



PHINMA ARAULLO UNIVERSITY
College of Information Technology and Engineering
Bachelor of Science in Information Technology



Final Project in ITE 292 - NETWORKING

“ Faculty Computer Laboratory ”

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Description of the Project

A faculty computer laboratory is a dedicated computer space or workspace within an educational institution, typically situated on a campus and specifically intended for use by faculty members in their roles as teachers and researchers. These computer labs are outfitted with a variety of computing resources, including desktop computers, laptops, or other computing devices, as well as software and tools relevant to the faculty's academic and administrative tasks.

Supporting faculty members' academic and research endeavors is the main goal of a faculty computer lab. It offers a location where instructors can carry out duties like;

1. Creating presentations, lecture notes, and other course materials are just a few of the instructional resources that faculty can prepare and generate in the lab.
2. Research and scholarly work for their academic research and publication activities, faculty members frequently need access to specialist software, databases, and research tools.
3. Assessment and grading teachers can utilize the lab to grade homework, tests, and keep track of student progress.
4. Various administrative chores connected to their teaching functions, such as monitoring class rosters, contacting with students, and conducting academic advising, may also be performed in the lab by faculty.
5. Collaboration: By offering a common workspace for group projects and conversations, faculty computer laboratories may promote collaboration among academics and researchers inside the university.

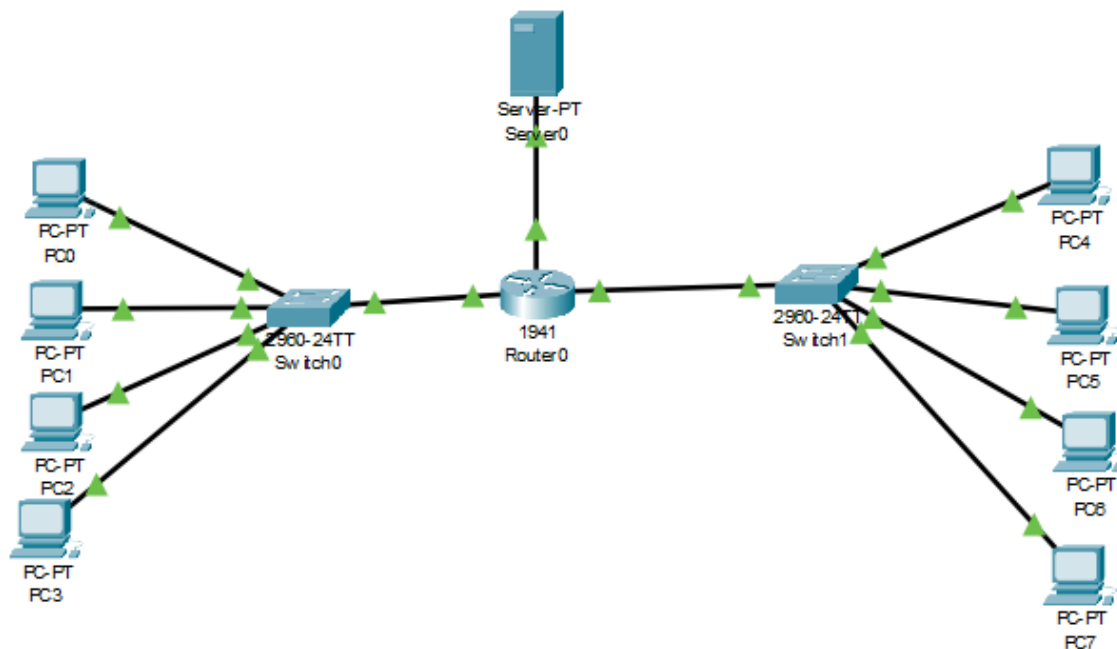
Scalability, security, and infrastructure future-proofing for IT companies in the contemporary digital environment is getting more and more challenging. These are the tasks of this networking strategy. An essential step in this process is the implementation of IPv6. It is studied why IPv6 adoption is crucial for IT startup infrastructure as well as how it might improve the way network resources are organized for long-term success. For tech companies looking to address scaling issues, improve network speed, and future-proof their infrastructure, adopting IPv6 is a critical step. IPv6's increased address space and efficiency enhancements are crucial for meeting the expansion and needs of the digital world and assuring the long-term success of startups. IT firms can put themselves in a position to succeed in a constantly changing technical environment by using IPv6.

Proposed Topology

To submit a new network proposal, drag and drop the following devices into the "Devices" panel in Cisco Packet Tracer. The Faculty Computer Laboratory required the following to present the network proposal to the customers.

Number of Devices	Devices	Name of Devices	Devices Unit
1	Router	Router0	1941
2	Switch	Switch0 & Switch1	2960-24TT
1	Server	Server0	Server-PT
8	PC	PC0, PC1, PC2, PC3, PC4, PC5, PC6, PC7, and PC7	PC-PT

Solution Design Model



Data Collection

Different techniques may be employed to collect data depending on the sort of study being done. The process of gathering data will focus on the effectiveness of the suggested number of devices that will be made available from the campus computer lab and how it will have a

beneficial impact on the academic performance of the students. Traditional research methods have the potential to maximize reliability, making them suitable for evaluating the efficacy or effectiveness of treatments.

Background Information

The methodology and suggestions made in this study can help the local community, particularly the university, by enhancing students' comprehension. This in turn can help teachers create their teaching methods. Additionally, the research has the potential to promote academics, particularly in the field of information and communication technology (ICT), which has played a significant role in stimulating innovation and boosting academic standards in a variety of global enterprises. ICT is becoming an essential part of education sector teaching and learning for students, both inside and outside of the educational environment.

Proposed Hardware and Software

A Faculty Computer Laboratory should focus on the right hardware and software when it is first starting out to guarantee an easy transition to IPv6. Hardware compatibility requires network components like switches, routers, and firewalls that can support IPv6 traffic. However, the actual requirements may vary based on the present setup. To be regarded as software compatible, an operating system, program, or network management tool must either support IPv4 or be able to handle IPv4 protocols. To achieve seamless integration and operation in an IPv4-enabled network, hardware and software must be evaluated, ready, and perhaps upgraded.

Proposed IP Addressing Scheme

The table below show the proposed device information that will used to set up the proposed network plan named "Faculty Computer Laboratory".

Device	Interface	IPv4 Address	Subnet Mask	DNS Server	Default Gateway
Server	GigabitEthernet0/0	192.168.1.1	255.255.255.0	0.0.0.0	192.168.10.1
Router					
Switch0	GigabitEthernet0/1				
Switch1	GigabitEthernet0/2				
PC0	FastEthernet0	192.168.1.0	255.255.255.0	192.168.1.1	192.168.10.1
PC1	FastEthernet0	192.168.1.1	255.255.255.0	192.168.1.1	192.168.10.1
PC2	FastEthernet0	192.168.1.2	255.255.255.0	192.168.1.1	192.168.10.1

PC3	FastEthernet1	192.168.1.3	255.255.255.0	192.168.1.1	192.168.10.1
PC4	FastEthernet1	192.168.1.4	255.255.255.0	192.168.1.1	192.168.10.1
PC5	FastEthernet1	192.168.1.5	255.255.255.0	192.168.1.1	192.168.10.1

Proposed Security Measures

A mix of access control methods, including keypads, biometric scanners, and access cards, should be used to prevent unwanted access. These controls make sure that only people with permission can access the building. Security camera installation also assists in monitoring the lab and serves as a deterrent to unwanted entrance. To stop theft and manipulation, it is also crucial to lock down hardware components including computers, servers, and networking gear. The security of a network depends on several essential elements. The first step is to install a reliable firewall to manage incoming and outgoing traffic, with set rules allowing only essential services. In order to identify and stop hostile network activity, intrusion detection systems (IDS) and intrusion prevention systems (IPS) are essential. The usage of Virtual Private Networks (VPNs) assists in encrypting data transfer, assuring privacy and security, while network segmentation is crucial to isolate sensitive data and systems from the rest of the network.