SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUT205 – INTERNET OF THINGS IN AUTOMOTIVE SAFETY

II YEAR /IV SEMESTER

Unit 2- IoT Communication and Levels

Topic 3 : Levels of IoT System

CONTENT

- Levels of IoT system
  - Level 1
  - Level 2
  - Level 3
  - Level 4
  - Level 5
  - Level 6

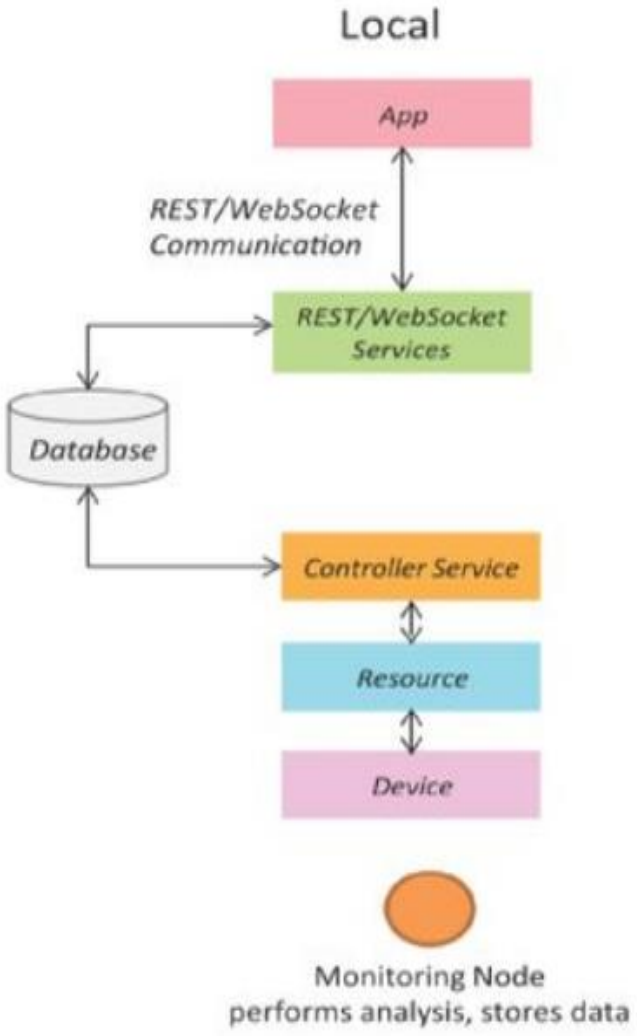
1. What is the communication model used in Websocket API?

2. Mention the types of Communication Model API

3. Mention the communication models used for REST API

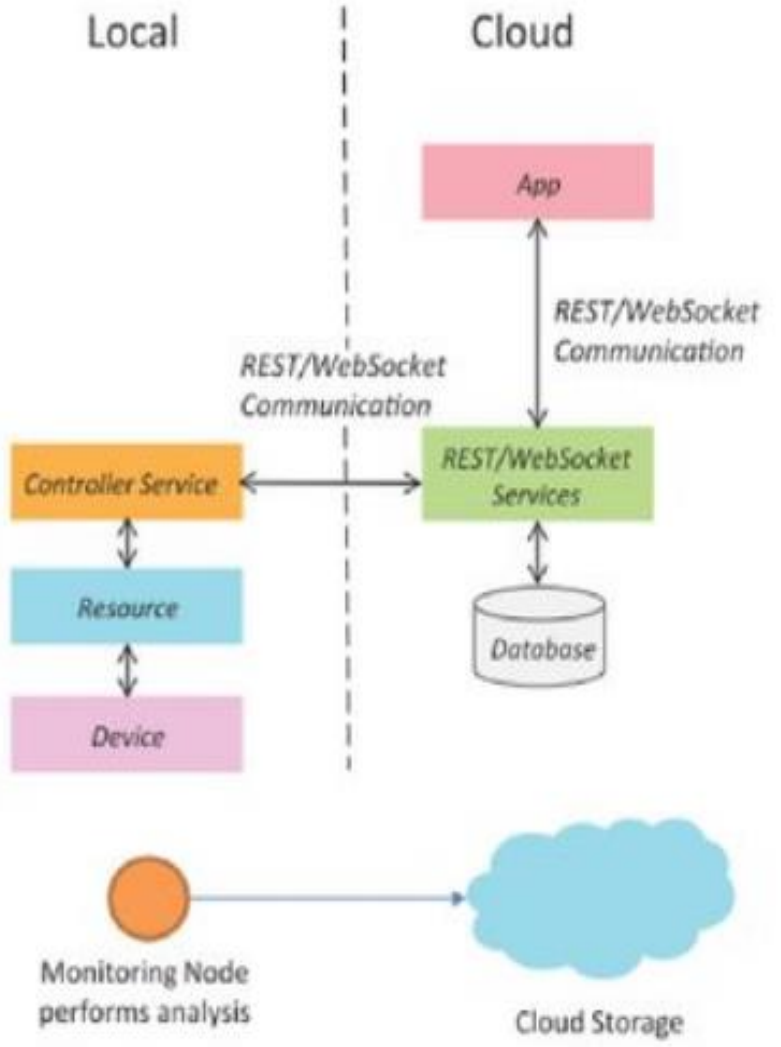
IoT LEVEL 1

- A Level 1 IoT system has a single node / device that performs sensing and actuation, stores data, performs analysis and hosts the application.
- Level 1 IoT systems are suitable for modelling low cost and low complexity solutions where the data involved is not big and the analysis requirements are not computationally intensive.



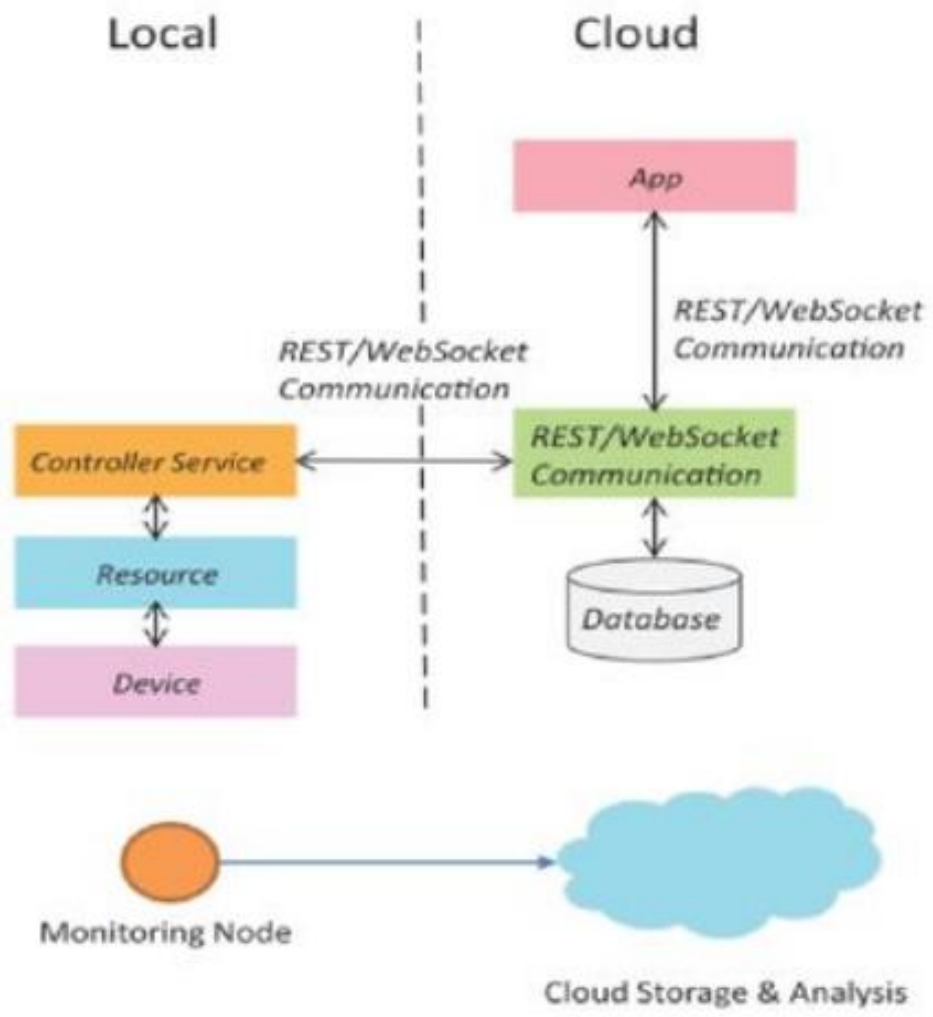
IoT LEVEL 2

- A Level 2 IoT system has a single node that performs sensing and actuation and local analysis
- Data is stored in the cloud and the application is usually cloud-based.
- Level 2 IoT systems are suitable for solutions where the data involved is big, however the primary analysis requirement is not computationally intensive and can be done locally.



IoT LEVEL 3

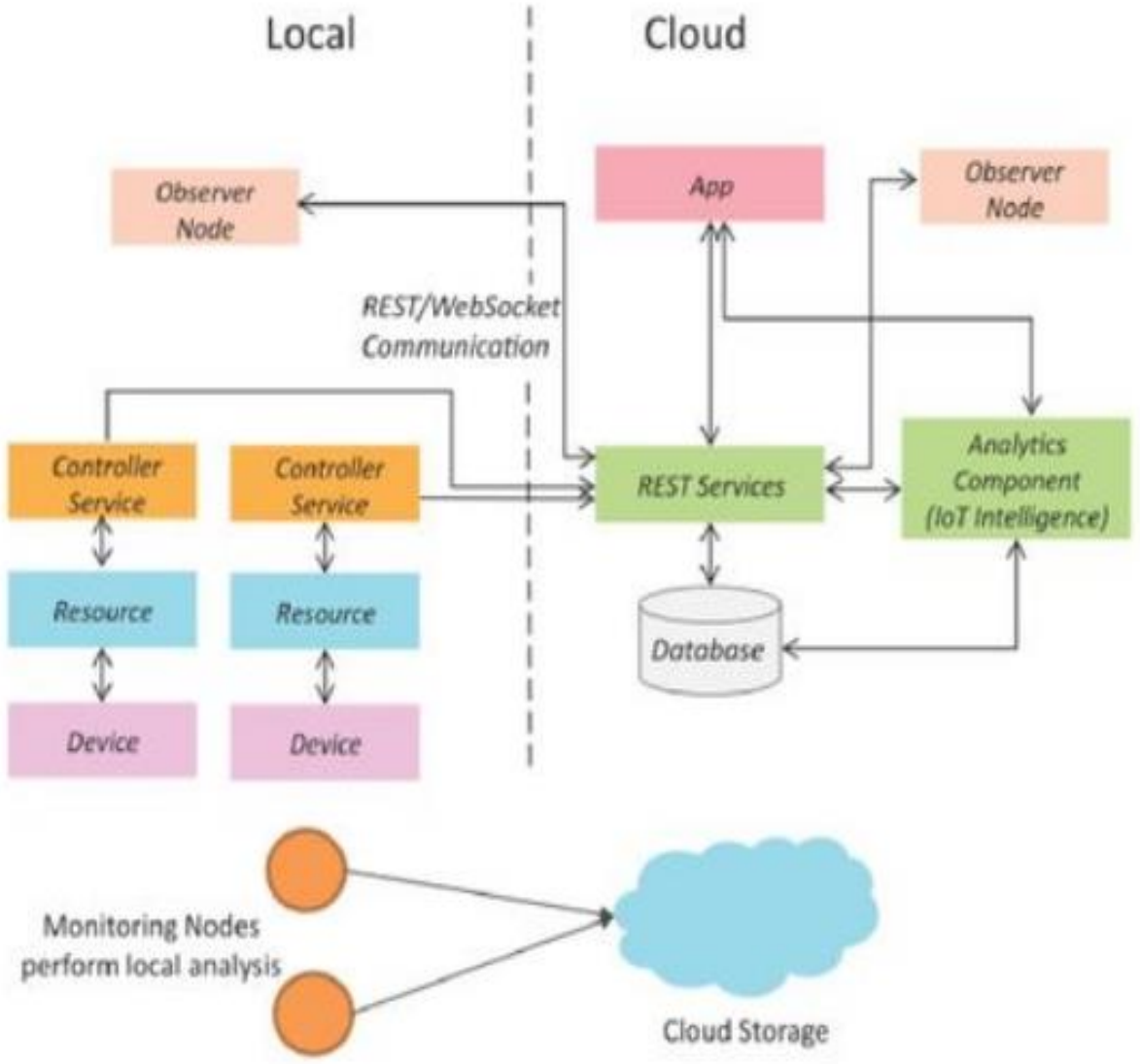
- A Level 3 IoT system has a single node
- Data is stored and analysed in the cloud and the application is cloud-based.
- Level 3 IoT systems are suitable for solutions where the data involved is big and the analysis requirement are computationally intensive.



IoT LEVEL 4

- A Level 4 IoT system has multiple nodes that performs local analysis.
- Data is stored in the cloud and the application is cloud-based.
- Level 4 contains local and cloud-based observer nodes which can subscribe to and receive information collected in the cloud from IoT devices
- Level 4 IoT systems are suitable for solutions where the multiple nodes are required, the data involved is big and the analysis requirement are computationally intensive.

IoT LEVEL 4

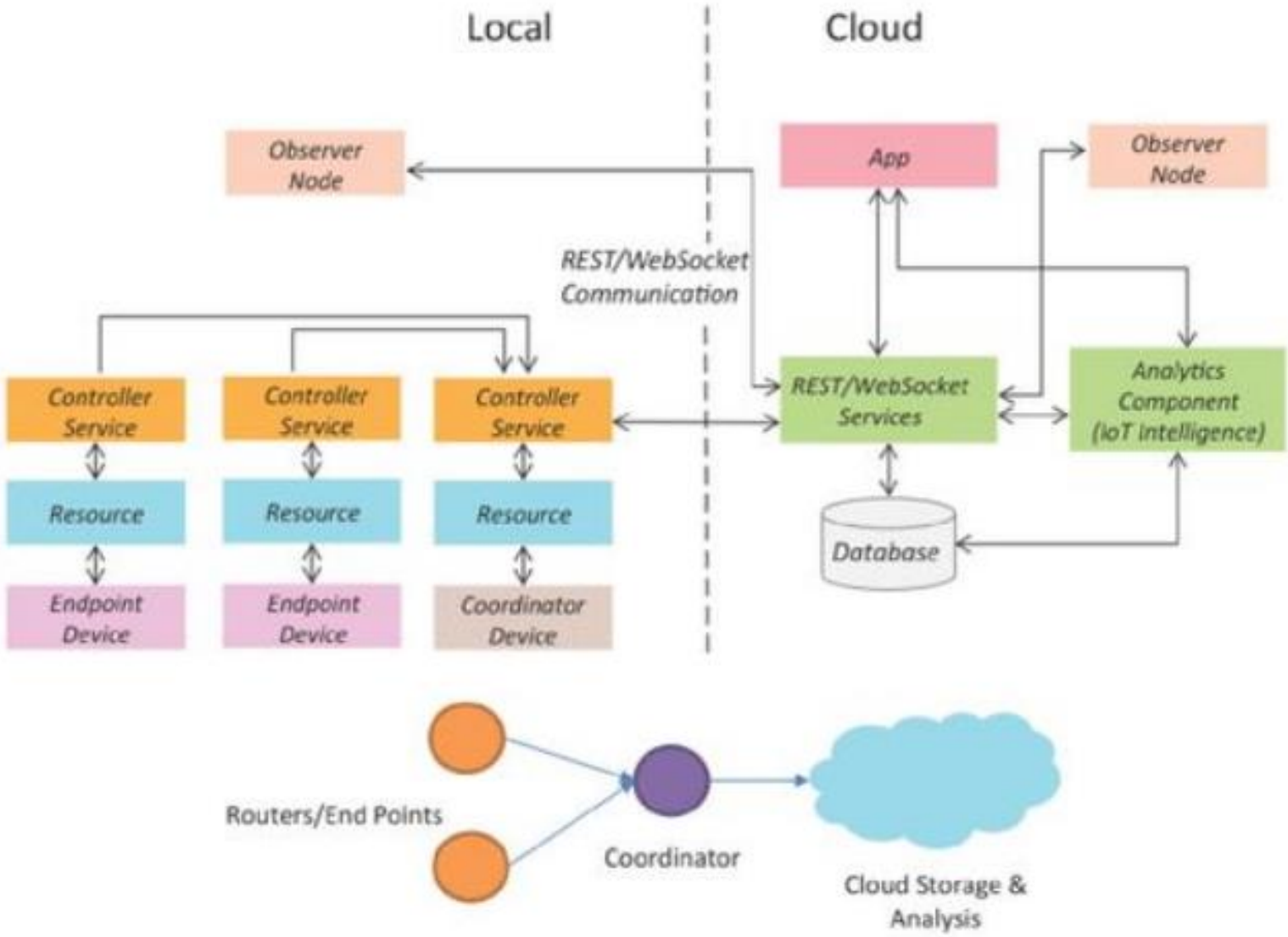

Local
Cloud
Observer Node
App
Observer Node
REST/WebSocket Communication
Controller Service
Controller Service
REST Services
Analytics Component (IoT Intelligence)
Resource
Resource
Database
Device
Device
Monitoring Nodes perform local analysis
Cloud Storage

Task

IoT LEVEL 5

- A Level 5 IoT system has multiple nodes and one coordinate node.
- The end nodes perform sensing and actuation
- The coordinate node collects data from the end nodes and sends it to the cloud
- Data is stored and analyzed in the cloud and the application is cloud-based.
- Level 5 IoT systems are suitable for solutions based on wireless sensor networks, in which the data involved is big and the analysis requirement are computationally intensive.

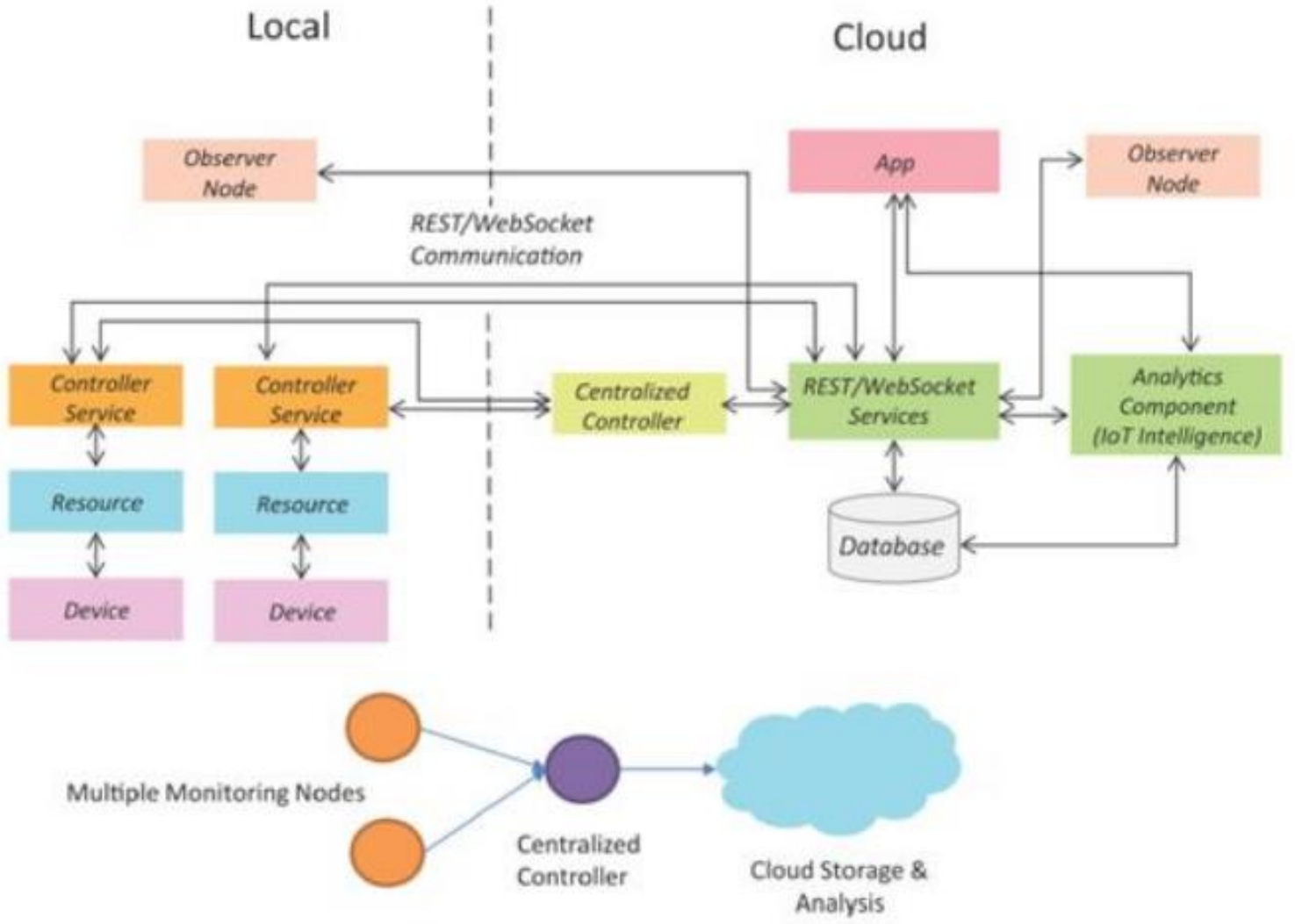
IoT LEVEL 5


Local
Cloud
Observer Node
App
Observer Node
REST/WebSocket Communication
Controller Service
Controller Service
Controller Service
REST/WebSocket Services
Analytics Component (IoT Intelligence)
Resource
Resource
Resource
Database
Endpoint Device
Endpoint Device
Coordinator Device
Routers/End Points
Coordinator
Cloud Storage & Analysis

IoT LEVEL 6

- A Level 6 IoT system has multiple independent end nodes that perform sensing and actuation and send data to cloud.
- Data is stored in the cloud and the application is cloud-based.
- The analytics component analyzes the data and stores the results in cloud database.
- The results are visualized with the cloud-based application.
- The centralized controller is aware of the status of all the end nodes and sends control commands to the nodes.

IoT LEVEL 6


Local
Cloud
Observer Node
REST/WebSocket Communication
App
Observer Node
Controller Service
Controller Service
Centralized Controller
REST/WebSocket Services
Analytics Component (IoT Intelligence)
Resource
Resource
Database
Device
Device
Multiple Monitoring Nodes
Centralized Controller
Cloud Storage & Analysis

1. How many levels of IoT are there?

2. Mention the features of IoT Level 4

3. In which level data is high?

REFERENCE

- https://slideplayer.com/slide/14272640/
- https://www.rfwireless-world.com/IoT/IoT-Architecture-Levels.html#:~:text=This%20page%20on%20IoT%20Architecture,4%20and%20IoT%20Level%205.&text=IoT%20architecture%20elements%20vary%20based,are%20defined%20for%20IoT%20system.

THANK YOU !!!