Power and Environmental Metering for SNIA Emerald 3.0.1

Patrick Stanko

SNIA Green TWG

SNIA Emerald™ Training

SNIA Emerald™ Power Efficiency Measurement Specification

Version 3.0

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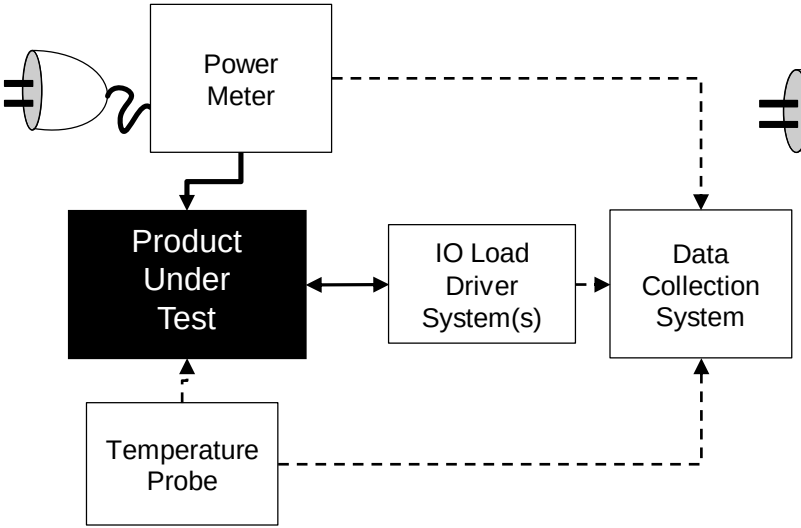
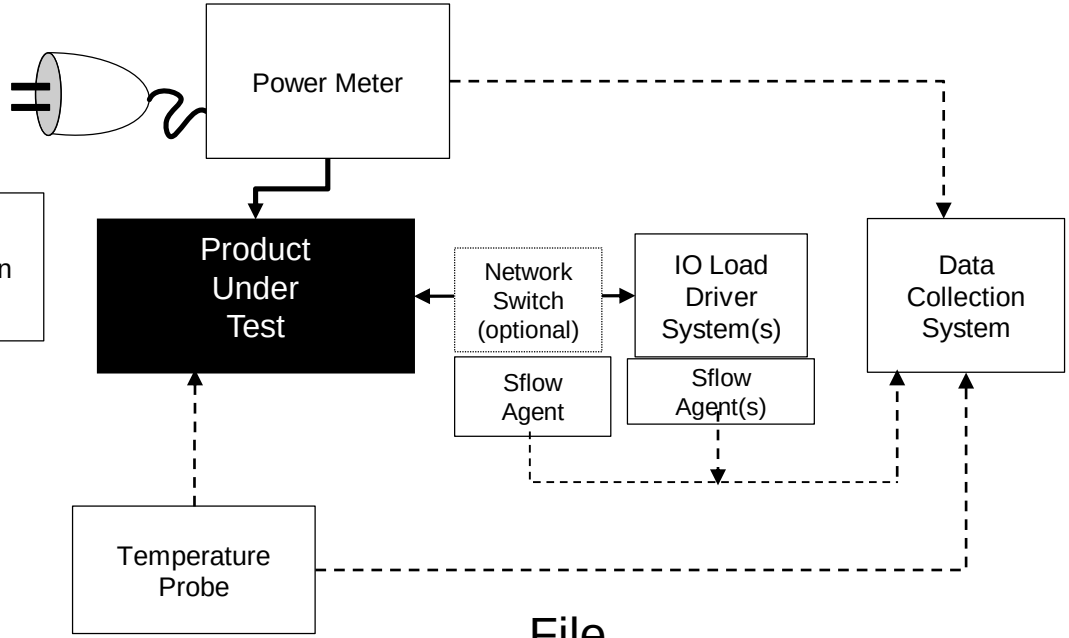
Sample Configuration



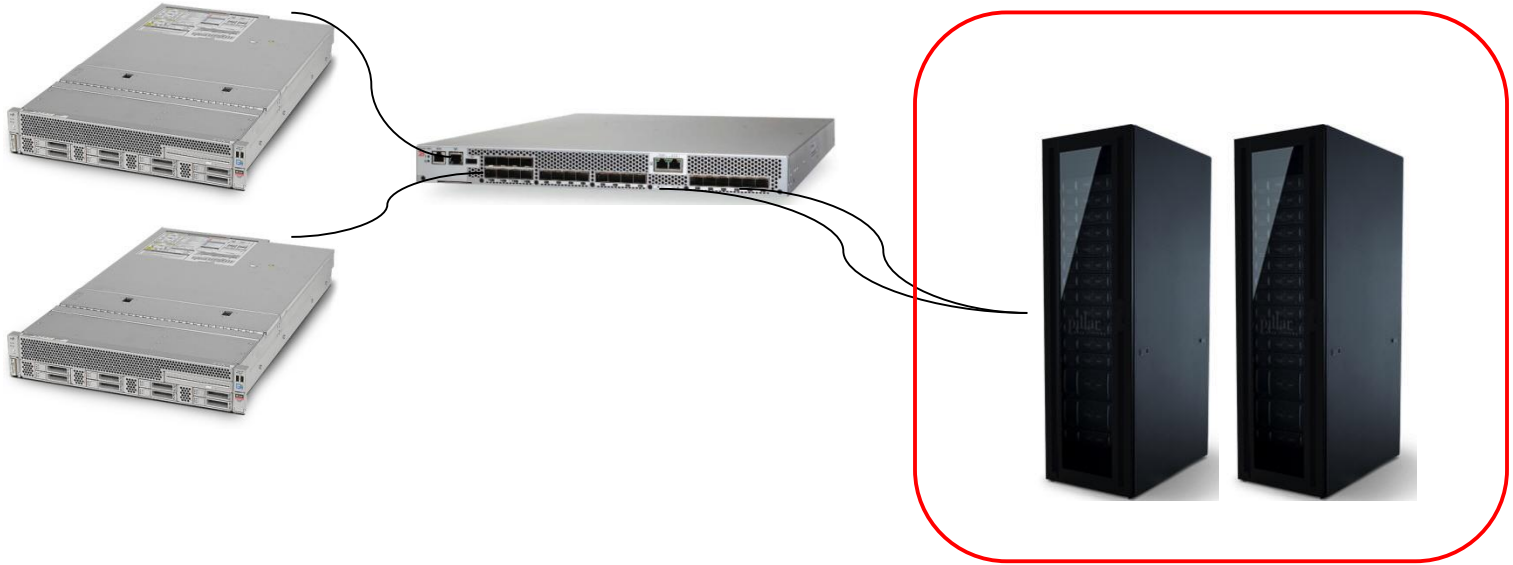
Block
Sample Configuration



File
Sample Configuration

Product under test

- Clearly define the system which requires power measurement



Black box boundary

- I/O generator server may be in the same rack
  - Rack level fans, rack level controller, switch
  - What is the real product under test

Redundancy in power supplies

- Measure both power feeds
- Both power supplies operational

Systems get large

- Multiple racks of equipment to measure
- Use a clamp on the main line feed

Double check

- Power should be close to what is expected
- Verify power factor and Total Harmonic Distortion
- Voltage sense close to the load
- If using current transformer
  - Has the correct phase
  - Settings on the power meter
- Three phase setup (double check)
  - Wire correct
  - Settings on the power meter
- Syncing clocks between power meter and Vdbench or SPEC SFS 2014

Environmental monitoring

- Monitor temperature during the test
  - Measure in degrees Celsius
  - With an accuracy of ±0.5º C
  - 50 mm in front of the primary air inlet port
  - Reading every 10 seconds to durable media
  - Emerald Specification 3.0.1 aligns to Data Center ENERGY STAR 1.1

Power meter requirements

SNIA GSI | GREEN STORAGE

- Power Meter Resolution

Power Consumption (p)	Minimum Resolution
p ≤ 10 W	± 0.01 W
10 < p ≤ 100 W	± 0.1 W
p > 100 W	± 1.0 W

- Power and voltage measurement recorded to durable media
- Reading rate of 5 second or less
  - Recommended to use 5 seconds reading rate to easily generate the required 1 minute average power samples for block and 10 second average power for file
- Time stamp should be with in 1 second of the workload generator

Input power requirements

Input power requirements

- Products with Nameplate Rated Power ≤ 1500 Watts

Supply Voltage	Phases	Voltage Tolerance	Maximum Total Harmonic Distortion
100V ac, 115V ac, 230V ac	1	±1%	2.0%
200 V ac, 208V ac, 400V ac	3	±1%	2.0%

- 115V ac input frequency of 60Hz with a tolerance of ±1%
- 100V and 230V ac and all three-phase input frequency of 50Hz or 60Hz with a tolerance of ±1%