# Data Center Design Process

A Well thought DC design process is the mandatory consideration for any Data Center within Rwanda. As Data center is the nerve center of IT computing infrastructure. These requirements must be considered while designing Data center.
Datacenters need to meet the space requirements, ambient environment and necessary security controls to protect the critical IT infrastructure that resides within.
Following are some key considerations:

- Site location and space considerations
- Architectural and Structural loading considerations
- Electric Power and backup power considerations
- Fire protection and cooling considerations
- Redundancy / Business continuity considerations
- Green Data Center considerations
- Security Considerations
- Operational considerations

It is essential that the design of the telecommunications cabling system, equipment floor plan, electrical plans, architectural plan, HVAC, security, and lighting systems must be aligned to each other. Ideally, the design process should be able to give:

- Estimate telecommunications, space, power and cooling requirements of the data center at full capacity and scalability.
- Space, power, cooling, security, floor loading, grounding, electrical protection and other facility requirements should be designed by well-qualified architects and engineers.
- Plan adequate space for operations Center, loading dock, storage room, staging areas and support areas. Floor plan should include placement of entrance Rooms, main distribution areas, intermediate distribution areas, horizontal distribution areas, zone distribution areas and equipment distribution areas.
- Conduct a risk assessment and plan appropriate security controls. These controls should be included in each aspect of Datacenter.

## Data center Tier

The data center operating within Rwanda should be above Tier three. There are four types of a tier and are defined by uptime standard.

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| Tier 1 | 99.671% Availability | Non-Redundant capacity components (Single uplink and servers) |
| Tier 2 | 99.741% Availability | Tier 1 + Redundant capacity components |
| Tier 3 | 99.982% Availability | Tier 1 + Tier 2 + Dual Powered equipment and multiple uplinks |
| Tier 4 | 99.995% Availability | Tier 1 + Tier 2 + Tier 3 + All components are fully fault tolerant including uplinks, storage, chiller, HVAC Systems, Servers and everything is dual powered |

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