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

draft-ietf-6lo-use-cases-15

Y-G. Hong (Daejeon Univ.), C. Gomez (UPC), Y-H. Choi (ETRI),
AR. Sangi(Wenzhou-Kean University), S. Chakrabarti

6lo WG Meeting@IETF 116 – Yokohama

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History and status

- 1st WGLC : draft-ietf-6lo-use-cases-05 (Non. 2018)
- 2nd WGLC : draft-ietf-6lo-use-cases-09 (Oct. 2020)
- Submitted to IESG : draft-ietf-6lo-use-cases-12 (Feb. 2022)
- 14th revision : draft-ietf-6lo-use-cases-14 (Oct.24.2022)
- Comments from IESG (Dec. 2022)
- **15th revision : draft-ietf-6lo-use-cases-14 (Mar.13.2023)**

Updates after Last meeting (1/12)

	Date	Name	Comments	Actions
1	2022-12-15	Zaheduzzaman Sarker (Transport Area)	- The comparison table in section 2.7 seems nice one, however, as there is no description given on how to interpret the Low or Moderate, frequent or infrequent. It kind of fails to provided the intended comparison. Like the scale is not YES and NO which cloud be easily interpreted, but No, Low, Moderate, High and perhaps Yes. If there is such scale already available in RFC or other documents would be nice to provide references.	Based on RFC 8578, No -> No, Low, Moderate, High -> Yes
			- There are terms used like 4G, LTE in this document, I don't think those need to be that much of generation specific and could easily be replaces by "cellular" unless we see an need to mention a particular cellular access generation for some specific reasons.	Replace 4G, LTE -> cellular

Updates after Last meeting (2/12)

	Date	Name	Comments	Actions
2	2022-12-15	Murray Kucherawy (ART Area)	The GENART review was particularly well done. Please give it its due attention. I concur with Alvaro on all of his points. I feel like at a bare minimum, RFC 8200 should be a normative reference here.	Move RFC 8200 into Normative section
			Please expand "OFDM" on first use and/or provide a reference. I see Eric found a bunch of others; the authors might want to review all of your acronyms for proper resolution at or before first use.	Add full name of OFDM

Updates after Last meeting (3/12)

	Date	Name	Comments	Actions
3	2022-12-15	Paul Wouters (SEC Area)	Like Roman, I am a bit concerned about the security aspects. As this is a use cases document, I've limited my issues to comments. But it would have to be satisfied in any further specification RFCs. Security and Encryption: Though 6LoWPAN basic specifications do not address security at the network layer, the assumption is that L2 security must be present. While I do understand that some L2 security is possible, eg via pairing, there is still a gap for some technologies - eg NFC where I wouldn't know which payment terminal I really connect to.	Update the paragraph and add a relevant sentence
			End-to-end communication is expected to be secured by means of common mechanisms, such as IPsec, TLS/DTLS or object security [RFC8613]. EDHOC (draft-ietf-lake-edhoc) could also be a good match Note that while the common mechanism is a good start, it only presents the use of a technology. Those technologies have requirements that might not be usable in the context of 6lo (eg when there is no internet connection to verify X.509 certificates (OCSP or CRLs) or DNS identifiers).	Add EDHOC as a one of examples

Updates after Last meeting (4/12)

	Date	Name	Comments	Actions
4	2022-12-15	Alvaro Retana (RTG Area)	(1) This datatracker page should indicate that this document replaces draft-hong-6lo-use-cases.	Asking IETF officer ?
			(2) No references are included for BLE, DECT-ULE, NFC, and PLC.	Add a reference of BLE, DECT-ULE, NFC
			(3) There are several references to specific IETF WGs. This is not a good practice because the WGs may change, be re-chartered, or even cease to exist.	Remove references of specific IETF working groups
			(4) No references are listed as Normative. I find this hard to believe, given the characterization described here [1]. Please review the references and move the ones that "must be read to understand...the technology" to be Normative. [1] https://www.ietf.org/about/groups/iesg/statements/normative-informative-references/	Move RFC 4861, 4862, 4919, 4944, 6568, 6606, 7228, 7400, 7428, 7668, 8105, 8163, 8200, 9159 into Normative

Updates after Last meeting (5/12)

	Date	Name	Comments	Actions
5	2022-12-14	Roman Danyliw (SEC Area)	Section 3 Security and Encryption: Though 6LoWPAN basic specifications do not address security at the network layer, the assumption is that L2 security must be present. In addition, application-level security is highly desirable. The working groups [IETF_ace] and [IETF_core] should be consulted for application and transport level security. The 6lo working group has worked on address authentication [RFC8928] and secure bootstrapping is also being discussed in the IETF. However, there may be other security mechanisms available in a deployment through other standards such as hardware-level security or certificates for the initial booting process. Encryption is important if the implementation can afford it. With the exception of authentication and secure bootstrapping, this text is vague on what security properties are to be considered. Likewise, saying "encryption" is not informative as it can help provide specific (but unnamed) security properties. What is intended is not clear. Specifically: -- What is the "L2 security" that "must be present" specifically? What properties are being addressed (e.g., confidentiality? Authenticity?) -- What is "application-level security" that is "desirable"?	Update paragraph to resolve comments
			Thank you to Robert Sparks for the SECDIR review. ** Section 1. Running IPv6 on constrained node networks presents challenges, due to the characteristics of these networks such as small packet size, low power, low bandwidth, low cost, Why is "lost cost" a challenge to running IPv6 on a constrained network? It seems like a desirable property.	Delete low cost

Updates after Last meeting (6/12)

	Date	Name	Comments	Actions
5	2022-12-14	Roman Danyliw (SEC Area)	** Section 2. Editorial. Inconsistent descriptions of the protocols: -- Data rate: not mentioned in Section 2.2. -- Range: not mentioned in Sections 2.1, 2.2, 2.3, 2.5	Add data rate in section 2.2 Add rage in section 2.1, 2.2, 2.3, 2.5
			** Section 2.2. Editorial. Could references to Bluetooth 4.0, 4.1, and IPSP please be provided.	Add a reference of BLE, IPSP
			** Section 2.3. Editorial. Please provide a reference to DECT-ULE.	Add a reference of DECT-ULE
			** Section 2.5. NFC technology enables simple and safe two-way interactions between electronic devices Are the other protocols in Section 2.* not “simple” or “safe”?	Delete "simple" and "safe"
			** Section 2.7 The following table shows the dominant parameters of each use case corresponding to the 6lo link layer technology. Is NFC “dominantly” only used in “health-care services”? Is there a basis for that assertion.	Change the health-care servcies to "services where privacy is important" for general expression
			** Section 3. ... L2-address-derived IPv6 addresses are specified in [RFC4944], but there exist implications for privacy. Explicitly state those privacy implications.	Add a sentence to explicitly state

Updates after Last meeting (7/12)

	Date	Name	Comments	Actions
5	2022-12-14	Roman Danyliw (SEC Area)	** Section 4.2. Section 4.* is titled "deployment scenarios". Section 4.1, 4.3, and 4.4 explicitly state where they are deployed. This section described Thread, but omits describing the envisioned deployment.	Change the title of Section 4, "6lo Deployment Examples"
			** Section 4.2. Editorial. The term "future-proof designs" seems like marketing.	Delete the term "future-proof"
			** Section 4.* and 5.*. Editorial. I don't understand the difference between a "deployment scenario" and a "6lo use case".	Change the title of Section 4, "6lo Deployment Examples" Section 4: Provide real deployment of 6lo Section 5: Provide possible use cases of 6lo
			** Section 5.1. Security support is required, especially for safety-related communication. What is a "security support"? Is "security" not desirable in the other use cases such as Section 5.2 - 5.4	Delete the sentence and following sentences

Updates after Last meeting (8/12)

	Date	Name	Comments	Actions
6	2022-12-12	Lars Eggert (GEN Area)	### Section 9, paragraph 8 ``` [IEEE802154] IEEE standard for Information Technology, "IEEE Standard for Low-Rate Wireless Networks". ``` No URL or other metadata?	Update the IEEE 802.15.4 reference
			### Inclusive language Found terminology that should be reviewed for inclusivity; see https://www.rfc-editor.org/part2/#inclusive_language for background and more guidance: * Term `master`; alternatives might be `active`, `central`, `initiator`, `leader`, `main`, `orchestrator`, `parent`, `primary`, `server` * Term `slave`; alternatives might be `follower`, `peripheral`, `replica`, `responder`, `secondary`, `standby`, `worker` * Term `traditional`; alternatives might be `classic`, `classical`, `common`, `conventional`, `customary`, `fixed`, `habitual`, `historic`, `long-established`, `popular`, `prescribed`, `regular`, `rooted`, `time-honored`, `universal`, `widely used`, `widespread` * Term `native`; alternatives might be `built-in`, `fundamental`, `ingrained`, `intrinsic`, `original` * Term `blinds`; alternatives might be `visually impaired`, `unmindful of`, `unconcerned about`, `negligent of`, `unaware`, `uncomprehending`, `unaware`, `uncritical`, `unthinking`, `hasty`, `blocked`, `opaque`	Change traditional to classicial, native to fundamental
			## Nits All comments below are about very minor potential issues that you may choose to address in some way - or ignore - as you see fit. Some were flagged by automated tools (via https://github.com/larseggert/ietf-reviewtool), so there will likely be some false positives. There is no need to let me know what you did with these suggestions.	?
			### Outdated references Document references `draft-ietf-6lo-nfc-18`, but `-19` is the latest available revision.	Update NFC I-D as -22

Updates after Last meeting (9/12)

	Date	Name	Comments	Actions
6	2022-12-12	Lars Eggert (GEN Area)	### URLs These URLs in the document did not return content: * https://standards.ieee.org/findstds/standard/1901.2-2013.html * http://www.g3-plc.com/home/ * http://groups.homeplug.org/tech/Netricity These URLs in the document can probably be converted to HTTPS: * http://www.techstreet.com/ashrae/standards/ashrae-135-2016?product_id=1918140#jumps * http://www.wi-sun.org	Update 3 URLs to check valid content and update 2 URLs to provide HTTPS connections
			### Grammar/style #### Section 5.2, paragraph 3 ``` w-cost, multi-drop field bus to inter connect the most numerous elements (sen ^^^^^^^^^^^^^ ``` This word is normally spelled as one.	Update as comment
			#### Section 5.3, paragraph 1 ``` infrastructure, and thus it falls outside of the constrained node network sco ^^^^^^^^^^ ``` This phrase is redundant. Consider using "outside".	Update as comment
			#### Section 5.6, paragraph 2 ``` ove. Note that NFC is often considered to offer intrinsic security propertie ^^^^^^^^^^^^^^^^^^ ``` The verb "considered" is used with the gerund form.	?
			#### Section 7, paragraph 2 ``` ommunication Union, "Short range narrow-band digital radiocommunication trans ^^^^^^^^^^^ ``` This word is normally spelled as one.	It comes from the title of ITU-T Recommendation

Updates after Last meeting (10/12)

	Date	Name	Comments	Actions
7	2022-12-12	Éric Vyncke (INT Area)	## COMMENTS ### Abstract The mix of acronyms (e.g., "MS/TP") and standards (e.g., IEEE or ITU) or expanded names (e.g., "Bluetooth Low Energy") in the abstract is a little weird. Suggest to expand the acronyms.	Update as comment
			### Section 2.5 `safe two-way interactions` what is meant by "safe" in this context ? Should "secure" be used ? Also puzzling is "two-way" as it is not mentioned in other sub-sections. What makes NFC unique here ? Is it more because it is only a 2 party link ?	Update as comment
			### Section 2.6 `This standard addresses the requirements with high data rates such as Internet, HDTV, audio, gaming.` s/Internet/Internet access/ ? What does "OFDM" mean ?	Change the setence and add a full name of OFDM
			### Section 2.7 "BLE" was not expanded before The "Usage" row is very specific and not explained, e.g., I wonder whether NFC is only used in health care.	Change BLE to Bluetooth LE

Updates after Last meeting (11/12)

	Date	Name	Comments	Actions
7	2022-12-12	Éric Vyncke (INT Area)	### Section 3 Should there be a reference about "multicast being harmful" ? Please expand/explain "ESC".	Add a reference and add a sentence to explain ESC
			### Section 4 Should the section title better reflects the actual content ? E.g., "6LowPAN Usages" The difference between sections 4 and 5 is also unclear, or is the latter an explanation of section 2.7 ? If so, the flow looks weird (suggest to move section 2.7 inn section 5).	Change the title of Section 4, "6lo Deployment Examples" Section 4: Provide real deployment of 6lo Section 5: Provide possible use cases of 6lo
			### Section 4.1 This section has a marketing twist that is unusual in IETF drafts.	Update the section 4.1 to remove marketing twist
			### Section 4.3 Should there be a mention of the work done in the SNAC WG ?	No relation with SNAC WG
			## NITS ### Section 2.6 "AMI' acronym is defined at least 3 times in the document. Suggest to expand it only once	Update as comment
			### Section 5.6 A lot of acronyms are defined and either never used or used only once. Please consider not defining those acronyms and use the full text.	Update as comment

Updates after Last meeting (12/12)

	Date	Name	Comments	Actions
8	2022-11-18	Carlos Bernardos	The document describes the applicability of IPv6 over 6lo networks and provides some examples of practical deployments. The document is well written and provides a very good set of references for the interested reader to continue digging. I think given the nature of the document, there are not issues for INT-AREA, as those aspects that would be indeed very relevant there are mostly tackled on the many other documents that are referenced. I find the document quite informative though and I enjoyed and learned quite a lot reading it.	
			Based on my review, if I was on the IESG I would ballot this document as YES.	
			The following are minor issues (typos, misspelling, minor text improvements) with the document: - I would personally prefer not to have explicit references to WGs, as the document probably will live longer that the 6lo WG (though there are examples on the IETF for the other way around ;)) and I think the document should not assume that the reader is familiar with IETF WGs.	Update as comment
			"for the IEEE Std 802.15.4[IEEE802159].)" --> "for the IEEE Std 802.15.4 [IEEE802159].)"	Update as comment
9	2022-11-18	Robert Sparks	This document is ready for publication as an Informational RFC Thanks for addressing my Last Call comments. The new Security Considerations text is helpful (though I would have preferred even more). I'll point to one last potential problem spot (as a nit) that you may wish to reconsider. See Section 3 at: "Encryption is important if the implementation can afford it." >From the rest of the document, it's clear that Encryption is important >even if the implementation _can't_ afford it (and what does "afford it" even mean in this context)? Please try to find more specific text to convey what you are trying to say.	Update paragraph to resolve comments

Remaining works

- Update and publish a revision (version-16)

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COMMENT:
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Thank you to Robert Sparks for the SECDIR review.

Thanks for addressing my DISCUSS and my substantive COMMENTs.

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** Section 2.7

   The following table shows the dominant parameters of each
   use case corresponding to the 6lo link layer technology.

Is NFC “dominantly” only used in “health-care services”?  Is there a basis for that assertion.
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Dear Roman Danyliw.

Thanks for your valuable comments.

Based on your comments, I updated the text in section 2.5 but I missed it in the table in section 2.7.

I agree with your point and I think it should be updated from "health-care services" to "secure transfer".
Secure transfer includes payment and health-care service, etc.

I will update the draft and re-submit.

Best regards.

Yong-Geun.

Thanks!!

Questions & Comments