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Leader in Innovative Technology

FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE OUTLINE

UNIT CODE: HCNA

UNIT NAME: HUAWEI CERTIFIED NETWORK ASSOCIATE (Routing & Switching)

LECTURER NAME: MR. KELVIN KARIUKI

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Course Objectives:

Upon completion of this course, you will be able to:

1. Explain the intricacies of data transmission over IP networks, for competency in supporting, maintaining and troubleshooting IP networks
2. Perform IP address planning for establishing well designed networks
3. Navigate and manage Huawei products through the Versatile Routing Platform (VRP)
4. Build efficient data switching environments through the management of switching products and manipulation of related (STP/RSTP) link layer protocols
5. Explain the principles of routing and configure (RIP/OSPF) routing protocols for implementation and support of effective enterprise network routing solutions

Course Prerequisite:

KCSE

Content Summary:

Day	Date		Content	Training Method
1	18 th May 2019	AM	1. Orientation 2. E-learning Platform 3. Basic Enterprise Network Architectures 4. Introduction to Transmission Media 5. Ethernet Framing	Lecture Practice
		PM	6. IP Addressing 7. Lab 1-1: Building Basic IP Networks 8. Internet Control Message Protocol 9. Address Resolution Protocol	
2	25 th May 2019	AM	10. Transport Layer Protocols 11. Data Forwarding Scenario 12. VRRP Foundation 13. Navigating the CLI	Lecture Practice
		PM	14. File System Navigation and Management 15. VRRP Operating System Image Management 16. Lab 2-1: Basic Device Navigation and Configuration 17. Establishing a Single Switched Network	
3	1 st June 2019	AM	18. Spanning Tree Protocol 19. Lab 3-1: Configuring STP	Lecture Practice
		PM	20. Rapid Spanning Tree Protocol 21. Lab 3-2: Configuring RSTP 22. Basic Knowledge of IP Routing 23. IP Static Routes 24. Lab 4-1: Configuring Static Routes and Default Routes	
4	8 th June 2019	AM	25. Distance Vector Routing with RIP 26. Lab 4-2: Configuring RIPv1 and RIPv2 27. Lab 4-3: RIPv2 Route Aggregation and Authentication	Lecture Practice
		PM	28. Link State Routing with OSPF	

			29. Lab 4-4: OSPF Single-Area Configuration	
5	15 th June 2019	AM	30. DHCP Protocol Principles 31. FTP Protocol Principles 32. Telnet Protocol Principles	Lecture Practice
		PM	33. Lab 5-1: Configuring FTP Services 34. Lab 5-2: Implementing DHCP 35. Advanced Enterprise Solutions Overview 36. Link Aggregation	
6	22 nd June 2019	AM	37. VLAN Principles 38. Lab 1-1: Ethernet Interface and Link Configuration 39. Lab 1-2: VLAN Configuration 40. GARP & GVRP 41. VLAN Routing	Lecture Practice
		PM	42. Wireless LAN Overview 43. Lab 1-3: GVRP Configuration 44. Lab 1-4: VLAN Routing 45. Lab 1-5: Configuring Layer 3 Switching	
7	29 th June 2019	AM	46. Principle and Configuration of HDLC and PPP 47. Frame Relay Principles 48. Principle and Configuration of PPPoE	Lecture Practice
		PM	49. Lab 2-1: HDLC and PPP Configuration 50. Lab 2-2: Configuring Frame Relay at the Customer Edge 51. Lab 2-3: PPPoE Client Session Establishment 52. Network Address Translation 53. Establishing Enterprise Radio Access Network Solutions	
8	6 th July 2019	AM	54. Access Control Lists 55. AAA 56. Lab 3-1: Filtering Enterprise Data with Access Control Lists 57. Lab 3-2: Network Address Translation	Lecture Practice

			58. Lab 3-3: Establishing Local AAA Solutions	
		PM	59. Securing Data with IPSec VPN 60. Generic Routing Encapsulation 61. Lab 3-4: Securing Traffic with IPSec VPN 62. Lab 3-5: Supporting Dynamic Routing with GRE	
9	20 th July 2019	AM	63. Simple Network Management Protocol 64. eSight Network Management Solutions 65. Introducing IPv6 Networks	Lecture Practice
		PM	66. IPv6 Routing Technologies 67. IPv6 Application Services - DHCPv6 68. Lab 4-1: Implementing IPv6 Networks and Solutions 69. Post-test	
10	First Week of August	AM	70. Written Exam	Exam
		PM		

Course Assessment Mode:

EXAM 1000

PASSMARK 600

Ground rules

1. Students must achieve 75% class attendance.
2. Students must clear fees before the set deadline to be eligible for exam.

Practicals:

Entry Level

MODULE 1 ESTABLISHING BASIC NETWORKS WITH ENSP

LAB 1-1 BUILDING BASIC IP NETWORKS **ERROR! BOOKMARK NOT DEFINED.**

MODULE 2 BASIC DEVICE NAVIGATION AND CONFIGURATION

LAB 2-1 BASIC DEVICE NAVIGATION AND CONFIGURATION

MODULE 3 STP AND RSTP

LAB 3-1 CONFIGURING STP

LAB 3-2 CONFIGURING RSTP

MODULE 4 ROUTING CONFIGURATION

LAB 4-1 CONFIGURING STATIC ROUTES AND DEFAULT ROUTES

LAB 4-2 CONFIGURING RIPV1 AND RIPV2

LAB 4-3 RIPV2 ROUTE AGGREGATION AND AUTHENTICATION

LAB 4-4 OSPF SINGLE-AREA CONFIGURATION

MODULE 5 FTP AND DHCP

LAB 5-1 CONFIGURING FTP SERVICES

Lab 5-2 Implementing DHCP

INTERMEDIATE LEVEL

MODULE 1 ETHERNET AND VLANERROR! BOOKMARK NOT DEFINED.

LAB 1-1 ETHERNET INTERFACE AND LINK CONFIGURATIONERROR! BOOKMARK NOT DEFINED.

LAB 1-2 VLAN CONFIGURATION

LAB 1-3 GVRP CONFIGURATION

LAB 1-4 VLAN ROUTING

LAB 1-5 CONFIGURING LAYER 3 SWITCHING

MODULE 2 ENTERPRISE WAN CONFIGURATION

LAB 2-1 HDLC AND PPP CONFIGURATION

LAB 2-2 CONFIGURING FRAME RELAY AT THE CUSTOMER EDGE

LAB 2-3 PPPoE CLIENT SESSION ESTABLISHMENT

MODULE 3 IMPLEMENTING IP SECURITY

LAB 3-1 FILTERING ENTERPRISE DATA WITH ACCESS CONTROL LISTS.

LAB 3-2 NETWORK ADDRESS TRANSLATION

LAB 3-3 ESTABLISHING LOCAL AAA SOLUTIONS

LAB 3-4 SECURING TRAFFIC WITH IPSEC VPN

LAB 3-5 SUPPORTING DYNAMIC ROUTING WITH GRE

MODULE 4 ESTABLISHING IPV6 NETWORKS

Lab 4-1 Implementing IPv6 Networks and Solutions

Core Reading Materials:

Course Website

❖ <https://www.huaweiacad.com>

Course Textbooks

1. HCNA – HNTD ENTRY – Huawei Networking Technology & Device

Approved for use: Sign: (CoD) _____ Date _____

Approved for use: Sign: (Dean, FoST) _____ Date _____