IPv6 for Smart Objects and its Applications

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Agenda

- What is a smart object?
- Why IPv6 for smart objects?
- Standardization Efforts
- Applications and Markets
What is a smart object?

- A device with the following capabilities:
Some examples of smart objects

- Energy Meter
- Temperature Sensor
- Light Bulb
- Toy
- Body Sensor
- Thermostat
Network of smart objects
Network of smart objects
Growth Potential

The Wired Revolution: Connecting Places
- 1875: ~ 0.5 Billion
- 1900: ~ 5.0 Billion
- 1925: ~ 5.0 Billion
- 1950: ~ 5.0 Billion
- 1975: ~ 5.0 Billion
- 2000: ~ 5.0 Billion
- 2025: ~ 5.0 Billion

Source: Ericsson

The Mobile Revolution: Connecting People

The Device Revolution: Connecting Objects

Devices
- ~ 50 Billion

Places
- ~ 0.5 Billion

People
- ~ 5.0 Billion
Growth Potential

M2M traffic to increase **22-fold** from 2011 to 2016

Source: Cisco

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Growth Potential

The Connected Life by 2020

2011
9 Billion
Total Connected Devices

2020
24 Billion
Total Connected Devices

2011
6 Billion
Mobile Connected Devices

2020
12 Billion
Mobile Connected Devices

$1.2 Trillion
7x increase on 2011 expected revenues

Revenue opportunity for connected devices in vertical sectors

Health
$69 Billion

Automotive
$202 Billion

Utilities
$36 Billion

Consumer electronics
$445 Billion

Source: GSMA
Key Enablers

- Smaller
- Cheaper
- More powerful
- Lower energy consumption

Hardware

- Communication protocols
- Web services
- Networking

Open Standards

Internet and the Cloud
Why IPv6 for Smart Objects

- Interoperability
- Adaptability
- Stability
- Network configuration and management

- End-to-End
- Security
- Large address space
Standardization Efforts

- IPv6 over Low power WPAN (6LoWPAN)
- Routing Over Low power and Lossy networks (ROLL)
- Constrained RESTful Environments (CORE)
Zigbee Smart Energy 2.0 Profile to define an IPv6-based protocol

Source: Zigbee Alliance
Applications/Markets

“... many appliances around the house, in the office, in the car, on our persons, in the buildings that we work and live in will be instrumented and will be part of the net... When those appliances are Internet-enabled... you open up an opportunity for new businesses to manage those devices.”

Vint Cerf
Vice President and Chief Internet Evangelist
Google Inc.
Markets

- Industrial Monitoring
Markets

- Industrial Monitoring
- Energy
Markets

• Industrial Monitoring
• Energy
• Structural Monitoring
Markets

- Industrial Monitoring
- Energy
- Structural Monitoring
- Connected Home
Markets

- Industrial Monitoring
- Energy
- Structural Monitoring
- Connected Home
- Healthcare
Markets

- Industrial Monitoring
- Energy
- Structural Monitoring
- Connected Home
- Healthcare
- Vehicle Telematics
Markets

- Industrial Monitoring
- Energy
- Structural Monitoring
- Connected Home
- Healthcare
- Vehicle Telematics
- Agricultural Monitoring
Markets

- Industrial Monitoring
- Energy
- Structural Monitoring
- Connected Home
- Healthcare
- Vehicle Telematics
- Agricultural Monitoring
- Building Management
Texas Instruments CC-6LoWPAN Development Kit
Belkin WeMo Home Automation System
Deutsche Telekom marketplace for M2M communication technologies
SIGFOX – Cellular network operator dedicated to M2M and IoT
Public cloud resource for smart devices
Conclusion

• Tremendous market potential in M2M/IoT/Smart object networks
• Much of these data will need to be uploaded, stored and processed
• IPv6 is an ideal candidate
• Opportunities for new businesses and channels
Thank You