ENERGY STAR® *Power and Performance Data Sheet*

Dell PowerEdge R510 Featuring the Dell High Performance 1100 W Power Supply

System Characteristics

Form Factor	2U
Available Processor Sockets	2
Available DIMM Slots / Max Memory Capacity	8/64 GB
ECC and/or Fully Buffered DIMMs	Yes
Available Expansion Slots	3 PCI-E
Minimum and Maximum # of Hard Drives	0 to 8
Redundant Power Supply Capable?	Yes
Power Supply Make and Model	Dell Energy Smart L1100A-S
Power Supply Output Rating[1] (watts)	1100
Minimum and Maximum # of Power Supplies	1 or 2
Input Power Range (AC or DC)	100-240VAC
Power Supply Efficiency at Specified Loadings[1]	80.0%@10%, 88.0%@20%, 92.0%@50%, 88.0%@100%
Power Supply Power Factor at Specified Loadings[1]	0.80@10%, 0.90@20%, 0.90@50%, 0.98@100%
Operating Systems Supported[2]	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 Citrix XenServer 5.x[3] Vmware ESXi 3.5[3] SUSE Linux Enterprise Server 10 and 11
Installed Operating System for Testing	Microsoft Windows Server 2008

1. Power supply information is for a single power supply only.

2. Available operating systems as shipped configurations from the factory.

3. Minimum as shipped configuration is installed SD disk.

System Configurations

	Minimum	Typical	Maximum
Configuration ID			
Processor Information	2, Intel L 5506	2, Intel L5506	2, Intel X5570
Memory Information	2 DIMM, 1 GB	6 DIMMs, 2 GB each	8 DIMMs, 8 GB each
Internal Storage	1 HDD	4 HDDs + 1 DVD	8 HDDs + 1 DVD
I/O Devices	2 onboard 1 GB NIC ports	2 onboard 1 GB NIC ports	minimum + 1 Quad port 1 GB PCI-E NIC
Power Supply Number and Redundancy Configuration	1	2	2
Management Controller or Service Processor Installed?	Yes	Yes	Yes
Other Hardware Features / Accessories	SAS6/iR	iDRAC6 Enterprise, 1 SCSI Cntl, 1 HBA	iDRAC6 Enterprise, 1 SCSI Cntl, 1 HBA

Power Data

	Minimum	Typical	Maximum
Idle Category (1S and 2S only)	Category D: Managed Dual Installed Processor (2P) Servers		
ENERGY STAR Idle Power Allowance (1S and 2S only)	150	210	354
Measured Idle Power (watts)	87.9	145.8	264.8
Power at Full Load[1] (watts)	159.8	219.6	459.2
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)	1,541 to 2,800	2,554 to 3,847	4,639 to 8,045
Link to Detailed Power Calculator (if available)	WWW.Dell.com/CALC		

1. 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.
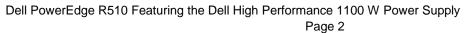
2. Estimated kWh/year gives the absolute range of energy use you could expect from continuous operation (24x7x365) and ranges from 100% idle usage to 100% full-load operation. The calculation also includes typical data center overhead at a ratio of 1 watt of overhead to every 1 watt of IT load (corresponding 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

Benchmark #1		Minimum	Typical	Maximum
	Benchmark Used and Type of Workload	Sandra Dhrystone isse 4.2		
	Avg. Power Measured During Benchmark Run	159.8	219.6	459.2
	Benchmark Performance Score	86	86	153
	Power Performance Ratio (perf score/avg. power)	0.54	0.39	0.33
	Link to Full Benchmark Report (Where Available)			

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	Yes	Yes
Variable Speed Fan Control Based on Power or Thermal Readings	Yes	No

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.

Thermal Information [1]

	Minimum	Typical	Maximum
Total Power Dissipation (watts)	397.0	481.0	593.0
Delta Temperature at Exhaust at 35C Peak Temp. (˚C)	5.1	6.7	9.9
Airflow at Maximum Fan Speed (CFM) at 35C Peak Temp.	140.0	130.0	108.0
Airflow at Nominal Fan Speed (CFM) at 25C Nominal Temp.	49	44	44

1. 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