

ENERGY STAR® Power and Performance Data Sheet

Dell PowerEdge R820 Featuring the Dell Energy Smart 1100W PSU and Intel E5 2620/2640



System Characteristics

Form Factor	2U server
Available Processor Sockets	4
Available DIMM Slots / Max Memory Capacity	48 Slots / 768GB max.
ECC and/or Fully Buffered DIMMs	Yes
Available Expansion Slots	7 PCIe slots
Minimum and Maximum # of Hard Drives	0 to 16
Redundant Power Supply Capable?	Yes
Power Supply Make and Model	Dell Energy Smart 1100W
Power Supply Output Rating* (watts)	1100 Watts
Minimum and Maximum # of Power Supplies	1 or 2
Input Power Range (AC or DC)	100-240 VAC, 50-60Hz
Power Supply Efficiency at Specified Loadings*	90.07%@10%, 93.53%@20%, 94.65%@50%, 92.68%@100%
Power Supply Power Factor at Specified Loadings*	0.86@10%, 0.94@20%, 0.98@50%, 0.99@100%
Operating Systems Supported	Microsoft Windows® Server 2008, Small Business Server 2011; Red Hat Enterprise Linux 5.7 and 6.2 with Xen; SUSE Linux Enterprise Server 10 and 11; Vmware: ESX 4.1, ESX5.0; Citrix XenServer 6
Installed Operating System for Testing	Microsoft Windows Essential Business Server 2008

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

System Configurations

	Minimum	Typical	Maximum
Configuration ID			
Processor Information	4, Intel, E5-4620	4, Intel, E5-4620	4, Intel, E5-4640
Memory Information	4x RDIMMs, 2GB 1333MT/s LV	32x RDIMMs, 8GB 1333 MT/s LV	48x RDIMMs, 16GB 1333MT/s LV
Internal Storage	1, SAS, 300GB, 10K, 2.5" HDD	8, SAS, 300GB, 10K, 2.5" HDD	8, SAS, 300GB, 10K, 2.5" HDD
I/O Devices	NDC Broadcom 4x 1GbE	NDC Intel 2x 10GbE+2x 1GbE	NDC Intel 2x 10GbE+2x 1GbE
Power Supply Number and Redundancy Configuration	1, Redundant	2, Redundant	2, Redundant
Management Controller or Service Processor Installed?	Yes	Yes	Yes
Other Hardware Features / Accessories	DVD-ROM IDRAC 7 Express	2x Quad-port 1GbE NIC IDRAC 7 Enterprise 2x Dual port FC8 PERC H810 PERC H710 DVD-ROM/RW	PERC H810 IDRAC 7 Enterprise 2x Quad-port 1GbE NIC 2x Dual port FC8 PERC H810 PERC H710 DVD-ROM/RW

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)	118.9	183.5	326.4
Power at Full Load* (watts)	403.9	491.4	531.5
Benchmark / Method Used for Full Load Test	SiSoftware Sandra Lite (Eval) 2012.01.18.01		
Test Voltage and Frequency for Idle and Full Load Test	230V/ 50Hz		
Range of Total Estimated Energy Usage ** (kWh/year)	2,083 to 7,076	3,215 to 8,609	5,719 to 9,312
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
#1 Benchmark Used and Type of Workload	SiSoftware Sandra Lite (Eval) 2012.01.18.01		

Benchmark

Avg. Power Measured During Benchmark Run	403.9 (W)	491.448 (W)	531.5
Benchmark Performance Score	728 (GIPS)	732 (GIPS)	263
Power Performance Ratio (perf score/avg. power)	1.802 (GIPS/W)	1.49 (GIPS/W)	N/A
Link to Full Benchmark Report (Where Available)			

Power and Performance for Benchmark #2 (optional)

Benchmark #2

	Minimum	Typical	Maximum
Benchmark Used and Type of Workload	N/A		
Avg. Power Measured During Benchmark Run			N/A
Benchmark Performance Score			N/A
Power Performance Ratio (perf score/avg. power)			N/A
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	No
Processor or Core Reduced Power States	Yes	No
Power Capping	No	Yes
Variable Speed Fan Control Based on Power or Thermal Readings	Yes	No
Low Power Memory States	Yes	No
Low Power I/O States	Yes	No
Liquid Cooling Capability	No	No
Other1:	N/A	N/A
Other2:	N/A	N/A
Other3:	N/A	N/A
Other4:	N/A	N/A

Power and Temperature Measurement and Reporting

Input Power Available & Accuracy?	Yes, +/- 1% @ >125W; +/-1.25W@50-125W; +/-5W@ <50W
Input Air Temp Available & Accuracy?	Yes, +/- 4° C
Processor Utilization Available?	Yes
Other Data Measurements Available & Accuracy?	Yes, Redundant Supply Vin = +/-1.25%, Vout = +/- 2%
Compatible Protocols for Data Collection	IPMI
Averaging method and time period	Polling rate - Min 1 sample/second, Max 10 samples/second. Average Polling Period - 4 AC Cycles

Thermal Information *

	Minimum	Typical	Maximum
Total Power Dissipation (watts)	247.3W	815W	1066.7 W
Delta Temperature at Exhaust at Peak Temp. (°C)	40.6C	52.5 C	51 C
Airflow at Maximum Fan Speed (CFM) at Peak Temp.	58 CFM	128 CFM	119 CFM
Airflow at Nominal Fan Speed (CFM) at Nominal Temp.	40 CFM	82 CFM	118 CFM

* 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