Overview of Changes

Herb Tanzer, HPE

SNIA Emerald™ Training

SNIA Emerald Power Efficiency Measurement Specification,

Version 2.1

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SNIA™ Green Storage Initiative

SNIA Emerald™

Introduction

- The "*SNIA Emerald™ Power Efficiency Measurement Specification*" is referred to here simply as the "*Measurement Specification*"
- V2.1.0 is an editorial, clarification, and refinement upgrade to V2.0.2
- Test sponsors should not expect significantly different SUT metric results between V2.02 and V2.1.0, given all other test conditions are the same
- Overall, there may be a reduction in time and effort required to generate a set of storage system test data for report submission
- A summary overview of changes from V2.0.2 to V2.0.1 are presented here

Instrumentation (Section 7.3.5 and Annex A)

- The suggested power meter list was clarified in Annex A and referenced in Section 7.3.5. Instead of creating a separate list of suggested power meters to use, the reference is to the same list of devices approved for use with the SPEC power benchmark.

Benchmark Driver (Section 7.3.7)

- Use of Vdbench as the benchmark driver for *all* Emerald tests is now required, as are all related scripts, with details and download access site references located in Section 7.3.7. Related material was moved from V2.0.2 Annex B (Required Benchmark Drivers) to Section 7.3.7.

  Note:
  Section 7.3.7 references http://sniaemerald.com/download for the required benchmark driver and script

Variable IO (Section 7.3.8.3.4)

- The Variable IO section was augmented to include support for both 512B and 4KB native storage devices:
  - A 4KB Table 13 was added to the Section 7.3.8.3.4 *Variable IO*.
  - The IO transfer size used within the Hot Band IO profile is now listed for 512B and 4KB native devices in Tables 12 and 13, respectively.

Metric Stability Assessment (Sections 7.3.18 and 7.4.3.5)

- The SUT metric stability criterion as a test for metric measurement interval flatness was refined and augmented in Sections 7.3.18 and 7.4.3.5. There are now two methods to assess stability:
  - A maximum allowed slope of a linear approximation determined from a least squares linear fit (new).
  - A smoothing function consisting of a weighed moving average (mathematically similar to the previous method in V2.0.2).

Note: further details in following session

Online and Near-Online Testing (Section 7.4, Annex B)

- The Online and Near-Online testing sections were combined into Section 7.4. Previously written as two separate sections, these were combined because the tests for both taxonomy categories are essentially identical. Where exceptions exist, these are noted.
- In addition, the following changes were made to help simplify the test and reporting processes:
  - The minimum active test phase duration for Online/Near Online was changed from 30 to 40 minutes. See Section 7.4.3.3 and Annex B.
  - The number of required reported/disclosed parameters was reduced.

Pre-fill Test (Section 7.4.1)

- The pre-fill test for Online and Near-Online must now pre-fill a minimum of 50% (was previously 56%) of the formatted storage. See Section 7.4.1.2.
- The definition of the pre-fill compressions requirements has been refined. See Section 7.4.1.2.

SUT Conditioning Test (Section 7.4.2)

- The SUT conditioning response time was changed from 30ms to 20ms in Section 7.4.2.4 in order to align with active test phase response time requirements in Section 7.4.3.5.
- The need to establish stability at the end of the SUT conditioning test was eliminated.

Active Test (Section 7.4.3)

- The active test was changed for added flexibility

  In V2.0.2 metric stability, as used for primary metric calculations, is required during the last 30 minutes of each test phase. In V2.1.0 the requirement was changed such that any stable continuous 30 minute measurement interval during a test phase can be used for primary metric calculations. See Section 7.4.3.5.

Capacity Optimization Test (Section 7.4.5)

- Changes made include editorial and use case coverage modifications:
  - Simpler thin provisioning test
  - Enhanced compression data set types
  - Allowance for larger de-dup and compression data sets
- Note: further details in following session

Measurement Requirements (Annex B)

- V2.0.2 Annex C was changed to Annex B.
- The title of Annex B was changed to indicate that the annex is normative.
- The Minimum Test Duration time in Table B-1 for the Online/Near-Online Active Test was updated to 40 minutes.

Questions?

Thank You

herb.tanzer@hp.com