



# SNS College of Engineering

An Autonomous Institution

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Redesigning Common Mind & Business Towards Excellence



Build an Entrepreneurial Mindset Through Our Design Thinking FrameWork

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

# Internet Of Things



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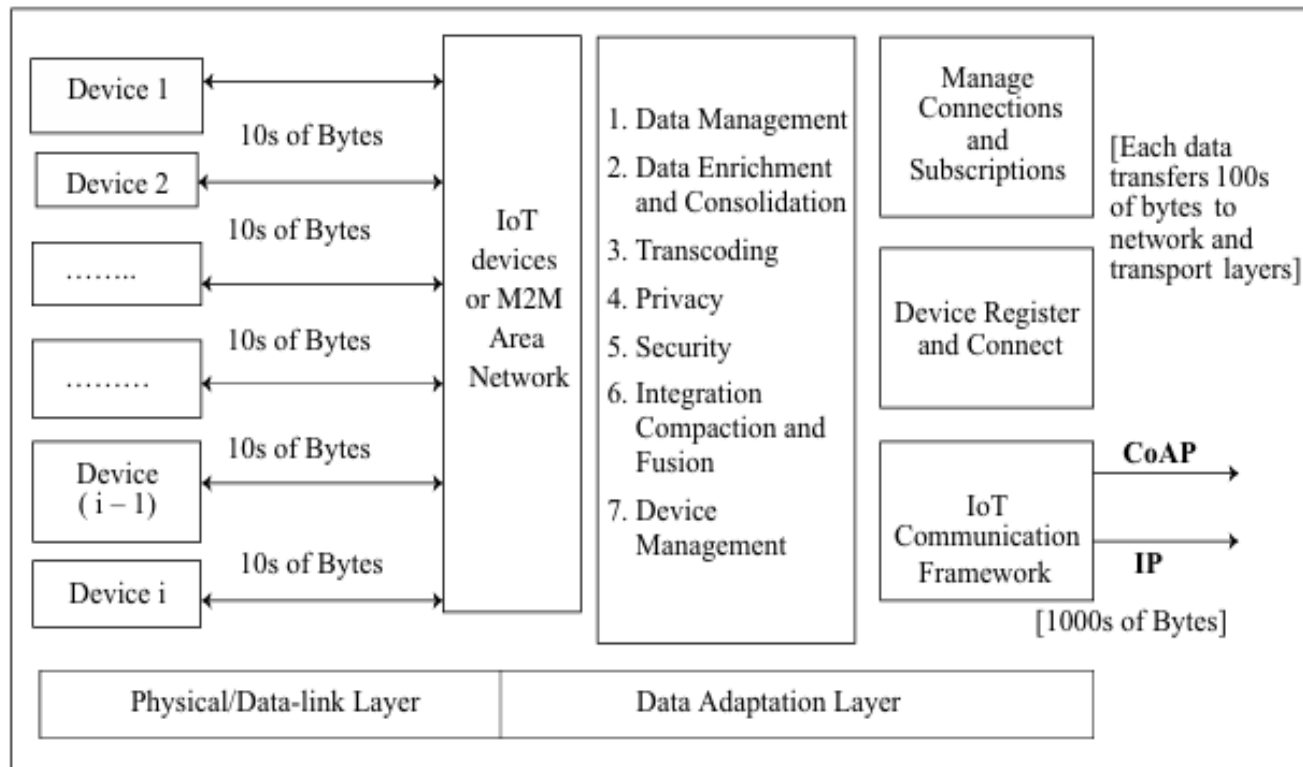


# DATA ENRICHMENT, DATA CONSOLIDATION AND DEVICE MANAGEMENT AT GATEWAY



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- A gateway at a data-adaptation layer has several functions. These are data privacy, data security, data enrichment, data consolidation, transformation and device management.



IoT or M2M gateway consisting of data enrichment and consolidation, device management and communication frameworks at the adaptation layer



# Data Management and Consolidation Gateway



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- Gateway includes the provisions for one or more of the following functions: transcoding and data management.
- Following are data management and consolidation functions: Transcoding ,Privacy, security Integration , Compaction and fusion
- **Transcoding:**
  - ❑ Transcoding does the data adaptation, conversion, and change of protocol, format or code Transcoding means data adaptation, conversion and change of protocol, format or code using software.
  - ❑ The gateway renders the web response and messages in formats and representations required and acceptable at an IoT device.
  - ❑ Similarly, the IoT device requests are adapted, converted and changed into required formats acceptable at the server by the transcoding software



# Data Management and Consolidation Gateway



- **Privacy**

- Data such as patient medical data, data for supplying goods in a company from and to different locations, and changes in inventories, may need privacy and protection from conscious or unconscious transfer to untrustworthy destinations using the Internet.
- Privacy is an aspect of data management and must be remembered while designing an application.
- The design should ensure privacy by ensuring that the data at the receiving end is considered anonymous from an individual or company



# Data Management and Consolidation Gateway



## Secure Data Access

End-to-end security is another aspect while implies using a security protocol at each layer, physical, logical link and transport layers during communication at both ends in a network.

## Data Gathering and Enrichment

IoT/M2M applications involve actions such as data-gathering (acquisition), validation, storage, processing, reminiscence (retention) and analysis.



# Data Management Gateway



- ❑ Device Management (DM) means provisioning for the device ID or address which is distinct from other resources, device activating, configuring (managing device parameters and settings), registering, deregistering, attaching and detaching.
- ❑ Device management also means accepting subscription for its resources.
- ❑ Device fault management means course of actions and guidelines to be followed in case if a fault develops in the device.
- ❑ Open Mobile Alliance (OMA)-DM and several standards are used for device management. OMA-DM model suggests the use of a DM server which interacts with devices through a gateway in case of IoT/M2M applications.



# Data Management Gateway



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Gateway functions for device management are:

- Does forwarding function when the DM server and device can interact without reformatting or structuring
- Does protocol conversion when the device and DM server use distinct protocols
- Does proxy function in case an intermediate pre-fetch is required in a lossy environment or network environment needs.

OMA DM model for  
using a DM server



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Thank  
You