Path Energy Traffic Ratio API (PETRA)
draft-petra-path-energy-api-02

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Motivation

• Provide **visibility** about energy consumption in a path
  • Metrics such as power consumption between source and destination, potentially related with throughput

• Define an API that can provide such information
  • Using well-known architectures (e.g. REST) and schemas (e.g. OpenAPI/YANG)

• This information can be consumed externally (e.g., SD-WAN customers) or internally (e.g., for operator optimization purposes)

• Draft already presented (v -00) during IETF 118
Rationale

• Assumption-1: energy consumption in devices has a baseline component independent of traffic plus another one dependent of traffic [1].
  • E.g., in an IP device, baseline component is due to processors, fans, cards, etc, while the component due to traffic volume follows some function (lineal, exponential, etc)

• Assumption-2: while in short term actions could maybe affect the component dependent of traffic volume, in the future it might be possible to influence also the baseline component.
  • E.g., by switching-off or moving to sleep mode some of the components such as cards

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• There can be multiple paths between origin and destination
• Energy consumption dependent on device characteristics and architecture, transceiver bit rate, number of hops, etc

• REST API (e.g. using OpenAPI/YANG)
  • Query: <src-IP, dst-IP, throughput>
  • Response: e.g., <watts-per-gigabit>
Changes from -00 (now in v -02)

- API refinement, adding new parameters
  - Currently, “Watts per Gigabit”, “Carbon Intensity” and “Renewable Percentage”
- Sub-section for recursive usage of the API
- Initial description of a YANG module
- IANA considerations reported
- Added Jan Lindblad as co-author
Next steps

• Collect feedback from the RG and checking interest

• Position this work in proper home: PANRG, GREEN, other?

• Report on implementation status

• Prepare new version for IETF 121