SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECE308- WIRELESS TECHNOLOGIES FOR IOT

III ECE / VI SEMESTER

UNIT 1 – OVERVIEW OF INTERNET OF THINGS

TOPIC 5 –M2M communication

M2M to the IoT

- Each machine in embeds a smart device

- Device senses the data or status of the machine

- Performs the computation and communication function

- A device communicates via wired or wireless systems

- Protocols: 6LowPAN, LWM2M,MQTT, XMPP

- Each device assigned 48-bits Ipv6 addresses.

Machine-to-Machine (M2M) to IoT

Technology closely relates to IoT which use smart evices to collect data that is transmitted via the Internet to other devices.

Close differences lies in M2M uses for device to device communication also for coordinated monitoring and control purpose

M2M Application Areas

- Connected Cars for Safety and Infotainment

- Remote Monitoring

- ATMs/Point of Sales Terminal Connected for centralized Security

- Remote Monitoring, Trucks Fleet Management

M2M Communication Framework

- DeviceHive

- Enables connecting devices to the IoTs

- Web-based management software that creates security rules based networks and monitors devices

M2M Architecture

Three domains

- M2M Device domain,

- M2M network

- M2M Application domain

M2MM Application Domain

Integration, Collaboration and M2M Application Services

Application (Reporting, Analysis, control)

Network Domain

M2M server, device identity, device and device-network management, Data Analysis, Abstraction, Accumulation, and Management, uni-cast and multicast message delivery and core functionalities for monitoring.

Connectivity (Communication and Processing Units)

M2M Devices Domain Communication

Gateway

Connectivity Interface (Communication and Processing Units) and Edge Computing (data element analysis and transformation)

Physical devices and Controllers (the things in IoT) [Sensors, machines, devices, Intelligent Edge nodes of Different Types

Layer 3: M2M device communication domain

- M2M Devices Domain Communication

- Gateway

- Physical devices and Controllers (the things in IoT) [Sensors, machines, devices, Intelligent Edge nodes of Different Types

Layer 2: Network Domain

- M2M server, device identity, device and device-network management,

- Data Analysis, Abstraction, Accumulation, and Management uni-cast and multicast message delivery

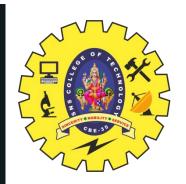- Core functionalities for monitoring Connectivity (Communication and Processing Units)

Layer 1: M2M Application Domain

- Integration, Collaboration and M2M

- Application Services

- Application (Reporting, Analysis, control)

M2M Protocols

- Eclipse M2M Industry Working Group Various projects

- Koneki

- Eclipse SCADA for open standards for communication protocols, tools, and frameworks

- ITU-T Focus Group M2M (global standardization initiative for a common M2M service layer)

- • Weightless (wireless communications) Group for standards and using wireless spaces for M2M

M2M Usages

- Coordinated movement of tools, robots, drones

- Refinery operations, sequential control at each stage during manufacturing

- Manufacturing of food packets

- Assembly in assembly lines and

- Tracking of failures along the railway tracks.

IIoT usages

- Manufacturing at multiple locations, railways, mining, agriculture, oil and

- • gas, utilities, transportation, logistics

- and healthcare services along usages of

- the Internet, and

- • Usages of software for analytics,

- machine learning, and knowledge

- discovery in these areas