Report on PICT Campus Network Survey

To,

Dr. Geetanjali V. Kale,

Head, Department of Computer Engineering

Date: 18/08/2022

Duration: 1 Week

Subject: Report on PICT campus network survey

Guided By: Prof. Preeti A. Jain

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Introduction:

An objective of our study was to conduct a campus-wide survey on college network design. Our 'Computer Networks & Security' subject teacher inspired us to do the same. A detailed description of the college's network design was given in the server room survey by our college's Network Administrator.

Acknowledgments:

Thanks to Dr. Geetanjali V. Kale Ma'am (Head, Department of Computer Engineering) for giving us permission to conduct a Campus Network Survey. It would not have been possible for us to conduct the survey without the invaluable support of our subject teacher, Prof. P. A. Jain Ma'am, our network administrator, Prof. Mayur Chavan Sir, and Siddheshwar Metkari sir, who provided us with a great deal of helpful information regarding the campus network. There was a lot of support from them.

EXECUTION:

1) We gathered in classroom no. A1-111 at 3:30 pm on the 24th of August, 2022. All necessary arrangements for the presentation are done.
2) Total of 65 students were present in the classroom.
3) Our Group members Sakshi Rathi, Vaishnavi Raut, Suyog, and Manav presented the PPT in front of the whole classroom. They explained all aspects of the college campus network that we have learned from the discussion with the network administrator.
4) After that session was open for questions and answers. Students asked about their doubts about the college network. And presenters cleared their doubts with available information.
5) Then the presenter asked some general questions about college network to students. And Students answered them very well.
6) And Presentation ended with a special thanks to our subject teacher Prof. Preeti A. Jain Ma'am, Network Administrator Prof. Mayur Chavan Sir, and Siddheshwar Metkari Sir.

CO1:

Summarize fundamental concepts of Computer Networks, architectures, protocols, and technologies.

ACTIVITY OBJECTIVE:

To map and document the computer network architecture, topology & administration of the PICT campus network.

ACTIVITY OUTCOME:

1) To complete our Course Outcome No. 1.
2) To familiar with all the terms used in computer networks, and understand how our college network works.

METHOD OF SURVEY:

On the 18th of August 2022 at 4 pm, we gathered in the server room (A1-113) for a discussion with Network Administrator Prof. Mayur Chavan. Firstly, Prof. Mayur Chavan sir

shared all aspects of the college campus network. Then, he had briefly described internet service providers, the hardware used for college network, limitations of college network, etc. Students cleared all their doubts regarding the college network from Prof. Mayur Chavan Sir, and Siddheshwar Metkari sir. Then we compiled all the data we collected through discussion with Prof. Mayur Chavan sir and Siddheshwar Metkari sir.

From this survey we collected data as below:

1) **Internet service provider: -**
   In our campus we have two internet service providers
   a) Reliance
   b) Intech

2) **Network Details:**

   ➢ Network Allocation: -
   > Reliance and Intech both are combinedly providing us 500mbps of connection, out of with 300mbps come from Reliance and 200mbps come from Intech. 10mbps of speed along with 10GB data per day limit is given to the students and staff. The user can log in and use the internet on any device (mobile, laptop, etc.), but the user can log in in only one device at a time.

   ➢ Controlling traffic from the server room: -
   > From the server room, the network administrator (Prof. Mayur Chavan) can control all the network of our campus which means if the coding round or exam is going somewhere in the college then they provide the extra bandwidth to specific users or labs if needed. On our campus we have two internet service providers if some problem has occurred to one of them, then all the traffic is shifted to another service provider.

3) **Explanation of the network diagram: -**

   ➢ Firewall: -
   > The firewall protects all devices connected to the campus network blocking unwanted port scans, viruses, and attacks from outside the campus network. By screening network traffic as it crosses the boundary between the Internet and the campus network, the firewall blocks certain probes and attacks from reaching our networked computers, creating a safer computing environment for everyone.

- ➢ Unibox Controller: -

    UniBox is one of the most innovative and reliable Hotspot Controllers in the market today. You can install UniBox to manage any sized Wi-Fi network without having to replace any existing infrastructure. With UniBox, you don't need any other solution for managing Wi-Fi access. It comes packed with features so just one box is enough to handle all the functions of Wi-Fi hotspots.

- ➢ DHCP: -

    Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.

    Every device on a TCP/IP-based network must have a unique unicast IP address to access the network and its resources. Without DHCP, IP addresses for new computers or computers that are moved from one subnet to another must be configured manually; IP addresses for computers that are removed from the network must be manually reclaimed. With DHCP, this entire process is automated and managed centrally

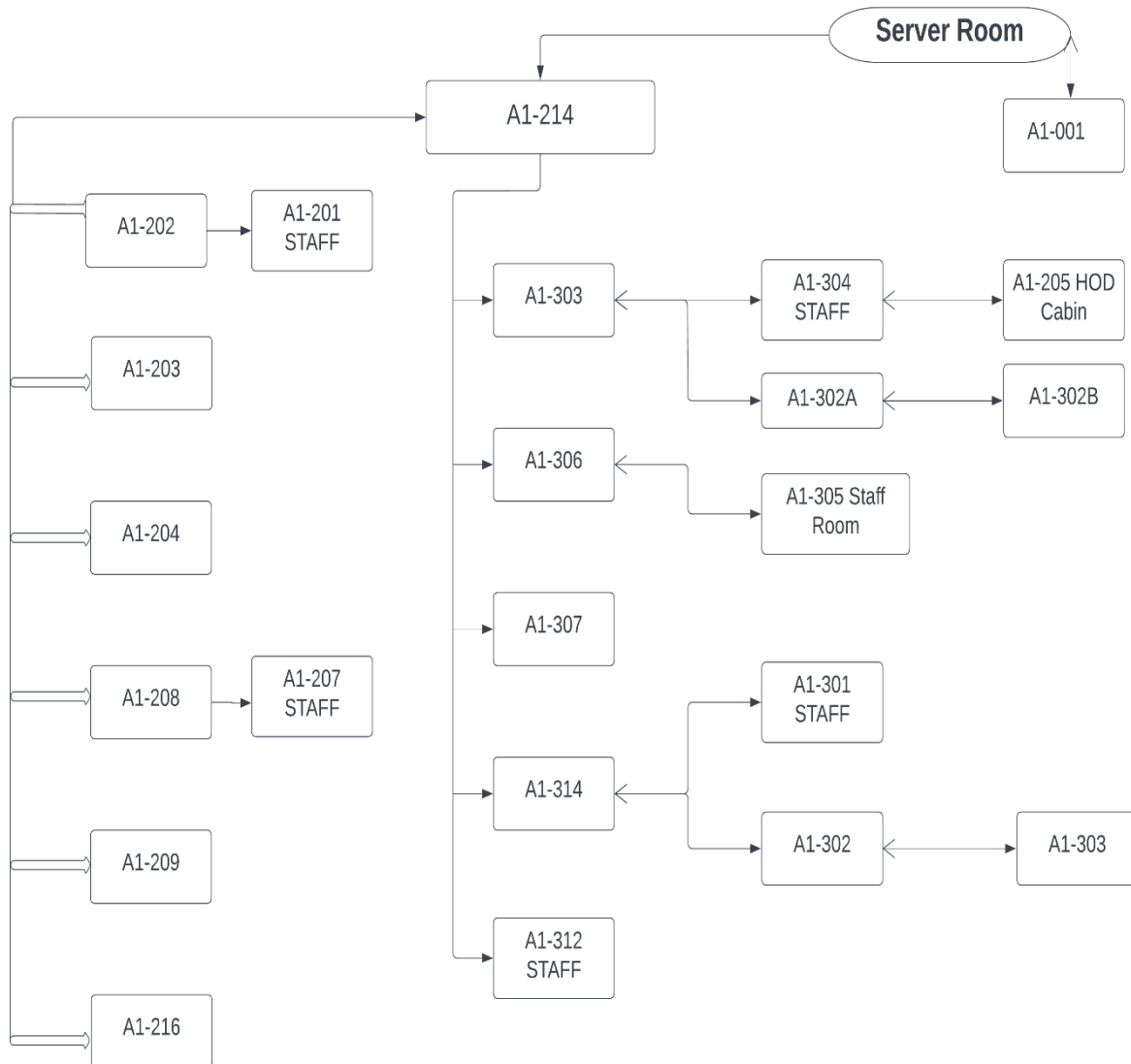4) **Physical network distribution map: -**
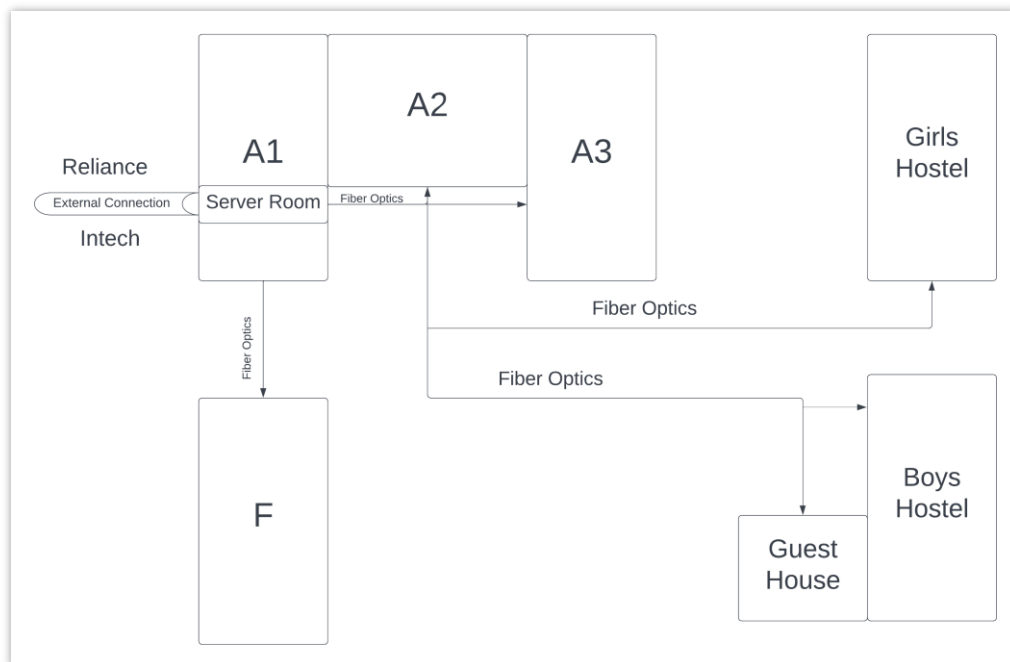
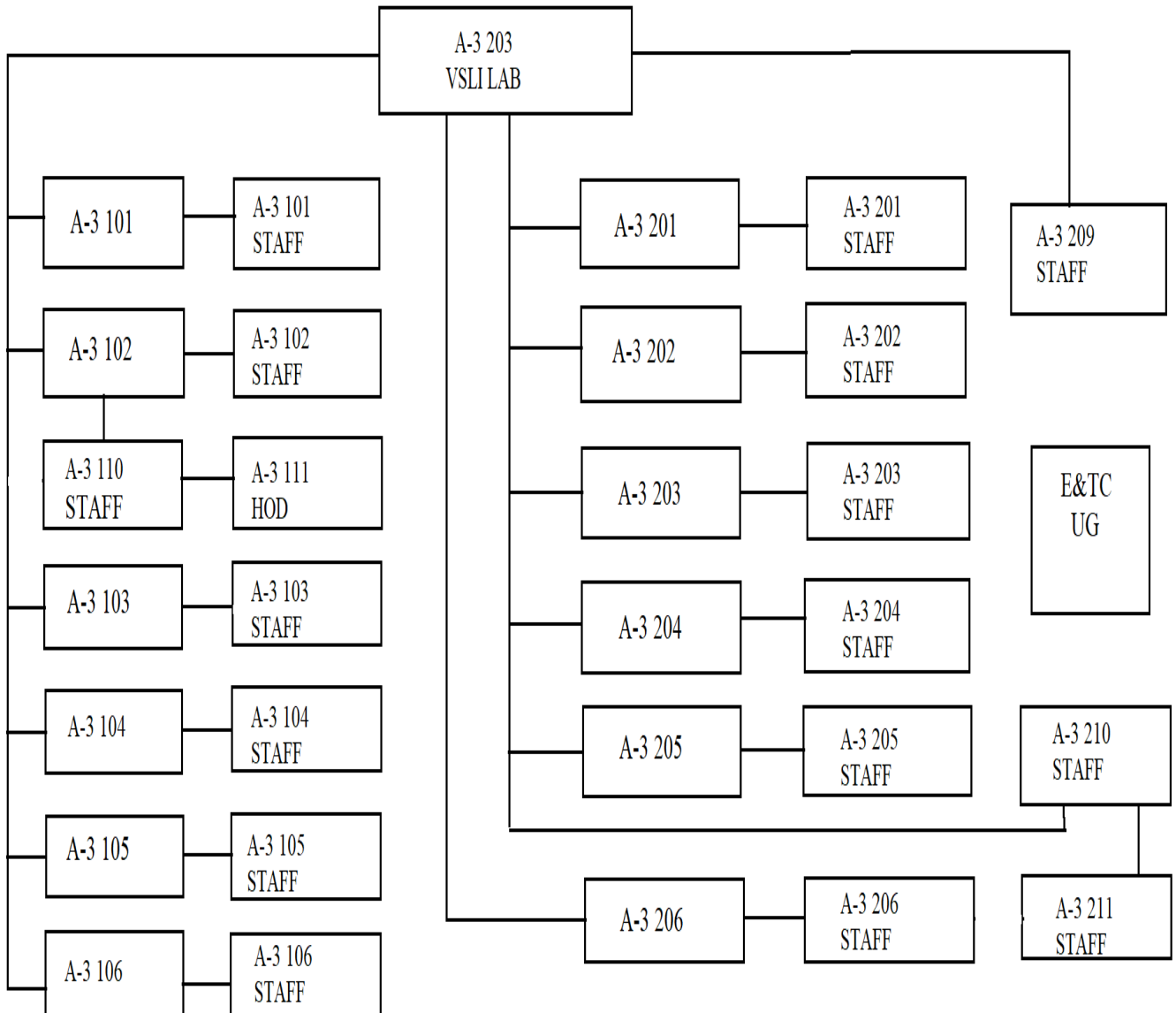**College Campus Network Representation Diagrams:**

1) Network Representation of A1 – First Floor (Computer Department, Conference Room, Reading Hall, Library)
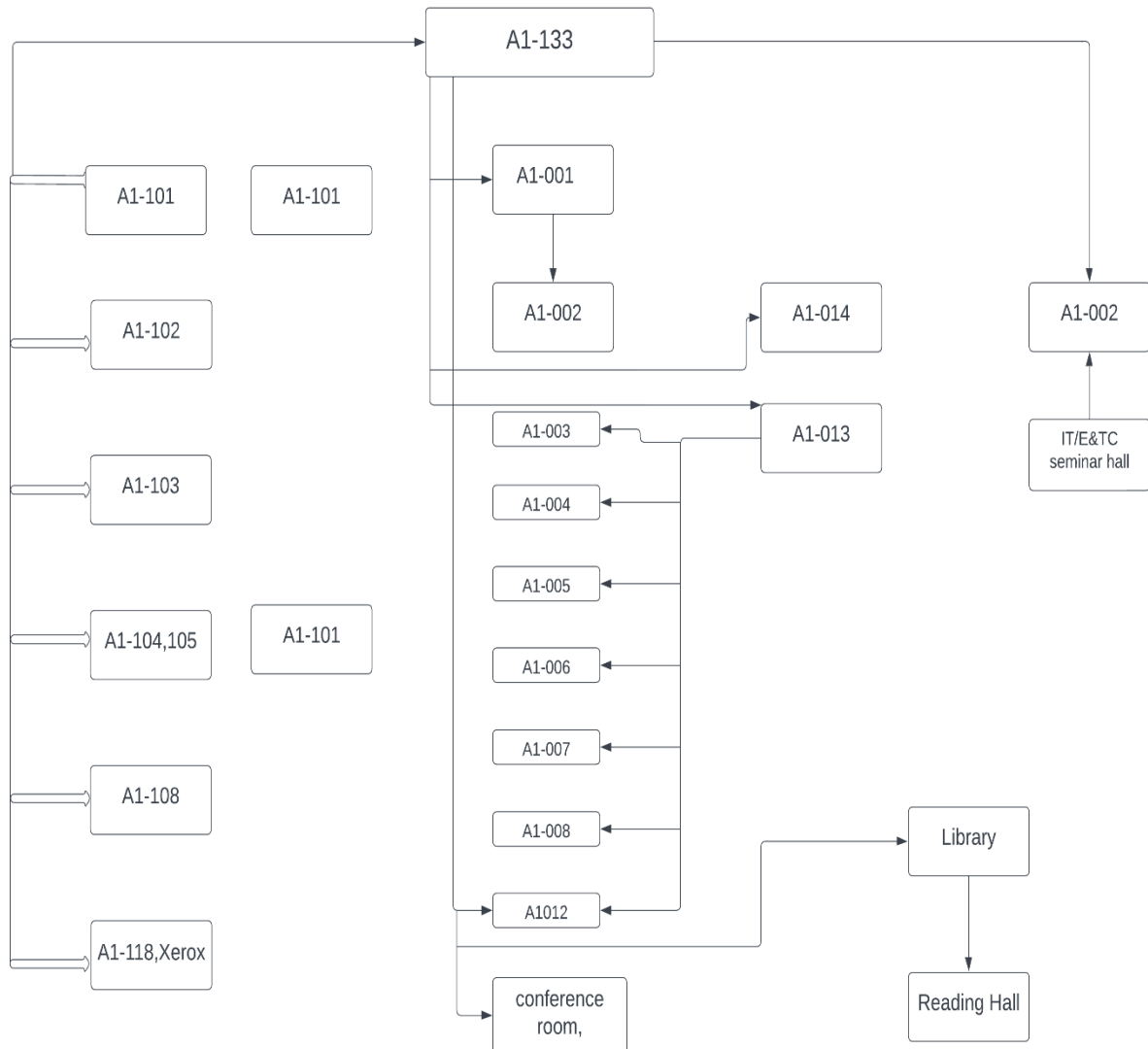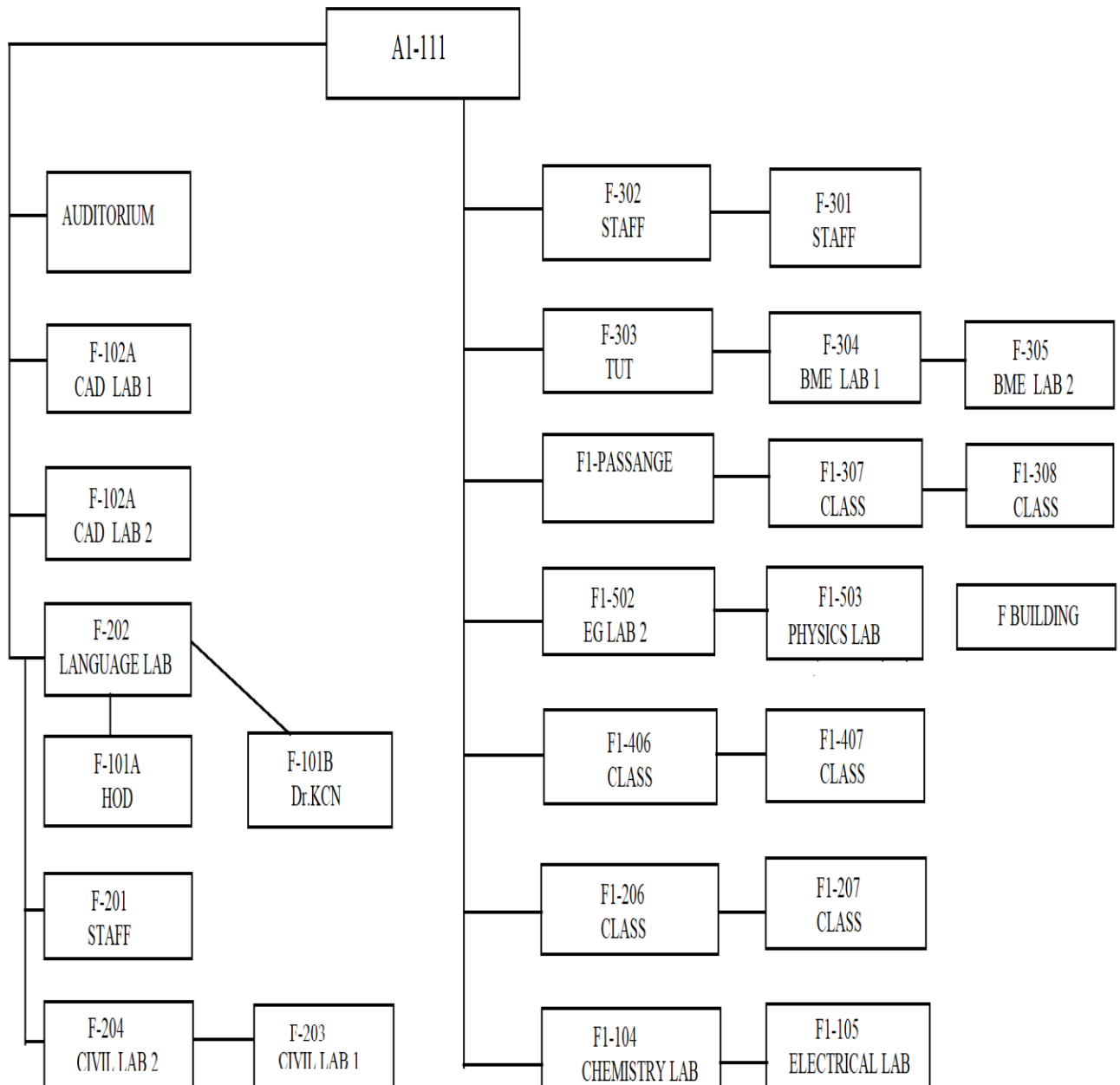
2) Network Representation of A1 – Second Floor and Third Floor (Computer Department)
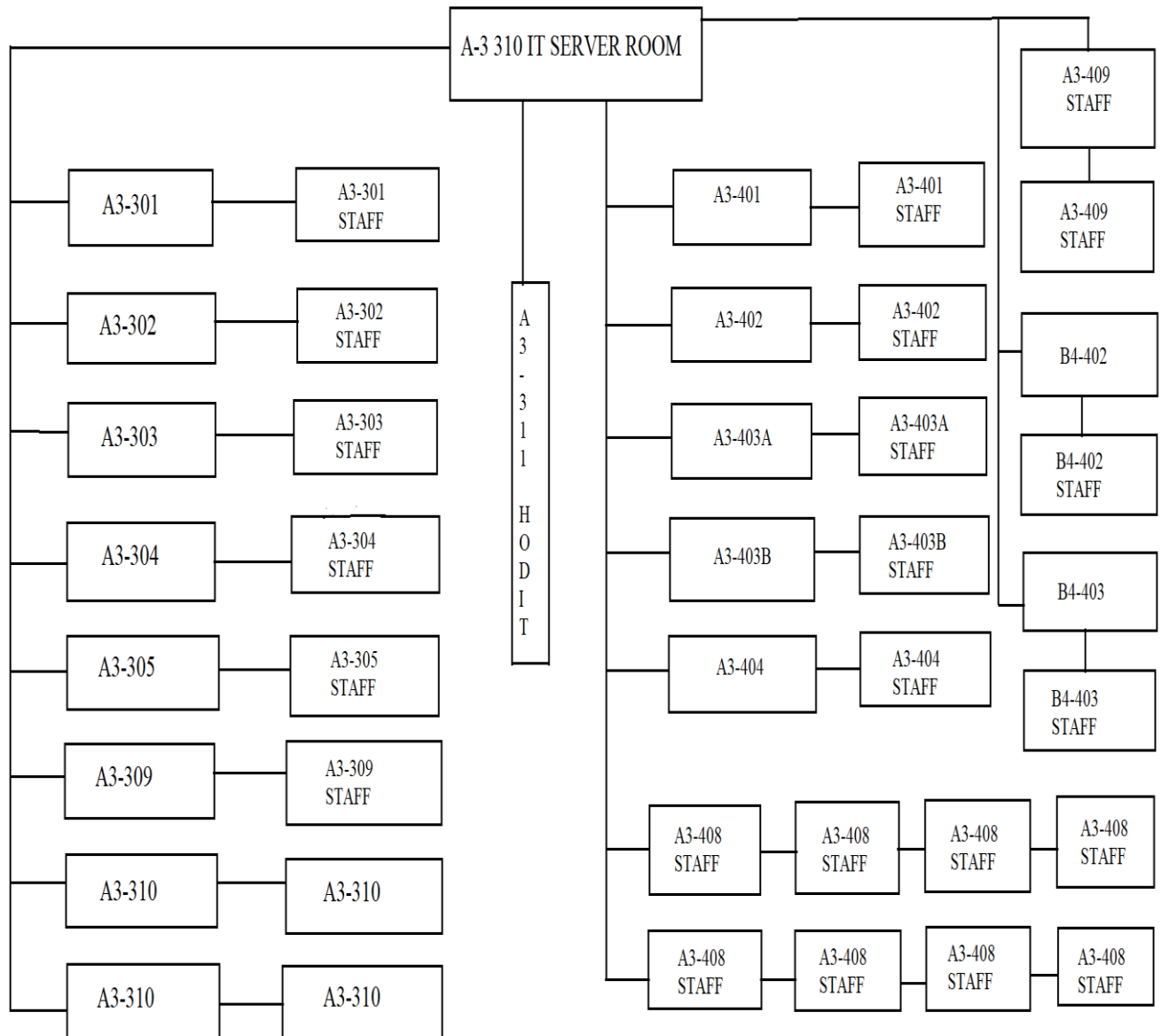
3) Network Representation of A3 – First Floor and Second Floor (EnTC Department)

## 4) Network Representation of FE Department consisting all floors of F1 Building

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                                A1-111

   AUDITORIUM                              F-302          F-301
                                          STAFF          STAFF

   F-102A                                 F-303          F-304         F-305
   CAD LAB 1                              TUT            BME LAB 1     BME LAB 2

   F-102A                                 F1-PASSANGE    F1-307        F1-308
   CAD LAB 2                                             CLASS         CLASS

   F-202                                  F1-502         F1-503        F BUILDING
   LANGUAGE LAB                           EG LAB 2       PHYSICS LAB

   F-101A          F-101B                 F1-406         F1-407
   HOD             Dr.KCN                 CLASS          CLASS

   F-201                                  F1-206         F1-207
   STAFF                                  CLASS          CLASS

   F-204           F-203                  F1-104         F1-105
   CIVIL LAB 2     CIVIL LAB 1            CHEMISTRY LAB  ELECTRICAL LAB
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5) Network Representation of A3 – Third Floor and Fourth Floor (IT Department)

Some glimpses from server room:
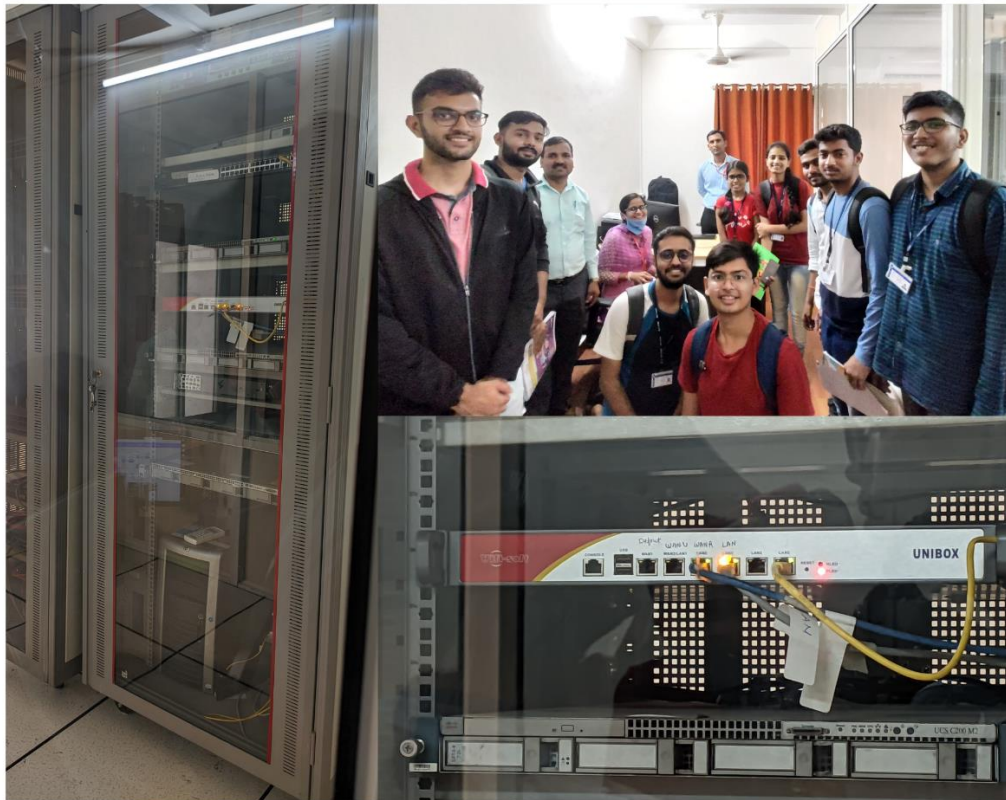
Some glimpses from Classroom room:
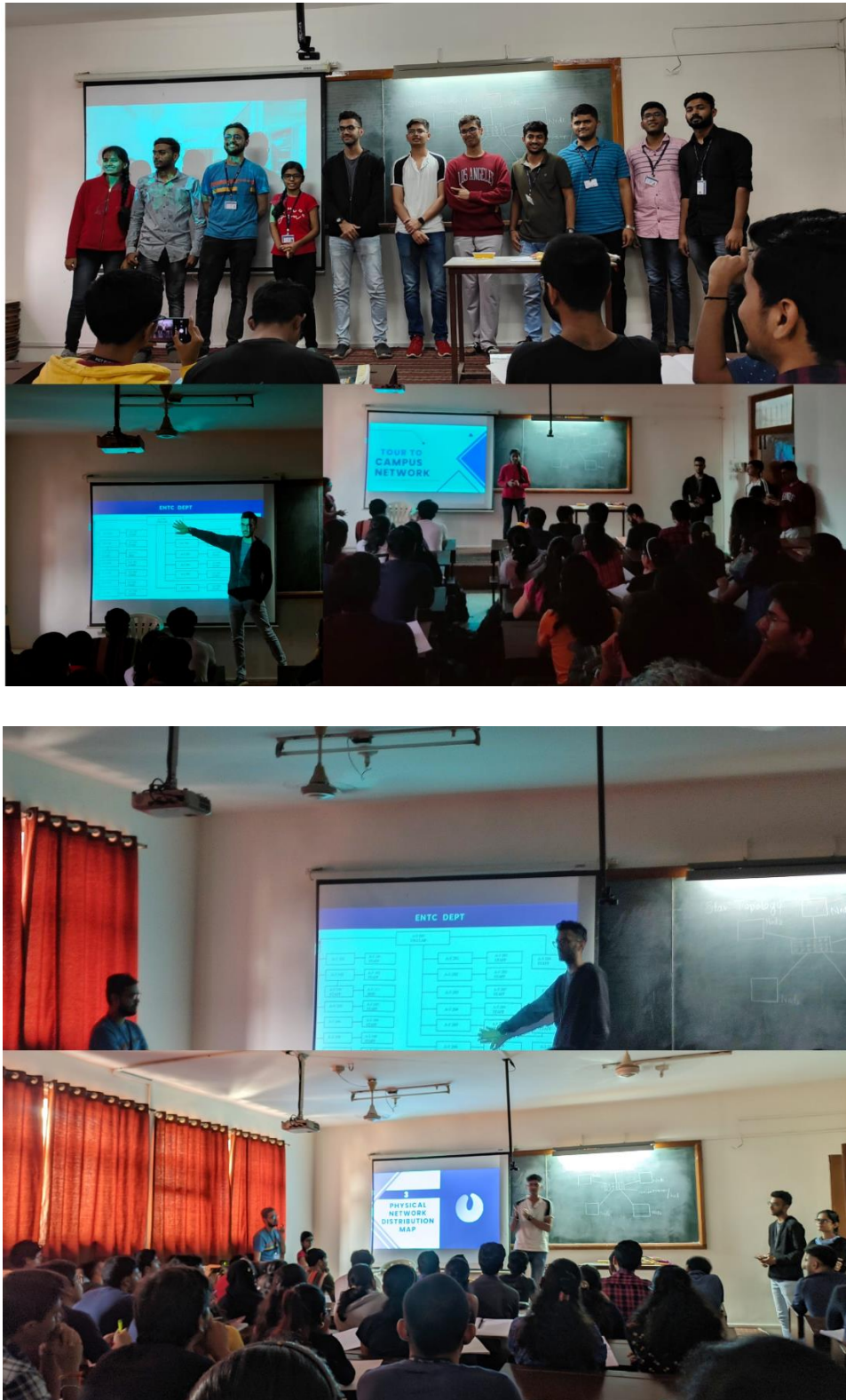
Video Link: https://drive.google.com/file/d/1ubeDbEKmRo_bQWou-dpJ7kr7iLA-sp5I/view?usp=sharing

Questions Asked by Students during Presentation:

Q1. What is ODTR?

Ans. ODTR is an Optical time-domain reflectometer. It is used to detect break-point in Optic-fiber. For finding the break-point on Optic-fiber, ODTR is placed at one end of optic fiber then it gives the distance at which fiber-optic is damaged.

Q2. How college keep a backup of network logs?

Ans. College saves all network logs for 1 month. If someone tries to breach the network security of the college network then, we can track the breach using network logs. Apart from this network provider also stores network logs on their cloud services for up to 6 months.

Q3. Why wireless network is not used in the college?

Ans. As the wireless network is intended for the open-area network but the structure of the network spread across the different departments of the college is not feasible using wireless. As well as there are many birds on campus that can be affected by this wireless network radiation.

Q4. Is UniBox a controller?

Ans. UniBox is a type of software used for authentication purposes for signing into the network, and network managing software for the network administrator.

Questions asked by presenters to students:

Q1. How configuration of the router is done?

Ans. There is a console port on the computer which is joined to the router. Then you can configure the router. The router is configured with DHCP Protocol which automatically assigns IP addresses to connected devices.

Q2. Why there is less no. off Wi-Fi routers in Boys Hostel?

Ans. Due to the structure of the Boy's hostel, there is more interference to the wireless network. Therefore, there is less connectivity of internet in the boy's hostel.

Q3. Why there is a need for 2 internet providers?

Ans. If there is a problem with one service provider network then also the network of the college is up with another internet provider.

Recommendations:

As a follow-up to the presentation, students were asked for their suggestions regarding the current state of the campus network, and if there were any improvements that could be made. In light of the relatively high cost of making the network fully wireless, it was suggested to make it wireless to a certain extent. The investment in a properly wired network that connects wireless hotspots to the existing wired network is one-time.

Conclusion:

From conducting this activity on PICT Campus Area Network, we learned about the campus network and its working. We gathered information about internet service providers (i.e., Reliance and Intech). A complete wireless network is not possible in the campus network because the radiation of the network can cause harm to birds in the campus area. As well as, for a big and fixed numbers of the network device, a wired network is preferred. And, thus we completed our survey on the college campus network.