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EH1-Infotech
SCF 69, Top Floor, Phase 3B2
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Mobile:- +91-9780265007
Landline:- 0172-5098107
Website:- www.eh1infotech.com
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Content of Certified Network Administrator from EH1-Infotech

Module 1: Basics of Network Technologies

- Network and its Types
- Transmission Modes
- Basics of IP addresses
- Networking Devices (Hub, Switch, Router, Repeater, Firewall)
- Ethernet LAN Cabling
- OSI Model
- Cisco Router Hardware and basic router Administration
- Cisco Router CLI basic commands
- Protecting router access with passwords
- Accessing Cisco router with SDM
- Cisco router IOS Management
- Router boot sequence
- Backup and restore Cisco IOS
- Backup and restore Configuration files
- Accessing Cisco router over the network (telnet, ssh)
- Cisco Discovery Protocol
- Router connectivity and troubleshooting

Module 2: IP addressing (IPv4 / IPv6)

- Private and public IP addresses for IPv4
- IPv6 addressing scheme
- IPv4 addressing scheme using VLSM and summarization
- IPv6 in conjunction with IPv4 such as (dual stack)
- Describe IPv6 addresses

Module 3: Introduction of TCP/IP protocol & Subnetting (CCNA)

- TCP/IP and DoD reference model
- IP Addressing
- Subnetting, VLSM Design & Summarization

Module 4: Routing Technologies

- Describe basic routing concepts
 - ✓ Packet forwarding
 - ✓ Message forwarding
 - ✓ Router lookup process
- Configuring router for the first time using CONSOLE
- Boot process of Cisco IOS routers
- Basic Router configuration
- Interface (Serial, Ethernet, Gigabit-Ethernet)
- Administrative distance
- Hop Counts
- Wildcard mask
- Static Routing
- Default Routing
- Dynamic Routing
- DVRP (Distance Vector Routing Protocol)
 - ✓ RIP V1
 - ✓ RIP V2
 - ✓ EIGRP
- LSRP (Link State Routing Protocol)
 - ✓ OSPF
- Path Vector
 - ✓ BGP (Exterior and Interior)
- Manage Cisco IOS Files
 - ✓ Boot preferences / Cisco IOS image(s)
 - ✓ Licensing
- Differentiate methods of routing and routing protocols
 - ✓ Static vs. Dynamic
 - ✓ Link state vs. Distance Vector
- Verify & troubleshooting routing protocols

Module 5: Switching

- Identify basic switching concepts
- Types of switching
- Collision / Broadcast Domains
- CAM Table
- Configure and verify initial switch configuration
- Switch operation (ping, telnet and SSH)
- Identify enhanced switching technologies
- RSTP / PVSTP
- Ether channels
- Configure and verify VLANs / Trunking
- DTP / Auto negotiation
- Configure and verify PVSTP operation
- Root bridge election / STP Modes

Module 6: Working on GNS3

- Configure Router by real IOS image
- Interior BGP
- IP Addressing of Computers by CLI
- Using 'Putty' to access Router

Module 7: Basics of WAN Network Technologies

- Wireless Devices (Router, Access Points)
- Introduction to WAN Networks
- WAN encapsulation types (HDLC, PPP)
- WAN Connectivity using serial dedicated networks
- Introduction to frame-relay technologies
- Implementing frame-relay wan network
- Introduction to DSL technologies (ADSL,SDSL)
- Introduction to VPN
- Configuring IPSEC site-site VPN using SDM
- Cisco Router Hardware & basic router Administration
- Cisco Router CLI basic commands
- Protecting router access with passwords
- Breaking Router Passwords
- Accessing Cisco router with SDM
- Cisco router IOS Management
- Router boot sequence
- Backup & restore Cisco IOS

- Backup & restore Configuration files
- Accessing Cisco router over the network (telnet, ssh)
- Cisco Discovery Protocol
- Router connectivity & troubleshooting

Module 8: Advanced Topics

- Configure and verify DHCP (IOS Router)
- Configuring router interfaces to use DHCP
- DHCP options
- Excluded addresses, Lease time
- ACL (Types, Features & Applications of ACLs)
- Standard, Extended, Named & Numbered
- Log option
- Configure and verify ACL.
- Identify the basic operation of NAT
- Purpose, Pool, Static, 1 to 1 & Overloading
- Source addressing & One way NAT
- Configure and verify NAT
- Configure and verify NTP as a client
- Recognize High availability (FHRP, VRRP, HSRP & GLBP)
- Configure and verify Sys log
- Describe SNMP v2 & v3

Module 9: Troubleshooting

- Troubleshoot and Resolve VLAN problems
- Identify that VLANs are configured
- port membership corrects
- IP address configured
- Troubleshoot and Resolve trunking problem
- correct trunk states
- correct encapsulation configured
- correct vlans allowed
- Troubleshoot and Resolve STP
- Root switch
- Priority
- Mode is correct
- Port states
- Troubleshoot and Resolve routing issues
- Routing is enabled
- Routing table is correct

- Correct path selection
- Troubleshoot and Resolve OSPF problems
- Neighbor advances
- Hello and Dead timers
- OSPF area, Interface MTU
- Network types, Neighbor states
- OSPF topology database
- Troubleshoot and Resolve inter VLAN
- Connectivity
- Encapsulation
- Subnet, Native VLAN
- Port mode trunk status

Module 10: Basics of Windows Server

- Networking concepts, History of Server OS
- Introduction to Windows Server 2012 & 2016
- Features of Windows Server 2016
- Installation of Windows Server 2012, 2016 (Split Method)
- Installation of Standard and Data-Centre Server
- Installation of GUI and CLI Server
- Introduction and Creation of Users Accounts

Module 11: Windows Server 2016

- Installation, Network Configuration (Ethernet, Wifi etc)
- Resources and printer Management
- Managing Windows Server 2016 Environment
- Implementing Windows Server 2016 Network
- Implementing Security in a Windows Server 2016 Network
- Implementation of Exchange Server 2012/ 2016

Test 1: Module 1 to 11

Module 12: Active Directory – Domain Services

- IP Addressing
- Logical Topologies, Peer to Peer and Domain Models
- Introduction to Directory Services
- Evolution of Directory Services – LDAP Protocol
- Features of Active Directory

- Installing Active Directory – Domain Controller
- Global Catalog
- Forest
- Installation of Primary Domain Controller (PDC)
- Installation of Additional Domain Controller (ADC)
- Installation of Read-Only Domain Controller (RODC)
- Installation of Tree Domain Controller (TDC)
- Installation of Child Domain Controller (CDC)
- AD-Recycle Bin

Module 13: Member Servers, Clients, User Configuration

- Configuring Member Servers and Clients.
- Creating Users in AD-DS
- User Logon policies
- Password policies
- Account Lockout policies
- User properties
- User properties

Module 14: Active Directory Trusts

- Introduction to Trust Relationship
- Categories, Directions and Types of Trusts
- Domain Level and Functional/Forest Level
- One Way/Two way Trust
- Authentication Protocols
- Configuring Forest Trusts between 2016 Forests

Module 15: Permissions/Access Control Lists

- File Systems
- Security and Sharing Permissions – Folders and Files
- Offline Folders
- MAP Network Drive and Synchronization

Module 16: Group Policy / System Policies

- User and Computer Policies
- Scope of Policies – OU, Domain, Sites

- Group Policy Object (GPO)
- Scripts, Folder Redirection
- Group Policy Preferences

Module 17: Profiles and File Server Resource Manager [FSRM]

- Types of Profiles – Local and Roaming
- Home Folder
- Configuring Quotas using FSRM
- Implementing File Screening using FSRM
- Configuring Storage Reports Management

Module 18: Distributed File System

- Creating Organizational Unit
- Delegating Control to a User
- Active Directory Recycle Bin
- DFS Namespace
- DFS Folders
- Software Deployment by DFS and Group Policy

Module 19: Dynamic Host Configuration Protocol (DHCP)

- Introduction and Configuration of DHCP Server
- DHCP Client Configuration
- Reservations
- DHCP Backup
- Configuring DHCP Failover

Test 2: Module 12 to 19

Module 20: Microsoft Hyper -V

- Installation of Hyper – V
- Configuring Virtual Machine
- Configuring Virtual Networks
- Configuring Virtual Hard disks
- WDS Practical on Virtual Machine

Module 21: Windows Deployment Services

- Introduction and Configuration of WDS Server
- Attended and Unattended Installation
- Known and Unknown Computers

Module 22: Internet Information Services (IIS)

- IIS 8.0 Configuration
- Hosting Websites, Virtual Directories
- FTP and HTTP Sites
- Sharing and Permission
- Default Pages
- HTTP Redirection
- Backup and Restoring Sites

Module 23: Domain Name System (DNS)

- Internet Basics, Host Files
- DNS Naming Hierarchy
- Lookup Zones – Forward and Reverse Lookup Zones
- Types of Zones – Primary, Secondary and Stub Zone
- Resource Records, Integration with AD-DS, SRV Records
- Forwarders, Dynamic Updates

Module 24: Routing and Remote Access

- Routing Configuration – Static Routes
- NAT, DHCP Relay Agent
- Remote Access Server Configuration
- VPN – PPTP

Module 25: Terminal Services

- Remote Administration Mode
- User Terminals
- Remote Application

Module 26: Storage Technologies

- Configuring iSCSI Target and Initiator
- Introduction to Storage spaces and Storage Pools
- Configuring Simple Volume (RAID – 0)
- Configuring Mirror Volume (RAID – 1)
- Configuring Parity Volume (RAID – 5)

Module 27: Advanced Topics

- Shadow Copies
- Windows Server Backup
- Introduction to Print Server
- Overview of AD-FS, LDS, RMS, CS
- Power Shell (ADDS, DNS, PDC)
- Upgrading Windows Server 2012 to 2016

Test 3: Module 20 to 27

Module 28: Basic Ethical Hacking

Module 29: Project Work Mandatory

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