ROYAL INSTITUTE OF INFORMATION & MANAGEMENT

BASICS NETWORKING

CHAPTER 1 Networking Basics

Introduction to Networking Advantages of Networking Types of Network 1 Local Area Network (LAN) LAN features Basic LAN components Type of LAN/LAN Peer-to-peer (workgroup) Campus Area Network 2 Metropolitan Area Network 3 Wide Area Network

The OSI Reference Model Why OSI reference model evolved. Features /adv of OSI reference Model. Data Encapsulation, de encapsulation. Client server

A Brief Review of OSI Reference Model

1. Physical Layer 2. Data Link Layer 3. Network Layer

4. Transport Layer 5. Session Layer 6. Presentation Layer

7. Application Layer

CHAPTER 2 Network Topology

Introduction of topology Physical Topology Logical Topology Topologies Bus Topology Star Topology Ring Topology Mesh Topology Hybrid Topology Star-Bus Topology Star-Ring Topology

CHAPTER 3 Ethernet Technologies

Introduction Ethernet—Brief History Ethernet 802.3 The IEEE 802.3 Logical Relationships to OSI Reference Mode The Ethernet Frame Format Frame Transmission Full Duplex Transmission Half Duplex Transmission – The CSMA/CD Access Method

The Ethernet Physical Layer 10-Mbps Ethernet—10 Base T 100—Mbps Fast Ethernet 1000—Mbps Gigabit Ethernet 1000 Base T

CHAPTER 4 Network Cabling

Introduction Network Cables (bounded media)

- 1. Twisted Pair Cable
 - Unshielded Twisted Pair (UTP)
 - UTP cable connector
 - Shielded Twisted Pair (STP)
- 2. Coaxial Cable Coaxial Cable Connectors
 3. Fiber Optic Cable Fiber Optic Connector Network cabling

 Color code standards
 Ethernet cabling
 Straight cabling
 Cross cabling
 Rolled-over cabling

CHAPTER 5 Connecting Devices/Network Devices

Introduction Half Duplex & Full Duplex Broadband and Baseband Coccision domain Broadcast

1. Hubs Types of Hubs 2. Routers **Router Operation Router Responsibility Router Features** 3. Bridges and Switches **Bridges** Types of Bridges **Bridge Features** Switches Switch Features Types of Switches Ethernet switch/ LAN switch ATM switch FSDW switch

FIR switch

Benefits of Switching Difference between bridge & switch Similarities between bridge & switch

4. Modems Characteristics of Modem

5. Wireless Networking

6. Gateways

- 7. CSU/DSU Identification of Network Components - RJ-11 Connecter, RJ-45 Connecter - AU1 Connector
 - BNC Connecter
 - ST Connecter, SC Connecter

Devices operating in physical Layer Devices operating in Data link Layer Devices operating in Network Layer

CHAPTER 6 IEEE Standards

Introduction IEEE standards Ethernet frame Token Ring frame

CHAPTER 7 MAC Address

Introduction to MAC Address MAC Address Need for MAC Address MAC vs. IP Addressing Identify MAC Address In Windows In UNIX or Linux In Windows XP

CHAPTER 8 IP Address

Introduction IP Address Class A, B, C, D, E Addresses Reserved Address Subnets Types of Subnetting Subnetting(FLSM) Variable Length Subnetting(VLSM) Subnet Masking Classes Inter Domain Routing (CIDR) Special IP Addresses Unicasting, Broadcasting and Multicasting Broadcasting Limited Broadcast Address Network Directed Broadcast Address Subnet Directed Broadcast Address Multicasting Network Masks Understanding Subnetting Examples Sample Exercise 1 Sample Exercise 2 IPv4 Addressing Notation IPv6 Addressing Notation Case Study: IP Addresses and Subnetting Scenario Analysis

CHAPTER 9 Communication Protocols

Introduction to Protocol Layers in TCP/IP modes Process/ apply layer Host-to Host layer Internet layer Network Interface layer Hyper Text Transfer Protocol (HTTP) File Transfer Protocol (FTP) Trivial File Transfer Protocol (TFTP) Domain Name System (DNS) Transmission Control Protocol (TCP) TCP Port User Datagram Protocol (UDP) Internet Control Message Protocol (ICMP) Protocols at different layers Telnet

Internet Message Access Protocol (IMAP) Simple Mail Transfer Protocol (SMTP) SMTP security and spamming Post Office Protocol (POP) Post Office Protocol version 3. (POP3) Hyper Text Transfer Protocol Secure (HTTPS) Network Time Protocol (NTP) Network News Transport Protocol (NNTP)

CHAPTER 10 DHCP (Dynamic Host Configuration Protocol)

Introduction IP Address Allocation BOOTP Compatibility Three mechanisms of IP Address Allocation Allocating a new IP Address Reusing a Previously allocated Network Address

CHAPTER 11 Wireless technology

Introduction to Wireless Technology

The 802.11 Standards Configuring Wireless Internetwork