



Joint Admissions and Matriculation Board

...enhancing Academic Excellence

9TH MAY, 2019

NETWORK ADVISORY TO ALL ACCREDITED CENTERS

Following the conduct of the 2019 Unified Tertiary Matriculation Examination, it was observed that some accredited Computer Based Test centres had varied standards of configuration of Network Installation and Topology which unfortunately affected the smooth deployment and administration of the examination.

There were cases of candidates and officials that either deliberately or unconsciously disrupted the network by stepping, cutting and/or damaging exposed cables in the examination halls. The current configuration in some of the centres does not allow for quick trouble shooting, and thereby led to unnecessary delay in fixing network challenges.

It is therefore in reaction to this and in pursuance of the need to ensure that accredited Computer Based Test centres run smoothly, efficiently and effectively, that the Board has decided to issue this Advisory Note.

Please note that this Advisory Note is **NOT** for 2020 Unified Tertiary Matriculation Examination, rather, it is aimed at the current situation as the Board plans to use accredited Computer Based Test centres for other activities which are to run from now till next year. Any centre that does not adhere to this Advisory Note would be excluded from such activities.

Technical Advisors and Technical Staff would be visiting your centre in earnest to confirm compliance with this Advisory and this will lead to the categorisation of centres in terms of those whose network are satisfactory or unsatisfactory.

The Board therefore implores all accredited centres to abide by this Advisory in the overall interest of the partnership that currently exists between your Centre and the Board.

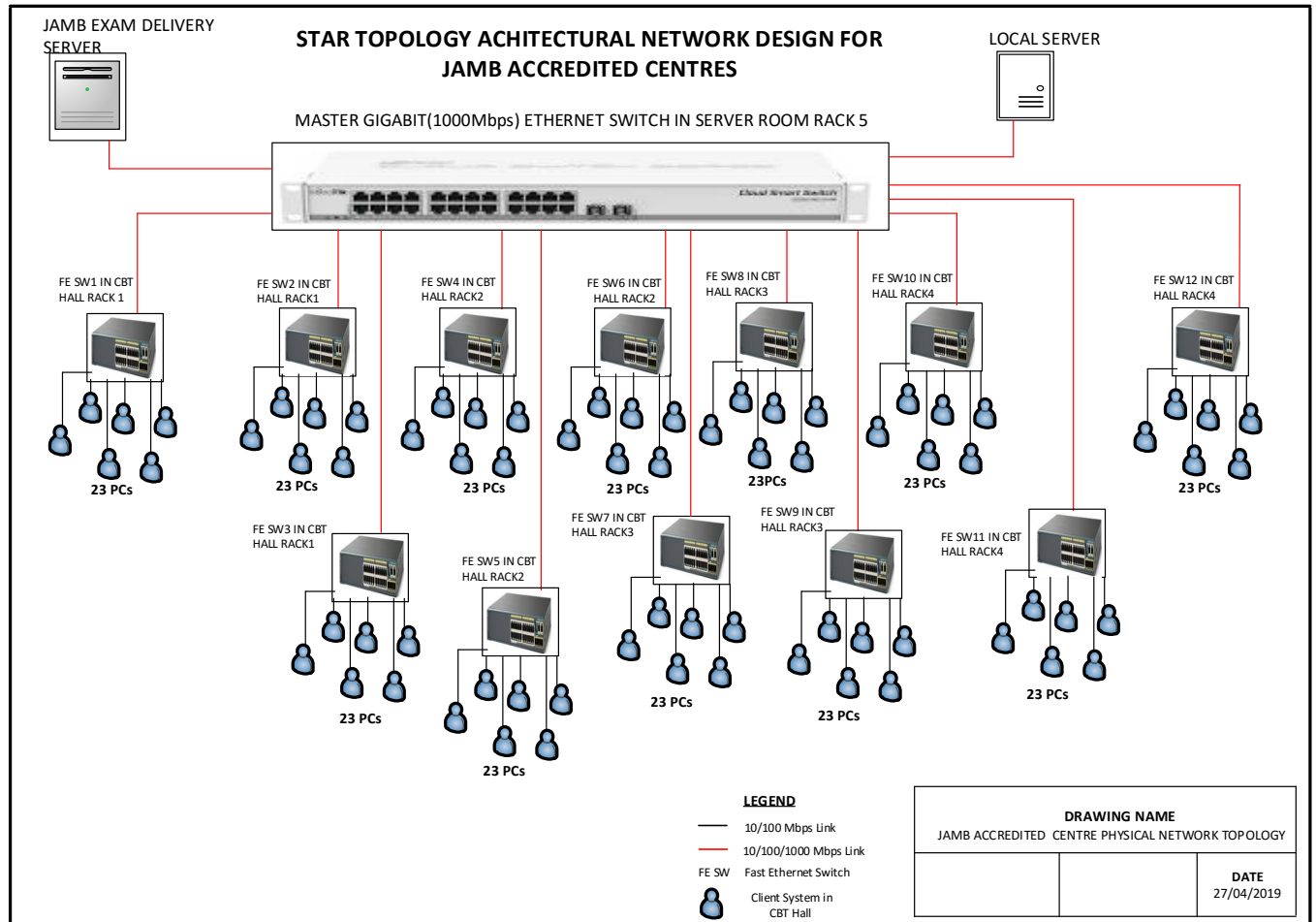
In view of the above, the Board hereby clarifies and restates its specification for the LAN implementations in accredited centers below.

General Guidelines

1. Network to be implemented will be a STAR Topology. The Board has discontinued and stopped the use of Bus or Ring designs.
2. All Cables are to be hidden by trunks/pipes. Roof channels and non-step surfaces must be used i.e. there must not be a situation where a candidate can step on trunks/pipes. All implementation partners are to keep in mind easy access to cables for servicing and future replacements in case of cable faults.
3. All Network switches are to be encased in Network Racks.
4. All cables coming out of the Racks either to server room or to computers must be encased.
5. Power units powering all switches must be encased and electrically grounded.
6. All cables used in the LAN implementation must be a minimum of CAT5e cables. Cat6 cables is required for new centers.
7. All single cables used in the deployment of LAN should be 100% pure copper and not exceed 100mtrs.
8. All Network racks should be in the hall at roof level (preferably a total of 2 placed at opposite ends in the hall coinciding with the center of the hall) and not in server room. Cable lengths to the server room from extreme ends of the hall will exceed 120feet in some instances if network racks are placed in the server room.
9. Port 1 in all cases should be used for uplink to Master switch.
10. The Master switch (located in Server room) must be CISCO or equivalent high grade Gigabit switch.

11. All Switches used in the Halls must be a minimum of 100Mbps connection.
12. All Switches must be connected to a power source with backup facilities (UPS or Inverter).
13. All network racks must be locked at all times.
14. All cables should have laminated labelling at both ends for easy identification.
15. All electrical trunks must be demarcated from LAN cables.
16. Switches to be installed should have extra capacity on both sides of the hall i.e. For a 275 capacity center, each side should have 7 switches.
17. All switches must be rack-mountable and must be racked at all times.
18. All WiFi and Internet enabled devices should be switched off during examination
19. No client computer should have an internet connection in any way during the examination.
20. Earthing: The building and electrical connections should be earthed and reviewed periodically. The server, switches, network racks, inverters, solar panels, charge controllers and other network and power equipment should be connected to the earthing system of the building.
21. All centers should be regularly fumigated for rodents as they have been known to eat network cables. This also implies that centers are advised to desist from having staff eat or dispose of food inside or around the center.

Network Topology



Advantages of the star topology

1. The Star Topology ensures that computers with problems are isolated to their specific switch and cable. This makes troubleshooting very easy.
2. The Star Topology also facilitates easy expansion of the network. Computers can be added or removed without any disruptions.
3. The Star Topology ensures that there is a maximum hop count of 3 which is excellent for any network.
4. Fast Performance and low network traffic/noise.
5. The Star topology ensures there are no network collisions.

IP ADDRESSING TO BE USED IN ALL CENTERS

This guide will show you how to configure all the computers in each Testing center to be able to connect to the network.

1. For the smooth conduct of the UTME, the Board hereby re-emphasizes the need for all centers to configure their systems with the appropriate and acceptable IP address scheme.
2. Complaints have been received about IP clashes between the IP address of the MIFI connected to the JAMB delivery Server and the local LAN IP address of the Center.
3. Based on this information, the Board hereby directs that no center should use any Static IP address in the range 192.168.0.xxx to 192.168.9.xxx (i.e. between 0 and 9)
4. Any other IP address outside this range can be used.

As a requirement, no device should be configured for DHCP services. All devices must have a static IP address configured for them. No two computers should have the same IP address, as the affected computers will not be useable (IP Conflict).

In order to configure the devices please follow the instructions as provided below.

The Internet Protocol Version 4 (TCP/IPv4) Properties box will be used to configure all static IP.

The IP address range to be used should start from:

SAMPLE 1

Device	IP Address Range	Instruction
JAMB Server Laptop	192.168.10.1 (or as agreed between 1 and 4)	To be configured on JAMB server laptop by JAMB technical staff ONLY
Main Lab (250 Computers)	192.168.10.4 - 192.168.10.254	This will cater for 250 computers.

Backup Computers	192.168.11.4 - 192.168.11.254	Only 25 of these are needed
Default Gateway	192.168.10.1	This will be the server laptop.
Subnet Mask	255.255.252.0	Please put this address on all computers including the server laptop and any other server in the network.

SAMPLE 2

Device	IP Address Range	Instruction
JAMB Server Laptop	172.16.0.1 (or as agreed between 1 and 4)	To be configured on JAMB server laptop by JAMB technical staff ONLY
Main Lab (250 Computers)	172.16.0.4 - 172.16.0.254	This will cater for 250 computers.
Backup Computers	172.16.1.4 - 172.16.1.254	Only 25 of these are needed
Default Gateway	172.16.0.1	This will be the server laptop.
Subnet Mask	255.255.252.0	Please put this address on all computers including the server laptop and any other server in the network.

Reminder

1. The use of DHCP is not allowed in all centers. This has been known to cause disruptions. Static IP addresses are to be used and NOT dynamic IP addressing in all Centers. Any Center using Dynamic IP Addressing will be disqualified.
2. Use either of the two IP address schemes and not a combination.
3. The use of the CBT Center server on the network is not required except for cases where there are thin client servers.

4. Please use TCP/IP version 4 for all configuration purposes.
5. Please take note of the subnet mask address. Ensure same is used on all computers.
6. Reserve addresses between 1 and 4 for JAMB server e.g. 192.168.10.2
7. It is required that the STAR topology as detailed above is used in the CBT center network design. i.e. One cable from the main switch in server room to each switch in the main hall. (No discretion is allowed on this)