Path Energy Traffic Ratio API (PETRA)

draft-petra-path-energy-api-00

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Motivation

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

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

• This information can be consumed externally (e.g., SD-WAN customers) or internally (e.g., for operator optimization purposes)
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 (linear, 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 using OpenAPI 3.0
  • Query: <src-IP, dst-IP, throughput>
  • Response: <watts-per-gigabit>
Next steps

• Initial work for collecting feedback and checking interest

• Prepare new version for IETF 119