EMERALD vs. ENERGY STAR

Donald Goddard - NetApp
ENERGY STAR Data Center Storage uses the SNIA Emerald test specification.

- Energy Star has tighter lab requirements.
- Energy Star Taxonomy
- Energy Star requires 80PLUS Silver or better power supplies in the storage systems under test.
- Energy Star requires power reporting capability during operation.
- Energy Star uses different reporting forms than the EMERALD TDR.
TEST LAB REQUIREMENTS

➡ Energy Star Certified test labs must be ISO 17025 accredited test labs.
   • Company labs do not require ISO 17025, but must be observed by a Certified Test Lab or Certification Body representative.

➡ EMERALD has no restrictions on labs.

➡ Submissions for Energy Star can be tested or modeled.
   • Modeled results must have verified test results to prove accuracy.

➡ EMERALD does not allow modeled data.
# Emerald Taxonomy

<table>
<thead>
<tr>
<th>Category Level</th>
<th>Online</th>
<th>Near-Online</th>
<th>Removable Media Library</th>
<th>Virtual Media Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer/Component(^a)</td>
<td>Online 1</td>
<td>Near- Online 1</td>
<td>Removable 1</td>
<td>Virtual 1</td>
</tr>
<tr>
<td>Low-end</td>
<td>Online 2</td>
<td>Near- Online 2</td>
<td>Removable 2</td>
<td>Virtual 2</td>
</tr>
<tr>
<td>Mid-range</td>
<td>Online 3</td>
<td>Near- Online 3</td>
<td>Removable 3</td>
<td>Virtual 3</td>
</tr>
<tr>
<td></td>
<td>Online 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-end</td>
<td>Online 5</td>
<td>Near- Online 5</td>
<td>Removable 5</td>
<td>Virtual 5</td>
</tr>
<tr>
<td>Mainframe</td>
<td>Online 6</td>
<td>Near- Online 6</td>
<td>Removable 6</td>
<td>Virtual 6</td>
</tr>
</tbody>
</table>

\(^a\) Entries in this level of taxonomy include both consumer products and data-center components (e.g., stand-alone tape drives). Grey shaded areas are not in scope of Emerald Specification.
Energy Star Taxonomy

<table>
<thead>
<tr>
<th>Category Level</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-end</td>
<td>Online 2</td>
</tr>
<tr>
<td>Mid-range</td>
<td>Online 3</td>
</tr>
<tr>
<td></td>
<td>Online 4</td>
</tr>
</tbody>
</table>

- Energy Star requires Online 2 to have a data protection scheme.
- Emerald does not require Online 2 to have a data protection scheme.
PSU AND POWER REPORTING

❖ ENERGY STAR PSU
  ❖ Energy Star requires 80PLUS Silver or better power supplies in the storage systems.

❖ ENERGY STAR POWER REPORTING
  ❖ Energy Star requires that the storage system be able to report power consumption while in use.
    > Can be built in to system.
    > Can be through external PDU or other appliance sold with the system.

❖ EMERALD has no PSU or power reporting requirements.
REPORTING

◆ EMERALD
  - EMERALD TDR

◆ ENERGY STAR
  - Register as Energy Star Storage Partner
  - CB input form (Usually a large spreadsheet)
  - CB Test Configuration form