

2006077

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IOT Assignment - 02

(Q1) What do you mean by M2M?

Ans) Machine to machine (M2M) refers to networking of machines for the purpose of remote monitoring and control and data exchange.

The basic building blocks of M2M architecture are : —

- ① M2M devices
- ② M2M area network
- ③ M2M gateway
- ④ M2M communication network
- ⑤ M2M service layer
- ⑥ M2M applications

(Q2) Explain the major building blocks of M2M architecture.

Ans) The major building blocks of M2M and their description are as follows : —

C.) MEM device :-

- ① consist of sensors & comm. equipment at the lowermost level.
- ② Connected to an operator's own network or can connect based on ZigBee or bluetooth etc.
- ③ Gateways: ensure data is moved for processing
- ④ Ex: Water contamination control
↳ Gateway responsible for proper addressing & routing.
- ⑤ If devices are connected to a fixed network (embedded STM) these form the end points of the network & hence are managed by the operator easily.

(•) m2m area network :-

- ① This is the connection b/w m2m devices & gateway.
- ② Possible using various area networks such as WPAN, IEEE 802.15.6, ZigBee, IEEE 802.15.4, bluetooth, bluetooth low energy.
- ③ Proprietary solⁿ such as Zwave, Zarin.

(•) m2m gateway :-

- ① Connection of m2m devices to communicate with m2m applications via a communication network.
- ② Acts as a channel.
- ③ If devices are not connected directly to the network, then gateway acts as an endpoint to operator's network.
- ④ Connection is mainly dependent on gateway.
- ⑤ Gateway must be secure if it is used as an end-point.

(.) M2M communication network :-

- ① During formative years of m2m, comm. relied on specialized networks.
- ② Mainly the communication between m2m devices & m2m applications.

(.) M2M Service Layer :-

- ① Provides device management, data transport.
- ② OneM2M : global initiative to standardize a common M2M service layer platform.
- ③ Ensures interoperability across various application domains.

(.) M2M applications :-

- ① Health monitoring
- ② Remote access, control of equipment
- ③ Tracking & monitoring of assets.
- ④ Smart grid applications, smart meters & industrial meters.
- ⑤ Control & monitor remote diagnostics

(Q3) Explain the role of gateway.

Ans) • M2M gateway provides connection of M2M devices to communicate with M2M applications with a communication network.

- M2M gateway acts as a channel.
- If devices are not connected directly to the network, then gateway acts as an endpoint to operator's network.
- The onus to provide security features for the gateway lies solely with the developer.

(Q4) mention the various communication protocols used for M2M communication

Ans) Various communication protocols for M2M are :-

- ① Bluetooth
- ② ZigBee
- ③ 802.15.4
- ④ 6LoWPAN
- ⑤ M-Bus, wireless M-Bus
- ⑥ UWB
- ⑦ Modbus
- ⑧ Z-wave

(Q5) Differentiate between IOT and m2m?

Ams)

IOT

IOT is based on IP network connections

IOT is about "things"

New protocols are developed frequently

Focuses on both hardware & software

Data is collected in cloud

m2m

① m2m uses point to point connection b/w machines of similar type.

② m2m is about "machines"

③ Relies on older protocols and communication techniques

④ Main emphasis of hardware.

⑤ Data collection in point to point on-premise storage infrastructure

(Q6) What do you mean by things in IOT and machines in M2M?

Ans) Things in IOT refer to smart and intelligent devices which contain sensors as well as actuators, they form the lowest level of an IOT network. Whereas, machines in M2M refer to lesser intelligent devices containing sensors but not actuators. Machines form the lowest level of a M2M architecture.