20 switches with 7 ports each. All the switches are interconnected with one another with ethernet cables to create a network backbone, thus leaving 5 ports available in each switch thus making 100 pots available for 100 devices to connect. These switches are connected to the main switch in the machine room, which is connected with an ethernet cable to an Access Point in the middle of the open space room, thus establishing 100 wired access points.

The router in the machine room is configured with an IP address of 10.0.0.1, with a subnet mask of 255.0.0.0

The DHCP1 sever is configured with IPv4 address of 10.0.0.10

and a service provider of DHCP with a default gateway of 10.0.0.1 and a subnet mask of 255.255.255.0 and a stating IP address of 10.0.0.11, a maximum number of user is set to 245 devices

With the DHCP service provider in the server configured it allows the router to automatically assign IPv4 addresses to any device connected to this network whether is via wired or wireless connection

For this purpose i have randomly placed devices across the space wired and wirelessly connected to run the simulation

Access Point configured to use 2.4 GHz channel 6, with a coverage of 200 meters^2 for WI-FI range

and a WI-FI Protected Access 2- Pre-Shared Key, this will prevent intruders from creating their own encryption key to match the one used by this network by using the temporal key integrity protocol(TKIP): which dynamically changes the key that the system use

**Cost**

20 Switches-TP (8-Pots)\* $350 = $7 000

1 2960-24TT Switch\* $1500 = $1500

1 Access Point-PT \*$20 = $20