UNIT-4

Cloud Data Centre:

* A data center is a facility composed of networked computer and storage that businesses and/(or) other organisations use to organise, process, store data.

* Data centers serve as a principal repositories for all IT equipment including servers, routers, firewalls, etc.

* A data center must also contain adequate infrastructure such as power distribution and supplemental power subsystems.

* Data center design is based on network of computing and storage resources that enable delivery of shared applications & data.

Data Center Consolidation and Collocation

* Data center consolidation is the process of downsizing (or) consolidating many servers, storage systems, network systems.

* The purpose is to lower cost & improve performance.

* Data center collocation is a process through which an organisation can rent physical office, network and other resources within an existing data center to deploy its own data center.

* It is also known as carrier hotels or colos.

Data Center Tiers:

+ Data center tiers are standardized ranking system that indicates reliability of data center infrastructure.

+ This classification ranks from 1 to 4.

+ Here Rank 1 is the worst performing level and Rank 4 is the best performing level.

* This ranking is based on:
1) Uptime guarantees
2) Fault Tolerance
3) Service lost.

Tier 1:
→ A data center with single path for power & cooling and no backup components.
→ This tier has expected uptime of 99.671% per year

Tier 2:
→ A data center with single path for power & cooling and some redudant and backup components available.
→ This tier has expected uptime of 99.74% per year

Tier 3:
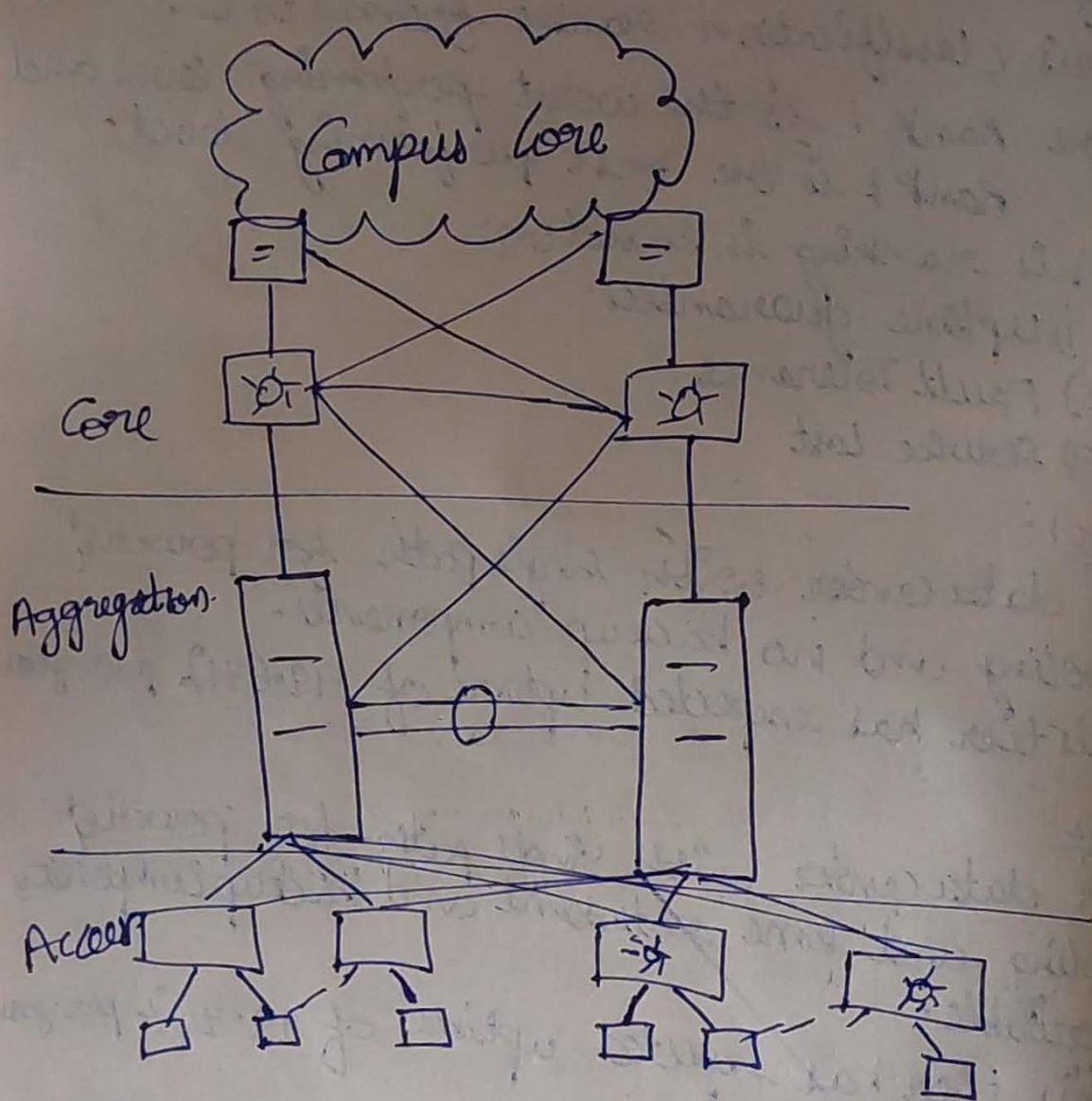→ A data center with multiple path for power and cooling and some redudant systems.
→ This tier has expected uptime of 99.983% per year

Tier 4:
* A completely fault tolerant data center with redudancy for every component.

→ This tier offer an expected uptime of 99.995% per year.

Data Center Architecture

Core Layer:

+ It provides high speed packet switching backplane for all flows going in and out of data center.

Aggregation Layer:

* It provides important functions such as:-
  - Service Module Integration.
  - Spanning Tree processing.
  - Layer 2 domain definitions

Access Layer:

* Here servers physically attach to network.
* The access layer network infrastructure consists of - Modular Switches.
  - ~~key~~ fixed configuration 1 (or) 2RU switches.
  - Integral blade server switches.

Mobile Cloud Computing

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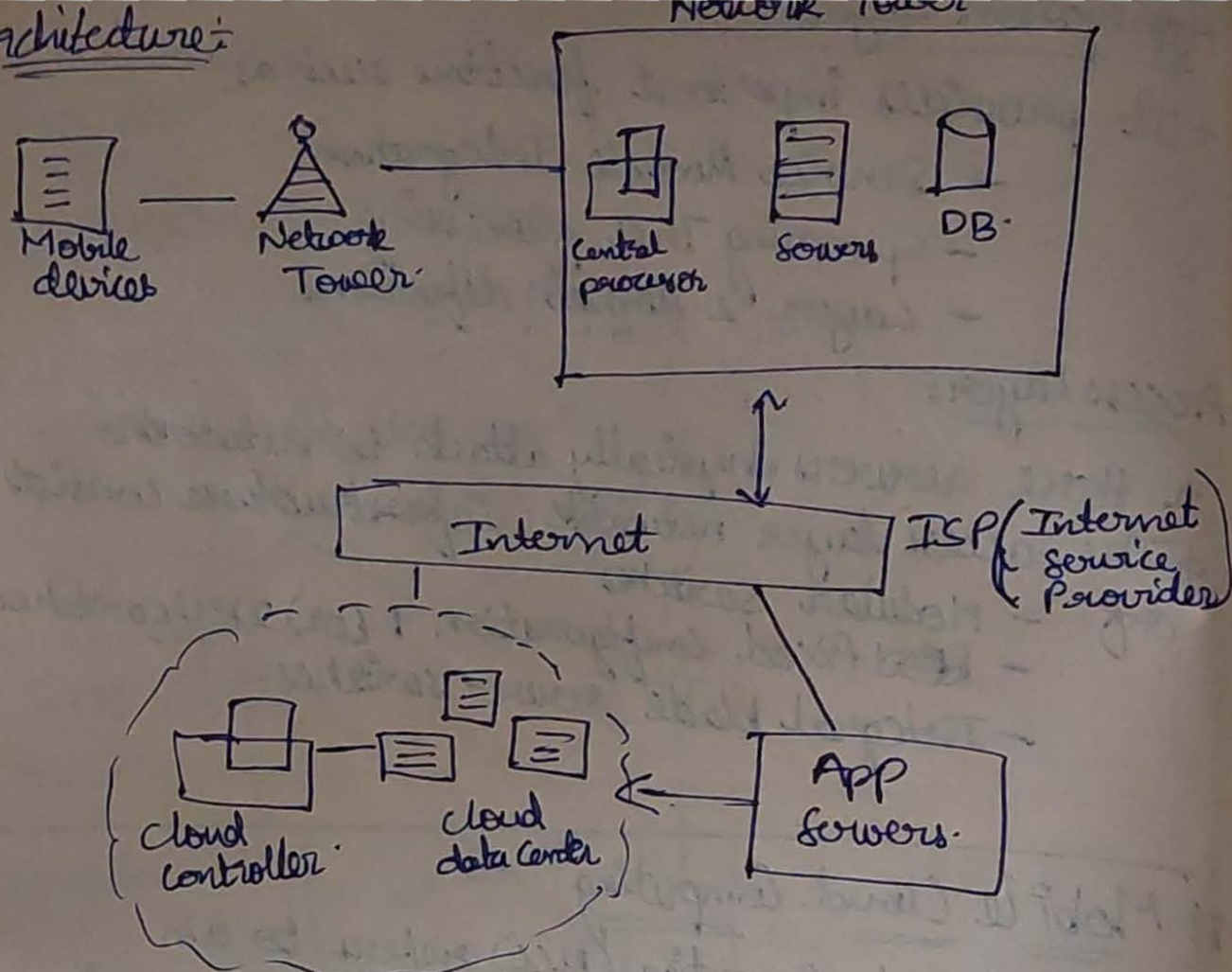
* ~~Mobile~~

* Mobile cloud applications move the computing power and data storage away from the mobile devices

* They ~~are~~ then accessed over wireless connection based on a thin native client.

Architecture:

Data Center owners (or) cloud service providers

* Mobile devices are connected to mobile devices networks via base stations.

* That Connection establish and control the connections and functional interfaces b/w the N/w's & Mobile devices.

* Mobile users request 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 corresponding cloud services

Applications:

1) Mobile Commerce:

→ Examples — mobile financial
- mobile advertising
- mobile shopping.

They face challenges such as
1) Low bandwidth
2) High complexity of devices
3) Security.

2) Mobile Learning:

* Mobile learning combines e-learning & Mobility.
* Cloud based mobile learning can solve these limitations.

3) Mobile Health Care
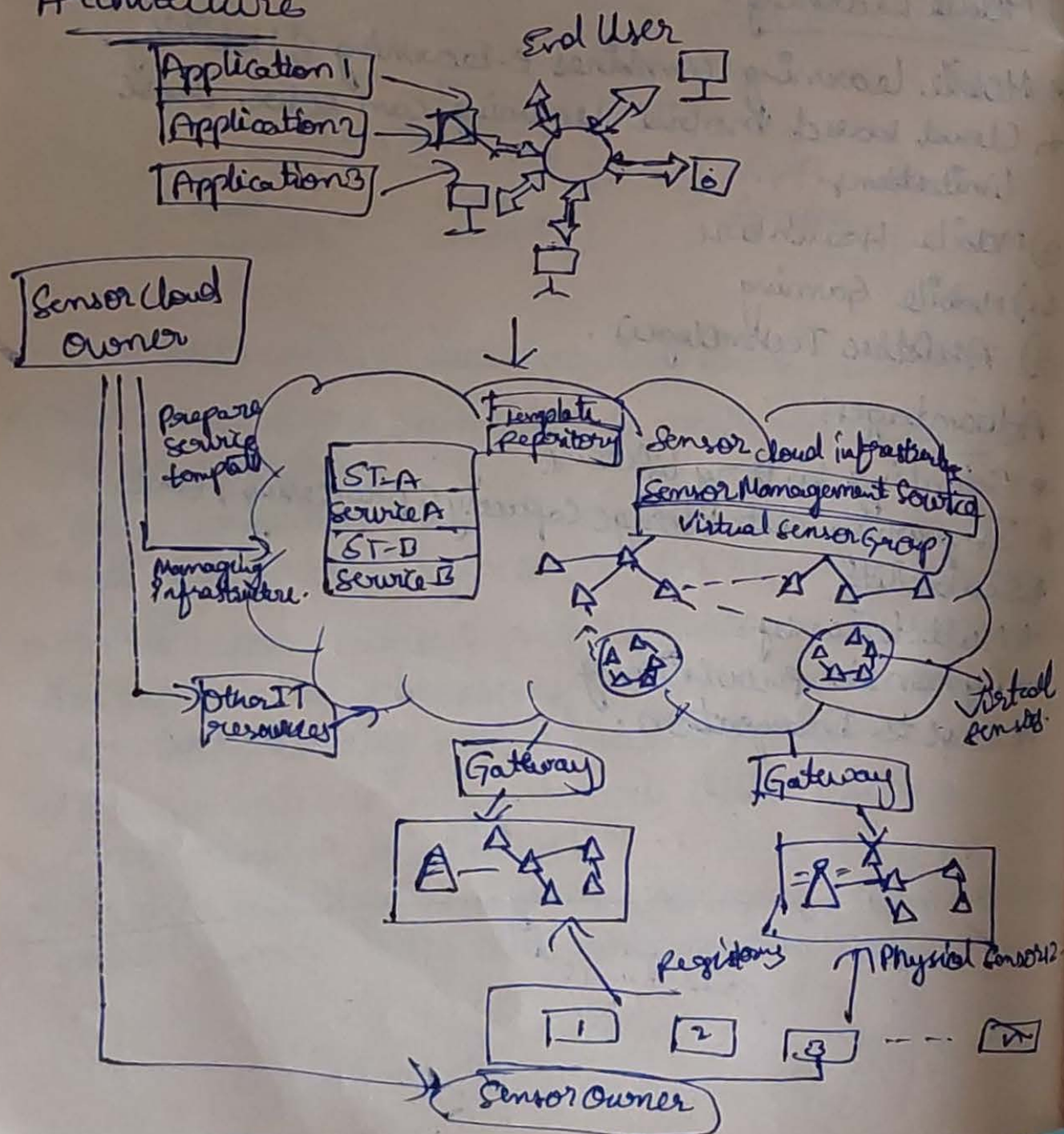
4) Mobile Gaming

5) Assistive Technologies.

Advantages:

* Extending battery lifetime.
* Improving data storage capacity & processing power.
* Scalability
* Multitenancy.
* Dynamic provisioning
* Easy to Integration.

#Sensor-Cloud

* Sensor cloud is a new paradigm for cloud computing that uses the physical sensors to accumulate its data and transmit all sensor data into a cloud computing infrastructure.

* Sensor cloud handles sensor data efficiently, which is used for many monitoring applications.

Architecture

Advantages

1) Analysis

2) Scalability

3) Collaboration

4) Visualisation

5) Free provisioning of Increased - Data storage &.
   Processing Power.

6) Dynamic Provisioning of Sources

7) Multitenancy

8) Automation

9) Flexibility

10) Agility of Sources.

11) Resource Optimization.

12) Quick Response Time.