Data Centers

→ A data center is a facility composed of networked computers and storage that businesses or other organizations use to organize and storage that businesses or other organizations use to organize.

→ Data Centers are not a single thing, but rather, a conglomeration of elements.

→ A data center must also contain an adequate infrastructure.

→ A data center's design is based on a network of computing and storage resources that enable the delivery of shared applications and data
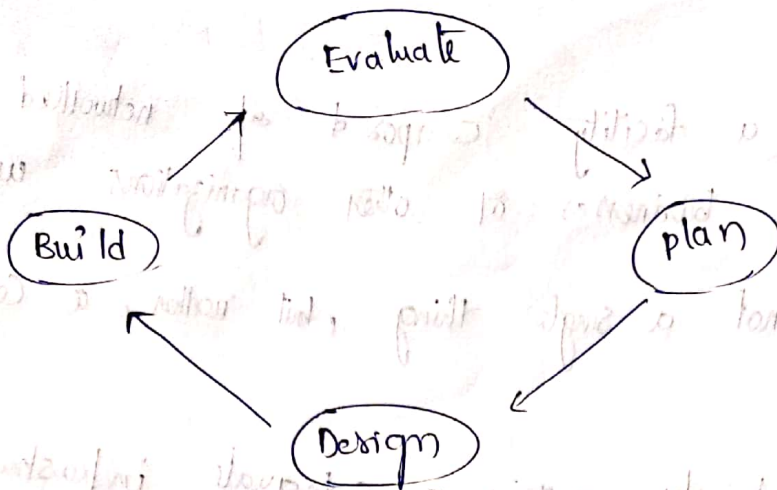
Data Center Consolidation and Colocation

→ Data Center Consolidation is the process of downsizing or consolidating many servers, storage systems, Network systems.

→ The purpose is to lower cost and improve performance, among other things.

→ Colocation is an appealing option for organizations that want to avoid the large capital expenditures.

Benefits

1. physical locations
2. Procurement
3. software
4. Security
5. Reduce errors.

Evaluate → plan → Design → Build → Evaluate

Data Center Tiers

→ Data Center tiers are a standardized ranking system, that indicates the reliability of data center Infrastructure

→ The classifications, ranks facilities from 1 to 4, with 1 being the want and 4 is the highest performing level

→ The ranting is based on
  1. uptime guarantees
  2. Fault tolerance
  3. service cost

Tier 1 :

→ A data center with single path for power and cooling and no backup components

→ This tier has an expected uptime of 99.671% per year

Tier 2 :

→ A data center with single path for power and cooling and some redundant and backup components available

→ This tier offers an expected uptime of 99.74% per year

Tier 3 :

→ A data center with multiple paths for power & cooling and redundant systems

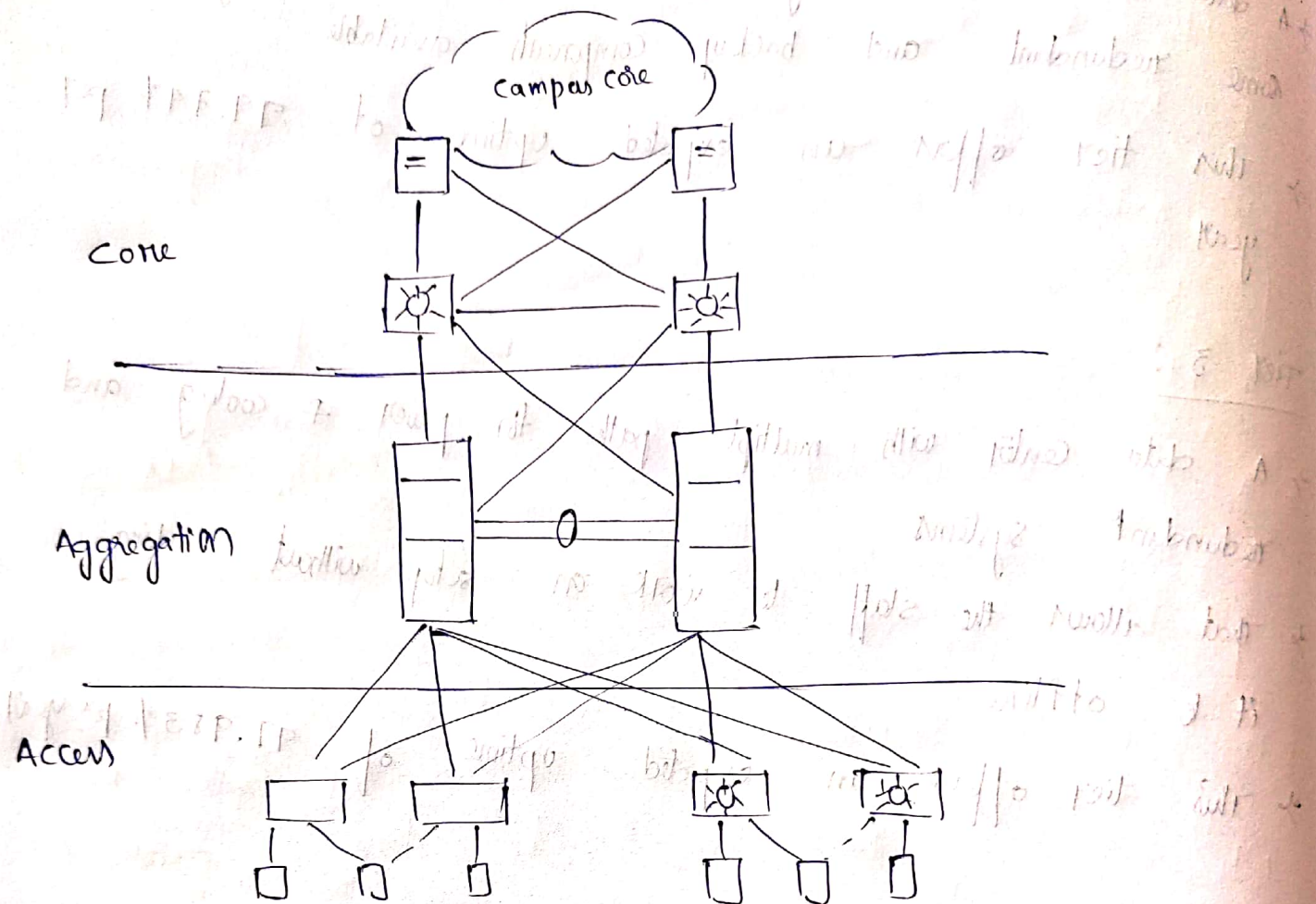→ That allows the staff to work on setup without taking it to offline

→ This tier offers an expected uptime of 99.983% per year

Tier 4 :

→ A Completely faulty tolerant data center with redundancy for every components

→ This tier offers with an uptime of 99.995% per year.

Data - Center Architecture

Core

Aggregation

Access

Core Layer:

→ provides high-speed packet switching back plane for all flows going in and out of the data center.

Aggregation:

→ provides important functions
- service module integration
- layer 2 domain definitions.

Access Layer:

→ The access layer network infrastructure consist of
- module switches
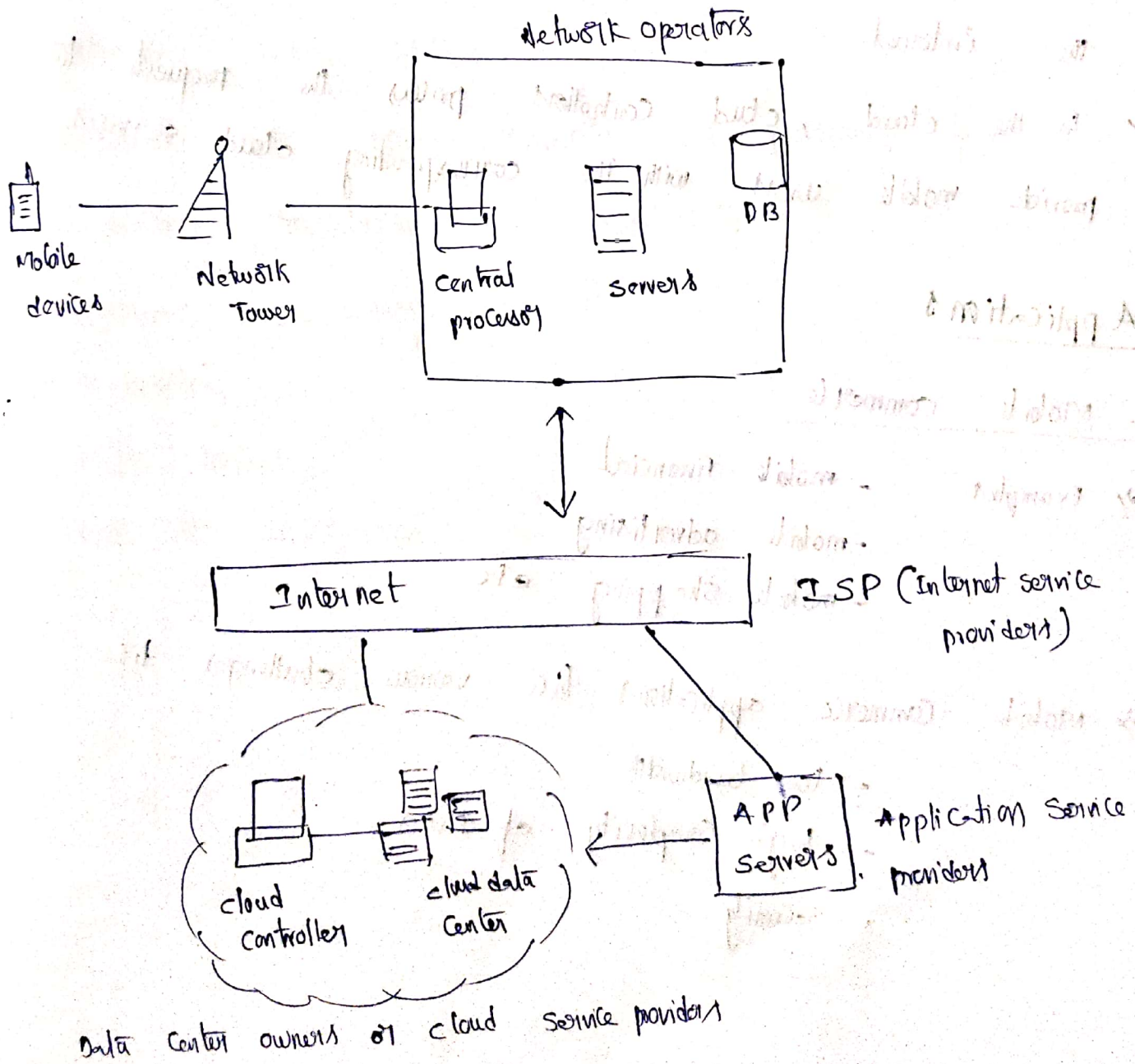- fixed configuration 1 or 2 RU switches
- integral blade server switches.

Mobile cloud Computing ——————— ** imp

→ Mobile cloud Computing (MCC) refers to an infrastructure where both the data storage and data processing happens outside of mobile device i.e into a powerful and centralized computing platform in a cloud

→ The data is accessed over the wireless connection based on a thin native client

Architecture

Network operators

mobile devices — Network Tower — Central processor, Servers, DB

Internet

ISP (Internet service providers)

cloud controller, cloud data Center

APP Servers — Application Service providers

Data Center owners or cloud service providers

→ Mobile devices are connected to the mobile networks via base stations

→ That connection establish and control the connections and functional interfaces b/w the n/ws and mobile devices.

→ Mobile users requests and information and transmitted to the central processors that are connected to servers providing mobile network services

→ The subscribers requests are delivered to a cloud through the internet

→ In the cloud, cloud controllers process the requests to provide mobile users with the corresponding cloud services.

Applications

1. Mobile commerce

→ Examples — mobile financial
— mobile advertising
— mobile shopping etc

→ Mobile Commerce applications face various challenges like
— low bandwidth
— high complexity of devices
— security

2. Mobile Learning

* mobile learning combines e-learning and mobility
* cloud based mobile learning can solve these limitations

3. Mobile Healthcare

4. Mobile Gaming

5. Assistive technologies

Advantages

→ Extending battery lifetime
→ Improving data storage capacity and processing power
→ Improving reliability and availability
→ Dynamic provisioning
→ Scalability
→ Multi-tenancy
→ Ease to Integration