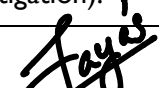


Canterbury Institute of Management (CIM)

ASSESSMENT COVER SHEET



1. Personal Details			
Student ID	Given Name(s)	Surname	Email Address
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Campus	Darwin Campus		
Course Title and Code	MBIS404 Networks and Communications		
Assessment Title	Assesment Task - <i>Week 4</i>		
Due Date & Time	27/10/2024		
Course Lecturer/Tutor Name: Sharad Neupane		Assessment Word Count (if applicable): 467	
2. Student Declaration			
<p>By signing and submitting this coversheet, I/we declare that:</p> <ul style="list-style-type: none"> ✓ This assessment submission is my/our own work unless otherwise acknowledged (including the use of generative AI tools) and is in accordance with the Institute's Academic Integrity and Honesty Policy available on the website. ✓ No part of this assessment has been submitted previously for advanced standing or academic credit in this or any other course. ✓ I/we certify that we have not given a copy or have shown a copy of this assessment item to another student enrolled in the course, other than members of this group. ✓ I/we are aware that the Lecturer/Tutor of this assessment may, for the purpose of assessing this assessment task communicate a copy of this assessment task to a plagiarism checking service to detect possible breaches of academic integrity, for example, plagiarism, recycling, cheating, contract cheating, or unauthorised use of generative AI (which may then retain a copy of the item on its database for the purpose of future investigation). 			
Signature:		Date:	24/20/24

Long Distance Connections

A ***Point-To-Point*** connection could be established using ***Fibre Optic*** cables. These types of cables are preferred for use cases such as if this premises contains two departments (sub-networks) which are located significantly apart. These cables do offer higher bandwidth and distance without needing for repeaters, although installation and maintenance costs associated are comparatively high for a small to medium enterprise.

If a network is needed to be formed with number of computers that are situated significantly apart from each other but below 100m from a switch, a ***Category 6a*** cable could be used. This is the successor or advanced type of cables that are evolved from widely used Category 5 cables. These cables offer upto ***10Gbps*** of speed which is ideal for commercial use and low latency applications.

Point-to-Point Topology

This topology is ideal for scenarios where two nodes needs to be linked together directly, a use case is far more common in large scale businesses where multiple remote locations wanting to access a central shared resource such as a mainframe or onsite legacy systems. In this scenario each remote location can create a *point-to-point* connection to central resource such as a head office.

This simple topology offers fantastic bandwidth capabilities as the connection is dedicated for specific use case. At the same time, the simplicity of the topology arrangement provides operational ease and straight forward failure detection and remedy options. Most advanced business use cases often employ disaster recovery fallback option of alternative connection method as well since this arrangement is prone to what is known as *single point of failure*.

Managing Hybrid Topology

A *hybrid* topology is a combination of topologies such as bus, star, mesh, point-to-point etc. Each of these individual topologies has their own advantages and disadvantages. When combined, it increases the overall complexity of the network resulting in higher maintenance costs and skills required to install, operate and manage the network.

If the network is not properly planned out prior to the installation it can lead to performance issues and limitations which may require network downtime or complete reimplementation to remedy the situation.

In terms of scalability, although hybrid topology would enable growth of network over period of time, it will also increase the complexity exponentially and reduce reliability and performance which can be identified as challenges of a hybrid network.

Bus Topology; Network Load

The fundamental concept of this topology is, a single backbone connection (*often referred as the backbone connection*) is shared by the peer nodes connected to the network. This means all nodes that intends to transmit data over the network has to share one line of connection resulting in huge performance penalties for all the nodes connected to the bus.

Therefore, this topology is least favourable for full duplex multi peer networks in modern standards.

Evaluation Comments