ENERGY STAR®

Version 4.0 Computer Servers Draft 1 Specification Webinar

U.S. Environmental Protection Agency
August 16, 2022

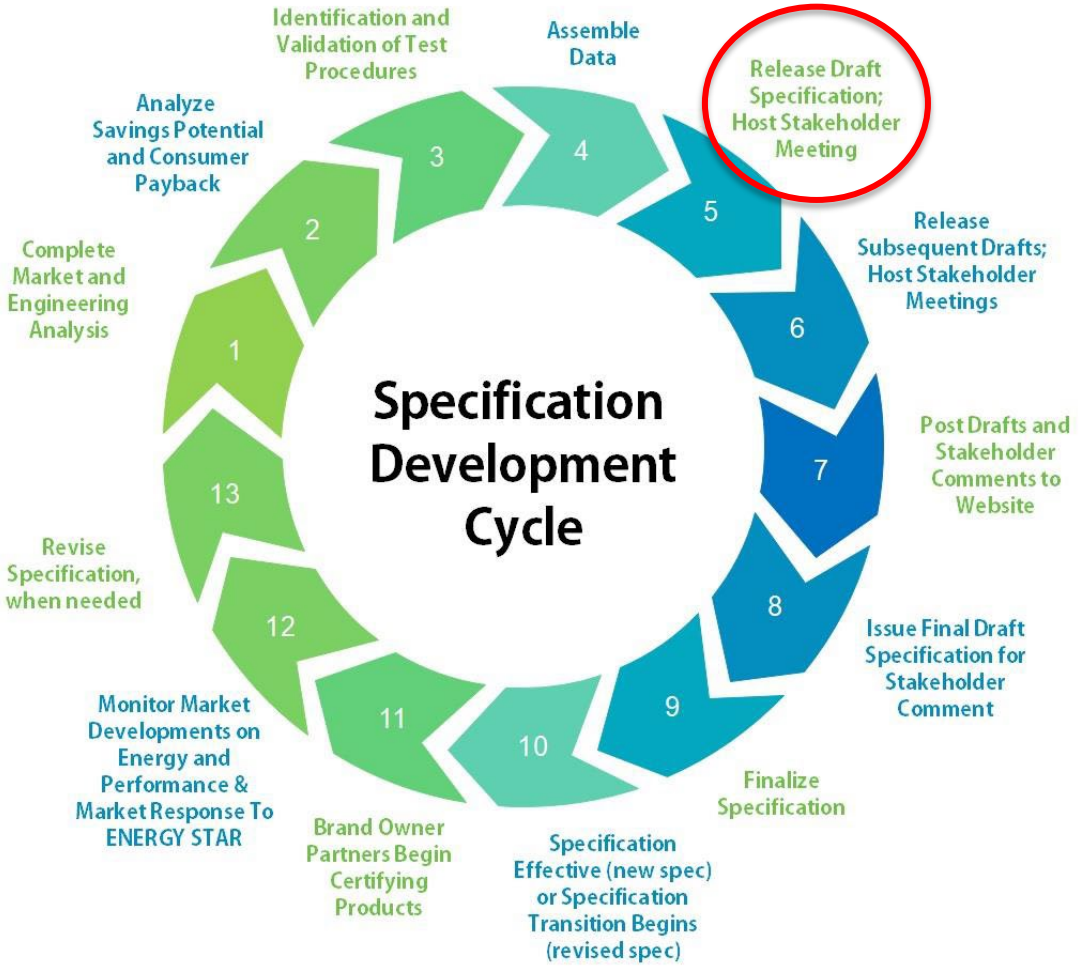
Agenda

- Introduction/Overview
- Definitions
- Scope
- Power Supply Requirements
- Active State Energy Efficiency Requirements
- Data Reporting Requirements
- Testing Products w/ Socket and Processor Mismatch
- Timeline and Next Steps

Introductions

- EPA
  - Ryan Fogle
  - John Clinger (ICF)

Review of Specification Development Cycle



New Definitions

- Storage Heavy Server (SHS): EPA has largely aligned with industry's proposed language in response to the discussion guide.
  - The proposed cutoff for a SHS product is supporting 30 or more storage devices.
  - EPA is considering adding additional clarification clearly stating that these 30+ storage devices must be installed in tested configurations for the server to certify as a SHS product.
  - EPA has not created a new definition for internal storage device. as storage devices are already defined in the specification.
- Hyperconverged Server: EPA agrees with industry's proposed definition in response to the discussion guide and has adopted this definition in Draft 1.

Updated Definitions

- Resilient Server: EPA has proposed a few minor tweaks based on stakeholder feedback to simplify this definition and better align it with recent changes in the market.
- High Performance Computing (HPC) System: Similar to resilient servers above, EPA is proposing minor tweaks to this definition to better align with current HPC technology.

Scope

- Included:
  - SHS Products: While not explicitly stated in the scope section, SHS products will remain in scope and be subject to all requirements in the specification but will not have specific active state efficiency requirements in Version 4.0 due to a lack of supporting data.
- Excluded:
  - Hyperconverged Servers: EPA is proposing to add hyperconverged server to the scope exclusion list as there is currently no known test methodology that can test all main functions of a hyperconverged product (compute, storage, networking) simultaneously.

Power Supply Requirements

- External Power Supplies: EPA received feedback to add Level VI EPS requirements to the server specification. Given the very limited number of EPS supported servers, as well as the fact that Level VI is already a federal requirement in the US, EPA has chosen not to add this requirement in Version 4.0.
- Internal Power Supplies: EPA received additional feedback stating that progress has been made in IPS efficiency, but only for IPSs with a wattage of 750 watts or greater. As such, EPA is proposing to raise the 80 Plus equivalent requirements for both single and multi-output IPSs with nameplate rating of 750 watts or greater but leaving the lower power IPSs at existing Version 3.0 levels.

Power Supply Requirements

Table 1: Efficiency Requirements for PSUs

Power Supply Type	Rated Output Power (W)	10% Load	20% Load	50% Load	100% Load
Multi-output (Ac-Dc)	750 watts or greater	N/A	92%	94%	90%
Multi-output (Ac-Dc)	Less than 750 watts	N/A	90%	92%	89%
Single-output (Ac-Dc)	750 watts or greater	90%	94%	96%	91%
Single-output (Ac-Dc)	Less than 750 watts	83%	90%	94%	91%

- Single-output 750watt+ IPS now 80Plus Titanium equivalent
- Multi-output 750watt+ IPS now 80Plus Platinum equivalent

Active State Energy Efficiency Requirements

- EPA has removed the requirement to submit html versions of SERT results files as neither industry nor EPA have found those file versions useful for data analysis or tracking purposes. XML and text versions of files along with png result files must still be submitted by CBs to EPA as part of the certification process.
- EPA has revised the active thresholds for all non-SHS servers in Table 3 of the specification.
  - Average pass rates range between 24-34% while trying to ensure some low-end configurations can meet the new levels.
    - Allows lower cost options for small business purchasers.

Active State Energy Efficiency Requirements

- Previous subcategories of one socket Blade/Multi-node and four socket Resilient servers have been removed as there is no current data for these categories.
- These new active state requirements do not apply to SHS products. EPA is allowing them to remain in scope, subject to all other requirements in the specification including the requirement to report active state energy efficiency in order to support future criteria development.

Active State Energy Efficiency Requirements

Table 3: Active State Efficiency Thresholds for all non-SHS Computer Servers

Product Type	Minimum Eff_{ACTIVE}	Minimum Eff_{ACTIVE} (V3)
One Installed Processor		
Rack	26.4	11.0
Tower	24.4	9.4
Resilient	6.6	4.8
Two Installed Processors		
Rack	30.4	13.0
Tower	26.5	12.0
Blade or Multi-Node	29.1	14.0
Resilient	6.0	5.2
Greater Than Two Installed Processors		
Rack	31.9	16.0
Blade or Multi-Node	26.8	9.6

Version 3.0 requirements shown in red for reference

A Note on Idle vs. Active Energy Efficiency Tradeoffs

Example of Idle vs. Active Tradeoff

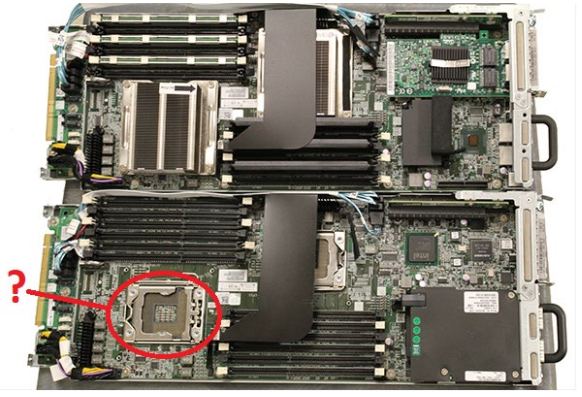
- 2 socket standard rack server
  - Uses 95 fewer watts in idle on average than ES rack server
- 2 socket ES rack server
  - Performs 2.17 times more work/watt than the standard rack server
- Gradually rising idle power levels necessitate a change in how ES determines server savings, leveraging deployed power modeling to recognize increasing efficiency of ES models over standard models

Data Reporting Requirements

- EPA has reiterated in this section that the html version of SERT output results no longer need to be reported to EPA for certification.

Testing Products w/ Socket and Processor Mismatch

- EPA has been made aware of a scenario where a server UUT can have two sockets physically present, but the system can only support one socket operation, as well as two socket systems that can support both one and two socket operation.
- EPA has clarified that for ES purposes, the product can be installed in either or both configurations, but that each valid configuration must be certified as a separate family for certification, resulting in separate listings on the qualified product list.



Timeline and Next Steps

- Today: Draft 1 specification webinar
- September 9, 2022: Deadline for written feedback
- Q4 2022: Final Draft
- Q4 2022: Final Spec
- Q3 2023: Effective date (exact date TBD)

Any Final Questions?

Draft 1 Specification Comment Deadline

- Send written feedback to servers@energystar.gov

Comment Deadline
Friday, September 9, 2022

Thank You!

- Questions on specification development:

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