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GROUP NAME- ELEVEN-NINE

List of Questions and Answers to Inquire/Research

1. What is the anticipated growth in postgraduate vs undergraduate students, and how will this affect lab requirements?

    i) Probably consists of a balanced number of undergraduate and graduate students, which raises the demand for adaptable lab and classroom layouts.

2. What are the specific networking devices required for the Cisco Network Lab?

    ii) Requires firewalls, switches, SD-WAN, and routers that meet the most recent Cisco training requirements.

3. What are the minimum bandwidth requirements for the labs to support high-speed internet in line with 4IR?

    iii) A fiber optic backbone that is fast enough to support video conferences, large downloads, and several labs— Bandwidth required = 7 Mbps × number of users.

4. What are the hardware requirements for the Embedded Lab (e.g., sensors, IoT devices, microcontrollers)?

    iv) Oscilloscope, Logic Analyzer, Multimeter, Hardware Debugger, Power Supply, and Soldering.

5. How will the hybrid classroom be utilized (e.g., class size, lecture type), and what technology will it need for efficient use?

    v) The hybrid classroom will support in-person and remote students with interactive tools and cloud storage. Many tools can be used such as Projectors, Smartboards, Laptops, tablets, phones, and more.

6. What level of security is required to prevent network breaches (e.g., firewalls, intrusion detection systems)?

    vi) Calls for many security measures, such as Employee Education, Remote monitoring, Firewalls, anti-virus software, and anti-spyware software.

7. How will you manage seamless transition from old to new equipment without disrupting services?

   vii) Equipment upgrades should be done gradually, beginning with less important areas to save downtime. Identifying and defining a clear reason, effectively communicating all associated benefits, and involving stakeholders and users in the evaluation process and actively listening to feedback.

8. What is the budget for the project, and are there any cost-saving alternatives for cutting-edge technologies?

   viii) Cost-balancing strategies could include leasing expensive gadgets or implementing scalable alternatives like cloud services. The budget of this project is 1 million Malaysian Ringgits.

9. What will be the power consumption and cooling requirements for the labs and equipment?

   ix) laboratory plug loads can range from 2.0 to 20.0 W per ft^2. For the cooling requirements, we will use: Air blast coolers, Indoor chillers, Heat exchangers, Outdoor chillers.

10. What will be the backup systems for data and power during outages?

    x) Uninterruptible Power Supply (UPS) and cloud-based data backups.

11. What wireless connectivity standards (e.g., Wi-Fi 6, 5G) should be implemented to future-proof the network?

    xi) Latest Wi-Fi 6 technology with provisions for future upgrades to Wi-Fi 7 or 5G. Also, Fiber Optic cables and LAN services. Here are some technologies samples that can be used in the lab system connection: Digital Subscriber Line (DSL), Cable Internet, Mobile Internet, Fiber Internet, Satellite Internet.

12. What kind of network management system should be used to ensure scalability and ease of management?

    xii) SDN, or software-defined networking, allows for remote management and simple scalability. Also, On-premises network management systems can be used for large campus networks that require greater performance and scalability. They also provide advanced features such as analytics, assurance, and artificial intelligence (AI) and machine learning (ML).

13. What is the expected number of users in the labs and lounge area at any given time, and how will this affect the network design?

    xiii) 30 workstations per lab with additional students using Wi-Fi, implying high bandwidth and multiple access points to maintain reliable connectivity for all users.

FESABLITY

1.**Demand & Capacity:** With anticipated growth the type of lab setup described can accommodate the needs of both the undergraduate as well as the graduate students.

2.Tech Compatibility: Specific devices and systems conform to the evolving Cisco standards and 4IR bandwidth requirements.

3.Budget & Resources: The organization has a budget of 1 million MYR, and courses that are presented in technological aspects also include options given for leasing so as to save the need to invest in other technology at great cost.

4.Management: A gradual upgrade plan reduces much disruption, thus enhancing transition.

5.Infrastructure: Back-up power, cooling and security are provided so as to guarantee that operations run smoothly.

6.Future-Proofing: Wi-Fi 6 and specifications for the support of 5G transition future connectivity requirements.

It may be possible to achieve the plan with the current resources, phase, and technology to enhance the growth and stability of business.

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