Network Design For a
New University

Final Project Proposal

COHNDNE232F- 045
COHNDNE232F- 018
COHNDNE232F- 049
COHNDNE232F- 050

HNDNE232F Batch

National Institute of Business Management
School of Computing (2025)

About Our Network Design,

The network design for Harmony University, spanning five floors, is tailored to the specialized needs of its computer, science, and engineering departments. Emphasizing both education and diverse activities, it boasts state-of-the-art infrastructure, redundancy for uninterrupted connectivity, robust security measures, and scalability for future growth. This design reflects Harmony University's commitment to providing a world-class educational experience.

Objectives of Network design,

➤ The objective of this network design for Harmony University is to create a reliable, secure, and scalable infrastructure tailored to the specific needs of its computer, science, and engineering departments. It aims to support a diverse range of activities while ensuring uninterrupted connectivity and safeguarding sensitive information. Additionally, the design promotes sustainability and is adaptable to future growth. This design ultimately seeks to provide a world-class educational experience for students and faculty at Harmony University.

Importance and goal of Our Network design

➤ Enhanced Academic Experience
➤ Efficient Collaboration
➤ Secure Information Environment
➤ Scalability for Growth
➤ High Availability and Reliability
➤ Competitive Edge

Technologies

- ➤ **Redundant Core and Distribution Layers**: Implementing redundancy at the core and distribution layers using protocols like HSRP ensures high availability. In case of a switch or link failure, traffic seamlessly fails over to the redundant component.

- ➤ **Cloud Computing**: At present, universities are facing a critical period of transition from digital campus to smart campus. Because cloud service data has the characteristics of diversity, in addition to structured data, there are also unstructured data, which play an important role in the study and life of the majority of students.

- ➤ **Firewall Based Cyber Security (pfSence):** pfSense is a powerful, open-source firewall and router platform trusted by network enthusiasts, businesses of all sizes, and enterprises. Built on FreeBSD, pfSense offers extensive features, including firewall, VPN (server and client), DHCP server/relay, DNS server/forwarder, and WAN load balancing.

- ➤ **Virtual Machines (VMware):** VMware is a company that develops a suite of virtualization products. At the heart of their offerings is the hypervisor, which is a software layer that creates and runs Virtual Machines (VMs).

- ➤ **NAS** - That stands for Network Attached Storage. Think of it as a big storage box hooked up to the campus LAN. Everyone—students, faculty, staff—can save, share, and back up files there. It's like a central spot where you log in, get your files, work together, and keep data safe. No more emailing huge files back and forth.

- ➤ **Zabbix network monitoring** - It's a monitoring tool that keeps an eye on all the network gear and servers around campus. The admins get a dashboard showing bandwidth use, server loads,

Wi-Fi spots, and important apps—all in real time. So if something's acting up, they know right away.

- **Vcent vm management** - This one's about handling all the virtual machines and ESXi servers different departments and labs use. IT folks can create, watch, and assign resources to these VMs depending on what's needed for classes or research. It helps keep hardware running smoothly and makes maintenance easier.

- **Virtualization** - This means running multiple virtual servers or desktops on one physical machine using a hypervisor. It saves money on hardware, uses resources better, and makes managing IT simpler.

- **Access Control Lists (ACLs)**: Configuring ACLs on routers and switches helps control traffic flow and provides an additional layer of security by filtering unwanted or malicious packets.

- **Virtual LANs (VLANs):** VLANs help segregate network traffic for security, manageability, and performance optimization. This is especially vital in an educational institution where different departments have distinct networking needs.

- **Ethernet Switching:** Layer 2 and Layer 3 switches are deployed at various levels of the network to manage traffic, provide connectivity, and route data between different departments and floors.
- **Wireless Access Points (APs):** Modern, high-performance wireless access points are strategically placed across the campus to provide reliable and seamless Wi-Fi connectivity to students, faculty, and staff.
- **Virtual LANs (VLANs):** VLAN technology is used to logically segment the network, allowing for better traffic management, enhanced security, and optimized resource allocation.

- **Quality of Service (QoS):** QoS settings are implemented to prioritize specific types of traffic, ensuring critical applications receive the necessary bandwidth for optimal performance.

- **PAT (Port Address Translation):**PAT is a type of Network Address Translation (NAT) that allows multiple devices on a local network to share a single public IP address. It works by assigning a unique port number to each device, enabling them to communicate over the internet.

- **EtherChannel:** EtherChannel is a technology that allows multiple physical Ethernet links to be combined into a single logical link. This provides increased bandwidth and redundancy while also improving load balancing.

- **STP (Spanning Tree Protocol):**STP is a network protocol used to prevent loops in Ethernet networks. It identifies redundant links and blocks some of them to ensure there is only one active path between any two network devices. This prevents broadcast storms and network congestion.

- **VTP (VLAN Trunking Protocol):** VTP is a Cisco proprietary protocol used for managing VLAN configurations across a network. It allows for centralized management of VLAN information, making it easier to add, modify, or delete VLANs on multiple switches simultaneously.

- **DHCP (Dynamic Host Configuration Protocol):** DHCP is a network protocol used to automatically assign IP addresses, subnet masks, gateway addresses, and other network configuration parameters to devices on a network. It simplifies the process of network configuration for devices, especially in large networks.

Network Topology
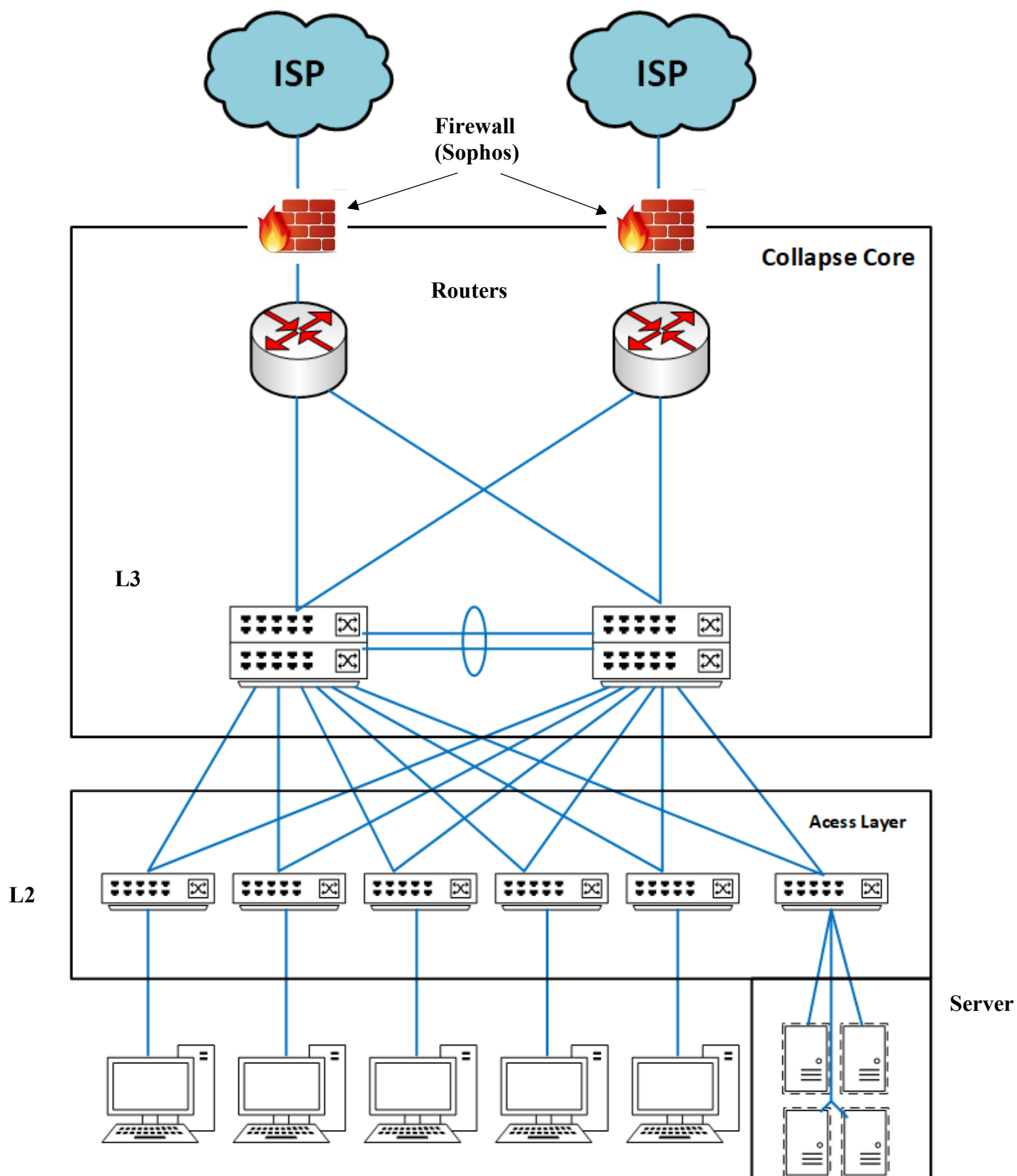
The Floor plans

Ground floor

Ground Floor Includes
- Reception
- Lounge
- Labour room
- Canteen area
- Studio
- Tennis court

- CCTV room
- Wash rooms

1st Floor
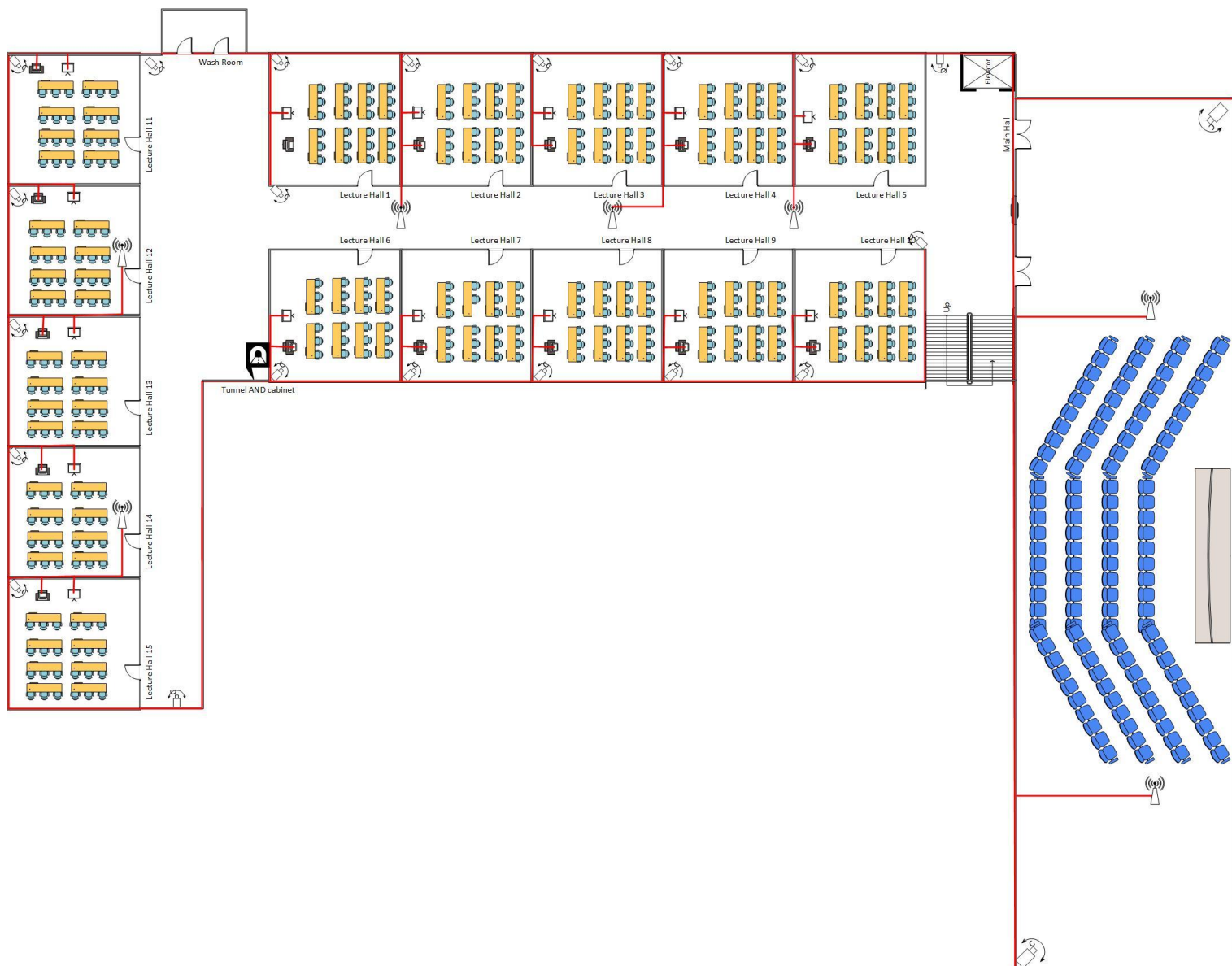
1st Floor Includes

- Lecture Halls
- Main hall
- Wash room

2nd Floor
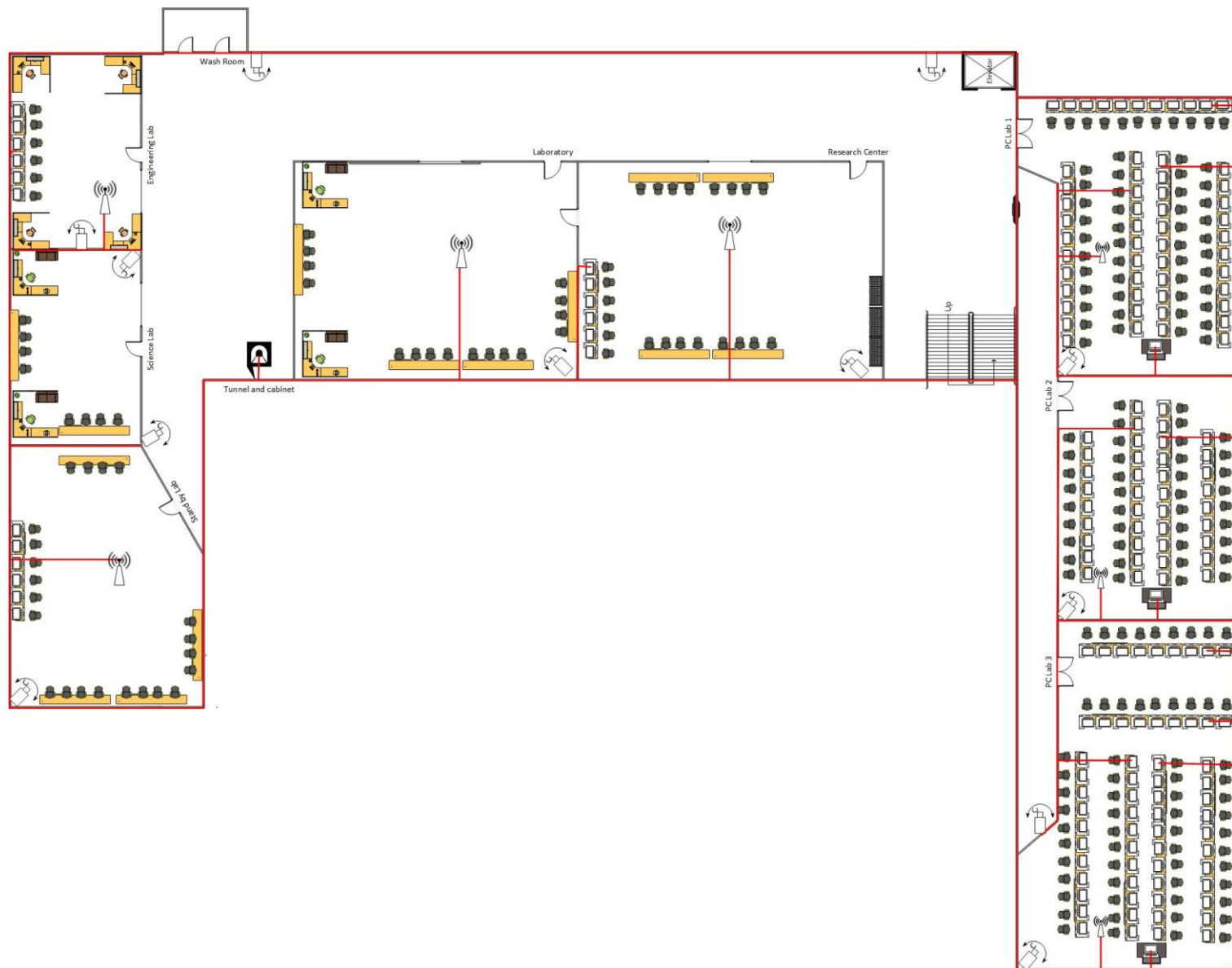
2nd Floor Includes

- Engineering Lab
- Science Lab
- Standby Lab
- Laboratory
- Research Centre
- Computer Labs
- Wash rooms

3rd Floor
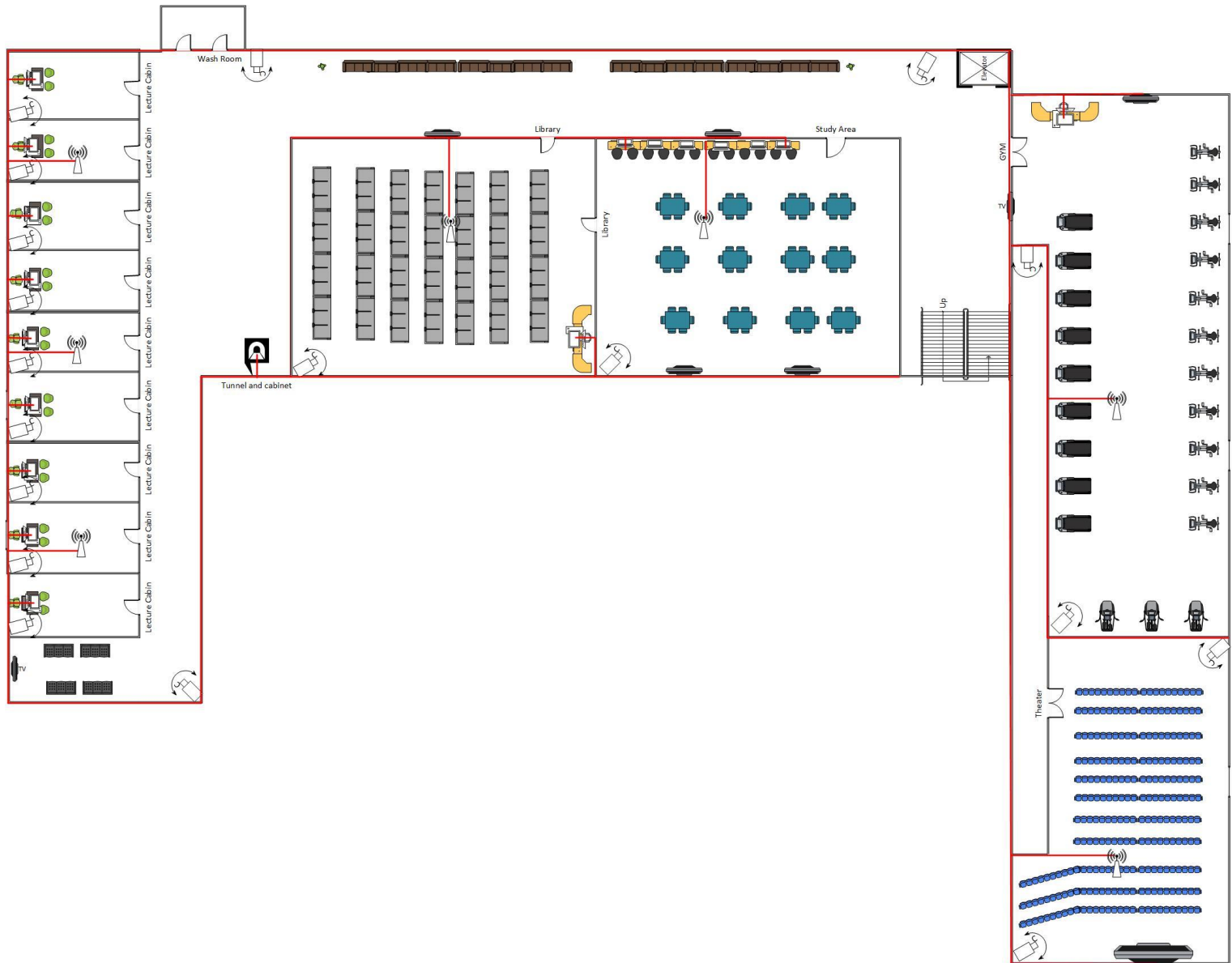
3rd Floor Includes
-Lecture Cabins
-Theatre
-GYM
-Library
-Study Area
-Wash Rooms

4th Floor
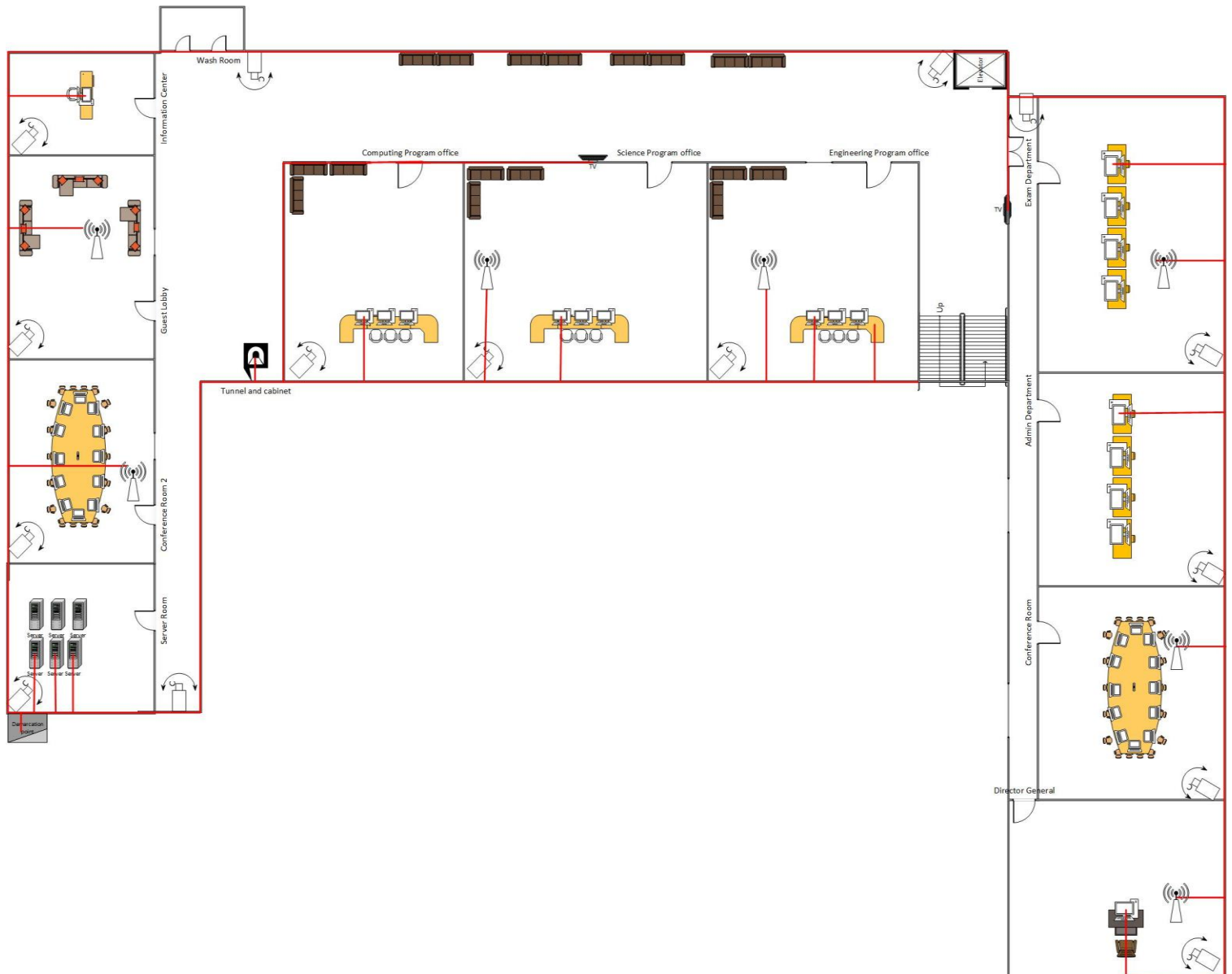
4th Floor Includes

-Server Room   -Engineering Program Office

-Conference Rooms   -Wash Rooms

-Director General Room

-Admin Department

-Exam Department

-Science Program office

-Computing Program Office

Heat maps

> 2.4 GHz band used
> Blue -Least Coverage Area
> Red -High Coverage Area

Ground floor
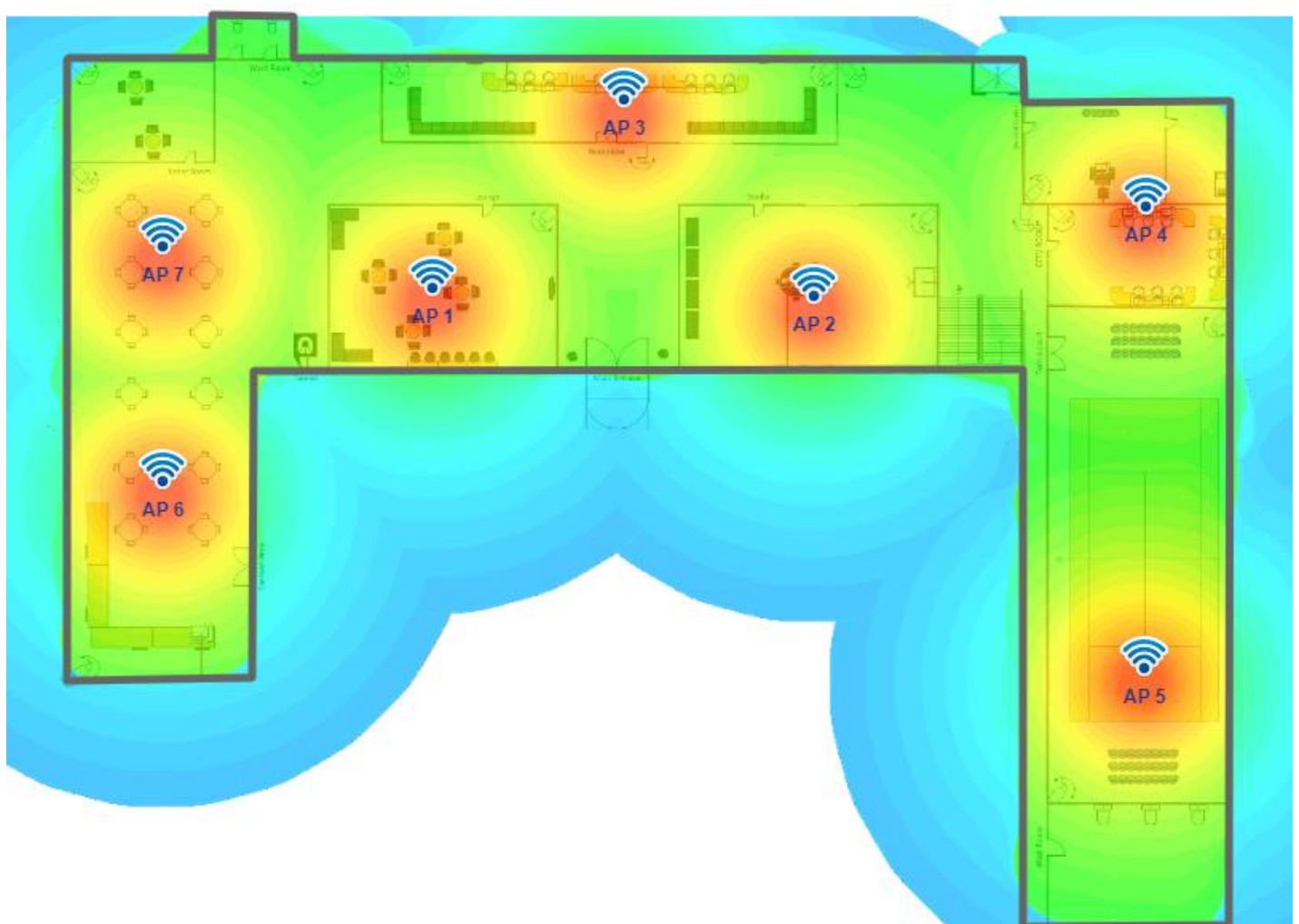
1ˢᵗ Floor

2ⁿᵈ Floor
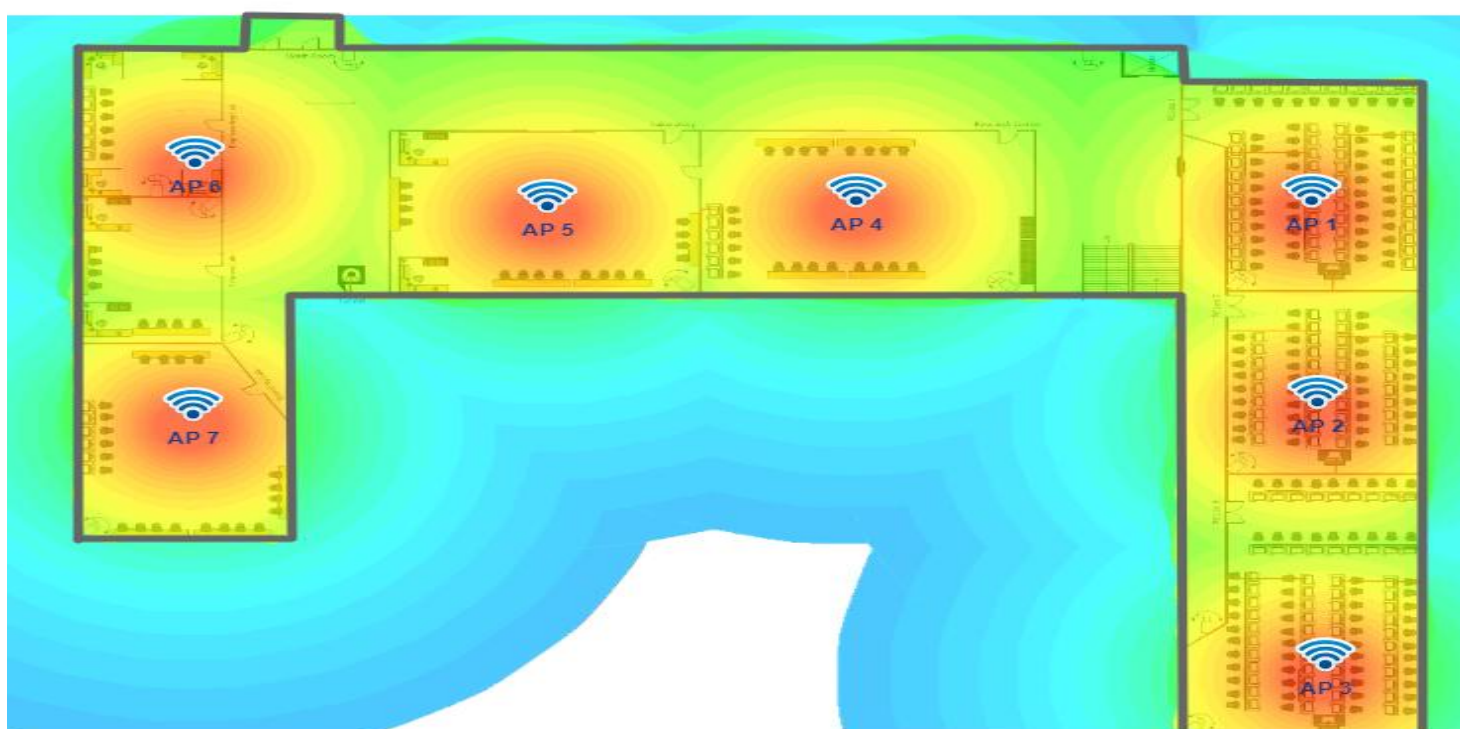
3rd Floor

4th Floor
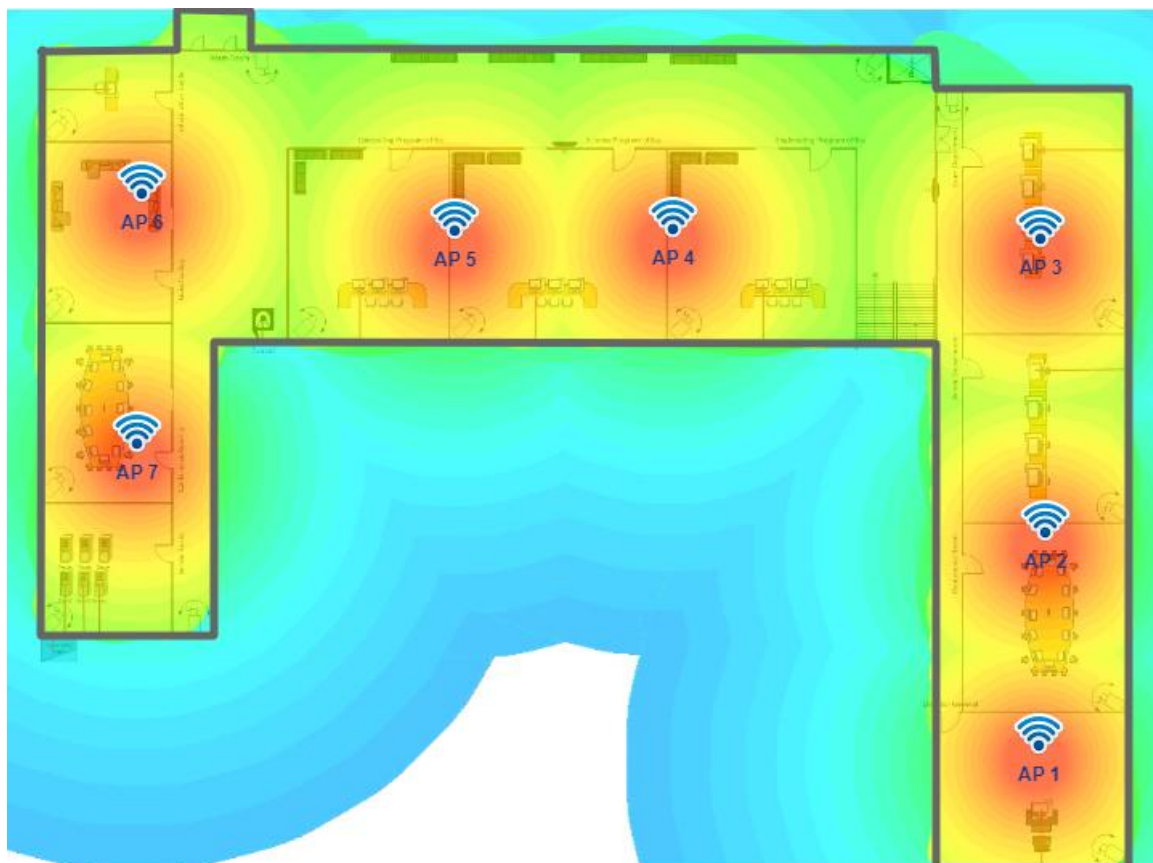
IP Address Table

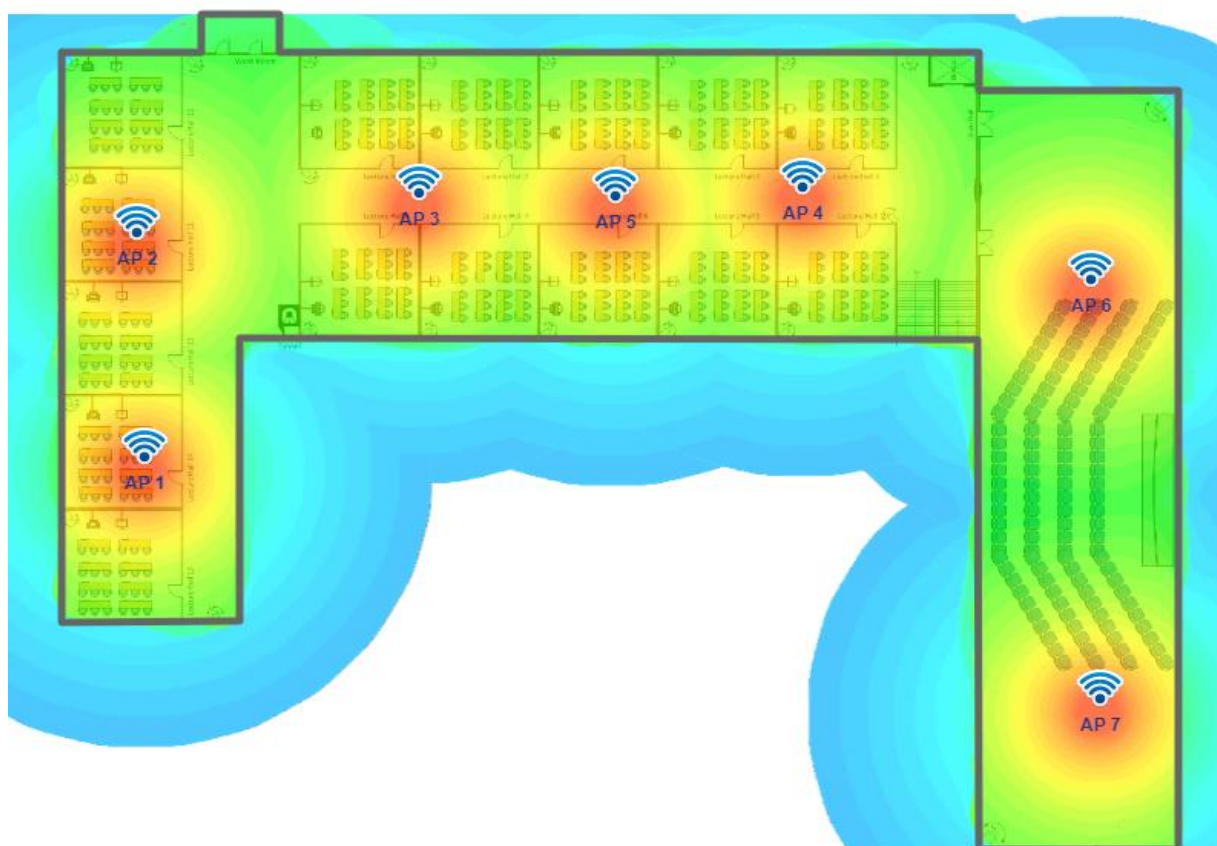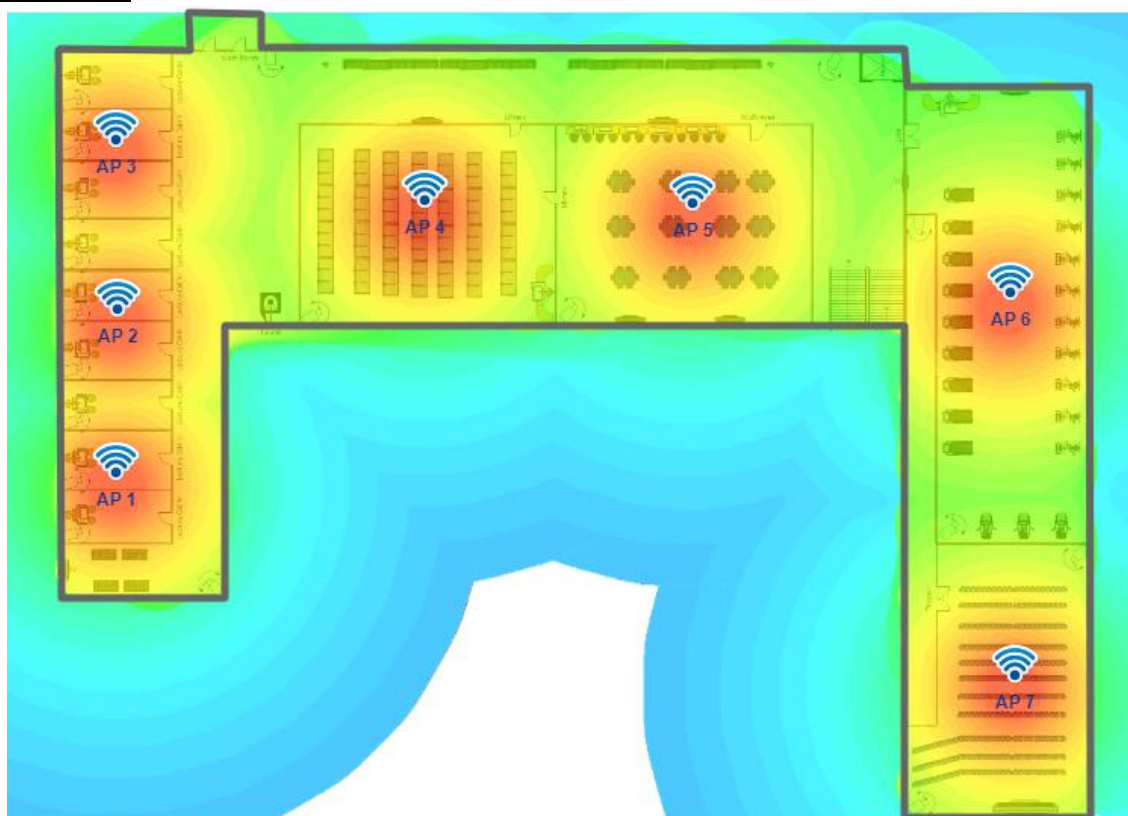| Floor	Department Name	VLAN	Host Needed	Host Available	Network Address	Subnet mask	Usable Ip Range
Ground Floor	Studio	10	10	4	192.168.2.64	255.255.255.240	192.168.2.65-192.168.2.74
	Reception + Information center	11	4	2	192.168.2.88	255.255.255.248	192.168.2.89-192.168.2.92
	Sick room	12	2	0	192.168.2.120	255.255.255.252	192.168.2.121-192.168.2.122
1st floor	Lecture halls	20	30	35	192.168.1.0	255.255.255.128	192.168.1.1-192.168.1.85
	Pc Labs		50				
	Auditorium		5				
2nd floor	Pc Lab	30	225	27	192.168.0.0	255.255.255.0	192.168.0.1-192.168.0.225
	laboratory	31	10	20	192.168.1.128	255.255.255.192	192.168.1.129-192.168.1.168
	Science Lab		10				
	Engineering Lab		10				
	Standby Lab		10				
3rd floor	Lecture cabin	40	15	15	192.168.1.192	255.255.255.224	192.168.1.193-192.168.1.207
	Library	41	20	10	192.168.1.224	255.255.255.224	192.168.1.225-192.168.1.244
	Theater Gym	42	4	2	192.168.2.80	255.255.255.240	192.168.2.89-192.168.2.92
4th floor	Administrator	50	20	9	192.168.2.0	255.255.255.224	192.168.2.1-192.168.2.21
	Director		1				
	Conference Room	51	10	4	192.168.2.32	255.255.255.240	192.168.2.33-192.168.2.42
	Exam Department	52	10	4	192.168.2.48	255.255.255.240	192.168.2.49-192.168.2.58
	Computing program office	53	5	1	192.168.2.96	255.255.255.248	192.168.2.97-192.168.2.101
	Science program office	54	5	1	192.168.2.104	255.255.255.248	192.168.2.105-192.168.2.209-

	Engineer program office	55	5	1	192.168.2.112	255.255.255.248	192.168.2.113-192.168.2.117
	CCTV room	70	88(CCTV) 3(PC)	35	192.168.3.0	255.255.255.128	192.168.3.1-192.168.3.88
	Database sever	80	1	2	192.168.3.128	255.255.255.248	192.168.3.129-192.168.3.132
	Web server		1				
	Email server		1				
	DHCP sever		1				
	Wi-Fi	100	1024	0	192.168.4.0	255.255.255.252	192.168.4.1-192.168.7.254

Port Table

S Device	S Interface	VLAN	Ip Address	Subnet Mask	Port status	D Device	D Interface
L3 switch 1	G1/0/2	10	192.168.2.78	255.255.255.240	Not Shutdown	GS1	G0/1
		11	192.168.2.94	255.255.255.248	Not Shutdown		
		12	192.168.2.122	255.255.255.252	Not Shutdown		
	G1/0/3	20	192.168.1.126	255.255.255.128	Not Shutdown	F1S1	G1/0/1
	G1/0/4	30	192.168.0.254	255.255.255.0	Not Shutdown	F2S1	G1/0/1
		31	192.168.1.190	255.255.255.192	Not Shutdown		
	G1/0/5	40	192.168.1.222	255.255.255.224	Not Shutdown	F3S1	G1/0/1
		41	192.168.1.254	255.255.255.224	Not Shutdown		
		42	192.168.2.94	255.255.255.240	Not Shutdown		
	G1/0/6	50	192.168.2.30	255.255.255.224	Not Shutdown	F4S1	G1/0/1
		51	192.168.2.46	255.255.255.240	Not Shutdown		
		52	192.168.2.62	255.255.255.240	Not Shutdown		
		53	192.168.2.102	255.255.255.248	Not Shutdown		
		54	192.168.2.110	255.255.255.248	Not Shutdown		
		55	192.168.2.118	255.255.255.248	Not Shutdown		
	G1/0/7	70	192.168.3.126	255.255.255.128	Not Shutdown	CS1	G1/0/1
	G1/0/8	80	192.168.3.134	255.255.255.248	Not Shutdown	SS1	G0/1
	G1/0/9				Ether channel	(Backup)L3 switch	G1/0/9
	G1/0/10						G1/0/10
	G1/0/11-24				Shutdown		
	G1/0/2	10	192.168.2.78	255.255.255.240	Not Shutdown	GS1	G1/0/2
		11	192.168.2.94	255.255.255.248	Not Shutdown		

		12	192.168.2.122	255.255.255.252	Not Shutdown		
	G1/0/3	20	192.168.1.126	255.255.255.128	Not Shutdown	F1S1	G1/0/2
	G1/0/4	30	192.168.0.254	255.255.255.0	Not Shutdown	F2S1	G1/0/2
		31	192.168.1.190	255.255.255.192	Not Shutdown		
L3 switch (Backup)	G1/0/5	40	192.168.1.222	255.255.255.224	Not Shutdown	F3S1	G1/0/2
		41	192.168.1.254	255.255.255.224	Not Shutdown		
		42	192.168.2.94	255.255.255.240	Not Shutdown		
	G1/0/6	50	192.168.2.30	255.255.255.224	Not Shutdown	F4S1	G1/0/2
		51	192.168.2.46	255.255.255.240	Not Shutdown		
		52	192.168.2.62	255.255.255.240	Not Shutdown		
		53	192.168.2.102	255.255.255.248	Not Shutdown		
		54	192.168.2.110	255.255.255.248	Not Shutdown		
		55	192.168.2.118	255.255.255.248	Not Shutdown		
	G1/0/7	70	192.168.3.126	255.255.255.128	Not Shutdown	CS1	G1/0/2
	G1/0/8	80	192.168.3.134	255.255.255.248	Not Shutdown	SS1	G0/2
	G1/0/9				Ether channel	L3 switch	G1/0/9
	G1/0/10						G1/0/10
	G1/0/11-24				Shutdown		

Network type	L3 port	Ip address	Subnet mask	Router port	Ip address	Subnet mask	Port status
LAN 1 (Main)	G1/0/1	10.10.10.1	255.255.255.252	G0/1	10.10.10.2	255.255.255.252	Not Shutdown
LAN 2	G1/0/1	10.10.11.1	255.255.255.252	G0/1	10.10.11.2	255.255.255.252	Not Shutdown

Network type	Router port	Ip address	Subnet mask	Firewall port	Ip address	Subnet mask	Port status
WAN 1 (Main)	G0/0	203.143.39.1	255.255.255.128	G0/0	203.143.39.2	255.255.255.128	Not Shutdown
WAN 2	G0/0	203.143.38.1	255.255.255.128	G0/0	203.143.38.2	255.255.255.128	Not Shutdown
WAN 3	G0/2						shutdown

| Network type	Firewall port	Ip address	Subnet mask	ISP Router port	Ip address	Subnet mask	Port status
WAN 1 (Main)	G0/1	203.143.39.3	255.255.255.128	G0/0	203.143.39.4	255.255.255.128	Not Shutdown
WAN 2	G0/1	203.143.38.3	255.255.255.128	G0/0	203.143.38.4	255.255.255.128	Not Shutdown
WAN 3	G0/2						shutdown

floor	device	vlan	Usable port range	Port Status
Ground	GS1	10	F0/1-10	Not Shutdown
		11	F0/11-14	Not Shutdown
		12	F0/15-16	Not Shutdown
			F0/24-48	Shutdown
First Floor	F1S1	20	F1/0/1-48	Not Shutdown
	F1S2		F2/0/1-37	Not Shutdown
			F2/0/38-48	Shutdown
	F1S3		F3/0/8-24	Shutdown
Second Floor	F2S1	30	F1/0/1-48	Not Shutdown
	F2S2		F2/0/1-48	Not Shutdown
	F2S3		F3/0/1-48	
	F2S4		F4/0/1-48	
	F2S5		F5/0/1-33	
		31	F5/0/34-48	
	F2S6		F6/0/1-25	
			F6/0/26-48	Shutdown
	F2S7		F7/0/8-24	Shutdown
Third Floor	F3S1	40	F1/0/1-15	
		41	F1/0/16-35	
		42	F1/0/36-39	
			F1/0/40-48	Shutdown
	F3S2		F2/0/8-24	Shutdown
Fourth Floor	F4S1	50	F1/0/1-21	
		51	F1/0/22-31	
		52	F1/0/32-41	
		53	F1/0/42-46	

		54	F1/0/47-48	
	F4S2		F2/0/1-3	
		55	F2/0/4-8	
			F2/0/16-48	Shutdown
CCTV	CS1	70	F1/0/1-48	
	CS2		F2/0/1-43	
			F2/0/44-48	Shutdown
	CS3		F3/0/1-24	Shutdown
Severs	SS1	80	F0/1-4	
			F0/5-8	Shutdown
Access Point	GS1	100	F0/17-23	
	F1S3		F1/0/1-7	
	F2S7		F7/0/1-7	
	F3S2		F2/0/1-7	
	F4S2		F2/0/9-15	

<u>Devices that we use</u>

<u>Sophos (SG 115)</u>

- Sophos SG 115 is a firewall designed for small and medium-sized businesses. It offers superior performance with a simple management interface. The SG 115 firewall is rated for 11-25 users, 2.7 Gbps firewall throughput, and 425 Mbps VPN throughput. The Sophos SG Series appliances are built to provide optimal performance, versatility and efficiency to meet all your security needs.
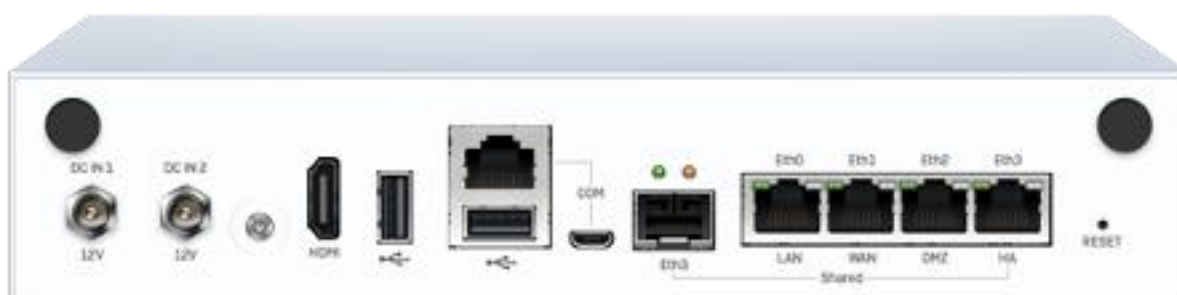
- USB Port - 2 x USB 3.0
- IPS Throughtput (up to 1.5 Gbps)
- Threat Protection Throughtput (800 Mbps)
- NGFW Throughtput (up to 2 Gbps)
- IPv4 Firewall Throughtput (up to 5.5 Gbps)
- Console Port – 1 x RJ-45(Serial)
- Virtual Domain

Cisco ISR(MODEL-ISR4431/k9)

- Product Details Cisco ISR4431-SEC/K9 is the Cisco ISR4431/k9 router with Security Bundle. Its other specifications are the same as ISR4431/k9. 500Mbps-1Gbps system throughput, 4 WAN/LAN ports, 4 SFP ports, multi-Core CPU, Dual-power, Security, Voice, WAAS, Intelligent WAN, OnePK, AVC, separate control data and services CPUs.

- Product Code Cisco-ISR4431/K9
- Aggregate Throughput -500 Mbps to 1 Gbps
- Total onboard WAN or LAN 10/100/1000- ports 4
- RJ-45-based -ports 4
- SFP-based -ports 4
- Enhanced service-module (SM-X) -slot 0
- NIM (Network Interface Modules) -slots 3
- Onboard ISC -slot 1
- DDRM (data plane) 2 GB (default) / 2 GB (maximum)
- DDRM (control/services plane) 4 GB (default) / 16 GB (maximum)
- Flash Memory 8 GB (default) / 32 GB (maximum)
- Power-supply options Internal: AC, DC, and PoE
- Rack height 1 RU
- Dimensions (H x W x D) 43.9 x 438.15 x 507.2 mm
- Package Weight 20.88 Kg

Cisco Catalyst 9300 Model(C9300-24T-A)

- Cisco Catalyst C9300-24T-A. Switch type: Managed, Switch layer: L2/L3. Basic switching RJ-45 Ethernet ports type: Gigabit Ethernet (10/100/1000), Basic switching RJ-45 Ethernet ports quantity: 24. Full duplex. MAC address table: 32000 entries, Switching capacity: 208 Gbit/s. Networking standards: IEEE 802.1D, IEEE 802.1Q, IEEE 802.1p, IEEE 802.1s, IEEE 802.1w, IEEE 802.1x, IEEE 802.3ad, IEEE.... Power over Ethernet (PoE). Rack mounting, Form factor: 1U

Cisco Catalyst 2960 PoE

Product Highlights

Cisco Catalyst 2960-Plus switches feature:

• 24 or 48 Fast Ethernet ports

• Small Form-Factor Pluggable (SFP) and 1000BASE-T Gigabit Ethernet uplinks

• IEEE 802.3af-compliant Power over Ethernet (PoE)

• LAN Base or LAN Lite Cisco IOS® Software feature set

• Smart Operations tools that simplify deployment and reduce the cost of network administration

• Cisco Energy Wise technology to manage energy consumed by connected devices

• An enhanced limited lifetime hardware warranty (E-LLW), providing next-business-day replacement

Applications and Benefits

The Cisco Catalyst 2960-Plus Series provides cost-effective, enterprise class Ethernet switching for:

• Branch offices, remote sites, and retail locations

• Conventional desktop workspaces

• Building infrastructure, physical security, and other non-traditional access applications

Benefits of the 2960-Plus include:

• Robust quality of service (QoS) that prioritizes voice and critical business applications

• Flexible security features that can limit access to the network and mitigate threats

• Tools that reduce total cost of ownership through simplified operations and automation

Cisco 9100 Access Point

- Cisco Catalyst 9100 Access Points are wireless access points designed for providing integrated security for IoT devices and mobile clients1. They are the follow-ups to the Cisco Aironet 1800 Series Access Points, specifically the Cisco Aironet 1830 and 1850 Series2. The Cisco Catalyst 9100 Access Points come equipped with Wi-Fi 6 capabilities, better industrial design, and improved RF performance, and deliver reliability, security, and intelligence at scale2.

Hikvision DS-2CD1043G0-I

- **Image Sensor-**1/3" Progressive Scan CMOS

- **Min. Illumination-**Color: 0.01 Lux @ (F1.2, AGC ON), 0.018 Lux @ (F1.6, AGC ON), 0 Lux with IR

- **Shutter Speed-**1/3 s to 1/100,000 s

- **Slow Shutter-**Yes

- **Wide Dynamic Range-**120dB

- **Day & Night-**IR Cut Filter

- **Angle -Adjustment**Pan: 0° to 355°, tilt: 0° to 75°, rotate: 0° to 355°

Lens

- **Focus-**Fixed

- **Lens Type-**2.8/4/6/8 mm

- **FOV-**2.8 mm, horizontal FOV: 103°, vertical FOV: 58°, diagonal FOV: 123°,4 mm, horizontal FOV: 83°, vertical FOV: 45°, diagonal FOV: 99°,6 mm, horizontal FOV: 51°, vertical FOV: 29°, diagonal FOV: 58°,8 mm, horizontal FOV: 39°, vertical FOV: 22°, diagonal FOV: 45°

- **Aperture-**F1.6

- **Lens Mount-**M12

- **Aperture Type-**Fixed

Budget Table

Device	Equipment	Model	Qty	Unit Price	Total Price
Firewall	Sophos	SG 115	2	$1317	$2634
Cloud	AWS	500 Mbps Server Machine	1	$0.13 (Hourly)	$1100
Router	Cisco ISR	ISR4431/K9	2	$16,500	$33,000
	Console cable	USB Console Cable USB to RJ45	2	$15	$30
Layer 3 switch	Cisco catalyst 9300	C9300-24T-A	2	$5,900	$11,800
	Power Supply	PWR-C1-350WAC-P/2	2	$769	$1,538
	Redundant Power Supply	PWR-C1-350WAC-P/2	2	$769	$1,538

	IP Services Electronic RTU License	C9300-DNA-A-24-3Y	2	$1,248	$2,496
	Redundant cooling Fans	Fan-T2	6	$518	$ 3,108
	Console Cable	USB Console Cable USB to RJ45	2	$15	$30
Layer 2 switch	CISCO SYSTEMS	Switch (SF110D08NA)	1	$109	$109
	Cisco catalyst 2960 PoE	WS-C2960+24PC-S	4	$2,800	$11,200
	Cisco catalyst 9200 PoE	C9200L-24P-4X-E	14	$5,660	$79,240
	Console cable	USB Console Cable USB to RJ45	10	$15	$150
	Patch panel	ICC CAT6 Patch Panel with 48 Ports and 2 RMS	14	$169	$2,366
		Wallmount 24-Port Cat6 Patch Panel RJ45	3	$46	$138
CCTV Equipment	Ip camera	DS-2CD2143G0-I	88	$95	$8,360
	NVR	DAHUA DHI-NVR2104HS-4KS2	1	$106	$106
	Power Distribution Unit	Hardy Rack Power Strip, Surge Protector 4 Socket	1	$20	$20
	HDD for NVR	8TB Internal Hard Drive HDD	3	$170	$510
Access point	WLAN controller	AIR-CT3504-K9	1	$5,816	$5,816
	Cisco 9100 access point	C9115AXE-H	35	$844	$29,540
Cable	Copper straight Through	CAT6E1M	100	$2	$200
		CAT6E10M	50	$5	$250
		CAT6E20M	100	$8	$800
server	Cable Managers-vertical	32611-E02	1	$1,500	$1,500

	Power Distribution unit	Rackmount PDU with 8 Outlets and Surge Protection	2	$100	$200
	Cable Ties	500 Pack Cable Tie	1	$15	$15
	Fan Kit	3U Triple Fan Kit, 3x 115 CFM	3	$150	$450
	UPS	AWP APO3000RT 3KVA RACK	1	$500	$500
	Servers	Dell 1U R640 5218/8G*1/600G SAS 10K*1/H330/DVD/750W*1/2.5-8	3	$2,570	$7,710
	KVM switch with a monitor	17-inch LCD KVM Switch	1	$1,800	$1,800
	Power Cords	6ft premium universal power code	8	$12	$$96
	WLAN Controllers cisco	Cisco Catalyst 9800-L	1	$11,830	$11,830
	Server Rack enclosure	9u AcoustiQuiet Desktop Server Rack	1	$1,900	$1,900
Cabinets	Wall Mount Rack	6U Wall Mount Network Rack	5	$30	$150
	Power Distribution Unit	MASS RACK Power Strip 6 Socket	6	$10	$60
PC	Hp desktop pc	EliteOne 800 G3 AIO	370	$200	$73,400
laptop	Hp laptop	Elitebook 840 G5	75	$310	$23,250
TV	VIZIO TV	40-inch D-Series Full HD 1080p Smart TV	12	$168	$2,016
Projector		GP - 12 LED Projector Support 1080P	20	$59	$1,180
		GP90 Portable LED Projector 3200LMS HD projector LCD	1	$121	$121

Smart Whiteboard	FITOUCH Interactive Whiteboard	FIT-TBI94D	15	$274	$4,110

Total budget =$219381

Bandwidth Calculation

Department	Users	Bandwidth (MBps)	Total Band. (MBps)	Backup Bandwidth (MBps)	Total Backup (MBps)
Firewall	-	-	10Gbps	-	10Gbps
CCTV	88	3	264	.5	44
Wi-fi	1024	3	3072	.5	512
Labs	265	70	18480	5	1325
Staff Cabins	15	50	750	1	15
Library	20	10	200	1	20

Lecture halls	30	40	1200	2	60
Program office	10	10	100	1	10
Administrator and Director	21	40	840	2	42
Reception	3	10	30	1	3
Server and CCTV rooms	8	70	560	5	40
Auditorium	5	5	25	0.5	3
Programming office	15	10	150	1	15
Studio	10	10	100	1	10

- Bandwidth measures using Mbps
- We Recommended 25800 Mbps as main ISP bandwidth.
- And Secondary ISP Bandwidth as 25000 Mbps.

FINAL PROJECT OVERALL TIMELINE

We have divided the overall task into main 4 tasks and each main task has respective sub-task which is shown below. Once we have all the main task and sub-tasks mapped out, you can see a visual representation of the timeline. This will help the customer to gain some idea about the project.

TASK NO	TASK	AUGUST	SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER		
		4th WEEK	1st WEEK	2nd WEEK	3rd WEEK	4th WEEK	1st WEEK	2nd WEEK	3rd WEEK	4th WEEK	1st WEEK	2nd WEEK	3rd WEEK	4th WEEK	1st WEEK	2nd WEEK	3rd WEEK
1	RESEARCH	▨	▨														
2	DESIGN			▨	▨												
3	PROPOSAL					▨											
4	ODERING EQUIPMENTS						▨	▨	▨	▨							
5	INSTALLATION										▨	▨					
6	CONFIGURING												▨	▨			
7	TROUBLESHOOTING														▨	▨	▨