ISACA Networks and Infrastructure Fundamentals (ITCA)

This entry-level Networks and Infrastructure Fundamentals (ITCA) training prepares IT professionals to design, configure, and secure network infrastructures while ensuring compliance with industry standards.

CBT Nuggets course material →

STUDY PLAN

WEEK 1

Connections and Layers — 156 min.

Memorizing the OSI Model	4
Layer 1 and Layer 2	12
Layer 3 and Frames & Packets	7
Layer 4 and 5	7
Layer 6 and 7	2
The OSI and TCP/IP (DoD) Models	2
Validation	3

Physical Connections

Data Signaling	13
Transmission Speed Over Copper	10
Twisted-Pair Cable	16
Fiber Optic Cable	7
Fiber Optic Connectors	4
Validation	4

Wireless Connections

Frequency and Wavelength	4
Signal Factor: Free Path Loss	5
Signal Factor: Absorption	5
Signal Factor: Reflection and Scattering	3
Signal Factor: Multipath, Refraction, and Line of Sight	5
Signal Factor: Fresnel Zone	3
Signal Factor: RSSI and SNR	9
Validation	2

Wireless Technologies and Wi-Fi Setup

Wireless Personal Area Network (WPAN)	9
Wireless Local Area Network (WLAN)	13
Wireless Metroarea Network (WMAN)	7

WEEK 2

156 min.

Wireless Wide Area Network (WWAN)	7
Wireless Standards	9
Wi-Fi Configuration	10
Validation	5

Network Components

End Points	7
Core Network Devices: Gateway and Router	7
Repeater	6
Hub	8
Switch	7
Bridge	7
Validation	6

Hybrid Devices and Network Architecture

Brouter and Multilayer Switch	18
How Switches Handle Addresses	8
Traffic via Switches and a Router	5
Traffic via a Multilayer Switch	4
Validation and Mid-Terms	16

Network Topologies

Bus Topology	10
Ring Topology	3
Star Topology	5
Mesh and Hub and Spoke Topology	8

WEEK 3

151 min.

Multipoint and Ad Hoc Topology	11
Validation	4

Network Types

Local Area Network (LAN)	4
Datacenter LAN	7
Wide Area Network (WAN)	4
Campus Area Network (CAN)	7
Internet Area Network	19
Validation	1

Border Network Components

Packet Filtering and Circuit-Level Firewalls	10
Stateful-Inspection Firewalls	8
Application-Level Gateway	7
Next-Generation Firewall	7
Demilitarized Zone (DMZ)	6
Validation and Lab Demonstration	20

Virtual Private Network (VPN)

VPN Overview	7
VPN Common Uses	12
VPN Common Features and Corporate VPN	12

Disadvantages of a VPN	5

WEEK 4

154 min.

VPN Encryption and Hashing Algorithms	19
Validation	6

VLAN Configuration and Software-Defined Networking

Network Problems and the VLAN	12
Understanding a SVI	15
The Software-Defined Networking Concept	8
SDN Scenario	10
Validation	3

Binary and Hexadecimal

Introducing Binary	4
Binary and IP Addressing	10
Parsing an IP Address	6
Hexadecimal Numbering	8
Physical Addresses	6
Validation	6

Address Classes & ANDing

Address Classes	15
Private IPv4 Addresses	10
Classless Inter-Domain Routing (CIDR)	10
How ANDing Determines Whether to Route	6

WEEK 5

163 min.

Validation	1

IPv6 Addresses and Configuration

Comparing IPv4 and IPv6	8
Structure of an IPv6 Address	7
Global Unicast and Anycast	6
Multicast, Unique Local, Link Local Addresses	2
IPv6 Address Compression	4
Autoconfiguration and DHCP	8
Validation	13

Layer 4 Transport Protocols

The TCP Connection-Oriented Protocol	3
TCP Data Transfer and Flow Control	6
The UDP Connectionless Protocol	11
Well-Known Ports	7
Common TCP and UDP Ports	7
DNS and 3-Way Handshake in Action	11
Validation	12

Static Routes and Dynamic Routing Protocols

Introduction to Routing Protocols	6
Routing Protocol Terms	8
Common Routing Protocols	12
Validation	31

WEEK 6

159 min.

Network Services

Hypertext Transfer Protocol (HTTP/HTTPS)	4
File Transfer Protocol (FTP)	3
Domain Name System (DNS)	7
Dynamic Host Configuration Protocol (DHCP)	8
Telnet and Secure Shell (SSH)	2
Mail Protocols	4
Validation	34

Enterprise Composite Network Model

Introduction	1
Small Office / Home Office (SOHO)	8
Problems with Enterprise Networks	9
Enterprise Campus: Switch Block	4
Enterprise Campus: Backbone	3
Enterprise Campus: Management Block	4
Enterprise Campus: Server Farm Block	5
Enterprise Edge: WAN Connections	5
Enterprise Edge and Service Provider Edge	6
Validation	1

Cloud Networking and Secure Network Design

Cloud-Based Networking	10
Industrial Control System: Purdue Model	12
Switch Port Security	5
Authentication	7
Authorization and Accounting	7
Validation	1

AAA and RADIUS Demo with VPN

AAA with RADIUS and TACACS+	9

WEEK 7 **160 min.**

TACACS+	3
RADIUS Demo	28
Validation	6

Security-Related Network Services

802.1x	11
DHCP Snooping	12
IP Source Guard / Dynamic ARP Inspection	5
Private VLAN	10
Validation	6

Telework, Virtual Network, Directory Services

Telecommuting	9
Telecommuting Security Concerns	14
Configure a Remote Desktop Connection	15
Alternative Connections to a Desktop	5
End-to-End VLANs	7
Directory Services	10
Validation	1

Network Monitoring and Management

SNMP Components	8
SNMP Demo with New Relic and PRTG	10

WEEK 8

	75 min.
Network Device Documentation and Inventory	14
Trivial File Transport Protocol (TFTP)	3
Network Time Protocol (NTP)	10
Validation	1

Network Availability and Performance

Hot Standby Router Protocol (HSRP)	5
Gateway Load Balancing Protocol (GLBP)	8
Quality of Service (QoS) for Voice	8
Metrics Affecting QoS	8
Marking QoS Traffic	5
Configure QoS Ports and DSCP	12
Validation	1