Course Outline for the Training Course on

Importance of IP in Converged Networks

Duration: 3 Days

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Title: Importance of IP in Converged Networks

Duration: 3 days

Course Code: NIT-IP-210

Course Description:

This course is designed to help participants understand the importance of the Internet Protocol for convergence Networks. Participants shall learn the fundamentals for network Convergence, including history, standards, and migration to single networks. Participants shall also learn the principles of IP Networking and Security; in addition, participants shall learn the IP- converged Next Generation Network Characteristics, Architecture, requirements and services.

Course Objectives and key Benefits

- Understand Converged Network Principles
- Understand IP Routing basics
- Understand IP Security basics
- Understand the Characteristics of IP Converged Networks - NGN
- Explore the IP Converged Network Architecture

Pre Requisite

Basic understanding of IP, basic understanding of Networking

Who Should Attend?

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

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Course Outline:

I. Introduction to Converged Networks

A. Fundamentals

1. Voice Network Requirements
2. Data Network Requirements
3. Transmission Systems
    a. Wire-line Transmission Types and Characteristics
    b. Wireless Transmission Types and Characteristics
4. QOS Considerations

II. IP Networking

A. IP Routing

1. Concepts
2. Internet Protocol (IP)
    a. IP/ICMP – Internet Control Message Protocol
    b. IP Addressing
3. IPV6
4. Transmission Control Protocol – TCP
5. User Datagram Protocol – UDP
6. Real Time Protocol – RTP
7. Routing Protocols
    a. Routing Information Protocol – RIPv1-RIPv2
    b. Open Shortest Path First – OSPF
    c. Border Gateway Protocol – BGP
    d. Intermediate System to Intermediate System – IS-IS
8. Quality of Service in Routing
    a. Differentiated Services
    b. Multi-Protocol Label Switching - MPLS

B. Networking Security

1. Types of Security Threats
2. Privacy Techniques for Encryption

3. Firewalls and Personal Firewalls
4. Systems for Intrusion Detection and Prevention
5. Network Access Control

III. IP Converged Networks

A. Converged IP Networks Characteristics

1. Media Independent IP Networks
2. Enabling New Features
3. Integration between Applications Capability
4. One Network for all Communications
5. Unified Communications Capability
6. Less Demanding Networks
7. Lower Installation Time Requirements
8. Lower Maintenance Costs
9. Future Growth Guarantees

B. NGN- A Converged Network

1. A Single Platform – For Voice and Data
2. Unrestricted Access to Different Services
3. NGN Service Assurance
4. Resiliency Recommendations
    a. High-Risk Service Identification
    b. Classification of Risks
    c. Custom Service Availability Requirements
    d. Analyzing the Threats
5. Protection against Single Points of Failure
    a. Intelligent Routing Algorithms
    b. Packet Switched Architecture
    c. Selection of Components with Inherent Resilience
6. Use of Different providers Option
7. Converged Networks – Separation between Networks and Services
8. Access Network Considerations
9. Core Network Considerations
10. IP/MPLS Technology

11. Redundant Capacity

C. IP Converged Architecture –NGN

1. 3-Tier Architecture
2. Application Layer
    a. Independent Service Layer
    b. Application Servers
3. Call Control Layer
    a. Session Servers
    b. Session Initiation Protocol -SIP
4. Transport Layer
    a. Media Servers and Routers
5. IMS Core Infrastructure Functionality

D. Requirements of Convergence

1. High Availability
2. Comprehensive Security
3. Voice-Quality Connections
4. Ease of Management

E. Technologies of Convergence

1. IP Multimedia Subsystem – IMS
2. Session Initiation Protocols – SIP
3. IPTV
4. Voice over IP
5. Voice Call Continuity

F. Convergence Services

1. Fixed Mobile Convergence
2. Mobile-to-Mobile Convergence
3. Location Based Services
4. Video on Demand
5. Voice over IP