# ENERGY STAR® Power and Performance Data Sheet

Dell PowerEdge R415 Featuring the Dell Energy Smart 500W PSU and AMD 4180 CPU



# System Characteristics

Form Factor	1U			
Available Processor Sockets	2			
Available DIMM Slots / Max Memory Capacity	8/128 GB			
ECC and/or Fully Buffered DIMMs	Yes			
Available Expansion Slots	1 PCI-E			
Minimum and Maximum # of Hard Drives	0 to 4			
Redundant Power Supply Capable?	Yes			
Power Supply Make and Model	Dell 500W			
Power Supply Output Rating* (watts)	500			
Minimum and Maximum # of Power Supplies	1 or 2			
Input Power Range (AC or DC)	100-240VAC			
Power Supply Efficiency at Specified Loadings*	79.9%@10%, 88.4%@20%, 92.5%@50%, 92.0%@100%			
Power Supply Power Factor at Specified Loadings*	0.74@10%, 0.85@20%, 0.95@50%, 0.98@100%			
Operating Systems Supported	Microsoft Windows® Server 2003 and 2008 Microsoft Windows Essential Business Server 2008 Microsoft Windows Small Business Server 2008 Red Hat Enterprise Linux 4 and 5 SUSE Linux Enterprise Server 10 and 11			
Installed Operating System for Testing	Microsoft Windows Server 2008			

<sup>\*</sup> Note: Power supply information is for a single power supply only

#### System Configurations

Processor Information	2, AMD 4180		
Memory Information	4 RDIMMs, 4 GB, 1066MHz		
Internal Storage	4x 300GB 15k SAS HDDs		
I/O Devices	2x 1 Gb LOMs, SAS6/iR		
Power Supply Number and Redundancy Configuration	2, 1+1 Redundant		
Management Controller or Service Processor Installed?	Yes		
Other Hardware Features / Accessories	iDRAC6 Enterprise, ODD		

### Power Data

Benchmark #1

Idle Category (1S and 2S only)	Category D: Managed Dual Installed Processor (2P) Servers		
ENERGY STAR Idle Power Allowance (1S and 2S only)	218		
Measured Idle Power (watts)	141.3		
Power at Full Load* (watts)	229.3		
Benchmark / Method Used for Full Load Test	Sandra Dhrystone isse 4.2		
Test Voltage and Frequency for Idle and Full Load Test	115 V/60 Hz		
Range of Total Estimated Energy Usage ** (kWh/year)	2,476 to 4,017		
Link to Detailed Power Calculator (if available)	WWW.Dell.com/CALC		

<sup>\*</sup> 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.

# Power and Performance for Benchmark #1

Benchmark Used and Type of Workload	Sandra Dhrystone isse 4.2
Avg. Power Measured During Benchmark Run	229
Benchmark Performance Score	99.2
Power Performance Ratio (perf score/avg. power)	0.433
Link to Full Benchmark Report (Where Available)	

# Power and Performance for Benchmark #2 (optional)

Benchmark Used and Type of Workload

Avg. Power Measured During Benchmark Run

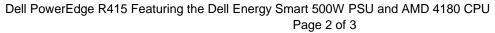
Benchmark Performance Score

Power Performance Ratio (perf score/avg. power)

Link to Full Benchmark Report (Where Available)

<sup>\*\*</sup> 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.).

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#### Enabled on **End-User Enabling Power Saving Features** Shipment Required Processor Dynamic Voltage and Frequency Scaling YES NO Processor or Core Reduced Power States NO YES YES NO Variable Speed Fan Control Based on Power or Thermal Readings NO YES Low Power Memory States **YES** NO Low Power I/O States YES NO Liquid Cooling Capability N/A NO Other1: Other2: Other3: Other4:

#### Power and Temperature Measurement and Reporting

Input Power Available & Accuracy?	Yes, +/- 5% for 20%-100% of max PSU load			
Input Air Temp Available & Accuracy?	Yes, +/- 2%			
Processor Utilization Available?	Yes			
Other Data Measurements Available & Accuracy?				
Compatible Protocols for Data Collection	IPMI			
Averaging method and time period	Power: 1 min running average of 2s interval samples. Temperature: no averaging, 5s interval sampling.			

hermal Information *	Minimum	Typical	Maximum
Reference Configurations		2, AMD 4180 4 RDIMM, 4GB, 1066MHz 4x 300GB 15k SAS HDD 2x 1Gb LOMs SAS6/iR iDRAC6 Enterprise ODD	
Total Power Dissipation (watts)		274.92	
Delta Temperature at Exhaust at Peak Temp. (°C)		12.1	
Airflow at Maximum Fan Speed (CFM) at Peak Temp.		90	
Airflow at Nominal Fan Speed (CFM) at Nominal Temp.		36	

<sup>\*</sup> Thermal information is provided for the minimum, typical and maximum configurations for the model line 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

<sup>1.</sup> 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.