GREEN BOF Charter Refinement discussion

LUIS MIGUEL CONTRERAS MURILLO, Qin Wu

(GREEN BOF Proponents)

2024-08-20

Agenda

1. GREEN BOF Charter Status Update
2. Operators' requirements
3. What needs to be standardized in the framework
4. Next Step

GREEN BOF Charter Status Update

- The 1st GREEN BOF Charter Refinement meeting was concluded in August 13
  - Setup a regular meeting to refine Charter text
  - Make charter ready by the end of this month.
  - Useful to start with a few use cases.
  - Include all IP network.
- Here is the latest update based on Tuesday's discussion,
  - https://github.com/marisolpalmero/GREEN-bof/blob/main/GreenCharterProposal.md
- The remaining issues include:
  - Revisit operator's requirements presented by Luis
  - What needs to be standardized in the framework

Operators' Goal and Usage

- Goal:
  - Improve energy efficiency and reduce energy consumption per traffic unit (MWh/PB) by 90% by 2025.
  - Continue to consume 100% Renewable Energy.
  - Reduce Scope 1 and 2 Carbon Emission by 70% by 2025.
  - Reduce Scope 3 Value Chain Carbon Emission by 39% by 2025.
  - Net-Zero by 2030.
- Operators Usage Examples
  - Track company's progress over time.
  - Better Understand and manage Energy costs.
  - Comply with Reporting requirements/regulations.
  - Include them in voluntary reporting and disclosures.
  - Compare networks with other company or operators.
  - Other aspect such as Energy mix finding optimum capex/opex relation.

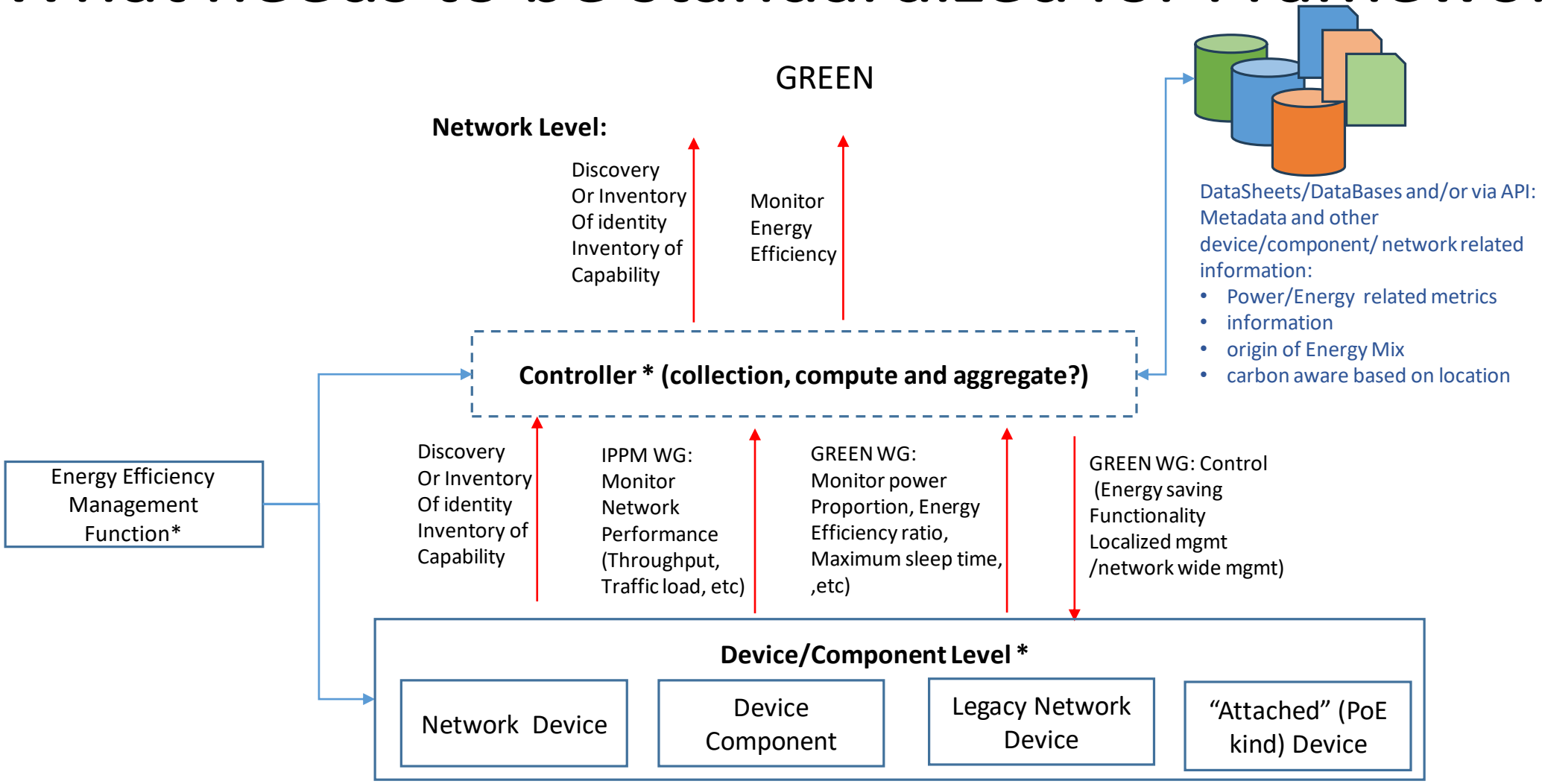
Operators' input

Category	Operators' requirements	Note	Priority
Observability	• Component granularity, e.g., per line-card, per-port	Per component measurement	1
	• Availability of information on the power consumption of the device, without needing instrumentation connected to the infrastructure.	Related to connected device case	1
	• Triggering of alarms when consumption deviate from a nominal usage.	Alarm notification	1 ??
	• Improvement of metering solutions (finer granularity, control of the energy efficiency and saving, interoperability, exposure)	Measurement Metadata such as interval, unit ,etc	1
Analysis	• Common definition of energy efficiency in network devices/components.	Standard metric	1
	• Common methodology of measurements for fair comparison	Standard Methodology	2
	• How to provide accurate figures (context of the measurement in terms of time period, location, traffic, etc)	Time based, location based visualization	2
	• Database for decision in case of large data transfer	Database in controller	3
	• Ability of multi-layer analysis (e.g., IP plus optical)	POI Use Case	3
Control& Mgmt	• To have devices with elastic power consumption according to the carried traffic	Dynamic Energy Saving	2
	• Support of network-wide energy saving and optimization functions	Network Level Mgmt	2
	• Support of network-wide control of energy optimization APIs, allowing external applications to optimize consumption	Network Level Mgmt	2
	• Advanced sleep mode, needing some sort of low power mode when node is lightly utilized	Dynamic Energy Saving	2
	• Ability to steer traffic based on power savings	Traffic Engineering	4
	• Comparison of decision vs optimal case	Intent based Concept	2
	• Synchronous query support	Network Level Query	2

Operators' input （Continued）

Miscellany	Operators' requirements	Note	Priority
Inventory Management	• Inventory of power components (of devices, racks, etc) including together	Component Level Device Level	1
Interaction with Other domain	• Inclusion of data center networks in the picture	Data Center Case	3
	• Power reduction in cell	Mobile Network Case	3
Sustainability & Carbon Emission	• Optimize the overall CO2 footprint (i.e., energy mix based on source type) facilitating the engineering of PoP migration	More renewable energy	4
	• Support both GHG/energy units	Measurement Unit	4
	• Clean energy, gas emission and sustainability in general	Carbon, renewable	4
	• Accounting of legacy installed base GHG/energy	Accounting Cost	4
	• Track device/network Consumption Before Operation	Manufacturing	4

What needs to be standardized for Framework



(*) Energy Efficiency Management Function is implemented inside the device or in a controller

Next Step

- Is there any other open issues we need to resolved for the current Charter?