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

draft-ietf-6lo-use-cases-09

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History and status

- WG document : draft-ietf-6lo-use-cases-00 (Nov.2.2016)
- 8th revision : draft-ietf-6lo-use-cases-08 (Nov.04.2019)
- 9th revision : draft-ietf-6lo-use-cases-09 (Jul.13.2020)

Goal of this document:

Help 6lo/6lowpan stack adaptation by a L2-constrained technology and help a newcomer understand how 6lowpan stack can be applicable in practice. Useful for new adopters of IOT@IETF.

6lo Link layer technologies

- ITU-T G.9959 (Z-wave) : RFC 7428
- Bluetooth Low Energy : RFC 7668
- DECT-ULE : RFC 8105
- Master-Slave/Token-Passing : RFC 8163
- NFC : draft-ietf-6lo-nfc-16
- PLC : draft-ietf-6lo-plc-04

Comparison across 6lo Link layer tech.

	Z-Wave	BLE	DECT-ULE	MS/TP	NFC	PLC
Usage	Home Automation	Interaction with Smart phone	Meter Reading	Building Automation	Health care Services	Smart Grid
Technology & Subnet	L2-mesh or L3-mesh	Star Mesh	Star No mesh	MS/TP No mesh	P2P L2-mesh	Star, Tree, Mesh
Mobility Reqmt	No	Low	No	No	Moderate	No
Security Reqmt	High, Privacy required	Partially	High, Privacy required	High, Authen. required	High	High, Encrypt. required
Buffering Reqmt	Low	Low	Low	Low	Low	Low
Latency, QoS Reqmt	High	Low	Low	High	High	Low
Date Rate	Infrequent	Infrequent	Infrequent	Frequent	Small	Infrequent
RFC # or Draft	RFC 7428	RFC 7668	RFC 8105	RFC 8163	draft-6lo-nfc	draft-6lo-plc

Comments & Email discussion

- Comments from Dominique
  - Usage of 'MAY' and 'SHOULD' with RFC2119
  - Unbalanced between sentences and normal group in section 1
  - Ambiguous expression of PLC
  - Possible candidate of 6lo link layer technology
  - Table of Comparison between 6lo link layer technology
  - Difference between section 4 and section 6
  - Normal reference

- Comments from Laurent
  - Comments for PLC technology

- Comments from Liubing (Remy)
  - Missing reference of IEEE 1901.1

Update after IETF106 (1/4)

- Usage of ‘MAY’ and ‘SHOULD’ with RFC2119
  - This draft describes use cases and applicability of 6lo
  - Avoid the usage of ‘MAY’ and ‘SHOULD’ in section 1 and section 5

- Unbalanced between sentences and normal group in section 1

> This document provides the applicability and use cases of 6lo, considering the following aspects:
>
> - 6lo applicability and use cases are uniquely different from those of 6LoWPAN defined for IEEE 802.15.4.
> - It covers various IoT related wire/wireless link layer technologies providing practical information of such technologies.
> - A general guideline on how the 6LoWPAN stack can be modified for a given L2 technology is described.
> - Various 6lo use cases and practical deployment examples are described.

Update after IETF106 (2/4)

- Ambiguous expression of PLC
  - PLC is a wired technology among 6lo link layer technologies

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PLC is a data transmission technique that utilizes power conductors
as medium.  Unlike other dedicated communication infrastructure,
power conductors are widely available indoors and outdoors.
Moreover, wired technologies cause less interference to the radio
medium than wireless technologies and are more reliable than their
wireless counterparts.  PLC is a data transmission technique that
utilizes power conductors as medium[I-D.ietf-6lo-plc].
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- Possible candidate of 6lo link layer technology
  - In the previous version of this draft, we considered the LTC-MTC technology as a 6lo link layer technology
  - Delete the expression of ‘possible candidate of 6lo link layer technology’

Update after IETF106 (3/4)

- Table of Comparison between 6lo link layer technology
  - Comment : looks like a mixture of technologies and applications. E.g. latency requirement = low for DECT-ULE, but only true for smart-metering, not for some other DECT-ULE use cases (home automation). Providing only one example of usage is a mis-representation of the technology.
  - Response : In some point, we have a difficulty to capture common characteristics of each technology for different application in limited space. That is the reason why we mentioned the usage of each technology in the first row.

- Difference between section 4 and section 6
  - Section 6 : provide 6lo use case examples of each 6lo link layer technology
  - Section 4 : provide *real* and *real* 6lo deployment scenarios and it includes G3-PLC and Netricity

Update after IETF106 (4/4)

- Normal reference
  - Comment : I wonder if this draft, being a use case description, should have any normative reference at all (except maybe for RFC2119)
  - Response : In RFC 7322, “where normative references are essential to implementing or understanding the content of the RFC and informative references provide additional information”. Except RFC2119, other references are moved to ‘Informative References’

Next steps

- Ask WGLC

- Update the draft to reflect comments
  - Comments from Liubing (Remy)
    - Add a reference of IEEE 1901.1

Thanks!!

Questions & Comments