Sustainability Telemetry

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We are excited to see the IAB tackling this very important issue since this is a topic that needs to get addressed in a timely manner. This is a global phenomenon, but the momentum in Europe for Sustainability is particularly strong. Based on our observations around 50% of European organizations have started including ESG (Environmental, Social, and Governance) criteria in their vendor selection process.

We have received customer requests across a broad spectrum of internet-related sustainability issues and have pursued multiple solutions to handle them. However, in this paper we intend to focus on a single issue; the lack of standards for measuring and communicating sustainability metrics.

Internet service providers and other internet focused organizations must routinely answer questions about their sustainability footprint from customers and regulatory bodies. This is also crucial information for internal decisions about investment and operations. A large component of this is their energy use, which has recently gotten increased attention due to the surge in energy prices in Europe.

To answer questions about sustainability of equipment and operational practices, various key performance indicators (KPIs) produced by network devices, management systems and departments are necessary. While such KPIs are abundantly produced and collected today there are quite a few issues with their usability and commonality. Without a common definition of metrics across the industry and widespread adoption we will be left with ill-defined, potentially redundant, and proprietary metrics.

One aspect that is lacking today is the precise definitions of the collected metrics. This leads to KPIs that are not comparable among each other. This makes it hard to know what is included in the numbers and what is not. It makes it hard to sum or compare numbers emanating from different manufacturers, from different organisations.

To produce aggregate data, it is also important to consider how the component inputs are combined. Different vendors and operators might do this aggregation differently, yet again producing values that are hard to combine or compare. In many cases, the actual numbers are underestimated, since there is a competitive pressure to produce small numbers.

There is reason to suspect the nebulous definitions combined with the competitive pressure might produce **greenwashing**. We propose the following initiatives to counter these effects:

- The Sustainability Telemetry Standard Specification
  As an industry, we need to co-operate and agree on a set of core KPIs that are measured, including the definition of terms, and measurement procedures. What is included, what is not. At the same time, we would also like to propose a technical framework for how this data is defined, queried, and transported. We would like to propose specific YANG model for this data, which intrinsically allows for a variety of collection protocols. We expect this work to be done at the IETF and result in a set of specifications published as RFCs

- The Sustainability Metrics Framework (Open Source)
  At the same time, in order to drive adoption, we should develop an open-source aggregation framework for sustainability data. This framework should be seen as a reference architecture for a sustainability monitoring mechanism. The reference implementation will be based on the IETF standards mentioned before. The architecture would supply a few base components, but otherwise allow vendors or standards bodies to propose plugin applications that fit in the general framework.
    - One example of such application that we would like to consider and propose a model to calculate the Total Sustainability Cost of Ownership (TSCO) for network solutions based on ESG Materiality Matrix. This model considers to be open to adding any implementation that takes into consideration Sustainability objectives at a point in time, but it also evolves with the needs of the business and the stakeholders. The initial scope proposes to investigate the top four most important ESG Materiality issues as a base to grow the TCO to a TSCO that matches the Company's priorities and issues.

Sustainability metrics require a broad diversity of data sources that needs to be combined.

- Information statically defined, data coming from manufacturing, including reference values on how products have been designed, normally this information is part of data sheets.
- Dynamic data, where information is measured in real-time from the networking equipment. It should consider “dynamic” inventory, what hardware and features are enabled and used by the network equipment.
- Recommendations and best practices to optimize the use of the network equipment, through their complete lifecycle.
- It would also need to consider country regulations, and social aspects.

We have worked on an initial proposal for a Sustainability Telemetry Specification, and we aim to start discussing this with few other interested parties in a side meeting at IETF 115 in London.

With this, we hope we have demonstrated that we are investing time and resources into the area. We are also looking forward to hearing from others who are working in this area and learn from their insights as well. It would be wonderful to combine our efforts in order to make a common framework that starts with buy in from various stakeholders in the industry, academia and SDOs. There are plenty of possibilities, and a strong market demand. There is every reason to move fast and broad on this topic.