ENERGY STAR® Power and Performance Data Sheet

HA8000 RS440xL : CL 1 model

System Characteristics

Form Factor	4U
Available Processor Sockets	4
Available DIMM Slots / Max Memory Capacity	64slots(@ 4 Processor) / 512GB
ECC and/or Fully Buffered DIMMs	ECC DIMMs
Available Expansion Slots	9slots
Minimum and Maximum # of Hard Drives	Min 1, Max 8
Redundant Power Supply Capable?	Yes
Power Supply Make and Model	Delta Electronics DPS-850FBA
Power Supply Output Rating* (watts)	850
Minimum and Maximum # of Power Supplies	Min 2, Max 4
Input Power Range (AC or DC)	AC 100V/200V
Power Supply Efficiency at Specified Loadings*	80.24@10%, 89.17@20%, 92.27@50%, 90.60@100%
Power Supply Power Factor at Specified Loadings*	0.8988@10%, 0.9651@20%, 0.9945@50%, 0.9988@100%
Operating Systems Supported	Microsoft Windows Server® 2003, 2008 and 2008 R2, RedhatEnterpriseLinux
Installed Operating System for Testing	Microsoft Windows Server® 2008 R2 Enterprise

*** Note: Power supply information is for a single power supply only**

System Configurations	Minimum	Typical	Maximum
Configuration ID	GQ*441CL-*******	GQ*441CL-*******	GQ*441CL-*******
Processor Information	E7-4830x4	E7-4830x4	E7-4830x4
Memory Information	1GBx8=8GB	1GBx16=16GB	8GBx64=512GB
Internal Storage	146GBx1	146GBx5	600GBx8
I/O Devices	On board 1G LAN x4port	On board 1G LAN x4port, Add-in card 1G LAN x2port x2, Fibre 8G x1port x1, SVP x1	On board LAN 1G x4port, Add-in card 1G LAN x2port x1, SAS 6G x4port x1, Fibre 8G x2port x4, SCSI x2, SVP x1, RMM3x1
Power Supply Number and Redundancy Configuration	2 / No redundancy	3 / Redundant	4 / Redundant
Management Controller or Service Processor Installed?	Yes	Yes	Yes
Other Hardware Features / Accessories	Internal SAS RAID x1, DVD-ROM	Internal SAS RAID x1, DVD-ROM	Internal SAS RAID x1, DVD-ROM, LTO5 HH

Power Data	Minimum	Typical	Maximum
Idle Category (1S and 2S only)		N/A (3S or 4S)	
ENERGY STAR Idle Power Allowance (1S and 2S only)	N/A	N/A	N/A
Measured Idle Power (watts)	401.00 W	459.72 W	678.00 W
Power at Full Load* (watts)	640.51 W	693.82 W	914.50 W
Benchmark / Method Used for Full Load Test		Sandra 2011 Engineer	
Test Voltage and Frequency for Idle and Full Load Test		230V / 60Hz	
Range of Total Estimated Energy Usage ** (kWh/year)	7,026 to 11,222	8,054 to 12,156	11,879 to 16,022
Link to Detailed Power Calculator (if available)			

*** Note: Full load power represents the sustained, average power at 100% load of the given workload, and does not necessarily represent the absolute peak power or the highest average, sustained power possible for other workloads.**

**** Note: Estimated kWh/year gives the absolute range of energy use a user could expect from continuous operation (24x7x365) and ranges from 100% Idle usage to 100% full load operation. The calculation also includes typical data center overhead at a ratio of 1 watt of overhead to every 1 watt of IT load (corresponding to a PUE of 2.0). Closer approximations may be found by using established power calculators and specific information about the intended operating environment (e.g., average time at Idle, data center PUE, etc.).**

Power and Performance for Benchmark #1		Minimum	Typical	Maximum
Benchmark #1	Benchmark Used and Type of Workload		Sandra 2011 Engineer	
	Avg. Power Measured During Benchmark Run	640.51 W	693.82 W	914.50 W
	Benchmark Performance Score	**139.79 MPixel/s**	**138.33 MPixel/s**	**140.00 MPixel/s**
	Power Performance Ratio (perf score/avg. power)			
	Link to Full Benchmark Report (Where Available)	N/A	N/A	N/A

Power and Performance for Benchmark #2 (optional)		Minimum	Typical	Maximum
Benchmark #2	Benchmark Used and Type of Workload			
	Avg. Power Measured During Benchmark Run			
	Benchmark Performance Score			
	Power Performance Ratio (perf score/avg. power)			
	Link to Full Benchmark Report (Where Available)			

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Power Saving Features	***Enabled on Shipment***	***End-User Enabling Required***
Processor Dynamic Voltage and Frequency Scaling	**Yes**	
Processor or Core Reduced Power States	**Yes(C3)**	
Power Capping		
Variable Speed Fan Control Based on Power or Thermal Readings	**Yes**	
Low Power Memory States		
Low Power I/O States		
Liquid Cooling Capability		
Other1:		
Other2:		
Other3:		
Other4:		

Power and Temperature Measurement and Reporting

Input Power Available & Accuracy?	Yes, +/-5% under the operating power range
Input Air Temp Available & Accuracy?	Yes, +/-3degC
Processor Utilization Available?	Yes
Other Data Measurements Available & Accuracy?	
Compatible Protocols for Data Collection	Yes, IPMI
Averaging method and time period	Using moving average method, Average values over about a 1 second interval

Thermal Information*	***Minimum***	***Typical***	***Maximum***
Total Power Dissipation (watts)	640.51 W	693.82 W	914.50 W
Delta Temperature at Exhaust at Peak Temp. (˚C)			
Airflow at Maximum Fan Speed (CFM) at Peak Temp.			
Airflow at Nominal Fan Speed (CFM) at Nominal Temp.			

* References: ASHRAE Extended Environmental Envelope Final August 1, 2008
Thermal Guidelines for Data Processing Environments, ASHRAE, 2004, ISBN 1-931862-43-5
Peak temperature is defined as 35 ˚C, Nominal Temperature is defined as 18 - 27 ˚C

Notes

1. SPECpower_ssj2008 is a registered trademark of the Standard Performance Evaluation Corporation (SPEC). Benchmark results stated above reflect results published on XX/XX/XX. For the latest SPECpower_ssj2008 benchmark results, visit http://www.spec.org/power_ssj2008.

ENERGY STAR Qualified Configurations

Include specific information on ENERGY STAR Qualified SKUs or configurations

All configurations of HA8000 RS440 CL 1 model

ENERGY STAR Qualified Configurations (Continued)

Include specific information on ENERGY STAR Qualified SKUs or configurations