

E-impact Interim meeting

Day 1 : Existing Drafts

Note Well

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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

- [BCP 9](#) (Internet Standards Process)
- [BCP 25](#) (Working Group processes)
- [BCP 25](#) (Anti-Harassment Procedures)
- [BCP 54](#) (Code of Conduct)
- [BCP 78](#) (Copyright)
- [BCP 79](#) (Patents, Participation)
- <https://www.ietf.org/privacy-policy/>(Privacy Policy)



Agenda

- Administrivia (10 minutes)
- Map/survey of existing drafts (Alex) (30 minutes)
- Sustainability Insights & POWEFF (Jan/Marisol) (30 minutes)
- Power Management YANG (Ron/Tony) (20 minutes)
- Sustainability considerations (Ali/Carlos) (30 minutes)
- ICMP Environmental Impact extensions (Carlos) (10 minutes)
- Gap Analysis (Chairs/All) (30 minutes)
- Open Mic (20 minutes)

IAB E-Impact Program

- Mainly a discussion and co-ordination forum
- Bring up and discuss work not immediately ready for engineering/research
- Identify topics ready for engineering/research and dispatch and potential venues
- Identifying gaps of work that needs to be done
- Possibility to publish IAB stream document(s) concerning high level architectural guidance

Thoughts from today's meeting:

Gap Analysis

Gap Analysis

- Are we collecting the right metrics
- What do we do with the collected metrics?
 - How do we influence routing, duty cycling, gear replacement etc.
- What are the hard problems that require further research?
- Is there work missing a proper venue?

High-level Gap Analysis Based on Today's Meeting

Metrics:

- Observability is step 1. For that we need to get metrics *done*
- Need to engage & work on open source to help this, not just standards
- We're maybe overly focused on energy, what about other aspects of sustainability

Other

- We need an ability to influence systems as well, not just observe
- Lots of details in different power save modes
- Consider how you transport information & integration to other YANG models etc.
- Consider what data can be trusted and how (cross-domain in particular)

Social

- Perfect is the enemy of good! Let's not overdo it!
- More interaction with policy makers, ISOC, rest of the world
- Find a way to publish documents from this program (when not technical YANG docs. etc)

More Detailed Gap Analysis (1/3)

1st presentation (Alex):

- Focus is on energy, not on other aspects of sustainability
- Fulfillment, Accounting, Power Sources
- Ability to not just measure but also influence

2nd presentation (Marisol & Jan):

- Precise, fully-defined metrics
- Machine-readable metadata
- Attribution of energy data (who is responsible for what)
- IETF hosted open source projects for data aggregation
- Better traffic engineering, able to cope with dynamics, disruption, etc.
- More interaction with policy makers, getting ISOC going on sustainability, etc.

More Detailed Gap Analysis (2/3)

3rd presentation (Ron):

- Power-save modelling simple vs. complex
- Too simple or just right?

4th presentation (Carlos):

- What level of recommendation to make, where to publish

5th presentation (Carlos):

More Detailed Gap Analysis (3/3)

Other:

- Getting these drafts moving forward (e.g, IVY WG)
- Discussion of what transport is right for all the information delivery
 - And why
- Discussion on at what level changes/control occurs
 - E.g., data center selection vs. routing
- Impact of various fine-grained sleep/idle/power-save modes
- Information sharing across administrative domains
- Protocols vs. APIs or both
- User-level feature relation to power consumption
 - E.g., how quickly will you be notified of say, social media responses
- Cost of data collection vs. benefit (e.g., flow-level data)

Some potential guidelines for further work (1/2)

- Perfect is the enemy of the good
 - E.g., maybe address intra-domain first before tackling global issues (see below)
- Transport considerations
 - We all love sharing sustainability information!
 - We should make a conscious decision on how that information is transported, and why
 - Not just pick a protocol because we happen to be working on it
 - We should use protocol X because it has the capabilities that we need
 - Likely information will come from mixed source, including administrative systems, electricity providers, etc. – more than one protocol is a safe assumption

Some potential guidelines for further work (2/2)

- Idle, sleep, etc. are not binary concepts
 - Real implementations come in very different variants, levels, dynamic adjustment, etc.
 - Shutting down a router vs. sleeping a CPU vs. fine-tuning clock frequency
 - Turning off a link vs. turning off wireless power amplifiers except when there's traffic vs. turning off redundant capacity (parallel link, pico-cell) when traffic is slower
 - Big difference between stopping traffic vs. impacting traffic vs. not impacting traffic
 - Big difference between things that are very slow (spinning up a fiber connection) and microsecond-level changes
 - Avoid hardcoding too rigid concepts into our protocols and metrics
- Information sharing across administrative boundaries is challenging
 - Can you trust power, carbon intensity, etc. information? Why? How?
 - Needs work! (But don't let that delay things you can do today)