



ENERGY STAR® Computers Directional Draft for Thin Clients

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6 **Note:** For the first time with Version 5.0 of the ENERGY STAR requirements for computers, EPA will include thin
7 clients as a product category, addressing requests from both manufacturers and buyers. On July 25, 2008, EPA
8 invited stakeholders with an interest in shaping the thin client requirements to test products and share the resulting
9 data with EPA. EPA received some data and a number of comments related to requirements for these products,
10 all of which influenced this Directional Draft proposal.

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12 Due to the new nature of this category, and because the data collection process for thin clients commenced
13 before similar efforts for Workstations and the Desktop/Notebook categories, EPA wished to provide an early look
14 at the thin client requirements to allow interested stakeholders to comment prior to the release of Draft 2 for
15 Computers on September 12. This document contains only the excerpts from the Computer Specification that
16 relate to thin clients.

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18 Should stakeholders wish to provide comments on the thin client proposals in this document, EPA asks that they
19 be submitted via email to computers@icfi.com by **September 8, 2008**. EPA will document or respond to
20 comments received by September 8, in Draft 2.

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25 **Note:** In conversations with EPA, manufacturers of thin clients characterized stated that their products sourced
26 standard internal and external power supplies commonly found in laptops and desktops. EPA proposes alignment
27 of the internal and external power supply efficiency requirements with those present for the other product
28 categories in the specification accordingly.

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31 **2) Energy Efficiency and Power Management Criteria:** Computers must meet the
32 requirements below to qualify as ENERGY STAR. The Version 5.0 effective date is covered in
33 Section 5 of this specification.

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35 **(A) Power Supply Efficiency Requirements - Desktop, Integrated Desktop, Notebook/Tablet
36 PC, Workstation, Small-Scale Servers, and Thin Clients:**

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38 **Computers Using an Internal Power Supply:** 85% minimum efficiency at 50% of rated output and
39 82% minimum efficiency at 20% and 100% of rated output, with Power Factor ≥ 0.9 at 100% of rated
40 output.

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42 **Computers Using an External Power Supply:** Must be ENERGY STAR qualified or meet the no-
43 load and active mode efficiency levels provided in the ENERGY STAR Program Requirements for
44 Single Voltage External Ac-Ac and Ac-Dc Power Supplies, Version 2.0. The ENERGY STAR
45 specification and qualified product list can be found at www.energystar.gov/powersupplies. Note:
46 This performance requirement also applies to multiple voltage output external power supplies as
47 tested in accordance to the Internal Power Supply test method referenced in Section 4, below.

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Note: As introduced in the beginning of this document, EPA invited Stakeholders to share product data supporting the creation of Draft 2 eligibility levels for thin clients on July 25, 2008. EPA combined resulting Stakeholder data with available information from manufacturer ECMA declarations, product manuals, and product datasheets to create as robust of a dataset as possible. With respect to these additional sources, EPA acknowledges that portions of data did not contain complete configuration or low power mode information and that these sources rely on manufacturer-specified test procedures that might not have aligned with the ENERGY STAR proposal.

Table 4, below, presents proposed Draft 2 levels for a unified low power mode, Idle State power, and WOL power allowances. Further details are provided in the note boxes inserted into the table.

Stakeholders are encouraged to share additional product data with EPA prior to the September 26th Stakeholder meeting to support modifications to the proposed levels. Data should use the test procedure and datasheets originally distributed and now available on the ENERGY STAR website at http://www.energystar.gov/index.cfm?c=revisions.computer_spec.

(B) Efficiency and Performance Requirements:

5) Thin Client Levels

Table 4: Thin Client Efficiency Requirements

Thin Client Operational Mode Power Requirements
Low Power Mode (i.e. Sleep Mode or Off Mode): ≤ 1 W

Note: EPA remains committed to encouraging computer power management through the ENERGY STAR computer program but recognizes that some thin clients on the market lack the capability to meet established requirements for Sleep Mode. After discussion with manufacturers regarding prospective requirements to minimize energy used during periods of inactivity, EPA proposes a single power level for the low power mode enabled as shipped to engage after thirty minutes of inactivity (further details on activation times are provided in the power management requirements table later in this document). Such an approach is intended to establish and encourage power management in this new product category for the program and allow manufacturers flexibility in achieving this goal.

The 1W level is proposed as a starting point to align with the level for notebook computers and due to the limited dataset available to EPA for sleep and off power. As noted, stakeholders are encouraged to share product data in support of modified levels.

Idle State: ≤ 11.5 W

Note: The idle power level above represents the top 22% of stakeholder-submitted data and 33% of EPA's total dataset. EPA proposes a single level for compliance as complete configuration data was not available for all systems in the analysis. A masked dataset "TC_Dataset_8 29 08.xls" is provided for review.

Capability	Additional Power Allowance
Wake On LAN (WOL) <i>(Applies only if computer is shipped with WOL enabled)</i>	+ 0.7 W for Sleep + 0.7 W for Off

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Note: In the Power Management table below, EPA proposes overall alignment with the requirements present for the other product categories, with specialized revisions only to the Sleep Mode requirement to account for the unified “Low Power Mode” presented in Section (B) above.

Sleep Mode: Thin Clients will be allowed to transition into a full Off State in lieu of sleep if latency is minimized over what would be expected of a sleep mode.

Wake On LAN: As noted in EPA’s Comment Response Document on June 9, 2008, revisions have been made to the overall Wake On LAN shipment requirement. A second bulleted option is provided below to allow for systems to be shipped to enterprise *without* WOL enabled by default, so long as controls to enable WOL are sufficiently-accessible. While this revision was initially raised through Desktop/Notebook comments, such an option addresses a comment voiced by some thin client manufacturers that models with embedded OSs and centrally-hosted applications do not require remote updates (and, consequently, do not require a WOL feature to allow these).

(C) Power Management Requirements: Products must meet the power management requirements detailed in Table 5, below, and be tested as shipped.

Table 5: Power Management Requirements

Specification Requirement		Applicable to	
Shipment Requirements			
Sleep Mode	Shipped with a Sleep mode which is set to activate within 30 minutes of user inactivity. <i>(Note: Thin Clients may transition to a full off mode within the timeframe above in lieu of sleep provided such functionality is capable of meeting the desired ≤ 5 second latency listed in definition M, above.)</i>	Desktop Computers	√
		Integrated Desktop Computers	√
		Notebook Computers/Tablet PCs	√
		Workstations	√
		Game Consoles	
		Small-Scale Servers with Desktop Components	
		Thin Clients	√
Display Sleep Mode	Shipped with the display’s Sleep mode set to activate within 15 minutes of user inactivity.	Desktop Computers	√
		Integrated Desktop Computers	√
		Notebook Computers/Tablet PCs	√
		Workstations	√
		Game Consoles	
		Small-Scale Servers with Desktop Components(if display is present)	√
		Thin Clients	√
Network Requirements for Power Management			
Wake on LAN (WOL)	Computers with Ethernet capability shall have the ability to enable and disable WOL for Sleep mode.	Desktop Computers	√
		Integrated Desktop Computers	√
		Notebook Computers/Tablet PCs	√
		Workstations	√
		Game Consoles	
		Small-Scale Servers with Desktop Components	√
		Thin Clients	√

	<p>Applies to computers shipped through Enterprise Channels, only:</p> <p>Computers with Ethernet capability must meet one of the following requirements:</p> <ul style="list-style-type: none"> ▪ be shipped with Wake On LAN (WOL) enabled from the Sleep mode when operating on ac power (i.e. notebooks may automatically disable WOL when disconnected from the mains); or ▪ provide control to enable WOL that is sufficiently-accessible from both the client operating system user interface and over the network if computer is shipped to enterprise without WOL enabled. 	Desktop Computers	√
		Integrated Desktop Computers	√
		Notebook Computers/Tablet PCs	√
		Workstations	√
		Game Consoles	
		Small-Scale Servers with Desktop Components	√
		Thin Clients	√
Wake Management	<p>Applies to computers shipped through Enterprise Channels, only:</p> <p>Computers with Ethernet capability shall be capable of both remote and scheduled wake events from Sleep mode.</p> <p>Manufacturers shall ensure, where the manufacturer has control (i.e., configured through hardware settings rather than software settings), that these settings can be managed centrally, as the client wishes, with tools provided by the manufacturer.</p>	Desktop Computers	√
		Integrated Desktop Computers	√
		Notebook Computers/Tablet PCs	√
		Workstations	√
		Game Consoles	
		Small-Scale Servers with Desktop Components	√
		Thin Clients	√