

LWIG Terminology IESG Comments

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We are documenting established terms

- AF: “the authors might like to consider whether this document could be repositioned as “A Discussion of Some Concept in Constrained Networks”. I believe that this re-branding complete with a few minor tweaks to the text to be consistent would pretty much defuse most of my Discuss comments (except, perhaps some on the Abstract and Section 2.3.1).”
- Thanks for the offer, but that’s not what we are doing here.

“Constrained”

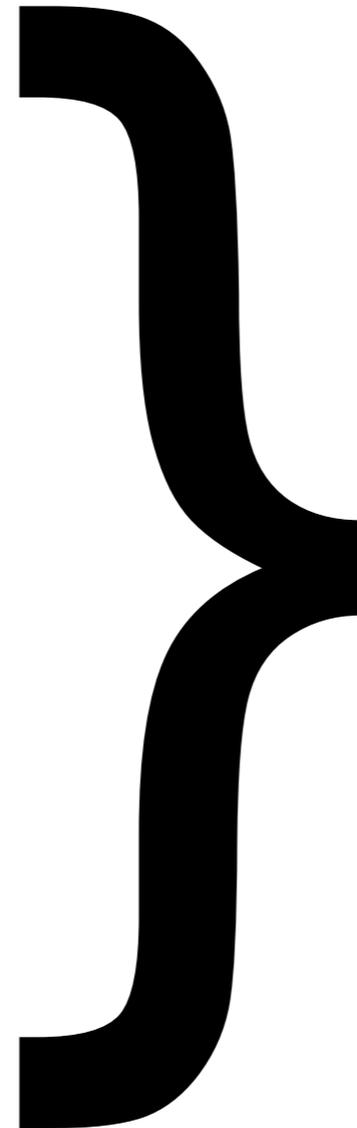
- SF: “intro: all devices have limited CPU etc. (Except maybe some in THHGTTG:-) That's not entirely a nit - all the terminology here needs to be relative, and relative to what we consider today's "standard candle" which could be a typical laptop. If you re-cast the discussion here in to only use relative terms, (except for examples) then perhaps this terminology could be current for far longer?”

What we mean

- Constraints that significantly limit what can be achieved
- Yes, **relative** to state of the art mass market devices (that we assume in other designs)
- Specifically, class 1/class2 or close

“Powerful”

- Supercomputer
- Server
- Desktop
- Laptop
- Smartphone
- Raspberry Pi



these are all not
“constrained”

Constrained node

- Existing definition:
 - The term "constrained node" is best defined by contrasting the characteristics of a constrained node with certain widely held expectations on more familiar Internet nodes:
 - Constrained Node: A node where some of the characteristics that are otherwise pretty much taken for granted for Internet nodes in 2013 are not attainable, often due to cost constraints and/or physical constraints on characteristics such as size, weight, and available power and energy.

Absolute numbers

- SF: “3 - I bet you some beers you live to regret using absolute numbers here. I don't find this table that useful. The text definitions saying what the nodes in various classes can and cannot do however is good and should be used in the definitions.”
- Giving names to classes in terms of absolute numbers are one of the major contributions here.
- Guided by real-world chip categories.

class 1 , class 2

- → The categories defined here have held since at least 2004, if not longer back. They are indeed formed by what can and cannot be done; Moore's law goes into cost and energy improvements instead. So we believe these categories will remain relevant for quite some more time.

2013

- today, CNN is different from “normal”
- in the future, it may not be
- → at the time of writing

Illustrate some more

- 6lo charter: “IPv6 connectivity over constrained node networks with the characteristics of:
 - limited power, memory and processing resources
 - hard upper bounds on state, code space and processing cycles
 - optimization of energy and network bandwidth usage
 - lack of some layer 2 services like complete device connectivity and broadcast/multicast”
- We could (abstract this some) and use it

Constrained network

- Much more open term
 - Includes battlefield networks between tanks
- Per se less the focus of this document
 - More interested in Constrained Node Network

Constrained Node Network (CNN)

- SF: “Just to note that this definition is fine!”

Other terms in scope

- Discuss other CNN terms to relate them to the terminology:
 - LLN (ROLL/RTG term)
 - LoWPAN, 6LoWPAN (INT term)
- Illustrate current terms based on existing, single-layer definitions (→ say that)
- → be less frank about the limitations of those existing definitions

Other terms out of scope

- **Challenged** network
- Often confused with **constrained** network
- Make sure the distinction is clear

E3

- SF: “4.2: I'd suggest s/E3/Einf/ so you could introduce new classes when you find out that E0..2 aren't sufficiently descriptive of interesting classes of device.”
- E_{∞} isn't ASCII, so E9?

“Always-Off”

- Slightly provocative
- That may be what makes it useful
- Stick to it?

Mention duty cycling

- → NEW:
- A term often used to describe power-saving approaches is "duty-cycling". This describes all forms of periodically switching off some function, leaving it on only for a certain percentage of time (the "duty cycle").

Avoid ACPI state names

- S0, S1, ... are confusing
- Use which letter?
A = always-on? P for power (but Ps)?
- Go to S9/A9/P9 as well?

Security

- SF: “it'd be good to note the security characteristics of the various classes defined. A table could usefully do that. (The exercise of generating that table might also help to see if the current class definitions are meaningful.)”
- Should we discuss security in detail?
- Or farm it out to ietf-core-coap, garcia-core-security?
- Seems a separate, much-needed effort.

Lots of very good editorial input

- (Needs to be put in.)

Questioning editorial style and substance

- Reference to “50 billion” paper..
 - ... and the significance of the $5 \cdot 10^{10}$ milestone
- Some marketing-style text
- Using the term “Internet of Things”