Constrained Group Authentication

Problem Statement

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Author:
Judy Zhu<zhuhongru@chinamobile.com>, Minpeng Qi<qiminpeng@chinamobile.com>
Outline

• What the problem is
  – Some Examples

• What we want
With the development of Internet of Things, the scale of IOT system become larger and larger. A large amount of smart meter terminals can be deployed in a block. Due to the limitation of network transportation and the Server capability, using uni-cast technologies will brings burden to the network link and server.

1 Server will face
10*500*200=1M connections
Example

**Use case:**
4760 users in one block. Each owns one IOT devices for smart metering. They will report data at the same time. Authentication happens when these devices report data.

**Issues:**
The communication will be large and cause overload for the network when all smart metering devices report data at the same time.
Use case:
80,000 taxis in one city, 90% with IOT devices for monitoring. Authentication is needed when these IOT devices connects with network.

Issues:
A plenty of taxis stay in the same area, the communication will be frequent and related authentication can cause overload for network.

Frequency for the issue happening:
• Every day in airplane
• Once per week when the taxi company call together of all taxi drivers.
Requirement

• To find an efficient way to reduce the burden of network connection and server
  – Some lightweight solutions like group authentication (1-to-many authentication) based on existing protocols
Thanks