

## Call for Application: Professional Training for Cisco Certified Network Associate (CCNA 200 – 231)

### 1. Introduction

Deso IT Lab, a registered training center in Rwanda, operating in Kigali, Nyarugenge District, specializes in professional IT training and consultancy services.

Our mission is to deliver high-quality, hands-on IT training programs that equip learners with practical skills, industry certifications, and the confidence to excel in their careers. We aim to bridge the gap between theory and practice.

Our Vision is to be recognized as a leading IT training institution that empowers individuals with cutting-edge skills, fosters innovation, and contributes to a digitally skilled workforce.

### 2. Course Content:

The course content includes:

No	Module	Content
1	Network Fundamentals	<ul style="list-style-type: none"> <li>• 1.1 Explain the role and function of network components               <ul style="list-style-type: none"> <li>○ 1.1.a Routers</li> <li>○ 1.1.b Layer 2 and Layer 3 switches</li> <li>○ 1.1.c Next-generation firewalls and IPS</li> <li>○ 1.1.d Access points</li> <li>○ 1.1.e Controllers (Cisco DNA Center and WLC)</li> <li>○ 1.1.f Endpoints</li> <li>○ 1.1.g Servers</li> <li>○ 1.1.h PoE</li> </ul> </li> <li>• 1.2 Describe characteristics of network topology architectures               <ul style="list-style-type: none"> <li>○ 1.2.a Two-tier</li> <li>○ 1.2.b Three-tier</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ 1.2.c Spine-leaf</li> <li>○ 1.2.d WAN</li> <li>○ 1.2.e Small office/home office (SOHO)</li> <li>○ 1.2.f On-premise and cloud</li> <li>• 1.3 Compare physical interface and cabling types           <ul style="list-style-type: none"> <li>○ 1.3.a Single-mode fiber, multimode fiber, copper</li> <li>○ 1.3.b Connections (Ethernet shared media and point-to-point)</li> </ul> </li> <li>• 1.4 Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)</li> <li>• 1.5 Compare TCP to UDP</li> <li>• 1.6 Configure and verify IPv4 addressing and subnetting</li> <li>• 1.7 Describe the need for private IPv4 addressing</li> <li>• 1.8 Configure and verify IPv6 addressing and prefix</li> <li>• 1.9 Describe IPv6 address types           <ul style="list-style-type: none"> <li>○ 1.9.a Unicast (global, unique local, and link local)</li> <li>○ 1.9.b Anycast</li> <li>○ 1.9.c Multicast</li> <li>○ 1.9.d Modified EUI 64</li> </ul> </li> <li>• 1.10 Verify IP parameters for Client OS (Windows, Mac OS, Linux)</li> <li>• 1.11 Describe wireless principles           <ul style="list-style-type: none"> <li>○ 1.11.a Nonoverlapping Wi-Fi channels</li> <li>○ 1.11.b SSID</li> <li>○ 1.11.c RF</li> <li>○ 1.11.d Encryption</li> </ul> </li> <li>• 1.12 Explain virtualization fundamentals (server virtualization, containers, and VRFs)</li> <li>• 1.13 Describe switching concepts           <ul style="list-style-type: none"> <li>○ 1.13.a MAC learning and aging</li> <li>○ 1.13.b Frame switching</li> <li>○ 1.13.c Frame flooding</li> <li>○ 1.13.d MAC address table</li> </ul> </li> </ul>
<b>2</b>	<b>Network Access</b>	
		<ul style="list-style-type: none"> <li>• 2.1 Configure and verify VLANs (normal range) spanning multiple switches           <ul style="list-style-type: none"> <li>○ 2.1.a Access ports (data and voice)</li> <li>○ 2.1.b Default VLAN</li> <li>○ 2.1.c InterVLAN connectivity</li> </ul> </li> <li>• 2.2 Configure and verify interswitch connectivity</li> </ul>

		<ul style="list-style-type: none"> <li>○ 2.2.a Trunk ports</li> <li>○ 2.2.b 802.1Q</li> <li>○ 2.2.c Native VLAN</li> <li>• 2.3 Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)</li> <li>• 2.4 Configure and verify (Layer 2/Layer 3) EtherChannel (LACP)</li> <li>• 2.5 Interpret basic operations of Rapid PVST+ Spanning Tree Protocol           <ul style="list-style-type: none"> <li>○ 2.5.a Root port, root bridge (primary/secondary), and other port names</li> <li>○ 2.5.b Port states (forwarding/blocking)</li> <li>○ 2.5.c Port Fast</li> </ul> </li> <li>• 2.6 Describe Cisco Wireless Architectures and AP modes</li> <li>• 2.7 Describe physical infrastructure connections of WLAN components (AP, WLC, access/trunk ports, and LAG)</li> <li>• 2.8 Describe AP and WLC management access connections (Telnet, SSH, HTTP, HTTPS, console, and TACACS+/RADIUS)</li> <li>• 2.9 Interpret the wireless LAN GUI configuration for client connectivity, such as WLAN creation, security settings, QoS profiles, and advanced settings</li> </ul>
<b>3</b>	<b>IP Connectivity</b>	
		<ul style="list-style-type: none"> <li>• 3.1 Interpret the components of routing table           <ul style="list-style-type: none"> <li>○ 3.1.a Routing protocol code</li> <li>○ 3.1.b Prefix</li> <li>○ 3.1.c Network mask</li> <li>○ 3.1.d Next hop</li> <li>○ 3.1.e Administrative distance</li> <li>○ 3.1.f Metric</li> <li>○ 3.1.g Gateway of last resort</li> </ul> </li> <li>• 3.2 Determine how a router makes a forwarding decision by default           <ul style="list-style-type: none"> <li>○ 3.2.a Longest prefix match</li> <li>○ 3.2.b Administrative distance</li> <li>○ 3.2.c Routing protocol metric</li> </ul> </li> <li>• 3.3 Configure and verify IPv4 and IPv6 static routing           <ul style="list-style-type: none"> <li>○ 3.3.a Default route</li> <li>○ 3.3.b Network route</li> <li>○ 3.3.c Host route</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ 3.3.d Floating static</li> <li>• 3.4 Configure and verify single area OSPFv2           <ul style="list-style-type: none"> <li>○ 3.4.a Neighbor adjacencies</li> <li>○ 3.4.b Point-to-point</li> <li>○ 3.4.c Broadcast (DR/BDR selection)</li> <li>○ 3.4.d Router ID</li> </ul> </li> <li>• 3.5 Describe the purpose, functions, and concepts of first hop redundancy protocols</li> </ul>
<b>4</b>	<b>IP Services</b>	
		<ul style="list-style-type: none"> <li>• 4.1 Configure and verify inside source NAT using static and pools</li> <li>• 4.2 Configure and verify NTP operating in a client and server mode</li> <li>• 4.3 Explain the role of DHCP and DNS within the network</li> <li>• 4.4 Explain the function of SNMP in network operations</li> <li>• 4.5 Describe the use of syslog features including facilities and levels</li> <li>• 4.6 Configure and verify DHCP client and relay</li> <li>• 4.7 Explain the forwarding per-hop behavior (PHB) for QoS, such as classification, marking, queuing, congestion, policing, and shaping</li> <li>• 4.8 Configure network devices for remote access using SSH</li> <li>• 4.9 Describe the capabilities and functions of TFTP/FTP in the network</li> </ul>
<b>5</b>	<b>Security Fundamentals</b>	<ul style="list-style-type: none"> <li>• 5.1 Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)</li> <li>• 5.2 Describe security program elements (user awareness, training, and physical access control)</li> <li>• 5.3 Configure and verify device access control using local passwords</li> <li>• 5.4 Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)</li> <li>• 5.5. Describe IPsec remote access and site-to-site VPNs</li> <li>• 5.6 Configure and verify access control lists</li> </ul>

		<ul style="list-style-type: none"> <li>• 5.7 Configure and verify Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)</li> <li>• 5.8 Compare authentication, authorization, and accounting concepts</li> <li>• 5.9 Describe wireless security protocols (WPA, WPA2, and WPA3)</li> <li>• 5.10 Configure and verify WLAN within the GUI using WPA2 PSK</li> </ul>
<b>6</b>	<b>Automation and Programmability</b>	
		<ul style="list-style-type: none"> <li>• 6.1 Explain how automation impacts network management</li> <li>• 6.2 Compare traditional networks with controller-based networking</li> <li>• 6.3 Describe controller-based, software defined architecture (overlay, underlay, and fabric)           <ul style="list-style-type: none"> <li>◦ 6.3.a Separation of control plane and data plane</li> <li>◦ 6.3.b Northbound and Southbound APIs</li> </ul> </li> <li>• 6.4 Compare traditional campus device management with Cisco DNA Center enabled device management</li> <li>• 6.5 Describe characteristics of REST-based APIs (CRUD, HTTP verbs, and data encoding)</li> <li>• 6.6 Recognize the capabilities of configuration management mechanisms Puppet, Chef, and Ansible</li> <li>• 6.7 Recognize components of JSON-encoded data</li> </ul>

### 3. Training Methods:

Our training courses are conducted in a workshop style with a high degree of participant involvement. We employ adult learning methodologies to ensure active participation. Debates and open discussions are encouraged. The trainer will use a mix of presentations to explain key concepts and practical exercises. Participants are encouraged to bring their own laptops.

## 4. Certification

Deso IT Lab issues Completion Certificates to participants who successfully attend the course and pass the course test. We also assist participants in obtaining international certification.

## 5. Training fees, Venue and Date:

This training will be held at Deso It Lab premises located at KN4 Avenue, Imbuga City Wolk opposite Equity Bank from 20<sup>th</sup> January to 21<sup>st</sup> February 2025, 06pm – 08pm (Evening program) and 18<sup>th</sup> January to 23<sup>rd</sup> February 2025, 09am - 05pm (Weekend program).

Program & Time	Dates	Batch	Training Mode
Evening (06PM – 08 PM) Monday to Friday	20 <sup>th</sup> January to 21 <sup>st</sup> February 2025	1	Classroom based: Deso IT Lab
Weekend program (09 AM – 05 PM)	18 <sup>th</sup> January to 23 <sup>rd</sup> February 2025	2	Classroom based: Deso IT Lab

**Training fees: 400,000Rwf**

To book your space, kindly proceed by paying the training fees through the following bank details:

- Bank Account: **100072274568** (Bank of Kigali)
- Title of the Account: Deso Engineering Co LTD

## 6. Other Available Profession trainings:

- CCNA: Cisco Certified Network Associate
- CCNP: Cisco Certified Network Profession
- CompTIA A+
- CompTIA Network +
- CompTIA Security +
- Project Management Profession (PMP)
- Statistical Software: SPSS and STATA

## NB: Tailor-Made Courses

We offer tailor-made courses to meet the specific needs of organizations.

For further clarifications, please contact us at +250 788222832, email us at [dtuyisenge@desoitlab.rw](mailto:dtuyisenge@desoitlab.rw), [info@desoitlab.rw](mailto:info@desoitlab.rw) or visit our web site: [www.desoitlab.rw](http://www.desoitlab.rw)

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Managing Director

