COMPUTER NETWORKS
B19CS5030

ASSIGNMENT-1
MOOC COURSE REPORT

M.TEJASWI
R19CS185
5th SEM ,'C' SECTION

INDEX

COURSE SUMMARY

This course “ComputerNetworksFundamentals” is provided by Charles Sturt University, and the course is delivered by Matt Constable.It gives us a basic understanding of computer networks through the form of video content, PPT’s, and many scenarios. There are a total of 4 modules in this course which gives us explanations of many topics in detail.There are a lot of resources provided in this course like youtube videos and a few practical sessions. After every module there is a mock test of 5 questions. Which we can answer after completing the course content of that module. After all the modules we have a final assessment consisting of 40 questions. After we pass the test we get a course of completion.

Course Contents

Module 1: Networking Concepts

- Study Materials
- YouTube Tutorials
- 2 Practical Lab Sessions
- Mock Exam

Module 2: Infrastructure

- Study Materials
- YouTube Tutorials
- 3 Practical Lab Sessions using Packet Tracer Application
- Mock Exam

Module 3: Network Operations

- Study Materials
- YouTube Tutorials
- 3 Practical Lab Sessions
- Mock Exam

Module 4: Network Security

- Study Materials
- YouTube Tutorials
- 3 Practical Lab Sessions
- Mock Exam

Module 1 : Networking Concepts

In this module we learn how networks are used, and learn about the types of applications found on most networks: Client server ,File and Print Services ,Communication Services.

We learn about networking hardware and physical topologies : LAN's and their hardware , MAN's and WAN's. The seven-layer OSI model: Application layer, presentation layer,session layer, transport layer, network layer, data link layer and physical layer. Switches, its installation on some common components of switches. We learn about the different switching methods. VLANs and Trunking, how they are used to logically separate networks within networks, its advantages and reasons for using it. STP(Spanning Tree Protocol), what it is and about it's history and different cisco versions. Routers, how they direct data between network nodes and how they operate in the network layer, and the different routing protocols. We also briefly learn about cloud computing.

Module 2 : Infrastructure

In this module we learn about WAN essentials: Network traversal, and connecting LAN’s, Properties of LAN and WAN. Different topologies: Bus, ring, star,mesh. Tiered topology WAN: Sites connected to star or ring formations. PSTN, and frame relay: It is a dial up connection and is designed for long distance and performs error checking. DSL(Digital Subscriber Line), how it operated over PSTN: Data it supports and its modulation techniques, xDSL, Asymmetrical and symmetric, Downstream, Upstream. Broadband cables. Virtualization, how it emulation a computer, operating system environment, or application on a physical system and ways to configure it. It’s advantages and disadvantages. Virtual switches and bridges, how they are created and connected. Remote Virtual Computing, how it works, its advantages and disadvantages. VPN, how it logically defines networks over public transmissions.

Module 3 : Network Operations

We learn what integrity, availability and uptime is: How they are compromised by breaches and disasters.We learn about malware and malicious software, virus and learn about fault tolerance. How we can prevent flaws in our networks and methods to do it. Network design: What a good design should look like,Keep it simple as possible. We look at many scenarios.Servers:Critical servers and server mirroring. Storage and data backups: Different methods for it, How to control them, Strategies for backup. Disaster recovery: How to restore critical functionality and data, Planning. Fundamentals of network management: Monitoring and access of all aspects

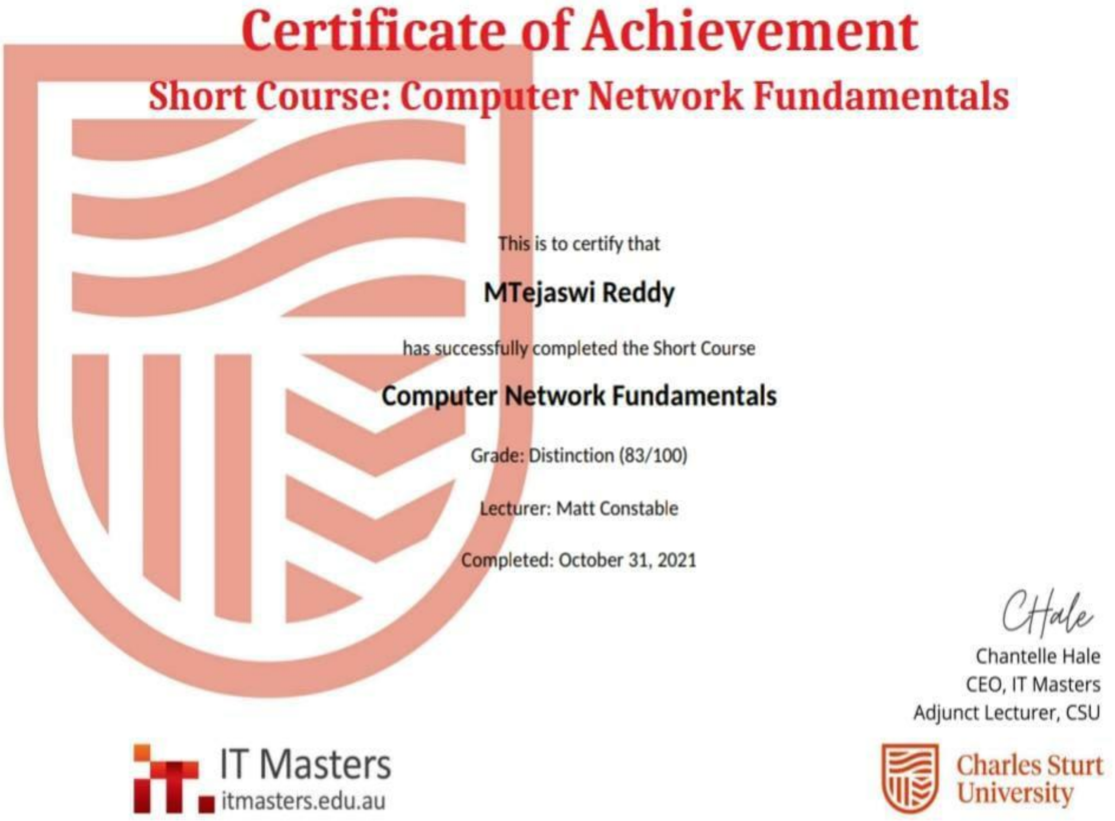
Module 4 : Network Security

Security assessment: How to examine a network’s risks, Types of risks. Effective security policies and goals. Physical security: Locks, Restriction of physical access to networks. Security in network design: How to control traffic through routers. Intrusion Detection and Prevention: How to detect suspicious network activity, IDS, Port mirroring, IPS, NIPS. Firewalls: How they filter and block certain traffic,Location. Scanning tools,how to use they during assessment: NMAP, Nessus, Honeypot Encryption: Uses of algorithms, How to keep info private, Key encryption. Different authentication protocols:How they verify user credentials and rules to follow

CONCLUSION

Computer networks operate using a varying set of Hardware and software. All packet-switched networks use Transmission Control Protocol/Internet Protocol (TCP/IP) to establish a standard means of communication. Each endpoint in a network has a unique identifier that is used to indicate the source or destination of thetransmission. Identifiers include the node's IP address or Media Access Control (MAC) address. Endpoint nodes, which are used for routing purposes, include switches and routers, servers, personal computers, phones, networked printers and other peripheral computing devices, as well as sensors and actuators. The Open Systems Interconnection (OSI) model defines how data is transferred between computers. A network's capacity is how much traffic the network can support at any one time while still meeting service-level agreements (SLAs). Network capacity is measured in terms of bandwidth. Bandwidth is quantified by the theoretical maximum number of bits per second (bps) that can pass through a network device. Throughput is a measure of the actual speed of a successful transmission after accounting for factors like latency, processing power and protocol overhead.

CERTIFICATE



Certificate of Achievement

Short Course: Computer Network Fundamentals

This is to certify that

MTejaswi Reddy

has successfully completed the Short Course

Computer Network Fundamentals

Grade: Distinction (83/100)

Lecturer: Matt Constable

Completed: October 31, 2021

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