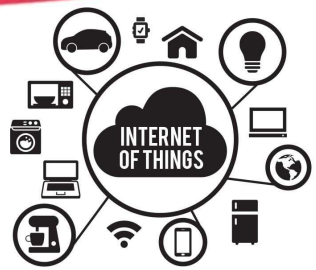
SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Department of Information Technology



19ITT30 - INTERNET OF THINGS

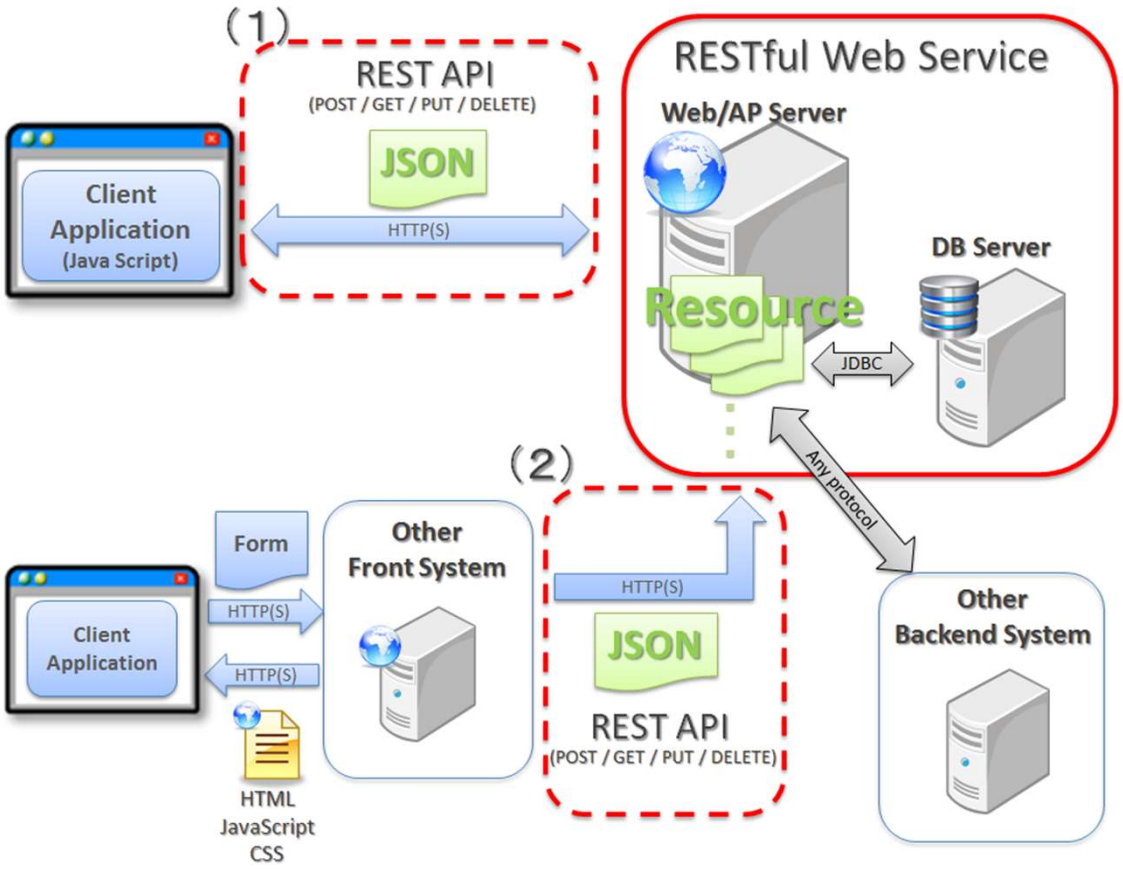
III B.Tech. IT/ V SEMESTER

UNIT III : EVOLVING IoT STANDARDS & PROTOCOLS

Topic 4 : Third Generation Partnership Project Service Requirements for Machine Type Communication

IETF IPv6 Routing Protocol for RPL Roll – Constrained Application Protocol (CoAP) – Representational State Transfer (REST) – Third Generation Partnership Project Service Requirements for Machine Type Communications- Over Low Power WPAN (6LoWPAN)- IP in Small Objects (IPSO) - WPAN Technologies for IoT/M2M – Zigbee/IEEE 802.15.4, RF4CE, Bluetooth and its Low-Energy Profile.

Recap


(1)
REST API
(POST / GET / PUT / DELETE)
JSON
HTTP(S)
Client Application (Java Script)
RESTful Web Service
Web/AP Server
DB Server
Resource
JDBC
Any protocol
(2)
Form
HTTP(S)
HTTP(S)
Client Application
Other Front System
HTML
JavaScript
CSS
HTTP(S)
JSON
REST API
(POST / GET / PUT / DELETE)
Other Backend System

3GPP – Service Requirements for Machine Type Communications

- Current mobile networks are optimized for human-to-human (H2H) traffic and not for M2M/MTC interactions
- 3GPP has started work on M2M specification in 2010 for interoperable solutions, particularly in the 3G/4G/LTE context.

3GPP – Service Requirements for Machine Type Communications

MTC Architecture Interfaces

- MTCu: provides MTC devices access to the 3GPP network for the transport of **user traffic**;
- MTCi: the reference point for MTC server to **connect the 3GPP network** via 3GPP bearer service
- MTCsms: the reference point for **MTC server to connect the 3GPP network via 3GPP SMS**

3GPP – Service Requirements for Machine Type Communications

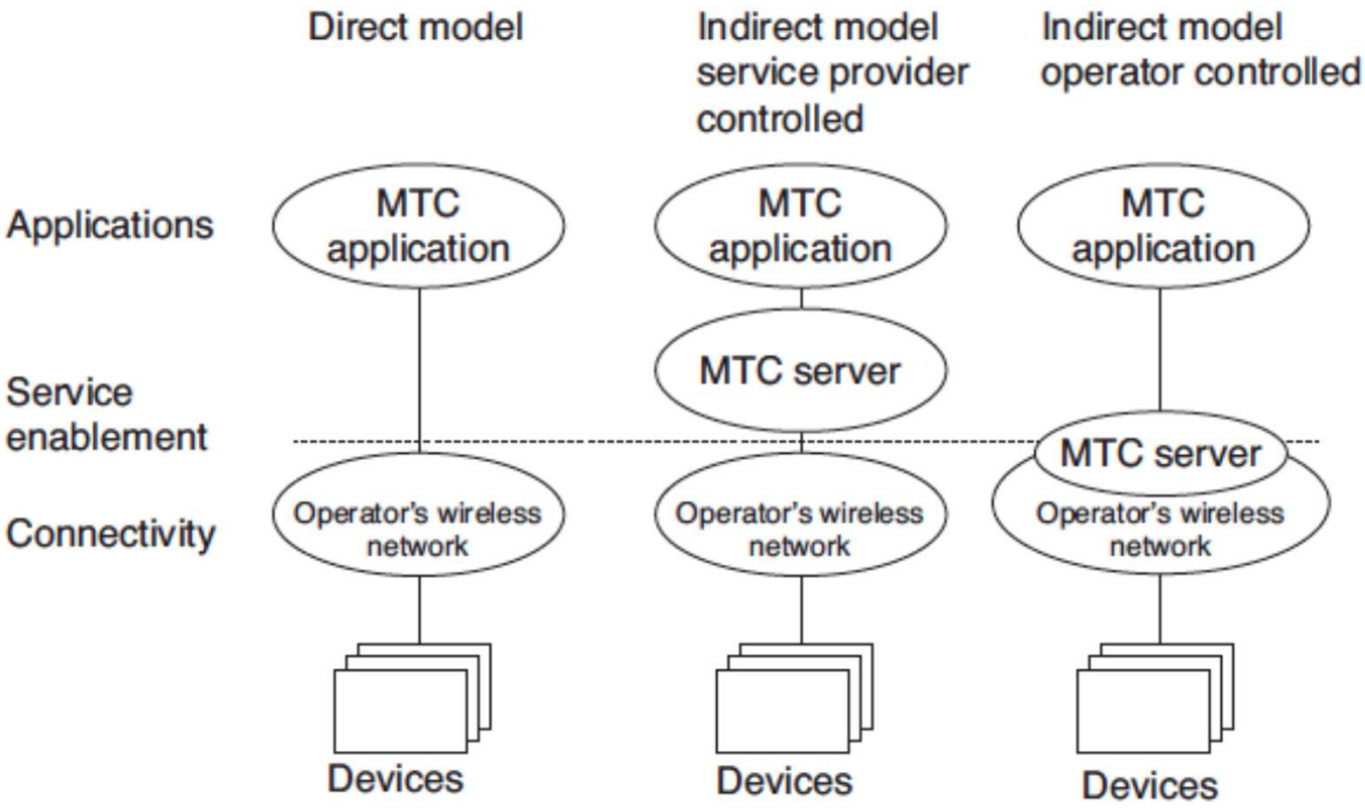
For MTC devices communicating with one or more MTC servers, the following use cases exist

- MTC server controlled by the network operator; namely the MTC server is **located in the operator domain.**
- Here – The network operator offers API (e.g., Open Systems Architecture [OSA]) on its MTC server(s) – MTC user accesses MTC server(s) of the network operator via API

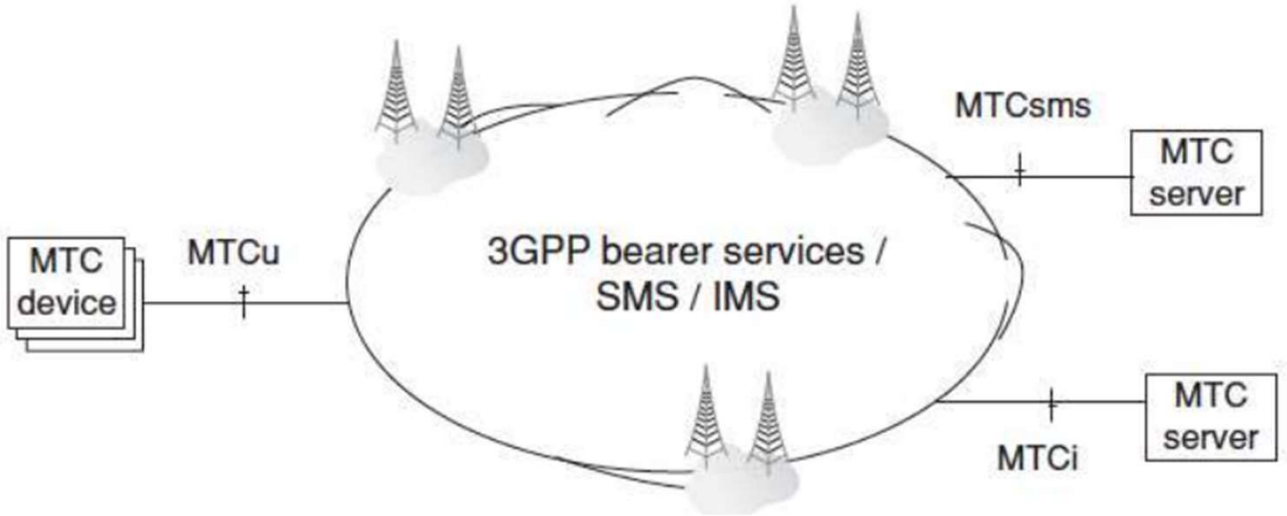
3GPP – Service Requirements for Machine Type Communications

For MTC devices communicating with one or more MTC servers, the following use cases exist

- MTC server not controlled by the network operator; namely MTC server is **located outside the operator domain.**
- Here – The network operator offers the **network connectivity to the MTC server(s) located outside of the network operator domain**

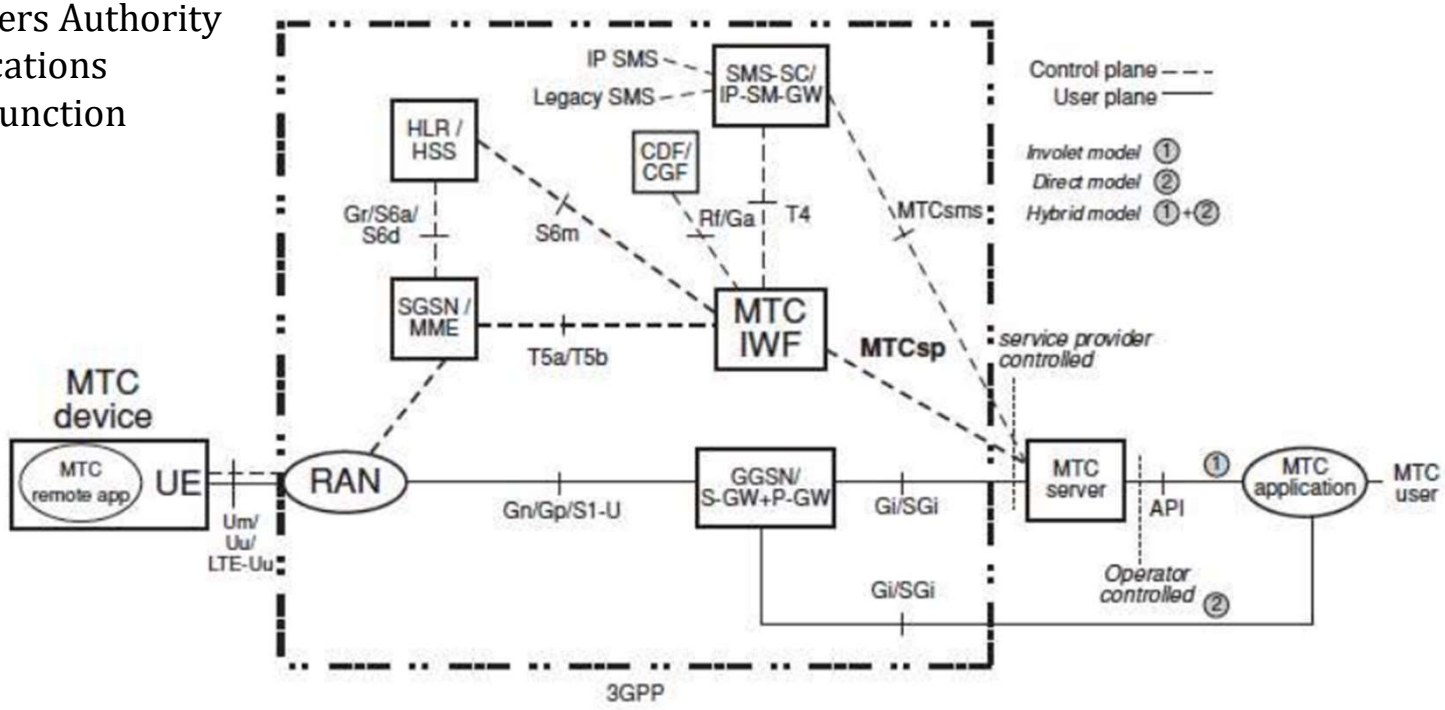

Direct model
Indirect model service provider controlled
Indirect model operator controlled
Applications
Service enablement
Connectivity
MTC application
MTC application
MTC application
MTC server
MTC server
Operator's wireless network
Operator's wireless network
Operator's wireless network
Devices
Devices
Devices

3GPP – Service Requirements for Machine Type Communications



3GPP – Service Requirements for Machine Type Communications

- ABNF Augmented Backus-Naur Form
- AVP Attribute-Value Pair
- C Conditional
- IANA Internet Assigned Numbers Authority
- MTC Machine-Type Communications
- MTC-IWF MTC Interworking Function
- O Optional
- SCS Service Capability Server



3GPP – Service Requirements for Machine Type Communications

The architecture encompasses a number of models as follows:

- Direct model—**direct communication provided by the 3GPP operator**: The MTC application connects directly to the operator network without the use of any MTC Server.
- Indirect model—**MTC service provider controlled communication**: The MTC server is an entity outside of the operator domain. The MTCsp and MTCsms are external interfaces (i.e., to a third-party M2M service provider);

3GPP – Service Requirements for Machine Type Communications

The architecture encompasses a number of models as follows:

- Indirect model—**3GPP operator controlled communication**: The MTC server is an entity inside the operator domain. The MTCsp and MTCsms are internal to the public land mobile network (PLMN);
- Hybrid model: The **direct and indirect models are used simultaneously** in the hybrid model, for example, connecting the user plane using the direct model and doing control plane signalling using the indirect model.

Thank You!