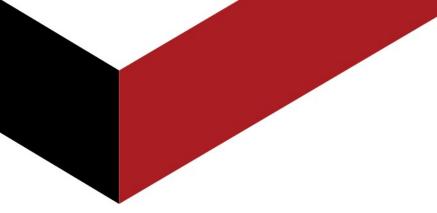**Course Outline for the Training Course on**

Cisco Certified Network Associate

Title: Cisco Certified Network Associate

Course Code: NIT-IP-202

Course Description:

This course is designed to help participants understand and to prepare the applicants to identify, design and recommend the best Cisco solutions for small to medium-sized businesses. It provides the installation, configuration, and troubleshooting information that technical support people require to install and configure the Cisco products sold through two tier distribution. Lectures, labs and interactive cases are provided to increase your understanding of the products and to best position them to meet customers' requirements. CCNA curriculum includes basic mitigation of security threats, introduction to wireless networking concepts and terminology, and performance-based skills. .

Course Objectives and key Benefits

- Understand Switching basis
- Understand IP Routing basics
- Understand IP Security basics
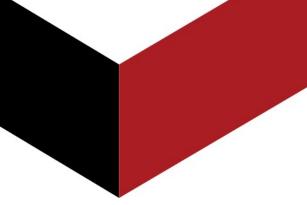- Understand basics of wireless

Pre Requisite

Basic understanding of IP, basic understanding of Networking

Who Should Attend?

Engineers / Designers & Planners / Implementation and deployment technicians / Managers

Course Outline:

I.   Operation of IP Data Networks

1.   Operation of IP Data Networks
2.   Recognize the purpose and functions of various network devices such as Routers, Switches, Bridges and Hubs.
3.   Select the components required to meet a given network specification.
4.   Identify common applications and their impact on the network
5.   Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models.
6.   Predict the data flow between two hosts across a network.
7.   Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN

II.   LAN Switching Technologies

A.   IP Routing

1.   Determine the technology and media access control method for Ethernet networks
2.   Identify basic switching concepts and the operation of Cisco switches.
     a.   Collision Domains
     b.   Broadcast Domains
     c.   Types of switching
     d.   CAM Table
3.   Configure and verify initial switch configuration including remote access management.
     a.   Cisco IOS commands to perform basic switch setup
4.   Verify network status and switch operation using basic utilities such as ping, telnet and ssh.
5.   Identify enhanced switching technologies
     a.   RSTP
     b.   PVSTP
     c.   Ethercnannels
6.   Describe how VLANs create logically separate networks and the need for routing between them.
7.   Explain network segmentation and basic traffic management concepts

8. Configure and verify VLANs
9. Configure and verify trunking on Cisco switches
    a. DTP
    b. Auto negotiation
10. Configure and verify PVSTP operation
    a. Describe root bridge election
    b. Spanning Tree

B. IP Addressing (IPV4/IPV6)

1. Describe the operation and necessity of using private and public IP addresses for IPv4 addressing
2. Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment.
3. Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment.
4. Describe the technological requirements for running IPv6 in conjunction with IPv4 such as dual stack
5. Describe IPv6 addresses
    a. Global unicast
    b. Multicast
    c. Link local
    d. Unique local
    e. eui 64
    f. auto configuration

III. IP Routing Technologies

A. Converged IP Networks Characteristics

1. Media Independent IP Networks
2. Describe basic routing concepts
    a. CEF
    b. Packet forwarding
    c. Router lookup process
3. Describe the boot process of Cisco IOS routers
    a. POST

b. Router bootup process
4. Configure and verify utilizing the CLI to set basic Router configuration
    a. Cisco IOS commands to perform basic router setup
5. Configure and verify operation status of a device interface, both serial and ethernet
6. Verify router configuration and network connectivity
    a. Cisco IOS commands to review basic router information and network connectivity
7. Configure and verify routing configuration for a static or default route given specific routing requirements
8. Manage Cisco IOS Files
    a. Boot preferences
    b. Cisco IOS image(s)
    c. Licensing
        i. Show license
        ii. Change license
9. Differentiate methods of routing and routing protocols
    a. Static vs. Dynamic
    b. Link state vs. Distance Vector
    c. Administrative distance
    d. split horizon
    e. metric
    f. next hop
    g. ip routing table
    h. Passive Interfaces
10. Configure and verify OSPF (single area)
    a. Benefit of single area
    b. neighbor adjacencies
    c. OSPF states
    d. Discuss Multi area
    e. Configure OSPF v2
    f. Configure OSPF v3
    g. Router ID

      h. Passive interface

      i. LSA types

11. Configure and verify EIGRP (single AS)

      a. Feasible Distance / Feasible Successors /Administrative distance

      b. Feasibility condition

      c. Metric composition

      d. Router ID

      e. Auto summary

      f. Path selection

      g. Load balancing

      h. Passive interface

12. Configure and verify interVLAN routing (Router on a stick)

      a. sub interfaces

      b. upstream routing

      c. encapsulation

13. Configure SVI interfaces

B. IP Services

C. Network Security

D. Troubleshooting

E. Wireless LAN