Training: CompTIA
CompTIA CloudNetX Prep Course

TRAINING GOALS:

The CloudNetX certification is an advanced skill-level cloud architect certification designed for professionals with 10 years of general hands-on IT experience, with at least five of those years being in Systems or Network Architecture.

This course can benefit you in two ways. If you intend to pass the CompTIA CloudNetX (Exam CNX-001) certification examination, this course can be a significant part of your preparation. However, certification is not the only key to professional success in the field of cloud architecture. Today's job market demands individuals have demonstrable skills, and the information and activities in this course can help you build your cloud skill set so that you can confidently perform your duties as a cloud architect.

Upon course completion, you will be able to:

- Analyze and use appropriate network architecture design.
- Analyze and implement network security.
- Understand network operations, monitoring, and performance.
- Use appropriate network troubleshooting tools and commands.

Skills you'll learn

- Analyze business requirements and design secure network architectures tailored for hybrid environments.
- Implement Zero Trust principles, configure access controls, and secure hybrid networks to enhance network security.
- Use tools to monitor network performance, automate tasks, and maintain reliable network environments for effective network monitoring and operations.
- Diagnose and resolve connectivity, performance, and security issues to troubleshoot hybrid networks effectively.

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ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Postępu 18B, 02-676 Warszawa, tel.: (22) 417 41 70

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Job roles that benefit from Cloud+ skills

- Solution Architect
- Network Administrator
- Linux Administrator
- Network Engineer
- Cloud Architect
- Cloud Engineer
- IT Manager

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CONSPECT:

- Preassessment
  - CloudNetX Pre-assessment
- Designing and Analyzing Networks
  - Designing and Analyzing Networks
    - Open Systems Interconnection (OSI) Model
    - Internet Protocol (IP) Addressing
    - Network Address Translation (NAT)
    - Networking Protocol
    - Using Network Protocol
    - BGP Advanced Routing Protocol
    - Power and Cooling
    - TCP/UDP
    - DNSSEC, DoT, DoH
    - Container Networking
    - Network Virtual Interfaces
  - Review Network Architectures and Topologies
    - Topology Types
    - Zone
    - Traffic Flows
    - Segmentation
    - Environments

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- Explain Connectivity Solutions for Hybrid Environments
  - Multiprotocol Label Switching (MPLS)
  - Software-Defined wide area network (SDWAN)
  - Cellular
  - Satellite
  - Dark Fiber
  - Direct Internet Access
  - Metro Network
  - Public Cloud Connectivity
  - Remote Access
  - Application Gateways
  - Private Platform as a Service (PaaS)
  - Virtual Private Networks (VPN)
  - Challenge Live Lab: Implement Hybrid Networking
- Compare Campus Wired Network Components
  - Layer 2 vs Layer 3
  - Power over Ethernet (PoE)
  - Three-Tier Hierarchy
  - Collapsed Core
  - Intermediate Distribution Frames (IDF) and Main Distribution Frame (MDF)
  - Spanning Tree Protocol (STP)
  - Tagging and Trunking
  - Bonding
  - Voice and Video
  - Customer Premises Equipment (CPE)
- Compare Campus Wireless Network Components
  - WiFi Features
  - Bluetooth Low Energy (BLE)
  - Near-Field Communication
  - Long-Range Wide Area Network (LoRaWAN)
- Analyze Availability Requirements and Technologies
  - Load Balancing
  - High Availability
  - Link Aggregation
  - Auto Scaling
  - Regions and Availability Zones

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- Content Delivery Networks (CDN)
- Fault Domains
- Update Domains
- Redundancy
- Activity: Analyze Technologies for Business Needs

- Summary

- Troubleshooting Methodology
  - Explain the Troubleshooting Methodology
    - Identifying Problems
    - Establishing a Theory of Probable Cause
    - Theory Testing
    - Establish a Plan of Action
    - Implementing Solutions and Escalation
    - Full System Functionality
    - Document Findings
  - Use Appropriate Tools and Commands
    - Common Network Tools 1
    - Common Network Tools 2
    - Common Commands 1
    - Common Commands 2
    - Activity: Use the Appropriate Tools or Commands
  - Analyze Outputs from Network Tools
    - Tool Outputs
    - Command Outputs
    - Performance Issues
    - Connectivity Issues
    - Access and Security Issues
  - Troubleshoot Connectivity Issues
    - Types of Connectivity Issues
    - Resolving Connectivity Issues
    - Applied Live Lab: Troubleshooting Branch Connections
    - Applied Live Lab: Troubleshooting Network Misconfigurations
    - Applied Live Lab: Implementing Secure Communications with IPSec
  - Summary
- Comparing Network Security Principles
  - Compare Cloud and Network Threats and Mitigations

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- Working With Network Threats 1
- Working With Network Threats 2
- BGP Hijacking
- Types of Network Vulnerabilities
- Mitigation Approaches

- Use Technology Selection for Network Security
  - Firewalls
  - Intrusion Prevention and Intrusion Detection Systems
  - Encryption
  - Application Gateways
  - Secure Web Gateways
  - Network Access Control
  - Live Lab: Securing Cloud Environments
  - Dynamic List
- Use Zero Trust Architecture Principles
  - Microsegmentation
  - Secure Access Service Edge (SASE)
  - Cloud Access Security Broker (CASB)
  - Identity as the Perimeter
  - Device Trust
  - Principles of Least Privilege
  - Zero Trust Network Access
  - Activity: Apply Zero Trust Architecture (ZTA) Principles to Secure a Network
- Implement Identity and Access Management
  - Single Sign-On (SSO)
  - Multifactor Authentication (MFA)
  - Conditional Access
  - Geofencing
  - Privileged Access Management (PAM)
  - Risk-Based Authentication
  - Role-Based Access
  - Attribute-Based Access Control (ABAC)
  - Live Lab: Implementing an Azure Conditional Access Control Policy
  - Endpoint Trust
  - User and Entity Behavior Analytics (UEBA)
  - Public Key Infrastructure (PKI)

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- Session-Based Tokens
- Just-in-Time Provisioning
- System for Cross-domain Identity Management (SCIM)
- Cloud Infrastructure Entitlement Management (CIEM)

- Summary

- Planning Campus Networks
  - Evaluate Recommendations for Physical Campus Installations
    - Power Considerations
    - Power Disruption
    - Environmental Factors
    - Fire Suppression
    - Physical Access Controls
    - Activity: Evaluate Business Requirements for Physical Campus
  - Document Architecture Artifacts
    - Requirements Analysis
    - Network Diagram
    - Verification and Validation of Artifacts
    - Runbooks
    - Work Breakdown Structure (WBS)
    - Knowledge Base Articles
    - Baselines
    - Reference Architectures
    - Configure Management Database (CMDB)
    - Activity: Analyze Requirements for Architecture Documentation
  - Summary
- Monitoring Network Performance
  - Use Performance and Monitoring Tools and Techniques
    - Traffic Analysis
    - Applied Live Lab: Packet Capture and Analysis
    - Log Collection
    - Simple Network Management Protocol (SNMP)
    - Quality of Service (QoS)
    - Alerting
    - Telemetry
    - Dashboards
    - Metrics

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- Continuous Monitoring
- Troubleshoot Network Performance Issues
  - Latency
  - Packet Loss
  - Maximum Transmission Unit (MTU)
  - Hairpinning
  - Broadcast Storm
  - Resource Exhaustion
  - Bandwidth Issues
  - Network Scanning
- Summary

- Configuring Network Access and Security
  - Configure Network Access Controls
    - Firewall Rules
    - Network Access Control Lists
    - Network Security Groups
    - IPS/IDS Signature Rules
    - Geolocation
    - Content/Uniform Resource Locator (URL) Filtering
    - Data Loss Prevention
    - Port Security
    - Activity: Configure Access Controls to Secure a Network
  - Troubleshoot Wi-Fi Performance Issues
    - Signal Interference
    - Signal Loss
    - Degradation
    - Low Signal Strength
    - Band Steering
    - Channel Overlap
    - Incorrect Channel Width
    - Live Lab: Analyze and Exploit Wireless Networks
    - Applied Live Lab: Investigating Port Security
    - Client Disassociation
    - Roaming Issues
    - Transmitter / Receiver Incompatibility
  - Configure Wireless Security Methods

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- Wireless Encryption
- Authentication
- Guest Access
- Captive Portal
- Layer 2 Client Isolation
- Media Access Control (MAC) Address Filtering

- Implement Appliance-Hardening Techniques
  - Patch Management
  - Default Credential Management
  - Unneeded Services
  - Local Password Management
  - Protocol Configuration
  - Access to Administrative Interfaces
  - Unused Physical Ports
  - Log Management
- Troubleshoot Access and Security Issues
  - Role and Policy Issues
  - Applied Live Lab: Implementing Continuous Authentication
  - DoS Issues
  - Applied Live Lab: Hardening a Fintech Cloud
  - Authentication and Authorization Failures
  - Certificate Issues
  - Blocked or Dropped Traffic
  - Applied Live Lab: Hardening and Troubleshooting an Enterprise
- Summary

- Describing Network Operations
  - Operate and Maintain a Network Environment
    - Risk Management
    - Business Continuity
    - Disaster Recovery
    - Service Management
    - Auditing
    - Failure Rate
    - Contracts, Agreements, and Terms
    - Network Function Virtualization
    - Out of Band (OOB) Management

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- Network Cost Management
- Service Delivery
- Activity: Operating and Maintaining a Network Environment

- Describe the Roles and Functions of DevOps
  - DevOps Roles and Responsibilities
  - DevOps Functions
  - Continuous Integration and Continuous Delivery Pipeline Management
  - Applied Live Lab: Designing a CI/CD Pipeline
  - GitOps
- Use Automation and Scripting in Hybrid Cloud Administration
  - Infrastructure as Code (IaC)
  - Applied Live Lab: Implementing Secure Containers with IaC
  - Life Cycle Management
  - Version Control
  - Generative Artificial Intelligence (AI)
  - Application Programming Interfaces (API)
  - Applied Live Lab: Examining API Security
  - Applied Live Lab: Troubleshooting a Startup Web Application
  - Software Development Kits (SDK)
  - Command-line Interface
  - Desired State
  - Change Management
- Summary

REQUIREMENTS:

Recommended experience: at least 10 years of IT experience, including 5 years in a network architect role, with hybrid cloud environments and foundational knowledge equivalent to Network+, Security+, and Cloud+

Difficulty level

CERTIFICATE:

The participants will obtain certificates signed by CompTIA (course completion). This course will help prepare you for the CompTIA CloudNetX certification exam, which is available through the Pearson

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VUE test centers.

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TRAINER:

Authorized CompTIA Trainer.

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