Power Benchmarking

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Problem statement

- Power becoming a critical factor in Networks
- Operators seeking more information
- "Maximum Rate Power (MRP)" is of little use
    - Average Power and MRP not correlated
- A lot of devices run at very low utilization rates
- Network products need to provide
    - Need to measure better
    - Better reporting
    - Better ways to compare power usage of different network equipment and control

AIM

- Ability to provide a means of measuring power usage based on traffic

- General flexible benchmark to work across a variety of devices

- Take into consideration environmental factors like

  - input air temperature
  - energy required for heat dissipation
  - Network/ device/ connector factors

Document details

- Defines 2 metrics

  - NECR (Network Energy Consumption Rate)

    - To optimize the run time energy usage for different devices, the   additional energy consumption that will result as a factor of additional traffic needs to be known. The NECR defines the power usage increase in MilliWatts per Mbps of data at the physical layer.

  - NEPI (Network Energy Proportionality Index)

    - In the ideal case the power consumed by a device is proportional to its offered network load. The average difference between the ideal(I) and the measured (M) power consumption defines the EPI.

Survey of Work in other standard bodies

- ATIS: Alliance for Telecommunications Industry Solutions
  - Green initative: Telecommunication Energy Efficiency (TEE) group
  - ANSI accredited
- EPA
  - Energy Star
- GreenGrid
- METI – Japan, dynamic tier selection, limited impact
- BBF – vendors and carriers; currently dormant on network energy efficiency
- ITU-T ß work in progress, no real details
- European Union: Broadband code-of-conduct, Datacenter code-of-conduct
- Energy Consumption Rating (ECR) Initiative
- IEEE: 802.3az (EEE)
- ECMA standard 393 ProxZzzy for sleeping hosts (implemented in Windows 7?)
- CSCI
- Miercom Green certification