21ES614 – Internet of Things

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Syllabus

Unit 1

Introduction to IoT - Definitions, frameworks and key technologies. Functional blocks of IoT systems: hardware and software elements- devices, communications, services, management, security, and application. Challenges to solve in IoT

Unit 2

Basics of Networking & Sensor Networks - Applications, challenges - ISO/OSI Model, TCP/IP Model, Sensor network architecture and design principles, IoT technology stack, Communication models. Communication Protocols - Overview of protocols in each layer, Application protocols for the transfer of sensor data, Infrastructure for IoT: LoRa-Wan, 6LoWPAN, 5G and Sigfox.

Unit 3

Introduction to Cloud, Fog and Edge Computing. Modern trends in IoT – Industrial IoT, Wearable. Applications of IoT - Smart Homes/Buildings, Smart Cities, Smart Industry, and Smart Medical care, Smart Automation etc.

IoT Technology Stack

TECHNOLOGY STACK

7 People and Business Processes
Intelligent decision making based on "Things" data and Apps

6 Applications
Analysed "Things" data used in development of custom Apps

5 Data Analytics
Mining, reporting, machine learning

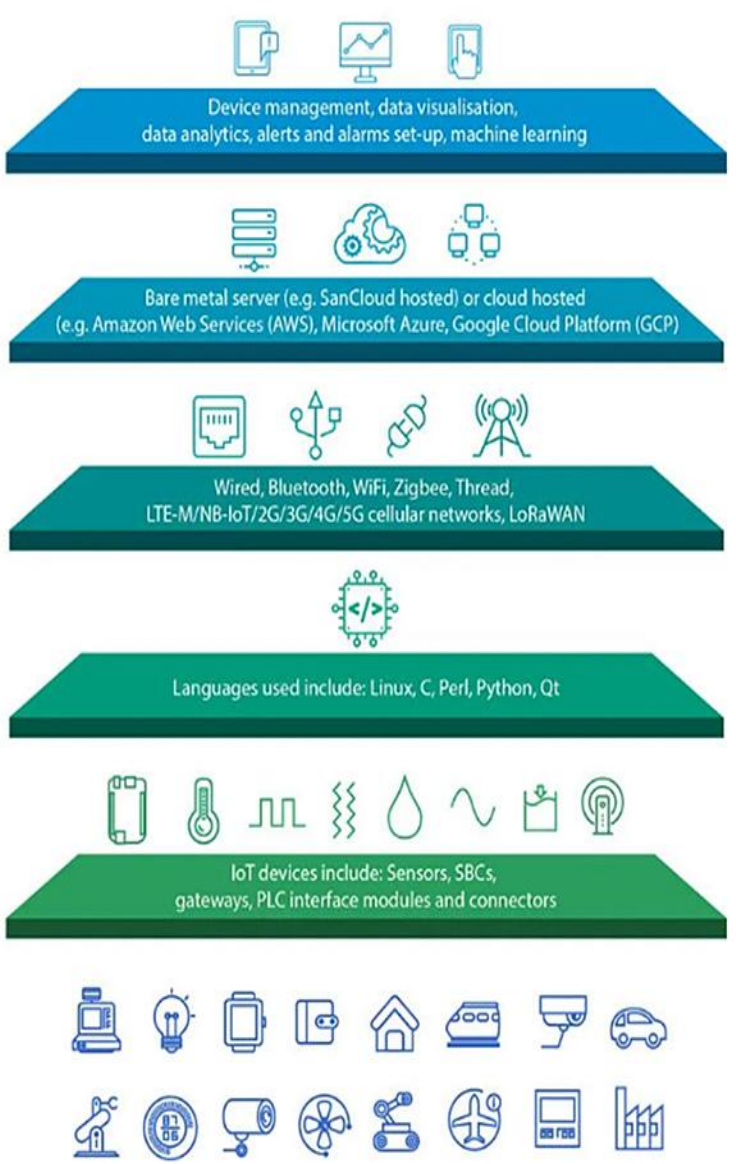
4 Data Storage
Big Data, harvesting & storage of "Things" data

3 Cloud Infrastructure
Public, private, hybrid, managed

2 Connectivity / Edge Computing
Communications, Networks, M2M, Wi-Fi, Telecoms

1 Things
Sensors, devices, machines, controllers

Applied IoT Technology Stack

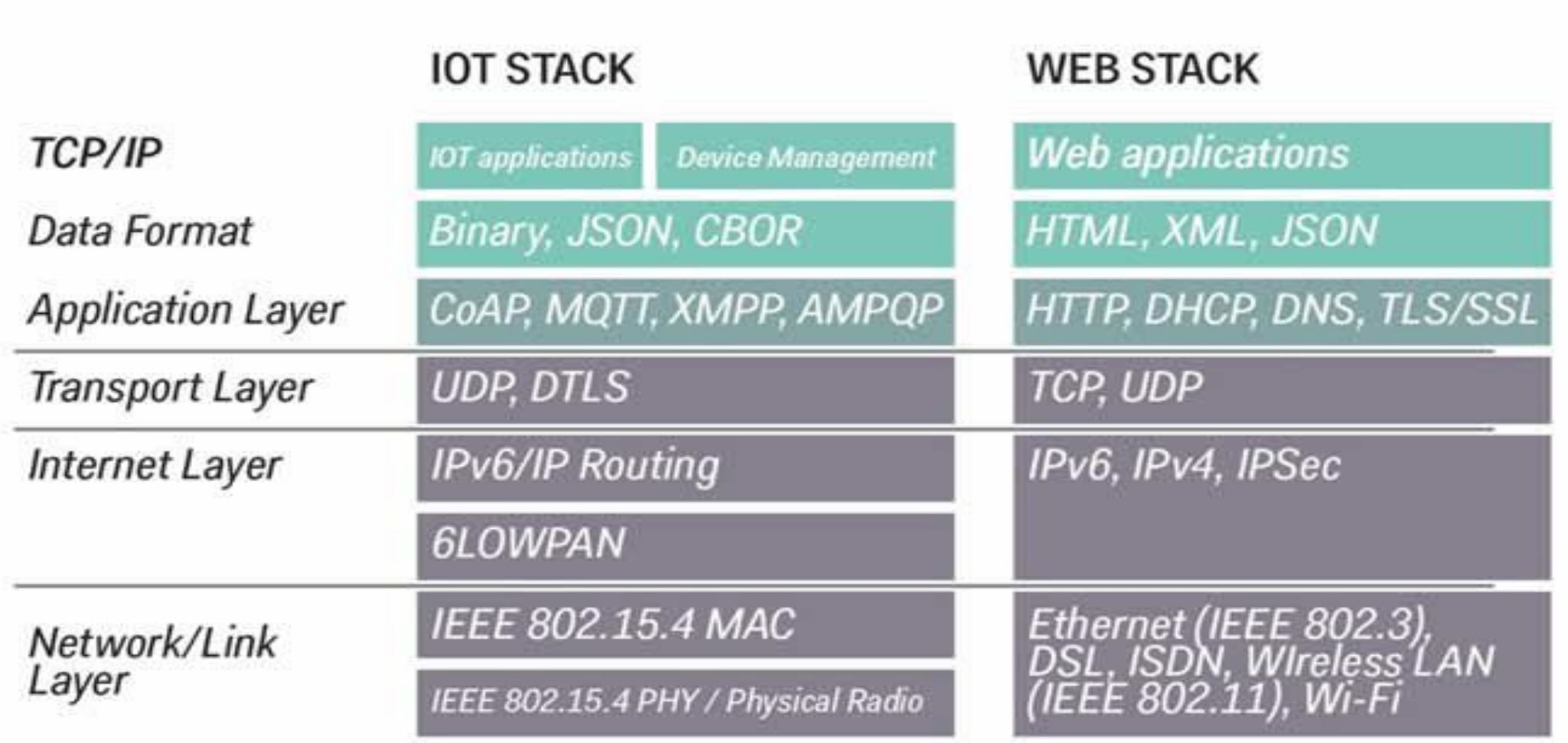


Ref:

https://iotbusinessnews.com/2022/07/13/86750-what-is-the-iot-technology-stack/

https://www.technologygateway.ie/applied-iot-cluster-providing-expertise-resources-across-the-internet-of-things-technology-stack/

IoT Technology Stack



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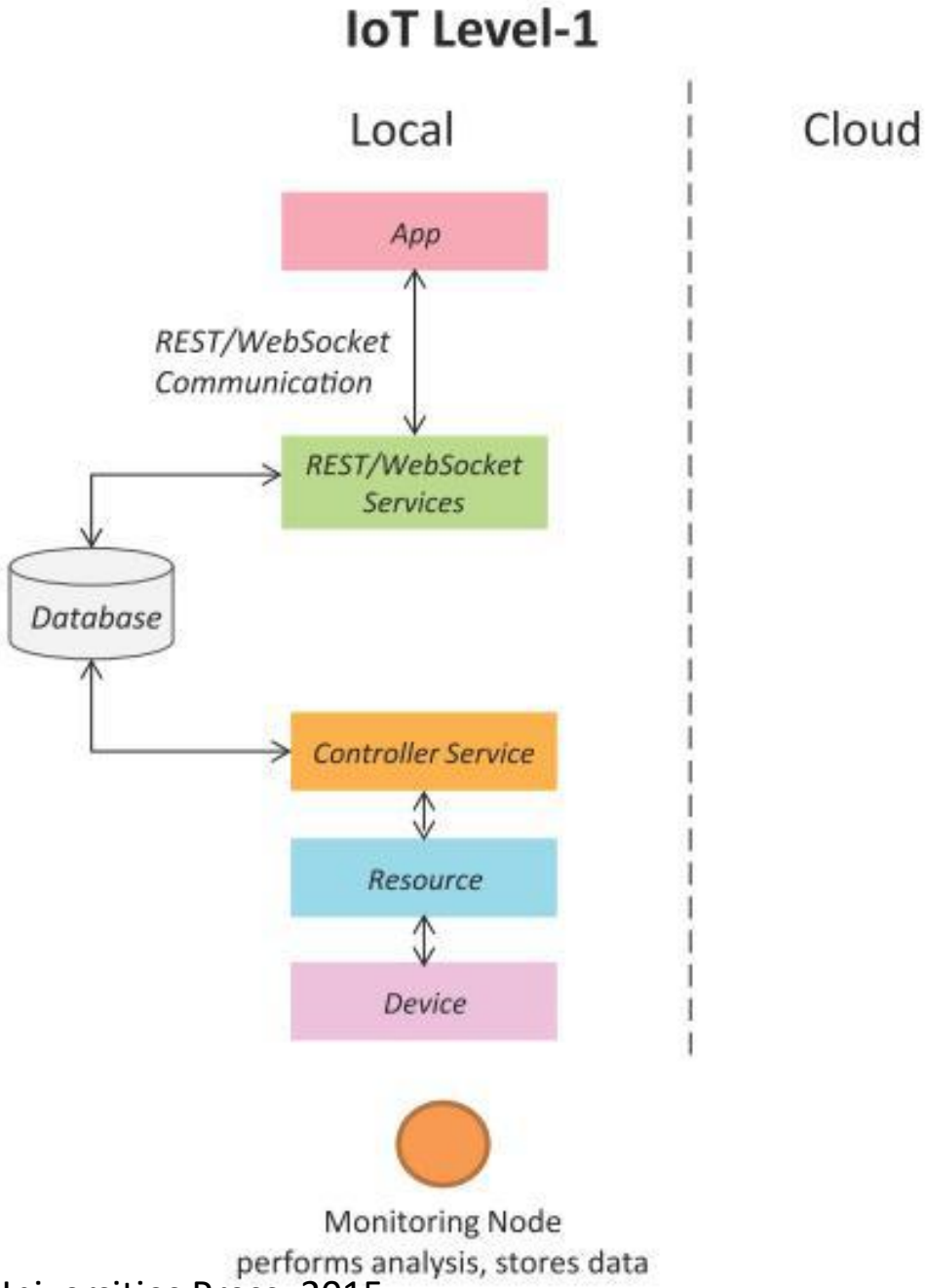
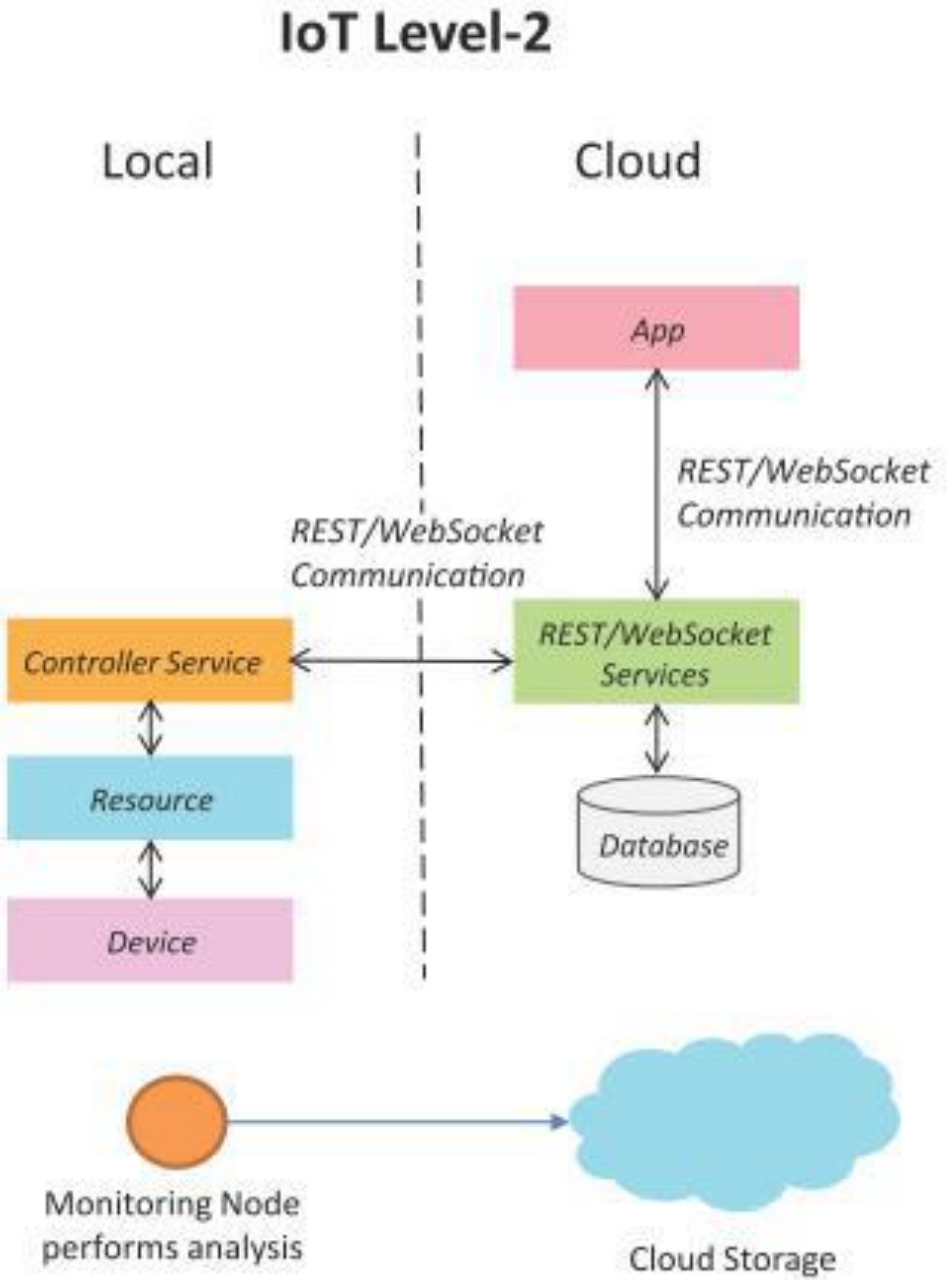
IoT Level 1



Ref: Arshdeep Bahga and Vijay Madisetti, “Internet of Things: A Hands-on Approach”, Universities Press, 2015.

IoT Level 2



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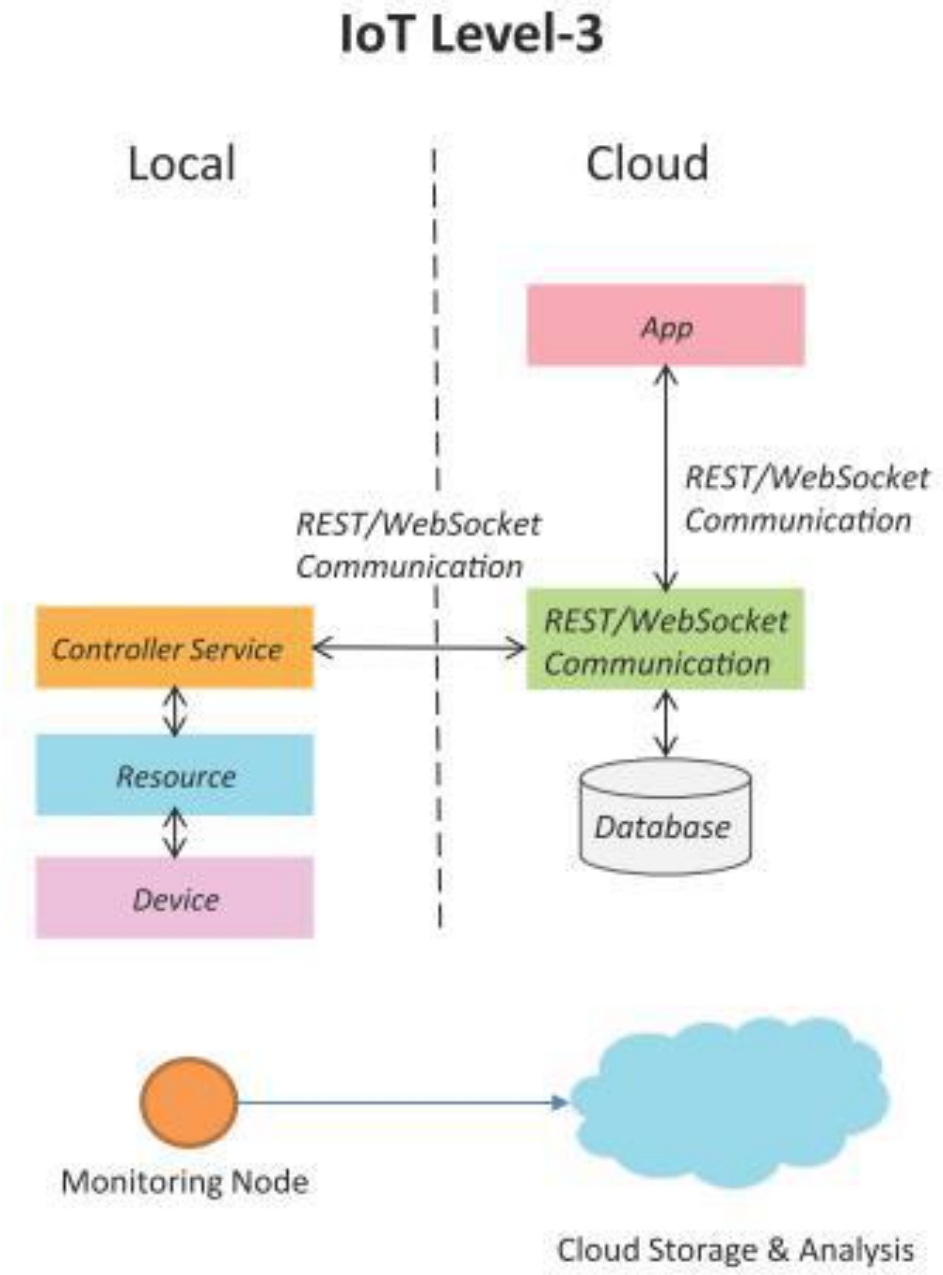
IoT Level 3



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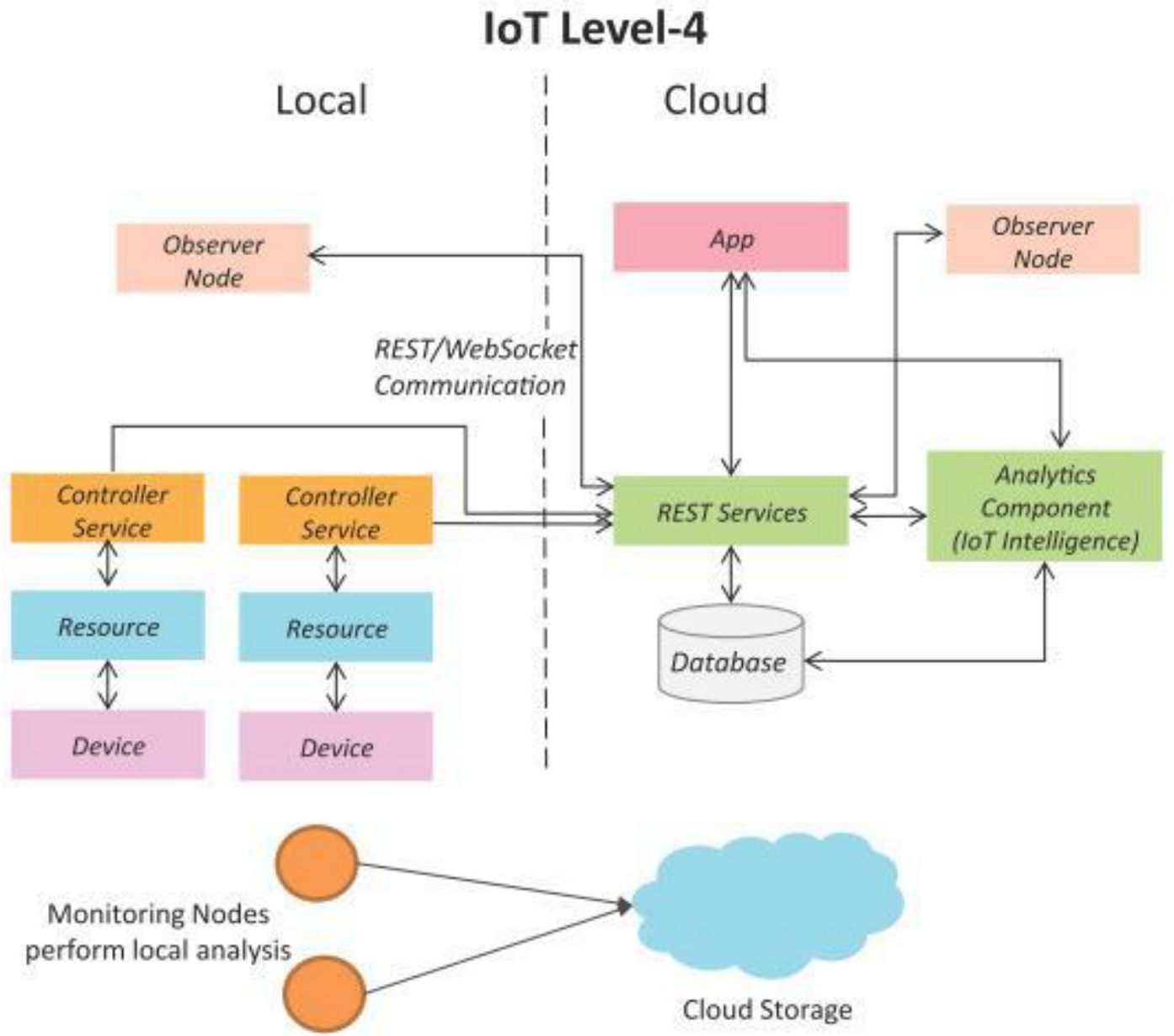
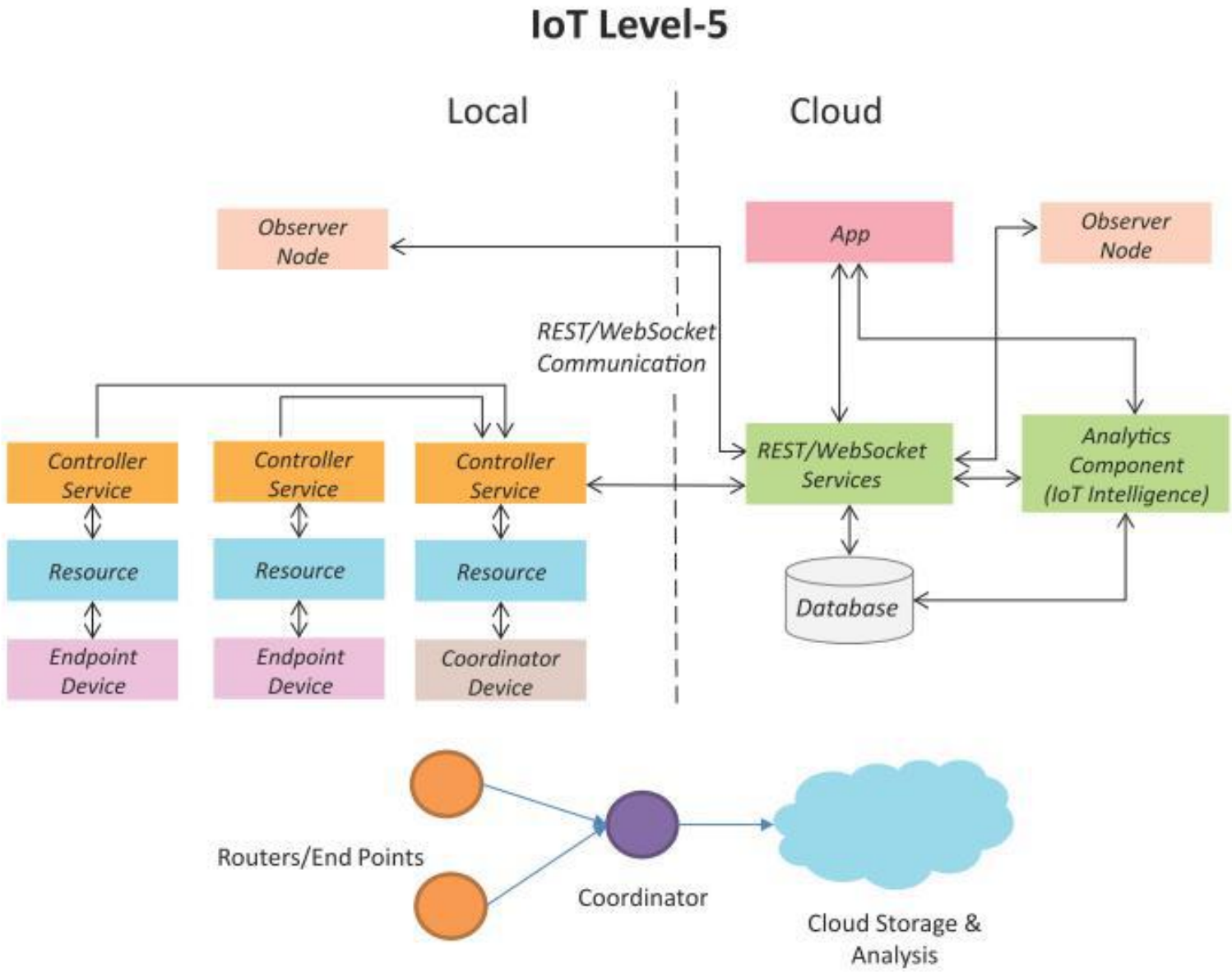
IoT Level 4



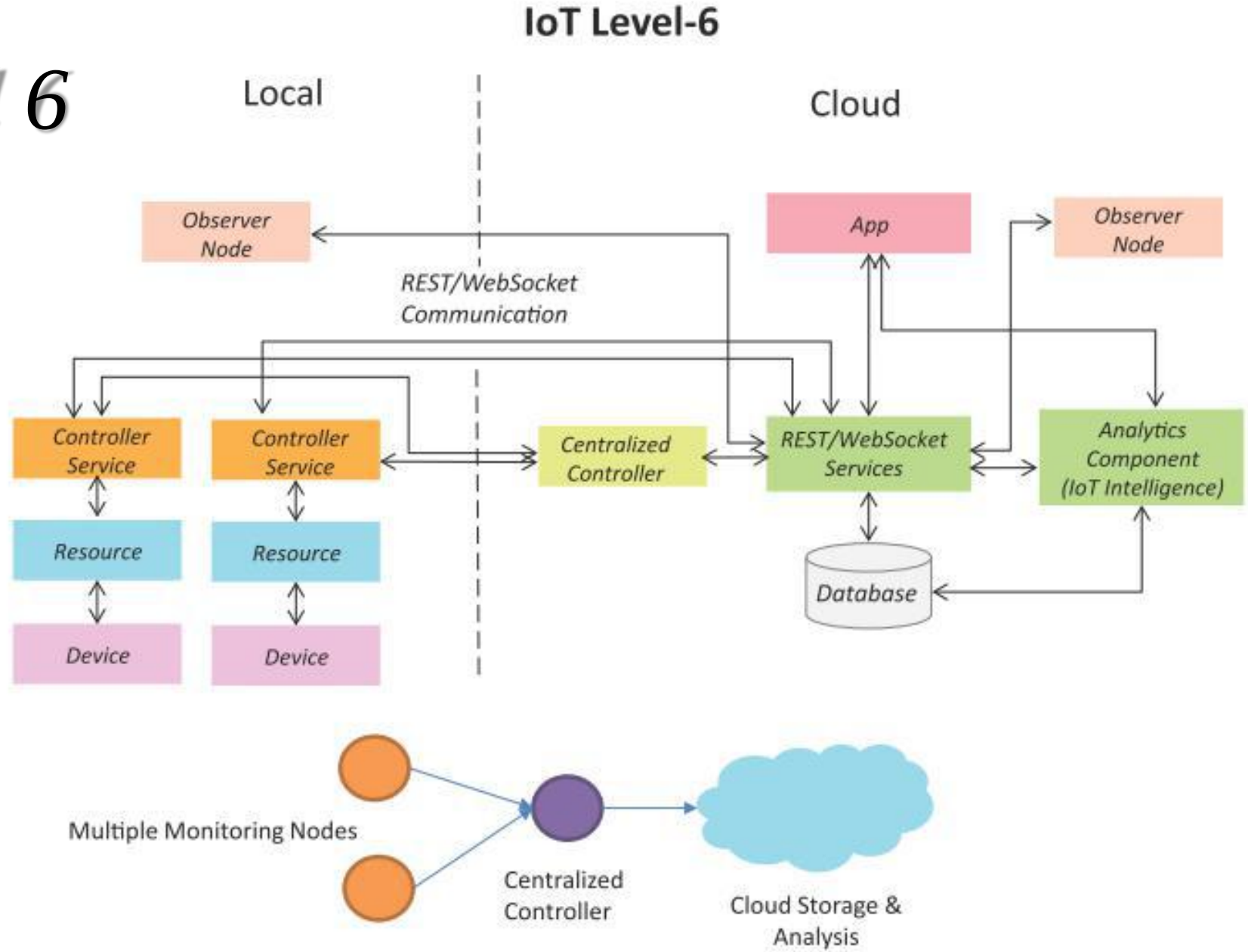
Ref: Arshdeep Bahga and Vijay Madisetti, “Internet of Things: A Hands-on Approach”, Universities Press, 2015.

IoT Level 5



Ref: Arshdeep Bahga and Vijay Madisetti, “Internet of Things: A Hands-on Approach”, Universities Press, 2015.

IoT Level 6



Ref: Arshdeep Bahga and Vijay Madisetti, “Internet of Things: A Hands-on Approach”, Universities Press, 2015.

Thank You…