ENERGY STAR® *Power and Performance Data Sheet*

Dell PowerEdge T320 with Dell Energy Smart 750W PSU and Intel E5 2420/2440

System Characteristics

Form Factor	Tower Server
Available Processor Sockets	1
Available DIMM Slots / Max Memory Capacity	6/192GB
ECC and/or Fully Buffered DIMMs	Yes
Available Expansion Slots	5
Minimum and Maximum # of Hard Drives	0 to 16
Redundant Power Supply Capable?	Yes
Power Supply Make and Model	Dell Energy Smart 750W
Power Supply Output Rating* (watts)	750 Watts
Minimum and Maximum # of Power Supplies	1 minimum / 2 maximum
Input Power Range (AC or DC)	100-240VAC ; 50-60Hz
Power Supply Efficiency at Specified Loadings*	88.18%@10%, 92.18%@20%, 94.24%@50%, 93.69%@100%
Power Supply Power Factor at Specified Loadings*	0.71@10%, 0.86@20%, 0.96@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; Cirtix XenServer 6
Installed Operating System for Testing	Windows Server 2008 R2 Enterprise

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

System Configurations

	Minimum	Typical	Maximum
Configuration ID			
Processor Information	1, Intel, E5-2420	1, Intel, E5-2430	1, Intel, E5-2440
Memory Information	1 RDIMM, 2GB, 1333 MHz, LV	4 RDIMMs, 4GB, 1333 Mhz, LV	6 RDIMMs, 32GB, 1333Mhz, LV
Internal Storage	1,SAS,300GB 15K, 3.5"	4,SAS,300GB 15K, 3.5"	16,SAS,300GB 15K, 2.5"
I/O Devices	Embedded Dual Port 1GbE	Embedded Dual Port 1GbE	Embedded Dual Port 1GbE PERC H810 Dual Port 10GbE Dual Port 1GbE Internal Tape Adpater
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	N/A	1 DVD-ROM iDRAC7 Express	1 DVD-ROM iDRAC7 Enterprise

Power Data

	Minimum	Typical	Maximum
Idle Category (1S and 2S only)	Category B: Managed Single Installed Processor (1P) Servers		
ENERGY STAR Idle Power Allowance (1S and 2S only)	65	133	601
Measured Idle Power (watts)	53.8	99.2	227.5
Power at Full Load* (watts)	101.2	158.3	310.3
Benchmark / Method Used for Full Load Test	SiSoftware Sandra Business 2012.01.18.10		
Test Voltage and Frequency for Idle and Full Load Test	230V / 50Hz		
Range of Total Estimated Energy Usage ** (kWh/year)	0,942 to 1,773	1,739 to 2,774	3,986 to 5,437
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	SiSoftware Sandra Business 2012.01.18.10		
	Avg. Power Measured During Benchmark Run	101.2	158.3	310.3
	Benchmark Performance Score	128	147	158
	Power Performance Ratio (perf score/avg. power)	N/A	N/A	N/A
	Link to Full Benchmark Report (Where Available)			

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

Benchmark #2

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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	Yes	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:		
Other2:		
Other3:		
Other4:		

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)	220.0	295.0	301.0
Delta Temperature at Exhaust at Peak Temp. (˚C)	17.0	20.0	20.0
Airflow at Maximum Fan Speed (CFM) at Peak Temp.	106.0	104.0	97.0
Airflow at Nominal Fan Speed (CFM) at Nominal Temp.	26.0	25.0	16.0

* 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