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Course Name

Practical Industrial Data Communications and Telecommunications

Sector Name

Information Technology

Document Type

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Practical Industrial Data Communications and Telecommunications

Course Introduction

This training course is designed to provide participants with a comprehensive introduction to the fundamental concepts and advanced topics necessary for understanding and managing modern networks. Over two days, participants will learn about key networking components, protocols, and models, as well as the practical skills needed to set up, configure, and troubleshoot both wired and wireless networks.

The course covers essential areas such as IP addressing, subnetting, network security, and performance optimization, ensuring a well-rounded understanding of the subject. Additionally, emerging trends like cloud computing, 5G, and network virtualization are explored to prepare participants for future developments in the field.

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Target Audience

- ✓ Network Administrators
- ✓ IT Professionals: IT staff who need to enhance their networking knowledge and skills to support their roles.
- ✓ System Administrators: Professionals who manage and configure servers and require a solid understanding of network concepts.
- ✓ Network Engineers
- ✓ Technical Support Specialists: Support staff who troubleshoot and resolve network-related issues.
- ✓ IT Managers and Directors: Leaders who oversee IT departments and need to understand network fundamentals and emerging trends.
- ✓ Network Security Specialists
- ✓ Consultants: IT consultants who advise clients on network design, implementation, and troubleshooting.
- ✓ Cloud Computing Professionals
- ✓ Telecommunications Professionals

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Learning Objectives

- ✓ Understand the fundamental concepts and components of data communications and networking.
- ✓ Gain knowledge of network protocols, models, and the hardware required for setting up and managing networks.
- ✓ Develop skills to troubleshoot common networking issues and optimize network performance.
- ✓ Explore advanced topics such as IP addressing, wireless networking, and emerging trends in cloud computing and network virtualization

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Course Outline

✓ Day 01

Fundamentals of Data Communications

Introduction to Data Communications

- ✓ Definition and importance of data communications
- ✓ Historical development of data communications
- ✓ Key components (transmitter, receiver, medium)
- ✓ Types of data communication systems (point-to-point, point-to-multipoint)

Networking Basics

- ✓ Overview of network types (LAN, WAN, MAN)
- ✓ Network topologies (star, mesh, ring, bus)
- ✓ Network architectures (client-server, peer-to-peer)
- ✓ Differences between public and private networks

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Course Outline

✓ Day 02

Network Protocols and Models

- ✓ OSI model layers and their functions
- ✓ TCP/IP model and comparison with OSI
- ✓ Common protocols (HTTP, FTP, TCP, UDP)
- ✓ Importance of protocols in ensuring reliable communication

Data Transmission Methods

- ✓ Wired vs. wireless transmission
- ✓ Analog vs. digital signals
- ✓ Synchronous vs. asynchronous transmission
- ✓ Transmission media (coaxial cable, fiber optics, radio waves)

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Course Outline

✓ Day 03

Networking Hardware

- ✓ Overview of routers, switches, hubs, and network interface cards (NICs)
- ✓ Functions and differences of each device
- ✓ Installation and configuration of networking devices
- ✓ Introduction to network cabling and connectors

Network Security Basics

- ✓ Fundamentals of network security
- ✓ Introduction to firewalls, VPNs, and encryption
- ✓ Common network security threats (malware, phishing, DDoS attacks)
- ✓ Basic strategies for protecting network resources

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Course Outline

✓ Day 04

IP Addressing and Subnetting

- ✓ Understanding IP addressing (IPv4 and IPv6)
- ✓ Structure and classes of IP addresses
- ✓ Subnetting and subnet masks
- ✓ Calculating subnets and IP ranges

Wireless Networking

- ✓ Wireless standards (Wi-Fi, Bluetooth)
- ✓ Wireless network setup and configuration
- ✓ Security protocols for wireless networks (WEP, WPA, WPA2)
- ✓ Troubleshooting wireless network issues

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Course Outline

✓ Day 05

Advanced Networking Concepts and Practical Applications

Network Performance and Management

- ✓ Monitoring network performance
- ✓ Tools and techniques for network management (SNMP, network analyzers)
- ✓ Quality of Service (QoS) in networks

Performance optimization strategies

Network Troubleshooting

- ✓ Common networking issues and solutions
- ✓ Diagnostic tools and techniques (ping, traceroute, network scanners)
- ✓ Step-by-step troubleshooting process
- ✓ Documenting and reporting network issues

Introduction to Cloud Networking

- ✓ Basics of cloud computing and networking
- ✓ Cloud service models (IaaS, PaaS, SaaS)
- ✓ Advantages and challenges of cloud-based networks

✓ Examples of cloud networking services (AWS, Azure, Google Cloud)

Emerging Trends in Networking

✓ Latest advancements in networking technologies (SDN, 5G)
✓ Impact of IoT on networking
✓ Network virtualization and its benefits
✓ Future trends and their potential impact (edge computing, AI in networking)

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
June 14, 2027	June 18, 2027	5 days	4250.00 $	UAE , Dubai
Aug. 30, 2027	Sept. 3, 2027	5 days	4950.00 $	England , London
Oct. 18, 2027	Oct. 22, 2027	5 days	4250.00 $	UAE , Abu Dhabi
Jan. 31, 2027	Feb. 4, 2027	5 days	4250.00 $	Bahrain , Manama

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