**Network Infrastructure Design for School Computer Lab**

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CS002.2 - NCS

Networks and cyber security

Network Design Logical Diagram

A diagram of a computer network

Description automatically generated

**Description:**

This diagram represents the logical network design for the school computer lab. The design includes:

* **Router:** Connects the school network to the internet.
* **Switch:** Connects all wired devices (desktops and printer) within the lab.
* **Wireless Access Point (WAP):** Provides wireless connectivity for the laptops.
* **Desktop Computers:** Eight desktop computers connected via wired Ethernet.
* **Laptops:** Four laptops connected wirelessly.
* **Printer:** Connected via wired Ethernet for centralized printing.

Device List in a Table

**Device List:**

| **Device** | **Model** | **Quantity** | **Cost per Unit** | **Total Cost** |
| --- | --- | --- | --- | --- |
| Router | ZLT S20 | 1 | Rs.19,500 | Rs.19,500 |
| Switch | PIXLINK | 1 | Rs.5100 | Rs.5100 |
| Wireless Access Point | Ubiquiti UniFi AP AC | 1 | Rs.3200 | Rs.3200 |
| Desktop Computers | Dell OptiPlex 3080 | 8 | Rs.118,000 | Rs.944,000 |
| Laptops | HP Pavilion 15 | 4 | Rs.180,000 | Rs.720,000 |
| Printer | HP LaserJet Pro M404 | 1 | Rs.49,000 | Rs.49,000 |
| Ethernet Cables | Cat6 10ft | 8 | Rs.1200 | Rs.9600 |

**Total Cost:** Rs.778,600

Justification for Selected Devices

**Justification for Selected Devices:**

1. **Router (ZLT S20):**
   * **Reason for Selection:** This router provides reliable performance with dual-band support and sufficient coverage for a small school network. It is cost-effective and easy to configure.
2. **Switch (PIXLINK):**
   * **Reason for Selection:** The PIXLINK is an 8-port gigabit switch that offers reliable performance at an affordable price. It is suitable for connecting all the wired devices in the lab.
3. **Wireless Access Point (Ubiquiti UniFi AP AC):**
   * **Reason for Selection:** This WAP provides robust wireless coverage and can handle multiple devices efficiently, making it ideal for connecting the laptops in the lab.
4. **Desktop Computers (Dell OptiPlex 3080):**
   * **Reason for Selection:** Dell OptiPlex 3080 desktops are reliable, cost-effective, and powerful enough for student use, ensuring smooth performance for educational software and applications.
5. **Laptops (HP Pavilion 15):**
   * **Reason for Selection:** The HP Pavilion 15 laptops are portable and offer sufficient processing power for most educational tasks. They provide flexibility for students to work from different locations within the lab.
6. **Printer (HP LaserJet Pro M404):**
   * **Reason for Selection:** The HP LaserJet Pro M404 is a reliable and cost-effective printer suitable for school use. It offers fast printing speeds and good print quality, essential for handling the printing needs of the lab.
7. **Ethernet Cables (Cat6 10ft):**
   * **Reason for Selection:** Cat6 Ethernet cables provide reliable and high-speed wired connections for the desktop computers and the printer, ensuring stable network performance.