



UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR BAHRU
SCHOOL OF COMPUTING,
SEMESTER 1, SESSION 2021/2022

SECR1213-02 NETWORK COMMUNICATION

GROUP PROJECT

TASK 3 : CHOOSING APPROPRIATE LAN DEVICES

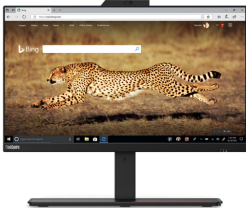

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LIST OF DEVICES

Type of devices	Usage	Description	Quantity	Price/unit (RM)	Total (RM)
 PC Desktop: <u>ThinkCentre</u> <u>M90a AIO PC</u>	Used as a learning device for students in the lab	Processor: 10th Generation Intel® Core™ i5-10400 Processor (6 Cores / 12 Threads, 2.90 GHz, up to 4.30 GHz, 12 MB Cache, 65W, DDR4-2666) Operating System: Windows 11, 64 bits Memory: 16 GB SO-DIMM DDR4 2666MHz Monitor/Display: 23.8" up to FHD IPS Privacy Guard (1920 x 1080, 350 nits); Touchscreen available on other panels + Keyboard & Mouse +Microsoft Office Home and Student 2021	120	3586.99	430438.80
 D-link 48-Port Gigabit + 4-Port SFP L2 Smart Switch (DGS-1210-52)	Used to connect all the computers in order to be able to communicate and share information with each other.	Ethernet standard: 10/100/1000 Base-T Network cables: -UTP Cat.5, Cat.5e, Cat.6 -EIA/TIA-568 100-ohm STP Transmission method: Store and forward Full/Half duplex: Full/half duplex for 10/100Mbps speeds Full duplex for Gigabit speed Media Interface Exchange: Auto MDI/MDIX adjustment for all twisted-pair ports +Support IEEE 802.1Q VLAN traffic segregation +Access Control List (ACL) feature to enhances network security	8	1929.00	15432.00

		<ul style="list-style-type: none"> +Auto Surveillance VLAN for easy integration with IP-based surveillance systems +Loopback detection (LBD) and broadcast storm control to avoid network downtime +Quality of Service (QOS) and bandwidth control to ensure smooth operation +Support Web-based GUI, Smart Console , Network Assistance Utility Cable diagnostics function to help troubleshooting wiring problem +featuring D-Link Green 3.0 technology. +allows more flexibility in power allocation for a variety of powered devices with affordable installation costs. 			
 <p>Cisco ISR4331-SEC/K9 Enterprise Router</p>	Used to improving internet connection	Total onboard WAN or LAN 10/100/1000 ports: 3 Memory DDR3 ECC DRAM: 4GB Flash Memory: 4GB Aggregate Throughput: 100Mbps-300Mbps	2	12091.44	24182.88
 <p>Dell PowerEdge R740 Rack Server</p> <p>(4214R, 16GB, 600GB, PERC H730P RAID Controller)</p>	Used to store data and provide specification services for each lab	Server Processor: Intel Xeon Silver 4214R Processor - 2.4GHz, 16.5M Cache, 12 Cores - Max Turbo Frequency 3.5GHz Server Memory: 16GB RDIMM, 2666MT/s, Dual Rank Server Storage: 600GB 10K RPM SAS 12Gbps 512n 2.5in Hot-plug HDD Server Optical Drive: DVD+/-RW Server Slots:- - Front Ports: 1 x	4	15739.00	62956.00

		<p>Dedicated iDRAC direct USB 2 x USB 2.0 1 x USB 3.0 (optional) 1 x VGA</p> <p>- Rear Ports: 1 x Dedicated iDRAC network port 1 x Serial 2 x USB 3.0 1 x VGA</p> <p>Server Raid: PERC H730P RAID Controller, 2Gb NV Cache</p>			
 <p>Ubiquiti Networks UniFi nanoHD Access Point</p>	Used to extending the wireless coverage of the existing network as well as increasing the number of users that can connect to it in one time	<p>WiFi Standard: 802.11ac Wave 2</p> <p>Data Throughput: 1733 Mb/s</p> <p>MIMO: 4x4 MIMO on the 5 GHz Band and 2x2 MIMO on the 2.4 GHz Band</p> <p>Number of Gigabit Ethernet Port: 1</p> <p>PoE Compliant: 802.3af</p> <p>WiFi Encryption: WEP/WPA/WPA2</p>	7	2228.42	15598.94
 <p>Fiber Optic Cable UniFi TIME Maxis Modem Router</p>	Used to transmit light between the two ends of a fibre, they are widely used in fiber-optic communications, offering transmission over greater distances and at higher bandwidths	<p>Connector: SC connector Work wavelength: 1310nm, 1550nm Fiber type: Singlemode (9/125)</p> <p>Application:</p> <ul style="list-style-type: none"> • Telecom and Datacom • Storage Network • CATV & Multimedia Application • Systems integration for Long Haul, Metro and Access Network • Fiber to the Indoor (FTTX) Test 	8	63	504

	than electrical cables.				
 <p>Cat6 Snagless Unshielded (UTP) PVC CM Ethernet Network Patch Cable</p>	Used to connect a computer to a router, a switch or hub for signal routing.	Data Rate Support: 1000Base-T and Maximum to 10GBase-T Standard Bandwidth: 250MHz PoE Compatibility: PoE/PoE+/PoE++ Wire Scheme: T568B, Straight Operating Temperature: -20 to +75°C (-4 to 167°F) Installation Temperature: -10 to +50°C (14 to 122°F) Cable Jacket: PVC CM (Round) Length: 35ft (10.7m) (Including Plugs) Connectors: RJ45(Male) Conductor Type: Stranded Pure Bare Copper Gauge (AWG): 24(7/0.20mm)	120	42	5040
 <p>Wall Faceplate 4 Ports Keystone RJ45 RJ11 Toolless CAT6 CAT7 Faceplate CAT5 CAT3 CAT8 Jack Four Port Malaysia</p>	Used to protect the components of a device and to improve the device's design and look.	Material: ABS Modular Type: Keystone jack, Inline coupler	11	60	660
	Used to protect the network by	Wireless Type: 802.11a/b/g/n Connectivity Technology: Bluetooth	1	1860	1860

FORTINET FortiGate-60E / FG-60E Next Generation (NGFW) Firewall Appliance, 10 x GE RJ45 Ports	filtering traffic and blocking outsiders.	Number of Ports: 10 Data Transfer Rate: 150 Megabits Per Second			
 RS PRO Cat5e 24 Port RJ45 RJ Patch Panel STP 1U Black	Used to to keep large numbers of cables organized	LAN Category: Cat5e Number of Ports: 24 Interface Type: RJ45 Shield Type: STP Rack Height: 1U Height: 44.45mm Width: 483mm Depth: 115mm Colour: Black	6	387.24	2323.44
TOTAL				RM 558966.06	

REFLECTION

Are you surprised by the prices?

Surely at first we were startled by the prices of these devices as the figures could turn up to tens of thousand for some devices when we did the research on these devices. Before we did the research, we expected that the figures would only turn to a couple of thousands and never thought that it would cost more than that for some devices. This shows that before we did the research, we were not particularly acknowledged how much does it cost to have these LAN devices. However, these situations where these devices cost us more than we expected are very common when we continue to do some deeper research on them.

Have you ever considered cost as a factor for choosing networking devices?

Yes, it is because cost is one of the most important elements when choosing network equipment to install in a new building. The entire cost of the devices we purchased is RM 558966.06, which is quite pricey but we managed to work within the budget which is less than 1.5M. We think the total cost is well worth it considering that we would be using them for a long time. Fortinet, HUAWEI, Dell, and D-Link are among the most commonly used brands, and they all represent a better quality. As a result, we could guarantee that the client might not have to spend anything more for the next 10 to 20 years.

What are the major differences between the same devices from different brands?

The major difference between the same devices from different brands are the popularity and the rating of the product. Devices or products that are produced by big companies or well-known brands are easy to gain more popularity no matter how high the quality of the products are. Thus, the rating and reviews of the products or devices from those brands are high due to many buyers and users.

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