DNS-The glue in IoT
12/10/2014
Plan

✓ Identifiers in IoT
✓ The need for DNS in IoT – use cases
✓ DNS as the glue
✓ How we plan to use DNS in a IoT PoC?
Identifiers
Making the things identifiable
Current identifier structure

MAC Address - 00-15-C5-49-04-A95
  Blocks – assigned to vendors by the IEEE
  Adapters - assigned by the vendor from its block

IPv4 Address - 129.113.7.156
  Prefixes – IANA, RIRs, ISPs
  Hosts – Configured by the network administrator
Identifier structure in IoT
The need for DNS - IoT use cases
B2B

- Date of manufacture
- Parts/materials used
- (Dis)assembly recipe

- Date of sale
- Warranty details
- Parts replaced

- On-board data
- Usage history
- Parts installed

- Parts/materials identified
- Disassembly history

Manufacture

Retail

Usage/Maintenance

End-of-Life
B2C

Extended Packaging Information
M2M
The 'glue' metaphor
DNS – The « glue » in Internet
DNS – Could be the « glue » in IoT
The IoT PoC
IoT Long Range network
LoRA Antenna

- Range
  - 3 – 4 Km in cities
  - 15 km in country side
- Frequency – 868 Mhz
- Star topology
- Communication cost – very low
LoRa Feature

✓ Similar to cellular network
✓ But ultra brand low range
✓ Directly connects to the device
✓ No mesh networks needed
LoRa – Set up
Arduino shield

- Add support to connect to objects
- Both radio and IP interface
- Support narrowband range, 6lowpan, IPv6, CoAP
- Contiki OS
- Proxy which helps to transform HTTP to COAP and vice versa
LoRa with Arduino shield support
Use of DNS

✓ The id of the device could be MAC, IPv6 or IMSI
✓ Is it possible to associate the device ID with a name from the Internet?
✓ such as kitchen-light.subscriber10.parisfablabs.fr

✓ Need
  ✓ Privacy reasons
  ✓ Ease of identification
How communication is done?

Client

Proxy

Server

HTTP/TCP/IPv4

GET uri

value

GET uri

value

CoAP/UDP/IPv6
How communication is done?
Future activities

✓ Registering and terminating a device
✓ Resolving the device address
  ✓ TXT
  ✓ DNS-SD
  ✓ NAPTR
✓ Mobility
✓ ....
Approach

Smart Cards
2D Codes
RTLS
Bar Code
GPS
NFC
Sensors
DNS
Merci !