

IPv6 over Constrained Node Networks(6lo) Applicability & Use cases

draft-hong-6lo-use-cases-03.txt

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History and status

- Discussed from IETF 89
- Initial Document: draft-hong-6lo-use-cases-00.txt (Oct.17.2015)
 - Presented at IETF-94 6lo WG meeting
- Update 01: draft-hong-6lo-use-cases-01.txt (Mar.21.2016)
 - Presented at IETF-95 6lo WG meeting
- Tele-conference (May.19.2016)
 - Productive discussion
- Update 02: draft-hong-6lo-use-cases-02.txt (Jul.08.2016)
 - Change of the title
 - Addition of the use cases of 6tisch
 - Editorial updates from Rashid Sangi
- Adoption call (Sep.22.2016~Oct.7.2016)
 - Several positive responses in support
- Update 03: draft-hong-6lo-use-cases-03.txt (Oct.30.2016)

Comments in Adoption Call (1/2)

- Comments from Xavier Vilajosana, Samita Chakrabarti, Abdur Rashid Sangi, Pascal Thubert, Joosang Youn, Take Aanstoot, Diego Dujovne, Paul Duffy, etc.,
- [Xavier] I would like to see there the features of 6lo that are supported and those that are not for the different underlying technologies, information about the current level of maturity and examples of existing deployments
- [Pascal] I'd suggest we consider the detnet use case draft as a reference of what we want to achieve

Comments in Adoption Call (2/2)

- [Take] I am missing the following chapters: 6loPLC, now primarily G3-PLC and Prime, LPWAN on low frequency
 - 5 Design space: New bullet: Update firmware requirements, Security Requirements:
 - 6.4 use case of MS/TP
 - 6.6 use case of LTE MTC
- [Paul] There is a lot more to 802.15.4e than 6TSCH. Wi-SUN Alliance is instead using pseudo random frequency hopping.
 - IEEE 1901.2/Netricity needs to be included with G3-PLC and Prime. AFAIK Prime is not even IP based?

6lo Link layer technologies

- ITU-T G.9959 (Z-wave) : RFC 7428
- Bluetooth Low Energy : RFC 7668
- DECT-ULE : draft-ietf-6lo-dect-ule-07
- Master-Slave/Token-Passing : draft-ietf-6lo-6lobac-05
- NFC : draft-ietf-6lo-nfc-05
- LTE MTC : 3GPP TS 36.306 V13.0.0
- IEEE 802.15.4e

Design space dimensions for 6lo use cases

- Deployment/Bootstrapping
- Topology
- L2-Mesh or L3-Mesh
- Multi-link subnet
- Data rate
- Buffering requirements
- Security Requirements
- Mobility across 6lo networks and subnets
- Time synchronization requirements
- Reliability and QoS
- Traffic patterns
- Security Bootstrapping
- Power use strategy
- Update firmware requirements

6lo use cases

- Use case of ITU-T G.9959: Smart Home
 - Example: Use of ITU-T G.9959 for Home Automation
- Use case of Bluetooth Low Energy: Smartphone-Based Interaction with Constrained Devices
 - Example: Bluetooth LE-based Body Area Network for fitness
- Use case of DECT-ULE: Smart Home
 - Example: use of DECT-ULE for Smart Metering
- Use case of NFC: Alternative Secure Transfer
 - Example: Secure Transfer by Using NFC in Healthcare Services with Tele-Assistance
- Use case of LTE MTC
 - Example: Use of wireless backhaul for LoRa gateway

Updates since the IETF 96

- Update introduction part
- Update Master-Slave/Token-Passing part in clause 3.4
 - Delete the related parts of transmission of IPv6
- Update 6lo design space dimensions
 - Modify some explanation parts of each space dimension
 - Delete Energy limitation space dimension
 - Add Update firmware requirements space dimension
- Update Acknowledgements parts
 - Reflect the persons who commented

Future works

- Update use cases of MS/TP, 6tisch, LTE-MTC
 - Will be provided by Kerry or Take Aanstoot
- Refer detnet use case draft
- LPWAN as a use case?
- Security consideration for each use cases or in general?
- Add a tabular description for comparison of characteristics in terms of applications on different L2 technologies

Next Step

- Will submit as a WG-00 document after the IETF meeting
- Comments ?