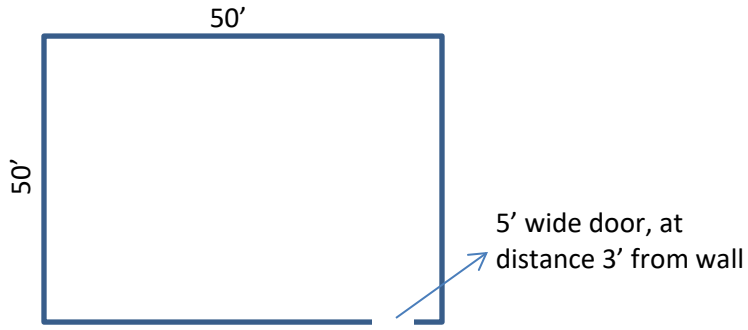
Design Assignment

Group – 1

You are given a space of size 50’ x 50’ as shown below.



You want to design a Cloud data center in the space provided with following rough specification.

1. The cloud provider wants to provide two types of VMs to users – a compute-intensive VM (4 vCPUs, 8 GB RAM) and a memory-intensive VM (2 vCPU, 16 GB RAM). The system is to be designed so that at a time, around 3000 compute-intensive and around 1500 memory-intensive VMs can run. The servers are to have 20-core latest generation Xeon CPUs, with at most 512 GB of RAM. Each user will also need to be provisioned with 30 GB of central SAN storage. The servers and storage should be protected against common failures.
2. The data center housing the system can only have PAC/PAHU systems for air-handling.
3. The system and the DC should be designed in such a manner that the failure of any single component should not cause the user programs to stop.

The specification allows for different design options. You are required to think about the different options before choosing one so that you can argue why you chose one option over the other, and discuss with me before you freeze the final design.

You are required to submit the following documents:

1. A list of equipments (servers, storage, switches, racks, AC, UPS,….) with quantity and basic specifications (some tentative make/model no. to show some actual equipment available in the market would be very nice), presented nicely in a table.
2. Distribution of the computing equipments over the racks (number the racks and list what goes in each rack).
3. Diagram showing interconnection of equipments inside one rack.
4. Diagram showing interconnection between different racks.
5. DC layout diagram showing the placement of the different equipments inside the DC (top view). Approximate dimensions should be shown against rooms/equipments/gaps etc.)
6. A design document (2 pages max) describing your design, especially justifying your major design choices)