OVERVIEW OF ETSI M2M ARCHITECTURE
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Why ETSI M2M?

- Provide an M2M architecture with a generic set of capabilities for M2M services
- Provide a framework for developing services independently of the underlying network
- Facilitate deployment of vertical applications
- Facilitate innovation across industries by exposing data and information and providing services.
ETSI M2M adopted a RESTful architecture style
  • Information is represented by resources which are structured as a tree

ETSI M2M standardizes the resource structure that resides on an M2M Service Capability Layer (SCL)
  • Each SCL contains a resource structure where the information is kept

M2M Application and/or M2M Service Capability Layer exchange information by means of these resources over the defined reference points

ETSI M2M standardizes the procedure for handling the resources
Features offered by ETSI M2M

- Identification of the M2M Application and the M2M Devices
- Asynchronous and synchronous communication
- Store and forward mechanism based on policies for optimising the communication
- Location information
- Device management based both on OMA DM (wireless) and BBF TR-69 (wireline)
- Mutual authentication between Network Service Capability Layer and Device/Gateway Service Capability Layer that are connected
- Secure channel for transporting data over mId reference point
- And much more ....
ETSI M2M Release 1 provides standardized security mechanism for the reference point *mld*

The device/gateway needs to have keys for securing the connection.

The device/gateway is provisioned with the key M2M Root Key.

The high level procedure are to

- Perform mutual *mld* end point authentication
- Perform M2M Connection Key agreement
- Optionally establish a secure session over *mld.*
- Perform RESTful procedures over the *mld*
Example: Connected home

- Wireless or Wired Networks
- M2M Gateway (GSCL)
- M2M Devices with Device Application (DA)
- M2M Network (NSCL)
- Network Application (NA)
High level deployment

M2M Device & Gateway Domain

- Heating
  - Heating App
- Washing-machine
  - Washing App

M2M Network Domain

- WIDE AREA NETWORK
  - WIRELESS
  - MOBILE
  - FIXED
  - .. OTHER

Example NSCL

- SmartHome App
Flow of events

M2M Device & Gateway Domain

- Heating
  - Heating App
- Washing machine
  - Washing App

M2M Gateway

myHome GSCL

WIDE AREA NETWORK

Example NSCL

WIRELESS

MOBILE

FIXED

.. OTHER

Configure & provision

Heating App

Register

Register

SmartHome App

Register

Configure & provision
The Network Application registers to the NSCL

- Name of the NSCL = exampleNSCL
- Network application register with the ID = SmartHome-ID
Gateway registration

The gateway (GSCL) registers to the NSCL
- Name of the NSCL = exampleNSCL
- Name of the GSCL = myHomeGSCL

Before registration the GSCL and NSCL are authenticated by means of the M2M Communication procedures
As a result of the gateway registration a resource representing the NSCL is created in the GSCL.
Device applications registration

- The device Applications register to the GSCL
  - Name of GSCL = myHomeGSCL
  - Device application heating register with the ID = Heating-App-ID
  - Device application washing-mashing register with the ID = Washing-App-ID
What’s next?

Appropriate access rights needs to be set up.

• For example the network application that knows the GSCL and the applications is setting up the accessRights information can now be transferred over the mId.
The information from the 2 device applications are stored in the containers in the NSCL.
Flow of events: add & read data

M2M Device & Gateway Domain

- Heating
  - Heating App
- Washing-machine
  - Washing App

M2M Network Domain

Example NSCL

myHome GSCL

add

add

SmartHome App

read
Flow of events: subscribe & notify

M2M Device & Gateway Domain

- Heating
  - Heating App
- Washing-machine
  - Washing App

M2M Gateway

M2M Network Domain

Example NSCL

subscribe

notify

SmartHome App
A new Network Application would like to reuse some of the data produced?

- For example the device manufacturer that controls the performance and status of the device
- The utility company that monitors the levels of utilization for each appliances
- ....

All you need to do is to develop the Network Application and

- Ask the “owner” of the information to give you read permission by updating the access right
- Retrieve the information and consume it
Questions

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