Overview: Green Storage, Energy Star and SNIA Emerald

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SNIA Emerald™ Training

SNIA Emerald Power Efficiency Measurement Specification, for use in EPA ENERGY STAR®

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SNIA™ Green Storage Initiative

SNIA Emerald™

Green Preamble

- Increased regulatory and societal pressures to lower energy footprints
- Growing awareness of environmental impact of IT equipment
- Rising energy cost for power and cooling is a large part of the cost of ownership
- Data centers cannot readily add additional power or cooling capacity

‘Green’ Storage

- How much data center Energy Usage is due to Storage?
  - ***It depends…***on Design and Workload (I/O profiles)!
  - Published studies range from <10% - >40%
  - “Rule-of-Thumb” for energy: 60% servers, 20% networking, and 20% **Storage** (but no consistent definition of *‘Storage’*)
- *Proportion of Energy used by Storage is increasing, because of…*
  - Facilities improvements (PUE, DCiE)
  - Virtualization – especially of Servers, O.S., Applications

The Players in Green IT

- I.T. owners / **Data Center operators** (“Customers”)
- **Vendors** of I.T. hardware, software, systems, services
  - Engineers/Developers/Architects – *including Cloud and SDS vendors!*
- Energy **Utilities and Regulators**
- **Governments**: local, regional, national, supra-national
  - US-EPA Energy Star programs
  - Euro. Comm. Code of Conduct on Data Centre Energy Effic.
- **Green Grid** metrics www.thegreengrid.org
  - Focus on Power, Energy, and Cooling used for IT
- **SNIA** – Industry expertise on enterprise STORAGE
- **Other interested parties**
  - Uptime Institute, 80 PLUS, ASHREA, SPC-E, ISO, IEC, INCITS

EPA ENERGY STAR®

SNIA™
Green Storage Initiative

- ENERGY STAR® for Data Center Storage specification was developed by the EPA, and V1.0 became effective in Dec'13
- ENERGY STAR® certified data center storage products must use efficient power supplies and variable speed fans if using active cooling, make available storage management features, and report on energy consumption under different operating conditions
- The ENERGY STAR® for Data Center Storage Specification references the use of the Emerald™ Power Efficiency Measurement Specification

SNIA Green Activities

- Green Storage Initiative (GSI)
  - Market green storage and manage the Emerald™ Program
  - Research, educate, leverage SNIA resources, provide direction
- Green Technical Working Group (GTWG)
  - Technical body of storage experts developing green storage specifications, white papers, tutorials, technical guidance
  - Develop the SNIA Emerald™ Power Efficiency Measurement Specification (currently 2.02) and “how to” User Guide for it
- Emerald™ Program
  - Promote use of the SNIA Emerald™ Specification methodology and test results
  - Help drive green storage decisions for both vendors and customer

Submission Requirements

	ENERGY STAR®	EMERALD™
Specification Current Next	V1.0 V2.0, late 2015 start; timing dependent on data set and test procedure development	2.0.2; 2.1.0 expected Fall 2014 Draft 3.0.x expected ~mid 2015
Eligible Products, current	Online (OL) 2, 3, 4	OL (2, 3, 4, 5, 6), Near-OL (2.3,5,6) Removable & Virtual Media Libraries (2,3,5,6)
Requirements, current	80 Plus “Silver” power supplies, variable speed fans, 0 or 1 COM, input power monitoring, optional inlet air monitoring, power-performance Modeler allowed, power-performance measurement data (EPA upload template)	Power-performance measurement data (TDR form)