Workstation Computers

Qualifying Product Definition

Proposed New Workstation Definition: A high-performance desktop computer designed for professional video editing, graphics, scientific/engineering, or other applications that require the maximum computing power available on the market. Workstations differ from desktop computers both in their intended applications and their hardware configurations. Workstations may contain multi-core/dual processors, power supplies with DC output ratings in excess of 500 watts, dual high-end video cards, and multiple hard drives. To qualify as a workstation, a computer must be certified by a number of independent software vendors (ISVs) to run high performance software applications.

Note: EPA acknowledges the need to revisit the workstation levels proposed in the Preliminary Draft. In order for EPA to consider separate performance levels for workstations, a definition must be developed that clearly delineates these product types from desktops. The definition provided above is EPA's first attempt at a workstation definition.

EPA may consider developing one computer definition and specification requirement that addresses both workstations and desktops while providing allowances (Watts) for specific components or features that require additional energy and are exclusive to workstations and/or more powerful, high end computers.

Hardware Requirements

Internal Power Supply Tier I Requirement: 80% minimum efficiency at 20%, 50%, and 100% of rated output.

Power Factor Requirement: TBD

Note: EPA is continuing to conduct research on whether an 80% efficiency level is appropriate and also contemplating different implementation dates for this requirement. In addition, EPA is considering adding a Power Factor (PF) requirement for the following reasons: (1) to ensure that ENERGY STAR qualified products support high quality power in addition to offering energy-efficient performance; (2) to provide additional utility savings; and (3) to harmonize with PF requirements in Europe and Japan ensuring that ENERGY STAR qualified models can meet global requirements. Specifically, EPA is considering a PF of 0.9 in addition to the proposed 80% efficiency level. Manufacturers can view the Internal Power Supply test procedure at www.efficientpowersupplies.org.

External Power Supply Tier I Requirement: If an external power supply is included with the workstation, that power supply must meet the ENERGY STAR External Single Voltage Ac-Ac and Ac-Dc Power Supply Specification.

Modes of Operation

Note: When revising the computer specification, EPA would like to recognize those computers that are energy-efficient in multiple modes of operation. In the long term the hope is that some form of computer benchmarking metric that recognizes whole machine energy performance can be developed. Realizing that this will take some time and significant energy savings can be captured in the short term, EPA will continue to work with industry stakeholders to identify appropriate energy efficiency levels for each individual operational mode under Tier I until a benchmark can be identified and tested.

Active Mode Definition: The mode in which the computer, while connected to a power source, is producing useful work; for example, running application software. To clarify, the low end or minimum power draw of active mode is idle. The high end of active mode would be the maximum power draw capable by the computer.

Idle State Definition: For purposes of testing under this specification, this is the state in which the operating system and other software have completed loading, the machine is not asleep, and activity is limited to those basic applications that the system starts by default. Idle state is considered a subset of Active Mode.

Proposed Tier 1 Levels: TBD

Note: EPA continues to believe that addressing idle state within the computer specification has merit as most computers spend a significant amount of time in this mode of operation. EPA will work closely with stakeholders to determine the appropriate method in which to test idle and further develop a more robust definition for idle state stemming from this test procedure. Once a definition for workstations is developed, EPA can then begin reviewing performance data to determine the appropriate idle level or range that represents the most energy-efficient models within this product category. EPA is open to considering a sliding scale approach for workstation energy efficiency if the data shows this is necessary.

Sleep Mode Definition: A low power state that a computer enters automatically after a period of inactivity or by manual selection. A computer with sleep capability can quickly "wake" in response to inputs from network connections or user interface devices. Computers may have more than one sleep mode, but the lowest power sleep mode is the one to which these criteria apply.

Proposed Tier 1 Level: ≤ 5 W or some type of sliding scale

Note: Similar to idle power, EPA has received a number of comments requesting that EPA keep some version of the previous MOU sliding scale for workstations within the new specification. EPA is open to considering a sliding scale for workstations if sufficient data is presented to support this request.

Off Mode Definition: The lowest power consumption mode which cannot be switched off (influenced) by the user and that may persist for an indefinite time when the appliance is connected to the main electricity supply and used in accordance with the manufacturer's instructions.

Proposed Tier 1 Level: ≤ 2 W

Note: The recent finalization of IEC 62301 provides EPA and stakeholders with a consistent and internationally recognized method to measure standby power. For purposes of the computer specification, EPA is using "off" mode to define standby as most systems have their standby power level in this mode.

Power Management Requirements

Tier 1: Manufacturers must set the default to activate the display's low-power or sleep mode within 15 minutes of user inactivity. Products may have more than one sleep mode, but these criteria address only the single lowest power consumption sleep mode. **Shipment requirements:** Systems shall be shipped with Wake On LAN (WOL) enabled from both Sleep (S3) and Off (S4, S5) modes. Any directed packet filters shall be enabled and set to an industry standard default configuration. All bundled and optional hardware and software shall be stable after transitions through low-power (S3,S4) modes and work within a larger power managed environment.

Note: EPA feels that WOL is a presently available and viable technology. Reliable WOL should increase power management enabling, and could keep the majority of computers from remaining in active mode most of the time. Furthermore, based on numerous discussions with stakeholders EPA believes that a power management requirement by itself does not ensure that these features will be implemented once the computer is installed. Therefore, EPA is considering developing a consumer education requirement that would include additional outreach efforts such including a power management Help Desk on the manufacturer Web site or a box insert that provides power management facts and/or instructions to be shipped with the qualified model. EPA believes that a stronger educational campaign that targets the end user will be beneficial to the overall power management initiative.

Tier 2: Systems shall be capable of retaining full network connectivity while in sleep.

Proposed Effective Dates

Effective Date Definition: The date that manufacturers may begin to qualify products as ENERGY STAR is defined as the *effective date*. The dates provided below represent the date of manufacture, which is specific to each unit and is the date (e.g., month and year) on which a unit is considered to be completely assembled. Any previously executed agreement (e.g., MOU) on the subject of ENERGY STAR will be terminated as of the effective date and all computer models manufactured as of this date will be required to meet the new specification requirements.

Specification Requirements	Tier I: January 1, 2007	Tier II: TBD
External Power Supplies	X	
Internal Power Supplies	X	
Sleep Mode	X	
Off Mode	X	
Idle State	X	
Power Management	X	X
Efficiency Benchmark		X
Interim Testing and Reporting Requirements		
Benchmarking Testing and Reporting	X	X

Note: EPA's goal is to finalize all effective dates and levels for Tier I requirements by the end of 2005 and any subsequent tiered requirements shortly thereafter. The intent of developing a tiered approach is to include those requirements EPA believes are feasible in the near term (Tier I) and allow for a longer lead time for those requirements that are likely to require additional analysis and/or manufacturing lead time before they can be implemented (Tier II). **EPA may be willing to consider alternative effective dates for a subset of these requirements that may require additional time to verify performance and implement.** Please note that once the specification is finalized EPA will allow manufacturers a minimum of 9 months or more to phase out models that do not meet the new Tier 1 requirements.

Idle Test Procedure and Benchmarking: It is EPA's goal to develop an idle test procedure over the next several months to allow manufacturers time to review and comment. Once completed, EPA will then require participating partners to begin testing and reporting product data for qualified models using the agreed upon test method to determine the appropriate specification levels before Tier I goes into effect. EPA will begin discussions in early 2006 with all interested stakeholders regarding the development of a computer efficiency benchmark test.

Please note that the table presented above may change based on additional discussions with EPA's international ENERGY STAR counterparts. EPA will inform stakeholders of any changes to this proposal by mid-September.