

INDUSTRIAL IOT DEVICE MANAGEMENT TECHNIQUE USING LIGHTWEIGHT MACHINE TO MACHINE (LWM2M)

CLAIMS:

1. The device management technique comprises of LWM2M protocol with CoAP and Bootstrap interface in industrial Internet of Things.
2. The device management strategy from claim 1,
The LWM2M protocol stack with IIoT connectivity consists of LWM2M Protocol Engine Core, Interface Layer, CoAP, DTLS, UDP/SMS, IPv6/6LoWPAN and IEEE 802.15.4 MAC/PHY.
LWM2M Protocol Engine Core that facilitates the fully managed OMA device management and service enablement operations and employs application programming interfaces (API's).
Interface Layer which enables a well-defined generic API's to access various interface layers like OMA/IPSO Object the underlying connectivity layer (CoAP) and platform specific configurations like Firmware over The Air.
CoAP declares the message header, request/response messages, message options, and retransmission strategies.
DTLS allows the security mechanism among LWM2M Server and LWM2M Client for all the message sharing.
UDP/SMS: explains about UDP binding and SMS binding for LWM2M.
IPv6/6LoWPAN provides IPv6 assistance for IoT devices through standards like 5G.
3. The claim 1 explains Lwm2M protocol, developed for remote management of M2M devices and associated services, features a modern architectural style focused on REST, explains an extensible resource and data design and

constructs on an effective protected data transmission standard called the Constrained Application Protocol (CoAP).

4. From claim 2, the device management comprise of four interfaces
Bootstrap includes LWM2M Bootstrap Server for maintaining the keys, protection control and configuration of a device to register with a LWM2M Server.
Device Discovery and Registration provides an LWM2M Client device.
Device Management and Service Enablement allows the LWM2M Server to perform device management and M2M service enablement by sending operations to the Client and to get corresponding responses from the LWM2M Client.
Information Reporting enables the LWM2M Client to maintain the resource data to the LWM2M Server.
5. The device management technique in claim 2 explains
The LWM2M interfaces exploit CoAP as the fundamental transfer protocol over IP and SMS bearers.
6. The cloud servers like IBM, amazon and LWM2M server to store the information.
7. The claim 2 includes,
The monitoring console is deployed for manufacturing devices to manage and monitor the devices and production machines remotely.
The device is suit for low battery powered devices and allows lower power consumption and high security among client and server.