ENERGY STAR® *Power and Performance Data Sheet*

IBM System x3550 M2 (7946-xxx) w/two 60W 4-core CPUs (see Qualified Configurat

System Characteristics

Form Factor	1U Rackmount
Available Processor Sockets	2
Available DIMM Slots / Max Memory Capacity	16 Slots / 128 GB max
ECC and/or Fully Buffered DIMMs	Yes, ECC, Registered DIMMs
Available Expansion Slots	2 PCI-E
Minimum and Maximum # of Hard Drives	0 Minimum / 6 Maximum, SAS or SATA
Redundant Power Supply Capable?	Yes
Power Supply Make and Model	675W High Efficiency IBM PN 39Y7200 or 39Y7206 (equivalent)
Power Supply Output Rating* (watts)	675W
Minimum and Maximum # of Power Supplies	1 minimum / 2 maximum
Input Power Range (AC or DC)	100 - 240 VAC 50-60Hz
Power Supply Efficiency at Specified Loadings*	85.4%@10%, 90.1%@20%, 92.6%@50%, 90.1%@100%
Power Supply Power Factor at Specified Loadings*	0.75@10%, 0.87@20%, 0.94@50%, 0.96@100%
Operating Systems Supported[1]	Microsoft Windows® Server 2003 and 2008 / Microsoft Windows Essential Business Server 2008 / Microsoft Windows Small Business Server 2008 / Windows HC Server 2008 / Red Hat Enterprise Linux 4 and 5 SUSE Linux Enterprise Server 10 and 11 / Oracle Enterprise Linux 5 VMWare ESXi 3.5 and ESXi 4.0
Installed Operating System for Testing	Red Hat Enterprise Linux 5 Update 3 x64 Edition

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

(1) Full compatability listing maintained at www.ibm.com/servers/eserver/serverproven/compat/us/nos/matrix.shtml

System Configurations

	Minimum	Typical	Maximum
Configuration ID	7946xxx	7946xxx	7946xxx
Processor Information	2, Intel Xeon L5530	2, Intel Xeon L5530	2, Intel Xeon L5530
Memory Information	2 DIMMs, 2GB each	8 DIMMs, 4GB each	16 DIMMs, 8GB each
Internal Storage	1 x 2.5 inch, 15kRPM SAS	4 x 2.5 inch, 15kRPM SAS	6 x 2.5 inch, 15kRPM SAS
I/O Devices	Onboard, dual Gigabit NIC	Onboard dual 1GB NIC + 1 PCI-E dual 1GB NIC + dual 1GB NIC option	Onboard dual 1GB NIC + 2 PCI-E dual 1GB NIC + dual 1GB NIC option
Power Supply Number and Redundancy Configuration	1 non-redundant	2 redundant	2 redundant
Management Controller or Service Processor	Yes	Yes	Yes
Other Hardware Features / Accessories	DVD RW standard, integrated RAID	DVD RW standard, integrated RAID	DVD RW standard, integrated RAID

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	150	258	466
Measured Idle Power (watts)	115.3	162.3	200.2
Power at Full Load* (watts)	187.2	263.3	352.0
Benchmark / Method Used for Full Load Test	IBM MPx (Multi-Platform eXerciser) utility v1.266 [1]		
Test Voltage and Frequency for Idle and Full Load	230V/60Hz		
Range of Total Estimated Energy Usage ** (kWh/year)	2,020 to 3,280	2,843 to 4,613	3,508 to 6,167
Link to Detailed Power Calculator (if available)	www.ibm.com/systems/bladecenter/resources/powerconfig.html		

* 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

[1] IBM internal tool: software set to exercise system to 100%. Results similar to Prime95 (www.mersenne.org)

Power and Performance for Benchmark #1

	Minimum	Typical	Maximum
Benchmark Used and Type of Workload	STREAM rev 5.8 / TRIAD (OpenMP compilation)		
Avg. Power Measured During Benchmark Run	156.38 W	223.33 W	261.10 W
Benchmark Performance Score	10137.23 MB/s	10404.54 MB/s	10729.55 MB/s
Power Performance Ratio (perf score/avg. power)	64.82 MB/s / watt	46.59 MB/s / watt	41.09 MB/s / watt
Link to Full Benchmark Report (Where Available)			

Benchmark #1

Power Saving Features	*Enabled on Shipment*	*End-User Enabling Required*
Processor Dynamic Voltage and Frequency Scaling		X
Processor or Core Reduced Power States	C1 Enhanced Mode	X
Power Capping	X	X
Variable Speed Fan Control Based on Power or Thermal Readings	X	

Power and Temperature Measurement and Reporting

Input Power Available & Accuracy?	Yes, +/-10% at or above 150W and ±20W below 150W
Input Air Temp Available & Accuracy?	Yes, +/-2℃
Processor Utilization Available?	Yes
Other Data Measurements Available & Accuracy?	
Compatible Protocols for Data Collection	IBM Active Energy Manager (AEM), IPMI
Averaging method and time period	1 second sample, values stored in an Accumulation register. Polling interval of 1 minute minimum (register divided by difference in time readings to get avg power value). Temp: returns value when read.

Thermal Information *

	Minimum	Typical	Maximum
Total Power Dissipation (watts)	187.2	263.3	352.0
Delta Temperature at Exhaust at Peak Temp. (˚C)	5.4	7.9	10.9
Airflow at Maximum Fan Speed (CFM) at Peak Temp.	60.0	59.0	57.0
Airflow at Nominal Fan Speed (CFM) at Nominal Temp.	35.5	34.6	28.1

* *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*

ENERGY STAR Qualified Configurations
Include specific information on ENERGY STAR Qualified SKUs or configurations

Base system is sold with 1 CPU socket populated. Customer order must contain the 2nd CPU to qualify. v
First (base) and second CPU must be identical in Processor Number.

The following CPUs are included in this product family qualification:

Processor Number	Clock Speed	Power	Number of Cores
L5506	2.13 GHz	60W	4
L5520	2.26 GHz	60W	4
L5530	2.40 GHz	60W	4

ENERGY STAR Qualified Configurations (Continued)

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