Characterization and Benchmarking Methodology for Power in Networking Devices

draft-ietf-bmwg-powerbench-01

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Document Context and Recap

- The benchmarking methodology provides a standardized way to evaluate the energy efficiency of networking devices
- Focus on device-level power consumption under controlled traffic conditions
- Enables:
  - Comparison of energy efficiency across devices
  - Assessment of system and sub-system contributions
- **Adopted** BMWG draft.
- This draft has been presented since IETF 119 and has evolved based on WG feedback

Changes from -00 to -01

Update 1: Measurement Stability and Reporting

Problem:

- Power measurements may capture transient (non-stable) states

Update:

- Measurements SHOULD be taken after reaching a **stable operating state**
- The following MUST be reported:
  - Stabilization interval
  - Measurement (averaging) interval

- Improve **reproducibility** and **comparability** across test environments

Changes from -00 to -01

Update 2: Idle and Idle+ Operational Conditions

Problem:

- Ambiguity in how Idle and Idle+ states are interpreted across implementations

Update:

- Idle / Idle+ measurements MAY include:
  - Control-plane activity
  - Background system processes
- Operational conditions MUST be explicitly reported
- Avoid ambiguity and ensure **consistent interpretation of results**

Changes from -00 to -01

Update 3: Objectives, Throughput, and Traffic Models

Additional Objective:

- Added third objective: “self-referential” benchmarking

Throughput Clarification:

- Introduced overall throughput alongside weighted throughput
- Provides flexibility in EER calculation

Traffic Model Enhancement:

- Added IMIX traffic (RFC6985)
- Complementary to RFC2544 traffic patterns

Better alignment with realistic workloads and deployment scenarios

Changes from -00 to -01

Other updates:

- Editorial improvements: Includes terminology normalization, BCP14 keyword consistency, and minor clarity refinements.

- Co-author update: Shailesh Prabhu joined the work starting this revision

Next Steps

- Continue incorporating WG feedback on -01 updates
- Prepare next revision based on WG input
- If there is consensus, assess readiness for Working Group Last Call