# CompTIA Network+ – Advanced Networking & Infrastructure Course

29 August – 2 September 2027
Cairo (Egypt)



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## Introduction:

CompTIA Network+ advanced networking and infrastructure practice is the applied skill set behind the vendor-neutral CompTIA Network+ certification, exam N10-009: designing, building, operating, securing and troubleshooting wired, wireless and cloud-connected networks. This 1-week course is for network managers and team leads and for network engineers, administrators, support specialists and analysts, and delegates finish with a Hybrid Network Infrastructure Design and Readiness Pack. It is taught at expert level through hands-on labs on routers, switches, wireless controllers and cloud virtual networks, mapped to the five N10-009 exam domains, with timed exam-style practice.

## Course Objectives:

- Define the five CompTIA Network+ N10-009 domains and map existing infrastructure, addressing and services against them
- Distinguish OSPF from BGP, and static from dynamic routing, when designing routed paths between campus, branch and cloud sites
- Apply VLAN, IEEE 802.1Q trunking, spanning tree and wireless channel plans to segment and extend enterprise networks
- Interpret SNMP, flow and syslog data against baselines to detect capacity, availability and configuration problems
- Compare RADIUS with TACACS+, and port security with IEEE 802.1X network access control, when hardening devices and access layers
- Justify a Hybrid Network Infrastructure Design and Readiness Pack using the seven-step troubleshooting method, recovery targets and exam-style practice results

## Target Audience:

- Network managers and infrastructure team leads who own network availability and decide which designs, changes and hardening controls go into production
- Network engineers who build routed and switched networks and choose routing protocols, VLAN layouts and redundancy mechanisms
- Network and systems administrators who run DHCP, DNS, monitoring and management access and judge when a baseline deviation needs action
- Technical support specialists who handle escalated connectivity faults and decide which tool and test isolates the cause
- Network and security analysts who review logs, flow data and access controls and judge whether traffic or configuration signals a threat
- Hybrid infrastructure practitioners who connect on-premises sites to cloud virtual networks and select gateways, overlays and security groups



## Course Outline:

### Day 1: Networking Concepts and IP Addressing

- OSI Model vs TCP/IP Model: Layer Functions, Encapsulation and Mapping Faults to Layers
- Common Ports and Protocols: TCP vs UDP, HTTP/HTTPS, DNS, DHCP, SSH, SNMP, SMTP and NTP
- IPv4 Addressing and Subnetting: CIDR Notation, VLSM and Address Planning Exercises
- Public vs Private IP Addresses: RFC 1918 Ranges, NAT and PAT Translation
- IPv6 Addressing: Address Types, Prefixes, SLAAC and Dual-Stack Deployment

### Day 2: Network Infrastructure and Wireless Networking

- Network Devices: Routers, Layer 2 and Layer 3 Switches, Firewalls, Access Points and Load Balancers
- Cabling and Connectors: Copper vs Fibre, Cable Categories, Transceivers and Termination Standards
- Network Topologies and Architectures: Three-Tier, Collapsed Core and Spine-Leaf Designs
- Wi-Fi Standards: IEEE 802.11 Generations, Frequency Bands, Channel Planning and Antennas
- Wireless Configuration and Security: SSIDs, Controllers, WPA2 vs WPA3, 802.1X and Site Surveys

### Day 3: Network Operations and Network Management

- Network Monitoring Tools: SNMP, Syslog, Flow Data, Baselines, Thresholds and Alerting
- Configuration Management: Documentation, Change Control, Version Control and Golden Configurations
- Backups and Recovery: Configuration Backups, Restore Testing, RPO vs RTO and High Availability
- VLANs and IEEE 802.1Q Trunking: Segmentation, Inter-VLAN Routing and Spanning Tree
- Routing and Core Services: Static vs Dynamic Routing OSPF, BGP, DHCP, DNS and NTP

### Day 4: Network Security and Troubleshooting

- Firewalls and Access Control: ACLs, Screened Subnets, NAC, IEEE 802.1X and RADIUS vs TACACS+
- VPNs: Site-to-Site vs Remote Access, IPsec, SSL/TLS and Secure Management Access
- IDS vs IPS: Detection Methods, Sensor Placement and Response to Common Network Attacks
- Seven-Step Troubleshooting Methodology: Diagnosing Common Connectivity and Cabling Faults
- Wireless and Performance Troubleshooting: Interference, Latency, Jitter, Packet Loss and Diagnostic Tools

### Day 5: Virtualization, Cloud and Emerging Network Trends

- Virtual Networks: Virtual Switches, Network Function Virtualisation, VXLAN and Virtual Appliances
- Cloud Models: IaaS, PaaS and SaaS; Public, Private and Hybrid Clouds with VPCs and Cloud VPNs
- SDN and SD-WAN: Control Plane Separation, Centralised Policy and Branch Connectivity
- IoT Networking and Network Automation: Device Segmentation, Scripting and Infrastructure as Code
- Capstone Lab: Hybrid Network Infrastructure Design and Readiness Pack with N10-009 Exam-Style Practice



## Skills You Will Gain:

- Subnetting and IPv6 Address Planning
- Dynamic Routing Configuration
- VLAN and Trunk Design
- Wireless Channel Planning
- Network Performance Baselining
- Access Layer Hardening
- Structured Network Troubleshooting
- Hybrid Cloud Connectivity Design

## Why Attend This Course:

- From fixing outages by trial and error to isolating faults with the seven-step method and the right command-line and hardware tools
- From flat networks with ad hoc VLANs to segmented designs with documented trunking, routing and wireless plans
- From reacting to user complaints to spotting degradation early through SNMP, flow and syslog baselines
- From scattered diagrams and unchecked configurations to a Hybrid Network Infrastructure Design and Readiness Pack with a hardening checklist and runbook

## Conclusion:

Advanced networking and infrastructure work, as defined by the CompTIA Network+ N10-009 objectives, is the discipline of keeping networks addressable, reachable, observable, secure and recoverable across campus, branch, wireless and cloud environments. The course makes three distinctions clear: interior versus exterior routing, monitoring data versus troubleshooting evidence, and perimeter controls versus identity-based zero trust access. It suits network managers and team leads and network engineers, administrators, support specialists and analysts who already work with networks every day and now need applied, exam-aligned depth across implementation, operations, security and hybrid design rather than an introduction to the basics.

## Frequently Asked Questions FAQ:

### What should delegates know before joining a CompTIA Network+ advanced networking and infrastructure course?

Delegates should already configure or support networks at work and understand IP addressing, common ports and protocols, and basic switching. Around a year of hands-on networking experience helps. The course moves quickly into routing, segmentation, hardening and troubleshooting labs rather than re-teaching fundamentals.



## How does a CompTIA Network+ advanced networking and infrastructure course differ from an entry-level networking course?

It assumes the basics and concentrates on applied implementation, operations, security hardening, structured troubleshooting and hybrid design across all five N10-009 domains. Entry-level courses introduce cabling, addressing and devices; here delegates design, configure, break and repair networks, then practise performance-based exam questions.

## Is CompTIA Network+ advanced networking and infrastructure knowledge vendor-neutral?

Yes. The N10-009 objectives describe protocols, standards and methods that apply across equipment makers and cloud platforms, such as OSPF, BGP, IEEE 802.1Q, 802.11 and 802.1X. Delegates learn concepts they can transfer to whichever routers, switches, wireless controllers or cloud networks their organisation runs.

## What do delegates take back to work from a CompTIA Network+ advanced networking and infrastructure course?

Delegates take back a Hybrid Network Infrastructure Design and Readiness Pack: an addressing, VLAN and routing plan, network diagrams, a hardening checklist, recovery targets, a troubleshooting runbook and a domain-by-domain exam-readiness record, built in the labs and ready to adapt to their own network.

