Emerald V4.0 Taxonomy and Hybrid Testing Requirements in ENERGY STAR V2.0

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SNIA Emerald™ Training

SNIA Emerald™ Power Efficiency Measurement Specification

Version 4.0.0

September 16, 2020

Taxonomy Sets

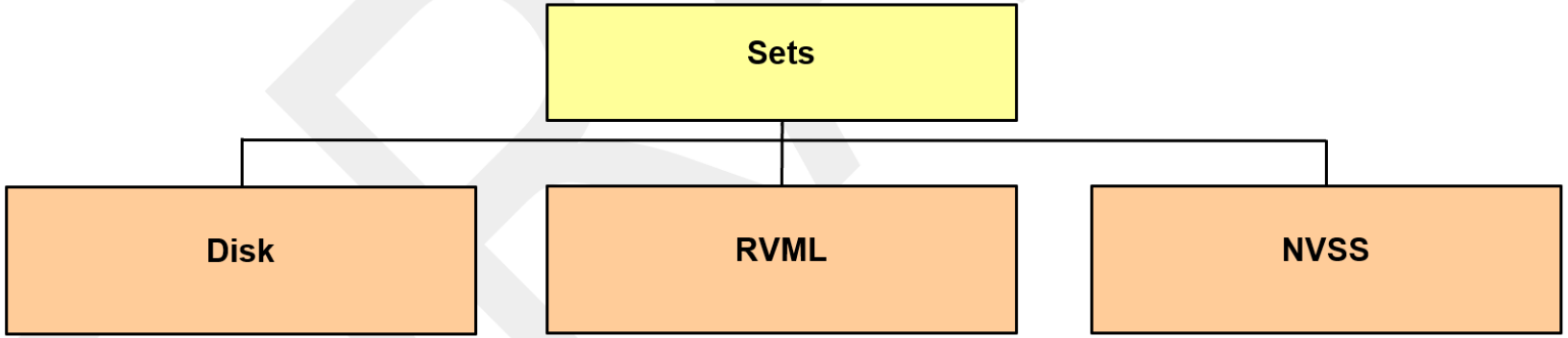

Figure 1 – Taxonomy Overview

Taxonomy sets define broad groupings of storage products that share similar system characteristics. Products in different sets are generally not comparable in performance or power efficiency characteristics.

Taxonomy Categories

Set					
Disk		RVML		NVSS	
Category					
Online	Near-Online	Removable Media Library	Virtual Media Library	Disk Access	Memory Access

Taxonomy categories define broad market segments within a Set that can be used to group products that share common functionality or performance requirements, and within which meaningful product comparisons can be undertaken. This document defines six broad taxonomy categories.

Taxonomy Category Details

Attribute	Set					
	Disk		RVML		NVSS	
	Category					
	Online	Near-Online	Removable Media Library	Virtual Media Library	Disk Access	Memory Access
Access Pattern	Random/ Sequential	Random/ Sequential	Sequential	Sequential	Random/ Sequential	Random
MaxTTFD	≤ 80 ms	> 80 ms	≤ 5 min	≤ 80 ms	≤ 80 ms	≤ 80 ms
Media Type	Magnetic disk	Magnetic disk	Magnetic tape, optical disk	Magnetic disk, Solid State Storage	Solid State Storage + optional magnetic disk[a]	Solid State Storage
Access Paradigm	Block, File, Object	Block, File, Object	Block	Block	Block, File, Object	Memory

[a] Allows a purely Solid State Storage system or a hybrid Solid State Storage and magnetic disk system.

Hybrid Testing Criteria for ENERGY STAR V2.0

- NVSS Set Disk Access Category also includes hybrid systems
  - A hybrid system is one that contains both spinning media drives and solid state drives.
- ENERGY STAR V2.0 allows hybrid systems to be tested as NVSS Disk Access but includes a restriction on the amount of solid state.
  - The maximum allowable solid state storage in a tested system is 30% of the addressable space.
  - This allows a certified system family to include any amount of solid state storage and still be considered as part of the certified product when sold.
- If the system family is all solid state or all spinning media it does not fall under the hybrid testing rules.

Taxonomy Classification Overview

Level	Set					
	Disk		RVML		NVSS	
	Category					
	Online	Near-Online	Removable Media Library	Virtual Media Library	Disk Access	Memory Access)
	Classification					
Consumer/ Component[a]	Online 1[b]	Near-Online 1[b]	Removable 1	Virtual 1	Online 1[b]	Online 1[b]
JBOD	Online 1.5	Near-Online 1.5[c]	Removable 1.5[c]	Virtual 1.5[c]	Online 1.5	Online 1.5[b]
Low-end	Online 2	Near-Online 2	Removable 2	Virtual 2	Online 2	Online 2[b]
Mid-range	Online 3	Near-Online 3	Removable 3	Virtual 3	Online 3	Online 3[b]
	Online 4	Near-Online 4[c]	Removable 4[c]	Virtual 4[c]	Online 4	Online 4[b]
High-end	Online 5	Near-Online 5	Removable 5	Virtual 5	Online 5	Online 5[b]
Mainframe	Online 6	Near-Online 6	Removable 6	Virtual 6	Online 6	Online 6[b]

[a] Entries in this level of the taxonomy include both consumer products and data-center components, e.g., stand-alone tape drives.
[b] No test procedure for this Classification is provided by this document.
[c] Classification is not defined; no test procedure is provided by this document.

⇦ Note: Online 1.5 is new

Summary

- For further details on the taxonomy refer to the Emerald V4.0