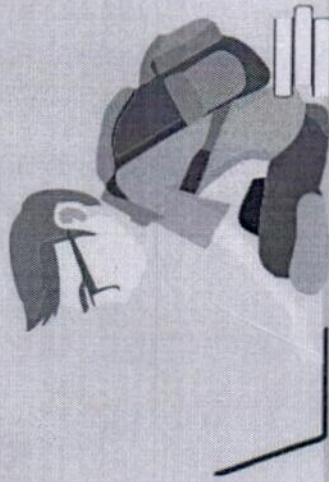


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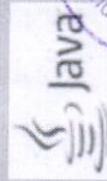
ROUTING & SWITCHING

Priyank Singhal, 9319905957
Rajendra Prasad Pandey, 9411636250



PHP Professionals

Mr P K Shah, 9917703333
Mr Manish Joshi, 9897147852



Java Essential
The Professional Module

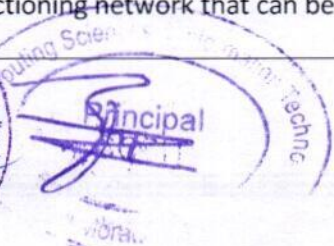
Dr Rajeev Kumar, 9897672215
Mr. Amit Vishnoi, 9528716907



Faculty of Engineering & Computing Sciences, Teerthanker Mahaveer University, Moradabad - 244 001, U.P., INDIA
Contact No.: +91 - 9568516000, 9568517000, 7351418000 | Website: www.tmu.edu.in

CCNA Routing and Switching Syllabus (Module 1 - Introduction to Networks)

Chap No.	Title	Outline
1	Explore the Network	This chapter introduces the platform of data networks upon which our social and business relationships increasingly depend. The material lays the groundwork for exploring the services, technologies, and issues encountered by network professionals as they design, build, and maintain the modern network.
2	Configure a Network Operating system	In the CCNA course of study, students learn to configure both devices that connect to the network (end devices such as PCs) and devices that connect networks together (intermediary devices like routers and switches). The Cisco Internetwork Operating System (IOS) is a generic term for the collection of network operating systems used by Cisco networking devices. Cisco IOS is used for most Cisco devices, regardless of the type or size.
3	Network protocols and Communication	It is important to learn the use of generally-accepted models that describe network rules and functions. Within this chapter, student will learn about these models, as well as the standards that make networks work, and how communication occurs over a network.
4	Network Access	This chapter begins with the general functions of the physical layer and the standards and protocols that manage the transmission of data across local media. It also introduces the functions of the data link layer and the protocols associated with it.
5	Ethernet	This chapter examines the characteristics and operation of Ethernet as it has evolved from a shared media, contention-based data communications technology to today's high bandwidth, full-duplex technology.
6	Network Layer	This chapter focuses on the role of the network layer. It examines how it divides networks into groups of hosts to manage the flow of data packets within a network. It also covers how communication between networks is facilitated. This communication between networks is called routing.
7	IP Addressing	This chapter examines in detail the structure of IP addresses and their application to the construction and testing of IP networks and subnetworks.
8	Subnetting IP Networks	This chapter examines, in detail, the creation and assignment of IP network and subnetwork addresses through the use of the subnet mask.
9	Transport Layer	The processes described in the OSI transport layer accept data from the application layer and prepare it for addressing at the network layer. A source computer communicates with a receiving computer to decide how to break up data into segments, how to make sure none of the segments get lost, and how to verify all the segments arrived. When thinking about the transport layer, think of a shipping department preparing a single order of multiple packages for delivery.
10	Application Layer	In this chapter will explore the role of the application layer and how the applications, services, and protocols within the application layer make robust communication across data networks possible.
11	Build a small Network	Up to this point in the course, we have considered the services that a data network can provide to the human network, examined the features of each layer of the OSI model and the operations of TCP/IP protocols, and looked in detail at Ethernet, a universal LAN technology. The next step is to learn how to assemble these elements together in a functioning network that can be maintained.



CCNA Routing and Switching Syllabus (Module 2 - Routing and Switching Essentials)

Chapter No.	Title	Outline
1	Routing Concept	This chapter will answer the question, "What does a router do with a packet received from one network and destined for another network?" Details of the routing table will be examined, including connected, static, and dynamic routes.
2	Static Routing	In this chapter, sample topologies will be used to configure IPv4 and IPv6 static routes and to present troubleshooting techniques. In the process, several important IOS commands and the resulting output will be examined. An introduction to the routing table using both directly connected networks and static routes will be included.
3	Dynamic Routing	This chapter introduces dynamic routing protocols. It compares the use of static and dynamic routing. Then the implementation of dynamic routing using the Routing Information Protocol version 1 (RIPv1) and version 2 (RIPv2) is discussed. The chapter concludes with an in-depth look at the routing table
4	Switched Networking	This chapter begins an examination of the flow of traffic in a modern network. It examines some of the current network design models and the way LAN switches build forwarding tables and use the MAC address information to efficiently switch data between hosts.
5	Switch Configuration	This chapter examines some of the basic switch configuration settings required to maintain a secure, available, switched LAN environment.
6	VLANs	This chapter will cover how to configure, manage, and troubleshoot VLANs and VLAN trunks. The second part of this chapter focuses on implementing inter-VLAN routing using a router. Inter-VLAN routing on a Layer 3 switch is covered in a later course.
7	Access Control Lists	This chapter explains how to configure and troubleshoot standard IPv4 ACLs on a Cisco router as part of a security solution. Included are tips, considerations, recommendations, and general guidelines on how to use ACLs. In addition, this chapter includes an opportunity to develop your mastery of ACLs with a series of lessons, activities, and lab exercises.
8	DHCP	This chapter explores the functionality, configuration, and troubleshooting of both DHCPv4 and DHCPv6.
9	NAT for IPv4	The chapter discusses how NAT, combined with the use of private address space, is used to both conserve and more efficiently use IPv4 addresses to provide networks of all sizes access to the Internet. This chapter covers:
10	Device Discovery, Management, and Maintenance	In this chapter, you will explore the tools network administrators can use for device discovery, device management, and device maintenance. Cisco Discovery Protocol (CDP) and Link Layer Discover Protocol (LLDP) are both capable of discovering information about directly connected devices.

