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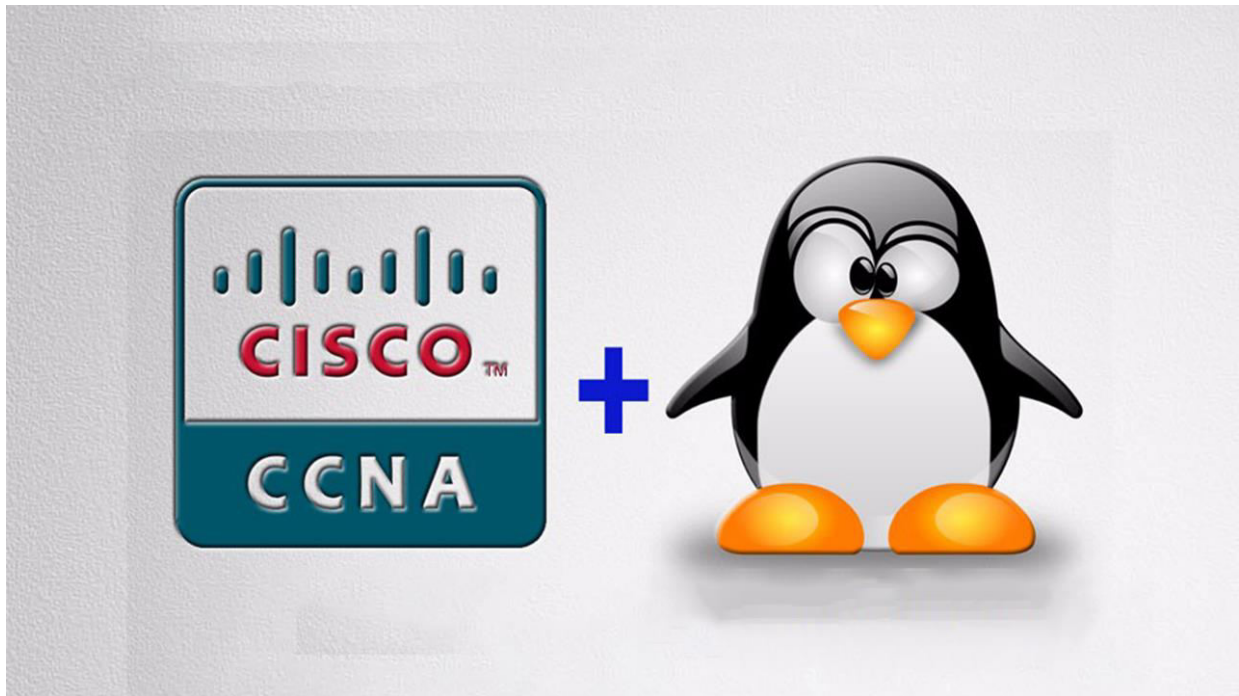
CISCO™ CCNA + (Linux penguin)

Linux + CCNA

Linux + CCNA Combo Course

➕ Course Overview:

The Implementing and Administering Cisco Solutions (CCNA) v1.0 course gives you a broad range of fundamental knowledge for all IT careers. Through a combination of lecture, hands-on labs, and self-study, you will learn how to install, operate, configure, and verify basic IPv4 and IPv6 networks. The course covers configuring network components such as switches, routers, and wireless LAN controllers; managing network devices; and identifying basic security threats. The course also gives you a foundation in network programmability, automation, and software-defined networking.

Red Hat System Administration I (RH124)

➕ Course Outline:

1. Get started with Red Hat Enterprise Linux
  - ➢ Describe and define open source
  - ➢ Linux distributions
  - ➢ Red Hat Enterprise Linux.

2. Access the command line
  - ➢ Log into a Linux system and run simple commands using the shell.

3. Manage files from the command line
  - ➢ Copy, move, create, delete, and organize files while working from the bash shell.

4. Get help in Red Hat Enterprise Linux
  - ➢ Resolve problems by using local help systems.

5. Create, view, and edit text files

➢ Manage text files from command output or in a text editor.

6. Manage local users and groups
➢ Create, manage, and delete local users and groups, as well as administer local password policies.

7. Control access to files
➢ Set Linux file system permissions on files and interpret the security effects of different permission settings.

8. Monitor and manage Linux processes
➢ Evaluate and control processes running on a Red Hat Enterprise Linux system.

9. Control services and daemons
➢ Control and monitor network services
➢ System daemons using systemd.

10. Configure and secure SSH
➢ Configure secure command line service on remote systems, using OpenSSH.

11. Analyze and store logs
➢ Locate and accurately interpret logs of system events for troubleshooting purposes.

12. Manage networking
➢ Configure network interfaces and settings on Red Hat Enterprise Linux servers.

13. Archive and transfer files
➢ Archive and copy files from one system to another.

14. Install and update software
➢ Download, install, update, and manage software packages from Red Hat and yum package repositories.

15. Access Linux files systems
➢ Access, inspect, and use existing file systems on storage attached to a Linux server.

16. Analyze servers and get support

> ➤ Investigate and resolve issues in the web-based management interface, getting support from Red Hat to help solve problems.

Red Hat System Administration II (RH 134)

Course Outline:

1. Improve command line productivity
> ➤ Run commands more efficiently by using advanced features of the Bash shell, shell scripts, and various utilities provided by Red Hat Enterprise Linux.

2. Schedule future tasks
> ➤ Schedule commands to run in the future, either one time or on a repeating schedule.

3. Tune system performance
> ➤ Improve system performance by setting tuning parameters and adjusting scheduling priority of processes.

4. Control access to files with ACLs
> ➤ Interpret and set access control lists (ACLs) on files to handle situations requiring complex user and group access permissions.

5. Manage SELinux security
> ➤ Protect and manage the security of a server by using SELinux.

6. Manage basic storage
> ➤ Create and manage storage devices, partitions, file systems, and swap spaces from the command line.

7. Manage logical volumes
> ➤ Create and manage logical volumes containing file systems and swap spaces from the command line.

8. Implement advanced storage features

➢ Manage storage using the Stratis local storage management system and use VDO volumes to optimize storage space in use.

9. Access network-attached storage

➢ Use the NFS protocol to administer network-attached storage.

10. Control the boot process

➢ Manage the boot process to control services offered and to troubleshoot and repair problems.

11. Manage network security

➢ Control network connections to services using the system firewall and SELinux rules.

12. Install Red Hat Enterprise Linux

➢ Install Red Hat Enterprise Linux on servers and virtual machines.

13. Run Containers

➢ Obtain, run, and manage simple, lightweight services as containers on a single Red Hat Enterprise Linux server.

Red Hat System Administration III (RH 254)

🞣 **Course Outline:**

1. Control services and daemons

➢ Review how to manage services and the boot-up process using systemctl.

2. Manage IPv6 networking

➢ Configure and troubleshoot basic IPv6 networking on Red Hat Enterprise Linux systems.

3. Configure link aggregation and bridging

- Configure and troubleshoot advanced network interface functionality including bonding, teaming, and local software bridges.

4. Control network port security

- Permit and reject access to network services using advanced SELinux and firewalld filtering techniques.

5. Manage DNS for servers

- Set and verify correct DNS records for systems and configure secure DNS caching.

6. Configure email delivery

- Relay all email sent by the system to an SMTP gateway for central delivery.

7. Provide block-based storage

- Provide and use networked iSCSI block devices as remote disks.

8. Provide file-based storage

- Provide NFS exports and SMB file shares to specific systems and users.

9. Configure MariaDB databases

- Provide a MariaDB SQL database for use by programs and database administrators.

10. Provide Apache HTTPD web service

- Configure Apache HTTPD to provide Transport Layer Security (TLS)-enabled websites and virtual hosts.

11. Write bash scripts

- Write simple shell scripts using bash.

12. Bash conditionals and control structures

- Use bash conditionals and other control structures to write more sophisticated shell commands and scripts.

13. Configure the shell environment

- Customize bash startup and use environment variables, bash aliases, and bash functions.

14. Comprehensive review

Practice and demonstrate knowledge and skills learned in this course.

Cisco Certified Network Associate (CCNA)

Course Outline:

Network Fundamentals

1. Explain the role and function of network components

- Routers
- L2 and L3 switches
- Next-generation firewalls and IPS
- Access points
- Controllers (Cisco DNA Center and WLC)
- Endpoints
- Servers

2. Describe characteristics of network topology architectures

- 2 tier
- 3 tier
- Spine-leaf
- WAN
- Small office/home office (SOHO)
- On-premises and cloud

3. Compare physical interface and cabling types

- Single-mode fiber, multimode fiber, copper

- ➢ Connections (Ethernet shared media and point-to-point)
- ➢ Concepts of PoE

4. Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)

5. Compare TCP to UDP

6. Configure and verify IPv4 addressing and subnetting

7. Describe the need for private IPv4 addressing

8. Configure and verify IPv6 addressing and prefix

9. Compare IPv6 address types

- ➢ Global unicast
- ➢ Unique local
- ➢ Link local
- ➢ Anycast
- ➢ Multicast
- ➢ Modified EUI 64

10. Verify IP parameters for Client OS (Windows, Mac OS, Linux)

11. Describe wireless principles

- ➢ Nonoverlapping Wi-Fi channels
- ➢ SSID
- ➢ RF
- ➢ Encryption

12. Explain virtualization fundamentals (virtual machines)

13. Describe switching concepts

- ➢ MAC learning and aging

- ➢ Frame switching

- ➢ Frame flooding

- ➢ MAC address table

Network Access

1. Configure and verify VLANs (normal range) spanning multiple switches

- ➢ Access ports (data and voice)

- ➢ Default VLAN

- ➢ Connectivity

2. Configure and verify interswitch connectivity

- ➢ Trunk ports

- ➢ 802.1Q

- ➢ Native VLAN

3. Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)

4. Configure and verify (Layer 2/Layer 3) EtherChannel (LACP)

5. Describe the need for and basic operations of Rapid PVST+ Spanning Tree Protocol and identify basic operations

- ➢ Root port, root bridge (primary/secondary), and other port names

- ➢ Port states (forwarding/blocking)

- ➢ PortFast benefits

6. Compare Cisco Wireless Architectures and AP modes

7. Describe physical infrastructure connections of WLAN components (AP,WLC, access/trunk ports, and LAG)

8. Describe AP and WLC management access connections (Telnet, SSH, HTTP,HTTPS, console, and TACACS+/RADIUS)

9. Configure the components of a wireless LAN access for client connectivity using GUI only such as WLAN creation, security settings, QoS profiles, and advanced WLAN settings

IP Connectivity

1. Interpret the components of routing table

- ➢ Routing protocol code
- ➢ Prefix
- ➢ Network mask
- ➢ Next hop
- ➢ Administrative distance
- ➢ Metric
- ➢ Gateway of last resort

2. Determine how a router makes a forwarding decision by default

- ➢ Longest match
- ➢ Administrative distance
- ➢ Routing protocol metric

3. Configure and verify IPv4 and IPv6 static routing

- ➢ Default route
- ➢ Network route
- ➢ Host route
- ➢ Floating static

4. Configure and verify single area OSPFv2

- ➢ Neighbor adjacencies

- ➢ Point-to-point

- ➢ Broadcast (DR/BDR selection)

- ➢ Router ID

5. Describe the purpose of first hop redundancy protocol

IP Services

- ➢ Configure and verify inside source NAT using static and pools

- ➢ Configure and verify NTP operating in a client and server mode

- ➢ Explain the role of DHCP and DNS within the network

- ➢ Explain the function of SNMP in network operations

- ➢ Describe the use of syslog features including facilities and levels

- ➢ Configure and verify DHCP client and relay

- ➢ Explain the forwarding per-hop behavior (PHB) for QoS such as classification, marking, queuing, congestion, policing, shaping

- ➢ Configure network devices for remote access using SSH

- ➢ Describe the capabilities and function of TFTP/FTP in the network

Security Fundamentals

- ➢ Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)

- ➢ Describe security program elements (user awareness, training, and physical access control)

- ➢ Configure device access control using local passwords

- ➢ Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)

- ➢ Describe remote access and site-to-site VPNs

- ➢ Configure and verify access control lists
- ➢ Configure Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)
- ➢ Differentiate authentication, authorization, and accounting concepts
- ➢ Describe wireless security protocols (WPA, WPA2, and WPA3)
- ➢ Configure WLAN using WPA2 PSK using the GUI

Automation and Programmability

- ➢ Explain how automation impacts network management
- ➢ Compare traditional networks with controller-based networking
- ➢ Describe controller-based and software defined architectures (overlay, underlay, and fabric)
- ➢ Separation of control plane and data plane
- ➢ North-bound and south-bound APIs
- ➢ Compare traditional campus device management with Cisco DNA Center enabled device management
- ➢ Describe characteristics of REST-based APIs (CRUD, HTTP verbs, and data encoding)
- ➢ Recognize the capabilities of configuration management mechanisms Puppet, Chef, and Ansible
- ➢ Interpret JSON encoded data

Prerequisites:

- • Basic technical user skills with computer applications on some operating systems are expected.

Who Can attend:

This course is geared toward Windows system administrators, network administrators, and other system administrators who are interested in supplementing current skills or backstopping other team members, in addition to Linux system administrators who are responsible for these tasks:

- Configuring, installing, upgrading, and maintaining Linux systems using established standards and procedures

- Providing operational support

- Managing systems for monitoring system performance and availability

- Writing and deploying scripts for task automation and system administration

Number of Hours: 70hrs

Certification: RHCE, RHCSA & Implementing and Administering Cisco Solutions (CCNA)

Key Features:

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects
- Virtual Live Experience
- Preparing for Certification