

HotRFC@IETF114, Philadelphia, PA

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Challenges and Opportunities in Green Networking

see also:

Challenges and Opportunities in Green Networking <https://datatracker.ietf.org/doc/html/draft-cx-green-ps-00>

Alex Clemm, Cedric Westphal, Jeff Tantsura, Laurent Ciavaglia, Marie-Paule Odi

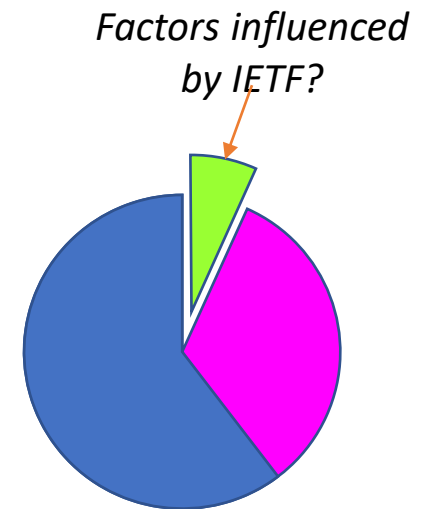
Green Networking Metrics <https://datatracker.ietf.org/doc/html/draft-cx-green-metrics-00>

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Why Green Networking?

- Reducing carbon footprint to “Net Zero” one of mankind’s “grand challenges”
- Networking applications are a key enabler in this, but is this enough?
 - Substantial footprint enabler for a lot of “green” already
 - But, networks consume lots of energy themselves
 - Net Zero mandates will apply to network providers as well
- Key contributors to network energy efficiency today
 - General hardware advances (e.g. Moore’s law – but slowing)
 - Deployment factors (e.g. Nordic locations for datacenters)
 - Antenna technology
- What about network-specific factors?
 - What are ways in which the IETF can contribute?
 - Even if just a small slice of the pie, everything counts...



Potential opportunities (and challenges)

- Device / equipment level
 - Proper instrumentation (common denominator and enabler for control loops)
- Protocol level
 - Traffic adaptation (e.g. bursty vs smoothed transmissions to maximize efficiency)
 - Data volume reduction (e.g. codings, retransmission avoidance)
 - Enabling network energy saving mechanisms (e.g. fast discovery, state reconvergence)
 - Network addressing (e.g. smaller tables to maintain)
- Network level
 - Energy-aware routing & path configuration
 - Energy-related control protocol extensions
- Architecture level
 - Facilitate organization of application to minimize energy consumption
 - Examples: retrieval of content, placement of computation (compare CDN/ICN/COIN but from energy perspective)

**START
HERE**

The good news: does not require one grand solution, but allows for many incremental pieces

Next steps

- Two drafts on this topic have been posted
 - Problem statement (Challenges and Opportunities)
 - Metrics (as a first specific work item)
 - Actually, three: draft-eckert-ietf-and-energy-overview
 - Just a starting point - **much** more will be needed
- Looking for collaborators (and landing spot)
- Informal side meeting on Tuesday 13:00-14:00 in Salon 9
 - Open working meeting between draft authors
 - Please join if you would like to contribute
- Comments? Questions? Please contact us
 - draft-cx-green-ps@ietf.org
 - draft-cx-green-metrics@ietf.org

THANK YOU!