compare and contrast network architecture devices, their functions, and features.
- Given a scenario, use appropriate networking tools.

Mobile Devices

- Install and configure laptop hardware and components.
- Explain the function of components within the display of a laptop.
- Given a scenario, use appropriate laptop features.
- Explain the characteristics of various types of other mobile devices.
- Compare and contrast accessories and ports of other mobile devices.

Hardware and Network Troubleshooting

- Given a scenario, troubleshoot common problems related to motherboards, RAM, CPU, and power with appropriate tools.
- Given a scenario, troubleshoot hard drives and RAID arrays with appropriate tools.

- Given a scenario, troubleshoot common video, projector, and display issues.
- Given a scenario, troubleshoot wired and wireless networks with appropriate tools.
- Given a scenario, troubleshoot and repair common mobile device issues while adhering to the appropriate procedures.
- Given a scenario, troubleshoot printer with appropriate tools.

Windows Operating Systems

- Compare and contrast various features and requirements of Microsoft Operating Systems (Vista, Windows 7, Windows 8, 8.1).
- Given a scenario, install Windows PC operating systems using appropriate methods.
- Given a scenario, apply appropriate Microsoft command line tools.
- Given a scenario, use appropriate Microsoft operating system features and tools.
- Given a scenario, use Windows Control Panel utilities.
- Given a scenario, install and configure Windows networking on a client/desktop.
- Perform common preventative maintenance procedures using appropriate Windows OS tools.

Other Operating Systems and Technologies

- Identify common features and functionality of the Mac OS and Linux operating systems.
- Given a scenario, setup and use client-side virtualization.
- Identify basic cloud concepts.
- Summarize the properties and purpose of services provided by networked hosts.
- Identify basic features of mobile operating systems.
- Install and configure basic mobile device network connectivity and email.
- Summarize methods and data related to mobile device synchronization.

Security

- Identify common security threats and vulnerabilities.
- Compare and contrast common prevention methods.
- Compare and contrast differences of basic Windows OS security settings.
- Given a scenario, deploy and enforce security best practices to secure a workstation.
- Compare and contrast various methods for securing mobile devices.
- Given a scenario, use appropriate data destruction and disposal methods.
- Given a scenario, secure SOHO wireless and wired networks.

Software Troubleshooting

- Given a scenario, troubleshoot PC operating system problems with appropriate tools.
- Given a scenario, troubleshoot common PC security issues with appropriate tools and best practices.
- Given a scenario, troubleshoot common mobile OS and application issues with appropriate tools.
- Given a scenario, troubleshoot common mobile OS and application security issues with appropriate tools.

Operational Procedures

- Given a scenario, use appropriate safety procedures.
- Given a scenario with potential environmental impacts, apply the appropriate controls.
- Summarize the process of addressing prohibited content/activity, and explain privacy, licensing, and policy concepts.
- Demonstrate proper communication techniques and professionalism.
- Given a scenario, explain the troubleshooting theory.

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Computer Networking



Network Architecture

- Explain the functions and applications of various network devices.
- Compare and contrast the use of networking services and applications.
- Install and configure DHCP, DNS, and NAT.
- Explain the characteristics and benefits of various WAN technologies.
- Install and properly terminate various cable types and connectors using appropriate tools.
- Differentiate between common network topologies.
- Differentiate between network infrastructure implementations.
- Given a scenario, implement and configure the appropriate addressing schema.
- Explain the basics of routing concepts and protocols.
- Identify the basic elements of unified communication technologies.
- Compare and contrast technologies that support cloud and virtualization.
- Given a set of requirements, implement a basic network.

Network Operations

- Given a scenario, use appropriate monitoring tools.
- Given a scenario, analyze metrics and reports from monitoring and tracking performance tools.
- Given a scenario, use appropriate resources to support configuration management.
- Explain the importance of implementing network segmentation.
- Given a scenario, install and apply patches and updates.
- Given a scenario, configure a switch using proper features.
- Install and configure wireless LAN infrastructure and implement the appropriate technologies in support of wireless capable devices.

Network Security

- Compare and contrast risk related concepts.
- Compare and contrast common network vulnerabilities and threats.
- Given a scenario, implement network hardening techniques.
- Compare and contrast physical security controls.
- Given a scenario, install and configure a basic firewall.
- Explain the purpose of various network access control models.
- Summarize basic forensic concepts.

Troubleshooting

- Given a scenario, implement the recommended troubleshooting methodology.
- Given a scenario, analyze and interpret the output of troubleshooting tools.
- Given a scenario, troubleshoot and resolve common wireless issues.
- Given a scenario, troubleshoot and resolve common copper cable issues.
- Given a scenario, troubleshoot and resolve common fiber cable issues.
- Given a scenario, troubleshoot and resolve common network issues.

- Given a scenario, troubleshoot and resolve common security issues.
- Given a scenario, troubleshoot and resolve common WAN issues.

Industry standards, practices, and network theory

- Analyze a scenario and determine the corresponding OSI layer.
- Explain the basics of network theory and concepts.
- Given a scenario, deploy the appropriate wireless standard.
- Given a scenario, deploy the appropriate wired connectivity standard.
- Given a standard, implement the appropriate policies of procedures.
- Summarize safety practices.
- Given a scenario, install and configure equipment in the appropriate location using best practices.
- Explain the basics of change management procedures.
- Compare and contrast common ports and protocols.
- Given a scenario, configure and apply the appropriate ports and protocols.

