



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

**NETWORK COMMUNICATIONS
(SECR 1213)**

**PROJECT
TASK 3: CHOOSING THE APPROPRIATE LAN
DEVICES**

**Submitted To:
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From:



GROUP 7 LAB RATS



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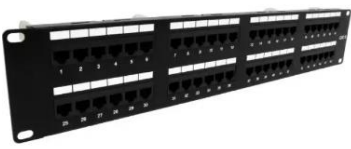

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LIST OF NETWORK DEVICES NEEDED AND DESCRIPTIONS

Type of Device	Usage	Description	Quantity	Price/unit (RM)	Total (RM)
Asus RT-AX58U Dual Band Wi-Fi Router 	Providing Internet access in the entire building.	<ul style="list-style-type: none"> • Supporting the latest Wi-Fi standard 802.11AX (Wi-Fi 6). • Supporting 160MHz bandwidth and 1024-QAM for better capacity and efficiency as well as dramatically faster wireless connections with a total networking speed of about 3000Mbps – 574Mbps on the 2.4GHz band and 2402Mbps on the 5GHz band. • Supporting not only MU-MIMO but also OFDMA technique to efficiently allocate the channels and communicate with multiple devices simultaneously. • Lifetime free AiProtection, powered by Trend Micro TM, blocks Internet security threats for all connected devices. 	2	614.49	1228.98
D-Link 48-Port 10/100/1000 Gigabit Smart Switch 	Connecting devices in a network to each other and allows them to communicate as well as share information.	<ul style="list-style-type: none"> • Network Technology: 10/100/1000Base-T • Ethernet Technology: Gigabit Ethernet • Power Description • Input Voltage: 110V AC • 220V AC • Power Source: Power Supply 	8	1845.49	14763.92

NetGear WAX214 Wireless Access Point 	Granting devices to connect to the Internet wirelessly if they cannot connect via wired media.	<ul style="list-style-type: none"> • Delivers 802.11ax high performance wireless connectivity • Supports dual-band concurrent WiFi 6 operations at 2.4GHz and 5GHz with a combined throughput of 1.8Gbps (600Mbps at 2.4GHz and 1200Mbps at 5GHz) • Powered by Power-over-Ethernet (PoE) or a DC power adapter 	6	699	4194
Dell PowerEdge R650XS Rack Server 	Storing data and supply access to data in each computer lab.	<ul style="list-style-type: none"> • 3rd Generation Intel® Xeon® Scalable processors • Supports up to 32 cores per CPU, and up to 16x DDR4 RDIMMs at up to 3200 MT/s • Built for fast growing solutions with an optimal footprint and Multi Vector Cooling 2.0 • Manage with iDRAC9 Enterprise, OpenManage Enterprise and Plugins, iDRAC Direct, and Quick Sync 2.0 • Full-stack management integration with Microsoft, VMware, ServiceNow, Ansible and many other tools for multiple operating environments, from on-premises to cloud to edge 	4	20166.91	80667.64

Cat6 Snagless Unshielded (UTP) PVC CM Ethernet Network Patch Cable 10.7m	Providing bigger bandwidth for better Internet connections and reliability in data transfer.	<ul style="list-style-type: none"> • Features 24AWG unshielded twisted pair stranded copper cable with a high performance modular plug at each end. • Snagless design protects the locking clips on the RJ45 connectors from being damaged or snapped off during installation. • Exceeds the performance of the Cat6 Ethernet network cable standard and offers the cost-effective solution for indoor Gigabit Ethernet data center applications, supporting up to 1000Mbps and 550MHz within 100 meters of cable. 	120	39	4680
MTP®-12 (Female) to MTP®-12 (Female) OM4 Multimode Elite Trunk Cable 10m	Providing medium for simultaneous and bi-directional data transfer.	<ul style="list-style-type: none"> • Designed for high-density fiber patching in data centers which need space saving and reduce cable management troubles. • With US Conec MTP® connectors and Corning ClearCurve® fiber, it is optimized for 10G/40G/100G high-density data center applications. 	8	505	4040
CAT5E/CAT6 2 Ports Faceplate	Preventing the entry of dust and ID labels to facilitate documentation of the cable structure in the network.	<ul style="list-style-type: none"> • Suitable for installing socket modules such as RJ45 and coaxial cable, and can be freely combined into components of various multimedia applications. • Embedded face frame, easy to install; panel surface with embedded chart and label location, easy to identify data and voice ports. • High quality new PC flame retardant raw materials. 	60	3.38	202.80

<div>Cat6 48-Port Patch Panel</div> <div></div>	Connecting various devices together	<ul style="list-style-type: none">• Category 6 performance• Unique color coded saddles• Industry standard IDC• High performance• Individually QA tested	8	155	1240
<div>PC Desktop</div> <div></div>	Support learning	<ul style="list-style-type: none">• Lenovo ThinkCentre Neo 30a• Operating System: Microsoft Windows 10 x64• Processor: Intel Core i5 (6th generation or newer)• Memory: 16GB RAM• Storage: 500GB internal hard drive• Display: 15” LCD monitor• Network Adapter: 802.11ac 2.4/5 GHz wireless adapter• Others: Webcam, lock, external drive for backups	120	3444	413280

SonicWall TZ300 Firewall 	Monitors and filters incoming and outgoing network traffic.	<ul style="list-style-type: none"> • Data Link Protocol: Ethernet, Fast Ethernet, Giga Ethernet • Firewall throughput: 750Mbps • Full Deep Packet Inspection (DPI): 100Mbps • IPS throughput: 300Mbps • Anti-malware throughput: 100Mbps • VPN throughput: 300Mbps • Connection rate: 5000 connections per second 	1	1900	1900
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Budget provided: RM1,300,000
 Total price of required devices: RM526,197.34
 Remaining budget: RM773,802.66

REFLECTION

1. Are you surprised by the prices? How were you surprised?

As we began researching the costs of the devices we required, we were pleasantly surprised to discover that the price for a switch per unit may range from RM RM1500 to RM 4500 and even more than that, especially for Cisco products that are quite expensive. We were shocked since before initiating the research we felt the pricing for the switch per unit was fairly affordable for this component. It implies that we did not fully grasp what the purpose of each component of the server and were unaware of the functionality of the equipment.

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

Yes, we have considered cost as a factor for choosing networking devices, but it wasn't the major factor because we are more concerned with the device's performance. Upon collecting the data and information for this research, we noticed that certain devices with the same specifications might have vastly different prices. At this point, we consider the pricing factor and try to choose the most affordable option and decent device performance for the components.

3. What are the major differences between the same devices from different brands? For example, Cisco and Huawei Routers.

Cisco Systems is an IT and networking brand that specializes in switches, routers, cybersecurity, and IoT and whose logo seems to be on every office telephone or conference hardware. Huawei is an information and communications technology (ICT) specializes in telecommunications equipment.

Cisco routers are said to be the best and secure routers. They're built to last, are easy to use, and have a user-friendly interface so you can set up the router quickly. Besides, cisco products meet the needs of corporations and offices of all dimensions and sorts. Huawei has some product line-ups that are like cisco devices but have their specific network hardware line-ups and IT solutions for various network requirements.

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MEETING MINUTES

1st Meeting

DATE : 21/11/2022 (MONDAY)

TIME : 6.00 PM - 7.00 PM

ATTENDEES: LIM JIE HAN

: LOKE RUI KEE

: MALLEYLENE PENEH

: JELIZA JUSTINE A/P SEBASTIN

LOCATION : ONLINE - GOOGLE MEET

GOAL : FOCUS ON COMPLETING THE TASK 3

DISCUSSION NOTES :

1). Firstly, the task leader, Lim Jie Han, gave a briefing for task 3, what the task was about, and the deliverables that need to be obtained.

2). Then, the meeting continued with task allocation. Each task is allocated to finish in one week respectively.

Task allocation

Research on different network devices	Lim Jie Han
Discussion & Decide which LAN device to choose	Lim Jie Han, Jeliza Justine A/P Sebastin, Malleylene Peneh, Loke Rui Kee
Reflection	Jeliza Justine A/P Sebastin, Malleylene Peneh
Meeting Minutes	Loke Rui Kee

Adjournment at 7.00pm.

Next meeting is scheduled on 19/11/2022 (MONDAY) at 7.00pm.

2nd Meeting

DATE : 19/12/2022 (MONDAY)

TIME : 7.00 PM – 8.00 PM

ATTENDEES: LIM JIE HAN

: LOKE RUI KEE

: MALLEYLENE PENEH

: JELIZA JUSTINE A/P SEBASTIN

LOCATION : ONLINE - GOOGLE MEET

GOAL : FOCUS ON COMPLETING THE TASK 3

DISCUSSION NOTES :

- 1). Firstly, each member updated their progress. Then, they reviewed their own part and others' parts.
- 2). Then, the members had a discussion to improve their respective tasks.
- 3). After that, the team has decided to complete the remaining tasks and set a time for all of us to review it before the submission.

Adjournment at 8.00pm.