

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

draft-hong-6lo-use-cases-02.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

Comments in IETF95 (1/2)

- [Pascal] renaming the doc would be a good idea. **Decide if it's for of use by us or by people outside of IETF.** The latter would be immensely useful. The former, not sure.
- [Dominic] Is it similar intention to define the use case as other WG provide or what is the detailed intent?
- [Samita] **To provide more details of the use cases.** Example, detailed requirements/expectations from security etc.
- [Gabriel] **Detailed deployment considerations and we may go for even changing the names.** Establishing a Wiki page.
- [Pascal] **People from outside should refer to get detailed information** beyond the description mentioned in the charter.
- [Samita] **Tabular description for comparison** of characteristics in terms of applications on different L2 technologies.

Comments in IETF95 (2/2)

- [Presentor] MS/TP details would be added in next version.
- [Samita] Decision for adoption would be done later
- [Pascal] similar documents exist but the deployment perspective should be addressed here.
- [Samita] Deploying related information if anyone working, should kindly provide.
- [Samita] Anyone deploying 6lowpan network today may provide useful comments

Comments in 6lo mailing lists (1/2)

- [Richardson] If the purpose is to market/educate outsiders then I see the point, and let's do that. This document should be augmented with a set of slides that explain (in pictures) the deployment scenarios indicated.
- [Samita] The purpose is to give ideas to folks outside 6lo WG (internally and externally) about how 6lowpan stacks could be used on multiple technologies and their respective deployments so if any new technologies/ deployment consider 6lo stack as their option they can get some information.
- [Sandra] I suggest that if not all the technologies, some examples should relate to LP-WAN technologies, since they are also restricted networks and also need IPv6-over-foo definitions.
- [Carles] The "6lo use cases" document may include a wider set of technologies than the current "6lo" ones. Then it would transform into a "6lo" and "lpwan" use cases document.

Comments in 6lo mailing lists (2/2)

- [Rashid Sangi]
- 1. 3.2. first para: better further define IPSS or completely exclude it.
- 2. 3.3. third para: "Portable Parts (PP) attached" - instead of - "PP attached".
- 3. 4. Design Space. first and second para: incorrect reference of "RFC 6558" - instead of - "RFC 6568"
- 4. 5.1. first para: suitably rephrasing "However, the person data" to let suppose "However, the personal data, which pose serious issues if mishandled while transferred in wireless domain, can be securely transferred by NFC technology".
- 5. 5.3. Reliability & QoS: "Latency of SENSOR READINGS" should be low for".
- 6. 5.4. first para: "communications" - instead of - "communicatios".
- 7. 5.5. first para: "Therefore, the use case of LTE MTC could be used in LPWAN" - instead of - "Therefore, the use....".
- 8. 5.5. example: if you are referring to connectivity between end device and LP WAN gateway, how about using the term "fronthaul" instead of "backhaul"?

Summary of the result of Tele-Conf. (1/2)

- Time : May 19, 2016
- Attendees : Samita, Yong-Guen, Thomas, Gomez, Younghwan, rashed, Xavier, Daniel
- Need to decide on **the new title of the draft reflecting purpose and content**
 - IPv6 over Constrained Node Networks(6lo) Applicability & Use cases
- Should we describe deployment in this document?
 - Concern over distinguishing itself from existing 6lowpan Usecase RFC
 - Some folks **see value in describing current deployment with figures** (Charles, Samita, and previously M. Richardson)
 - Yong-Geun to seek contribution on 6lo deployment high-level diagram, scale, Applications and L2 technologies
 - Possible deployment examples: Smart Grid activity in WiSun? 6Tisch area?
 - However the document's **main focus is on per-L2 technology usage, a daptation parameters**

Summary of the result of Tele-Conf. (2/2)

- Clarification of the purpose of the document
 - Informational RFC
 - Targeting IETF internal WGs and members as well as external SDO contemplating a L3 solution for their respective L2 constrained node networks
- Should the document include LPWAN as a usecase? [IETF95 comments from Sandra]
 - 6lowpan can be used definitely on LPWAN with some modification but the consensus in the team is to wait until LPWAN BOF next time
 - Wait until later revision of the document
- What about Security requirement of the usecase scenarios?
 - Should this be considered for each usecase or in general ?
 - Youg-Geun has taken this as an AI

6lo Link layer technologies

- ITU-T G.9959 (Z-wave) : RFC 7428
- Bluetooth Low Energy : RFC 7668
- DECT-ULE : draft-ietf-6lo-dect-ule-04
- Master-Slave/Token-Passing : draft-ietf-6lo-6lobac-04
- NFC : draft-ietf-6lo-nfc-03
- LTE MTC : 3GPP TS 36.306 V13.0.0
- IEEE 802.15.4e

Design parameters 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
- Energy limitation

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 95

- Change of the title
 - Previous document
 - Use cases for IPv6 over Networks of Resource-constrained Nodes
 - From this document
 - IPv6 over Constrained Node Networks(6lo) Applicability & Use cases
- Update of the abstract and Introduction parts
- Addition of 6lo link layer technology
 - IEEE 802.15.4e by Tomas
- Addition of the section of 6lo deployment scenarios
 - Not yet filled
- Editorial update of comments from Rashid Sangi

Remaining items

- Add use cases of MS/TP and 6tisch
 - MS/TP will be provided by Kerry
 - 6tisch will be provided by Tomas
- Fill a section of 6lo deployment scenarios
 - Seek valuable contents
 - Waits for contributions
- 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

- Comments ?