Chapter 1
Section 1.1

Campus Area Network: Background

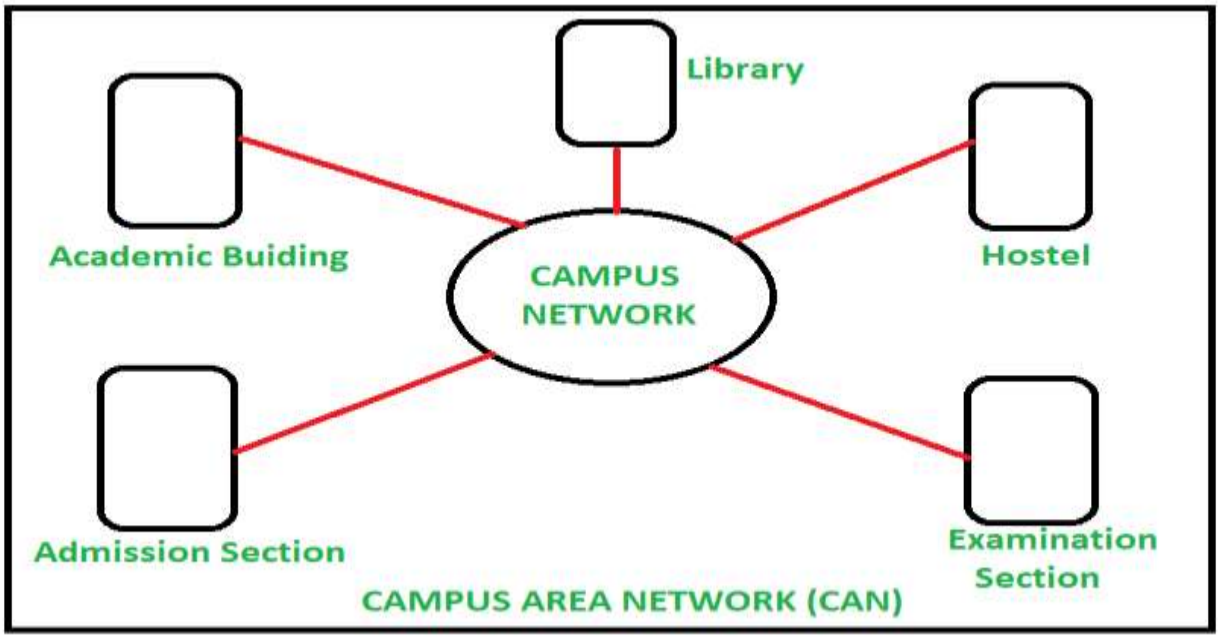
Campus Area Network (CAN) is a group of interconnected Local Area Networks (LAN) within a limited geographical area like school campus, university campus, military bases, or organizational campuses and corporate buildings etc. A Campus Area Network is larger than Local Area Network but smaller than Metropolitan Area Network (MAN) and Wide Area Network (WAN).

This Campus Area Network also called as Corporate Area Network. Sometimes this network is also referred as Residential Network or ResNet as it is only used by residents of specific campus only. Campus Area Network is network of interconnected Local Area Networks where these LANs are connected via Switches and Routers and create a single network like CAN. Campus Area Network covers areas of around 1 to 2 km range and it can be both wired or wireless connectivity.

Example of CAN :

Let's think about a university where university networks interconnect academic building, admission building, library, account section, examination section, placement section etc. of an institution when connected with each other combine to form Campus Area Network (CAN).

The below figure illustrates a Campus Area Network:



Campus Area Network: Infrastructure

Within a limited geographical area, LANs are interconnected with help of Switches and Routers and connects buildings to buildings of a single campus where all networking resources like wiring, hubs, switches, routers etc. are owned by university itself. In this, they use same kind of technologies like Local Area Network only interconnection between different buildings is there. Nodes in a campus network are interconnected by means of Optical fiber media, i.e., Fiber optics and takes advantage of minimum 10-Gigabit Ethernet technology. Besides this 10-Gigabit Ethernet technology, Wi-Fi hotspots and hot zones are different ways of accessing network.

Benefits of CAN:

- Speed –

  Communication within a CAN takes place over Local Area Network (LAN) so data transfer rate between systems is fast than Internet.

- Control –

  Campus area networks are designed with centralized control in mind. This allows universities to manage everything in-house where administrators have full control over their infrastructure and security policies.

- Security –

  Network administrators of campus take care of network by continuous monitoring, tracking and limiting access. To protect network from unauthorized access firewall is placed between network and internet.

- Cost effective –

  With a little effort and maintenance, network works well by providing fast data transfer rate with multi-departmental network access. It can be enabled wirelessly, where wiring and cabling costs can be managed. So, to work with in a campus using CAN is cost-effective in view of performance.

Finally, we can say Campus Area Network is a cost-effective and easy to implement within a specific geographical area or certain kilometers of locality. And it is very helpful to campuses like colleges, universities, corporate organizations, etc.

The Future of Campus Area Networks

As campuses get larger and the demand for more speed and coverage increases, campus area networks are pushed to their limits.

Many administrators are turning to cellular access points to cover large areas - especially outdoors - and accelerate the speed of deployment for critical wireless connectivity. In the past, universities had to rely on commercial carriers for cellular access in many of these environments, which left administrators with little control in terms of their network resources, service levels, and budget.

Now private fast speed deployments make setting up an own network as simple as configuring enterprise Wi-Fi. Administrators can expand their campus area networks quickly to cover both indoor and outdoor spaces. In cases where extra distance is needed, small roof-mounted antennas provide targeted communication, perfect for site-to-site data transfer.

Chapter 1
Section 1.3 Campus Area Network: Design Consideration

The following factors and designs are considered while designing the CAN Systems for the University premise. They are:

1. The Entire premise are covered through wire and wireless devices with minimum 1 Gbps speed.

2. All the office desks will be connected through CAT 6 network cables.

3. Entire other areas will be covered through Indoor and Outdoor corporate Wi-Fi Networks

4. Entire network will be centralized controlled and monitored.

5. Inter Building connectivity will be done through high-speed networking (min 10 GBPS) Fiber Optics Connectivity.

6. Entire networking cabling will be done through PVC Channels / pipes with the drop down from the false ceilings / ceilings.

7. All the final termination will be done in the patch panels at the Rack ends and faceplates at the Table ends.

8. Further ready-made good quality patch chords will be used for the final connections to the device.

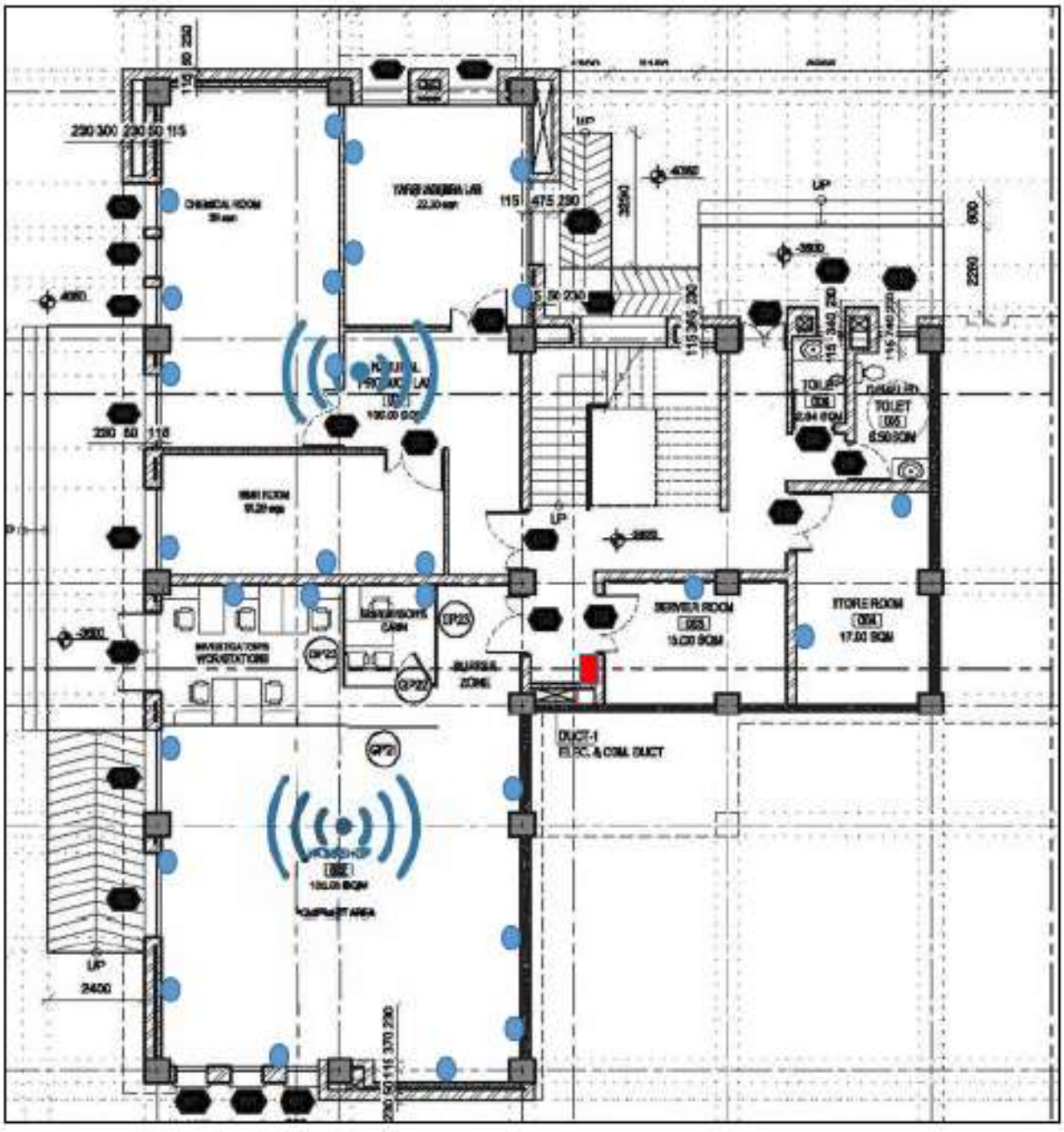
9. Entire network points will be properly marked and labelled for the future trouble shooting.

10. Entire network designs are done with adopting the Structural Cabling terminologies and norms.

11. Internal Voice Communication will be done through IP Based EPABX and the same Network Cabbing will be used.

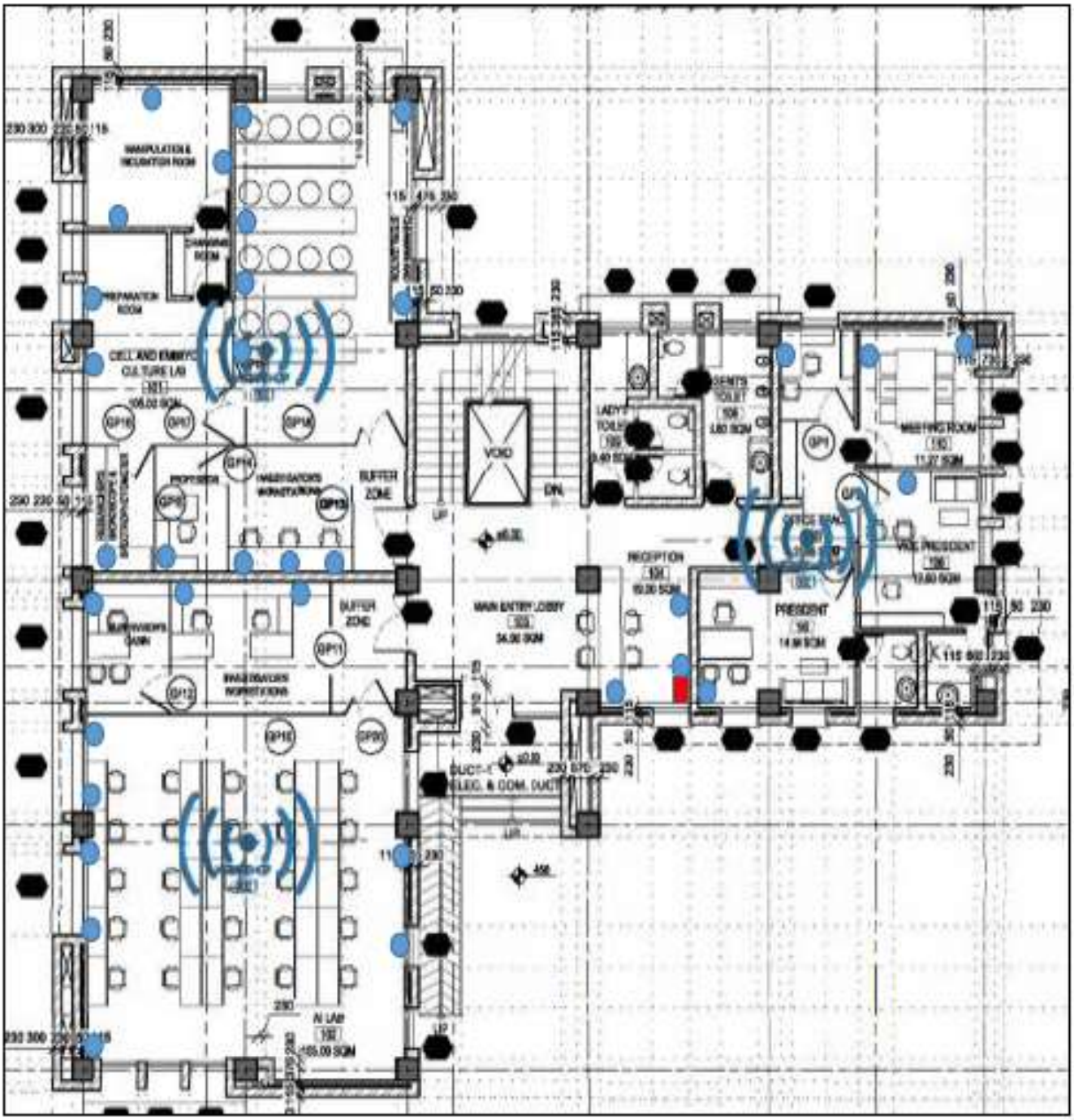
Campus Area Network: Layouts and Positioning

Ground Floor



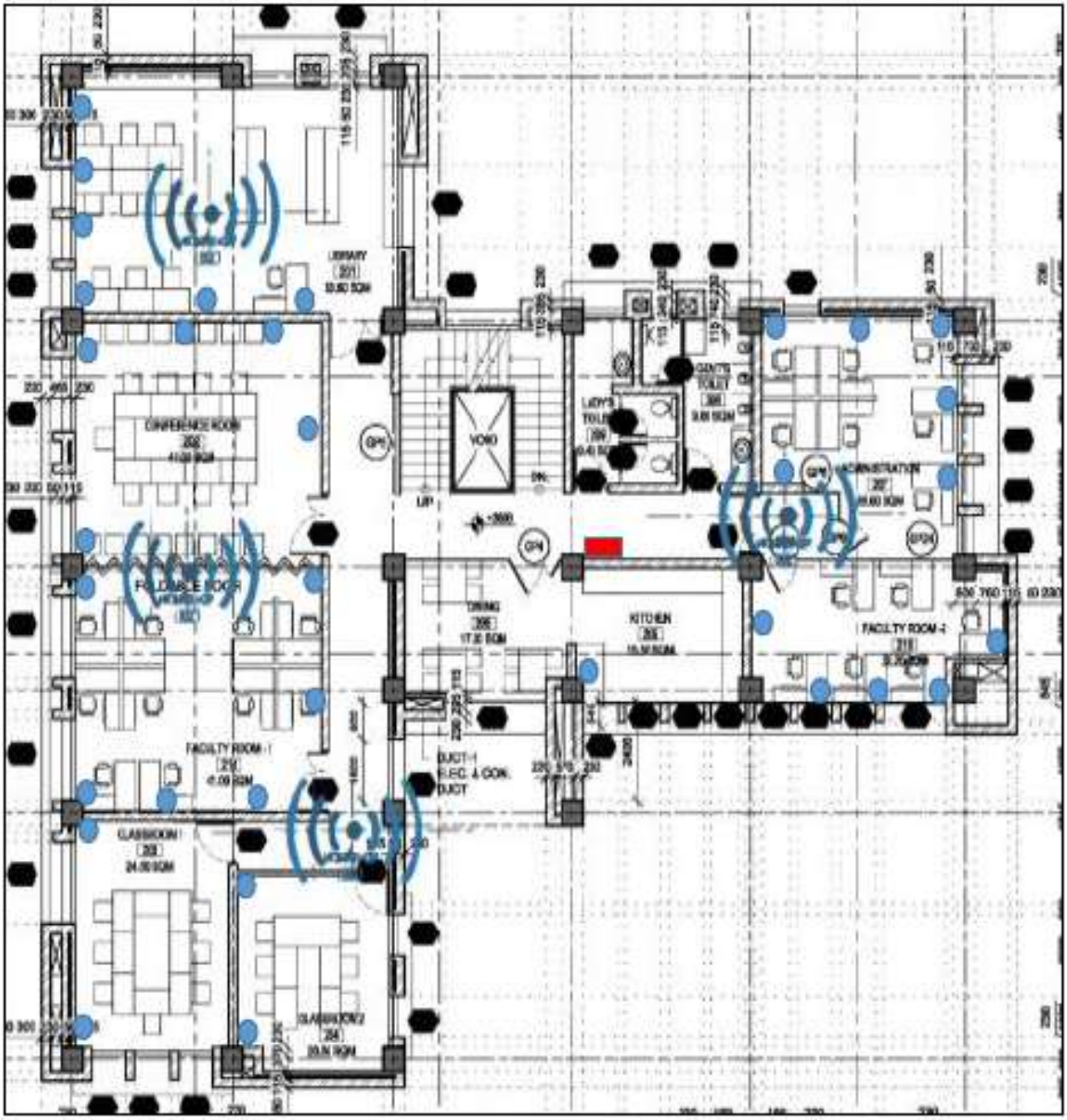
Index		
	Rack – 9U	1 Pc
	Computer / Telephone Point	31 Points
	Wi-Fi Devices	2 PCs

FIRST FLOOR



Index		
	Rack – 9U	1 Pc
	Computer / Telephone Point	40 Points
	Wi-Fi Devices	3 PCs

SECOND FLOOR



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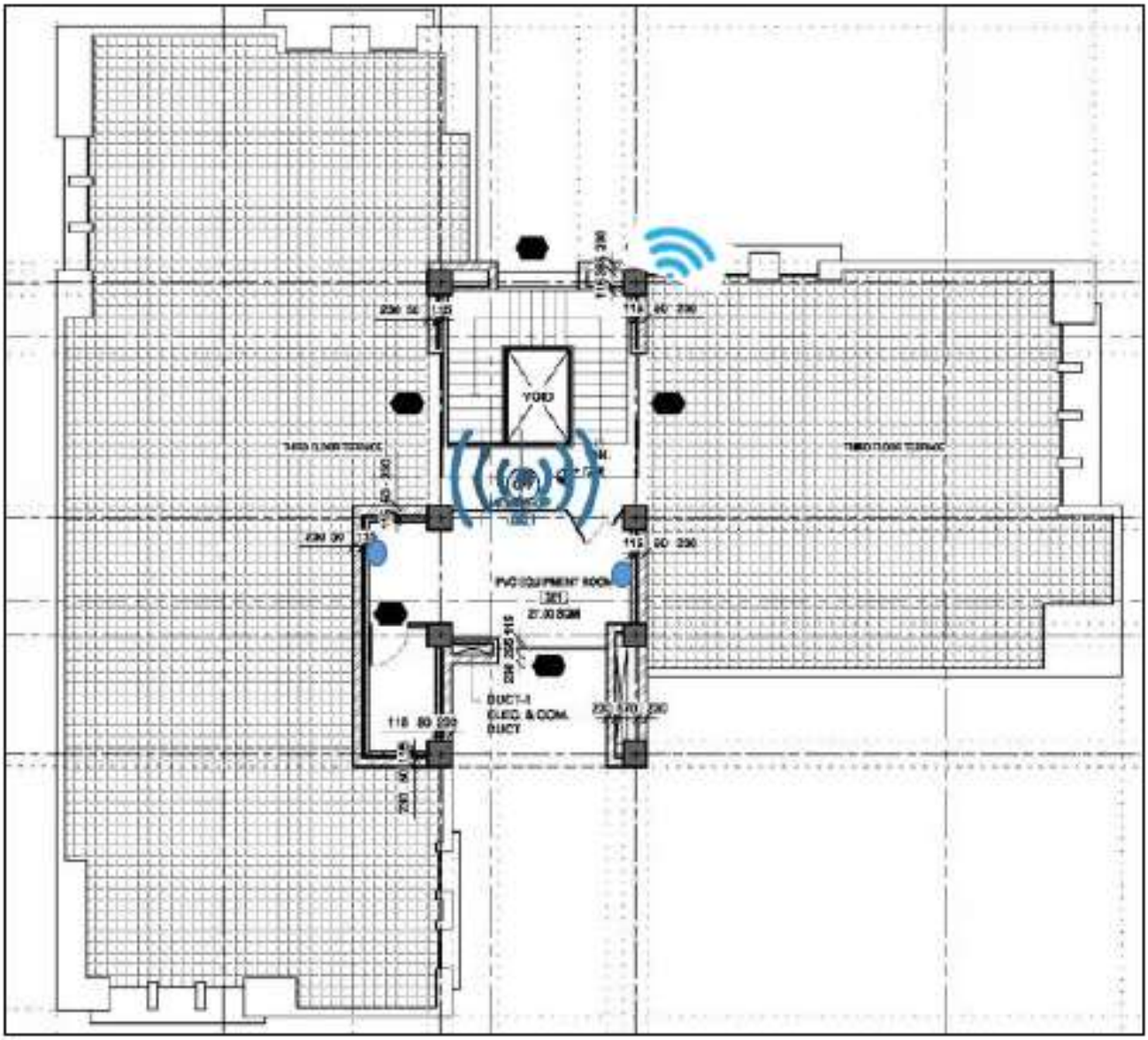
	Rack – 9U	1 Pc
	Computer / Telephone Point	47* Points – 6 points for TOP floor
	Wi-Fi Devices	4 PCs

TOP FLOOR



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Wi-Fi Devices	2 PCs (1 External)