



# SNIA Emerald™ V3.0.x Specifications: What's Changed

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Stakeholder Meeting

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- History of the SNIA Emerald™ Power Efficiency Measurement Specification V3
- Changes between Specification V3.0.1 and V3.0.2
- Changes between Specification V3.0.2 and V3.0.3

# SNIA Emerald™ V3 History

- ◆ V2.1.1 – December 2, 2015
  - ◆ support Block Access device testing
- ◆ V3.0.1 – December 11, 2017
  - ◆ change summary: add File Access device testing
- ◆ V3.0.2 – May 23, 2018
  - ◆ referenced by ENERGY STAR DCS 1.1
  - ◆ change summary: Correct some internal discrepancies in V3.0.1
- ◆ V3.0.3 – October 11, 2018
  - ◆ SNIA discussing ENERGY STAR DCS adoption with EPA
  - ◆ change summary: Create spec suitable for submission for ISO Standardization via the PAS process

# Changes from V3.0.1 to V3.0.2 - 1

- Correct internal discrepancies in period of some measurements
- Subclause 7.2.9
  - ◆ temperature recording period is 10 seconds
- Subclause 7.2.11.2
  - ◆ correct internal inconsistency: for File Access testing, IO throughput is reported every 10 seconds

# Changes from V3.0.1 to V3.0.2 - 2

- Subclause 7.4.2.6
  - ◆ in the calculation of stability for File Access testing, K is 30
- Annex B Measurement Requirements
  - ◆ text and table heading format modified for greater clarity
  - ◆ Table B-3: power data collection period changed to 10 seconds
- Clarifying wording changes in various places

# Changes from V3.0.2 to V3.0.3 - Goal

- Major goal: create a Specification suitable for submission for international standardization via the ISO PAS process
  - ◆ partially completed in V3.0.1
  - ◆ follow ISO Directives Part 2, Eight edition, 2018
  - ◆ normative language updated per ISO changes 2016-2018
  - ◆ adoption of ISO conventions for values and dimensions
  - ◆ improved and added definitions
  - ◆ clarified wording in many places
- Test results from V3.0.2 and V3.0.3 should be equivalent

# Changes from V3.0.2 to V3.0.3 - Goal

- Changes summarized, with some omissions, in this presentation
  - ◆ many wording changes not flagged
  - ◆ many reformatting changes not flagged

# Changes from V3.0.2 to V3.0.3 – General-1

- ISO conventions for representing values with dimensions followed throughout
  - ◆ 10 mW and two bytes
- ISO conventions for representing values followed throughout
  - ◆ 1 000 and 3,14159
- ISO conventions for ranges followed throughout
  - ◆  $\pm 100$  mW and 15 % relative humidity to 80 % relative humidity



# Changes from V3.0.2 to V3.0.3 – General-2

- Use center dot (·) for scalar multiplication in formulas and equations
- Correct some cross references
- Improve consistency of definitions and usage of defined terms in Spec
  - ◆ add some definitions
  - ◆ modify some definitions
  - ◆ modify text for consistent with defined terms

# Changes from V3.0.2 to V3.0.3 - 1

## ➤ Clause 2 Scope

- ◆ remove Subclauses 2.5 and 2.6 as inappropriate to this Clause

## ➤ Clause 3 Normative References

- ◆ ISO Directives Reference updated to current versions

## ➤ Clause 4 Definitions

- ◆ reformatted to ISO conventions
- ◆ unused definitions removed
- ◆ additional definitions added or moved to this Clause
- ◆ many abbreviations used in Spec added to the list

# Changes from V3.0.2 to V3.0.3 - 2

## ➤ Subclause 7.2.7 Power

- ◆ reorganize text and Tables 9 and 10 with no change in requirements

## ➤ Subclauses 7.6.4.3 Capacity Optimization Test

- ◆ make required created container size a range rather than an exact value

## ➤ Subclauses 7.6.4.5 and 7.6.4.6 ... Heuristics

- ◆ reword calculation of saved formatted capacity ( $I_{com}$ ) for clarity and ISO use of %

# Changes from V3.0.2 to V3.0.3 - 3

## ➤ Subclause 8.7.1 Metrics

- ◆ expression of binary values of secondary metrics adjusted to be 1(Yes) or 0 (No)

## ➤ Subclause 9 Disclosure Requirements

- ◆ “data deduplication”, “storage protection”, and “80 PLUS” replace previously used terms
- ◆ “raw, unformatted, uncompressed capacity of the storage media” replaces previous undefined term

# Changes from V3.0.2 to V3.0.3 - 4

## ➤ Annex H

- ◆ remove paragraph addressing Host sFlow® as referenced information is no longer available

## ➤ Bibliography

- ◆ modify style
- ◆ update some references to current versions or currently available material
- ◆ modify sFlow® references
- ◆ add 80 PLUS reference

- SNIA provides a collection of ancillary materials required or helpful for SNIA Emerald™ testing
  - ◆ 2 were updated for V3.0.3 (Test Data Report Template and What's Changed)
  - ◆ remainder unchanged; the V3.0.2 version remains applicable
- Information available
  - ◆ [www.sniaemerald.com/download/Spec\\_v3.0](http://www.sniaemerald.com/download/Spec_v3.0)
  - ◆ [\*What has Changed? SNIA Emerald™ Measurement Specification V3.0.2 to V3.0.3\*](#)

- For all materials related to SNIA Emerald™ V3 testing  
[www.sniaemerald.com/download/Spec\\_v3.0](http://www.sniaemerald.com/download/Spec_v3.0)
- Some documents available through above URL
  - ◆ *SNIA Emerald™ Power Efficiency Measurement Specification V3.0.3*
  - ◆ *SNIA Emerald™ Power Efficiency Measurement Specification V3.0.2*
  - ◆ *What has Changed? SNIA Emerald™ Measurement Specification V3.0.2 to V3.0.3*
  - ◆ *What has Changed? SNIA Emerald™ Measurement Specification V2.1.1 to V3.0.2*

# Discussion ???

