

PART-A

5. cloud computing: usage of cloud in IoT.

Sensors collect the data, do local processing,

local storage and sends the data to the cloud.

Data from different vast of amount of devices

are collected in cloud storage, computed in the

cloud and decision is made. in that way

cloud plays a huge role in IoT technology,

Four cloud platforms:

1. Microsoft Azure.

2. Amazon web services.

3. Oracle cloud.

4. Google cloud.

3. Zig bee vs Z-wave protocols:

Zig bee

1. Used for IoT applications including smart homes, health care systems,

2. supports star, peer to peer or cluster networks. supports mesh network also.

3. low rate wireless

4. Range: 10-100m.

5. frequency: 2.4 GHz.

Z-wave

used for smart home and small commercial IoT domains.

mesh network.

low power MAC Protocol.

4. Range: 20m.

5. frequency: 900 MHz.

1. Arduino vs Raspberry Pi:

Arduino	Raspberry Pi
1. Small Programmable device.	1. General purpose Linux distribution. General purpose computers.
2. Simple to use.	2. more software oriented programming.
3. Easy Easy to connect.	3. Full networking solution.
4. Open source.	4. Open source.
5. Hardware oriented.	5. Software oriented.

7. REST API VS websocket API:

REST API	websocket API.
1. Stateless.	1. Stateful.
2. Unidirectional.	2. Full duplex (bidirectional).
3. Request response.	3. Full duplex.
4. For every request/response a new TCP connection is established.	4. A single TCP connection is established for entire communications.

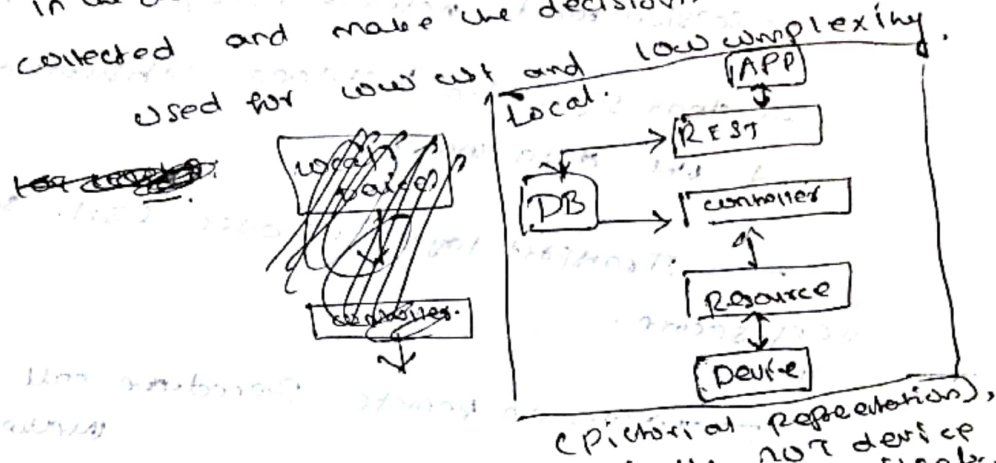
2. Need for IoT System management:

1. Retrieving and Reusing configuration.
2. Apply to all devices in the network.
2. Scheduling configuration updates automatically.
4. monitoring the devices.
5. collecting statistical data.

2. IoT level 1;

Single device IoT.

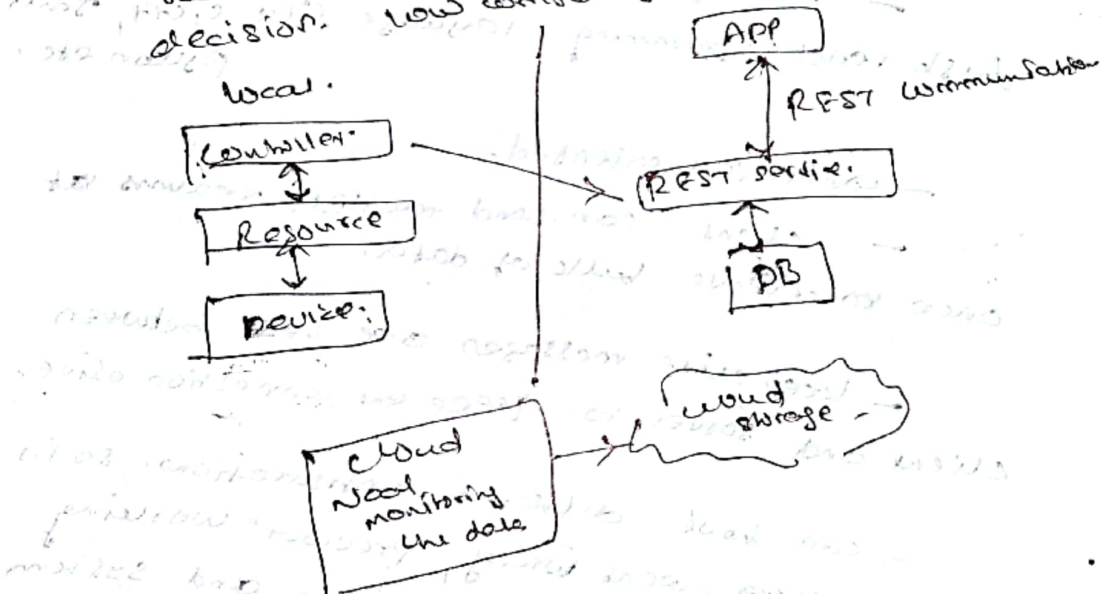
device sense the information, stores data in the device itself, will analyse the data, collected and make the decision. used for low cost and low complexity.



IoT level 2;

Single device IoT.

Device collect the information, sends the data to the cloud, and processed in cloud, and make the decision. low complexity and big data solutions.



Home automation.

1. Retrictor control - needs level 2 IoT since it may have to order to the grocery vendors etc.

2. Security control - needs level 2 IoT since it may have to deal data with other devices like road sensors etc.

(4)

3. N/C control: Level 1 IoT is enough since all decision can be made locally itself.

4. power sensors: Level 1 IoT is enough.

3. Network:

- session based network management protocol,
- clear separation between configuration data and the data content.
- Transport layer is over SSH. so it is very secure.

- works on Remote Procedure call (RPC) methodology.
- passes information through unified modelling

(language (uml))

- Data modelling is done using Yowler.
- client or server code can be written in any high level programming language like C++, Java, python etc.

- connection oriented.
- client can send multiple requests at once to retrieve bulk of data.
- keep alive messages are sent between client and server to keep the connection alive.
- can have different configurations. so in case something went wrong, previous working configuration can be overwritten and system will become stable.