

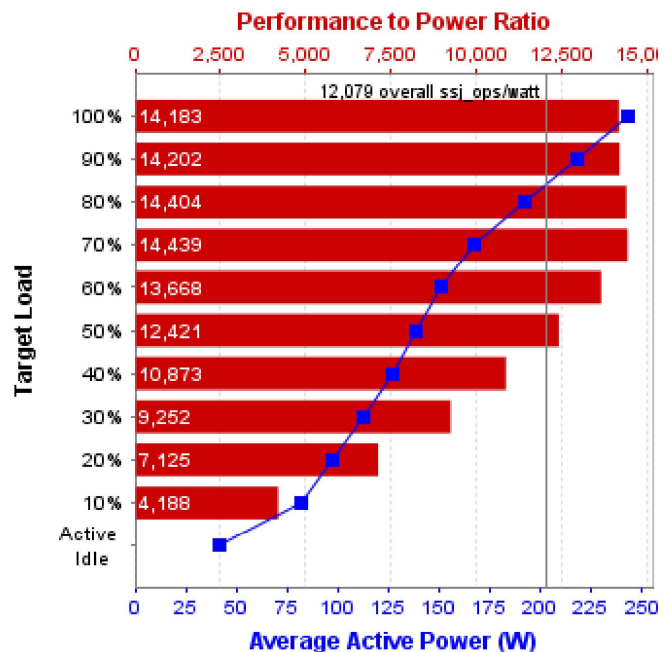
SPECpower_ssj2008

Copyright © 2007-2016 Standard Performance Evaluation Corporation

Fujitsu FUJITSU Server PRIMERGY RX2560 M2			SPECpower_ssj2008 = 12,079 overall ssj_ops/watt		
Test Sponsor:	Fujitsu	SPEC License #:	19	Test Method:	Single Node
Tested By:	Fujitsu	Test Location:	Paderborn, NRW, Germany	Test Date:	Mar 9, 2016
Hardware Availability:	Apr-2016	Software Availability:	Jan-2015	Publication:	Unpublished
System Source:	Single Supplier	System Designation:	Server	Power Provisioning:	Line-powered

Benchmark Results Summary

Performance			Power	Performance to Power Ratio
Target Load	Actual Load	ssj_ops	Average Active Power (W)	
100%	99.9%	3,448,187	243	14,183
90%	89.8%	3,097,846	218	14,202
80%	80.1%	2,766,075	192	14,404
70%	69.9%	2,411,569	167	14,439
60%	60.0%	2,071,973	152	13,668
50%	50.0%	1,726,591	139	12,421
40%	40.1%	1,384,205	127	10,873
30%	30.2%	1,041,259	113	9,252
20%	20.0%	690,526	96.9	7,125
10%	10.0%	343,507	82.0	4,188
Active Idle		0	41.7	0
∑ssj_ops / ∑power =				12,079



System Under Test

Set: 'RX2560 M2'

Set Identifier:	RX2560 M2
Set Description:	System Under Test
# of Identical Nodes:	1
Comment:	Single Node

Hardware

Hardware Vendor:	Fujitsu
Model:	FUJITSU Server PRIMERGY RX2560 M2
Form Factor:	4U
CPU Name:	Intel Xeon E5-2699 v4
CPU Characteristics:	22-Core, 2.20GHz, 55MB L3 Cache
CPU Frequency (MHz):	2200
CPU(s) Enabled:	44 cores, 2 chips, 22 cores/chip
Hardware Threads:	88 (2 / core)
CPU(s) Orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
Tertiary Cache:	55 MB I+D on chip per chip
Other Cache:	None
Memory Amount (GB):	64

# and size of DIMM:	8 x 8192 MB
Memory Details:	8 GB DDR4, registered, ECC, 2400 MHz, PC4-2400R, DIMM, 2Rx8; slots 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H populated
Power Supply Quantity and Rating (W):	1 x 800
Power Supply Details:	Fujitsu Technology Solutions S26113-F615-E10
Disk Drive:	1 x DOM SATA 6G 64GB Main N H-P, S26361-F5522-E64
Disk Controller:	Integrated SATA Controller
# and type of Network Interface Cards (NICs) Installed:	1 x PLAN AP 1x1Gbit Cu Intel I210-T1 (Copper), S26361-F3852-E501
NICs Enabled in Firmware / OS / Connected:	1/1/1
Network Speed (Mbit):	1000
Keyboard:	None
Mouse:	None
Monitor:	None
Optical Drives:	No
Other Hardware:	None

Software	
Power Management:	Enabled ("Fujitsu Enhanced Power Settings" power plan)
Operating System (OS):	Microsoft Windows Server 2012 R2 Standard
OS Version:	Version 6.3.9600 Build 9600
Filesystem:	NTFS
JVM Vendor:	Oracle Corporation
JVM Version:	Oracle Java HotSpot(TM) 64-Bit Server VM (build 24.80-b11, mixed mode), version 1.7.0_80
JVM Command-line Options:	-server -Xmn11g -Xms13g -Xmx13g -XX:SurvivorRatio=60 -XX:TargetSurvivorRatio=90 -XX:AllocatePrefetchDistance=256 -XX:AllocatePrefetchLines=4 -XX:LoopUnrollLimit=45 -XX:InitialTenuringThreshold=12 -XX:MaxTenuringThreshold=15 -XX:ParallelGCThreads=22 -XX:InlineSmallCode=3900 -XX:MaxInlineSize=270 -XX:FreqInlineSize=2500 -XX:+AggressiveOpts -XX:+UseLargePages -XX:+UseParallelOldGC -XX:-UseAdaptiveSizePolicy
JVM Affinity:	start /NODE [0,1,2,3] /AFFINITY 0x3FFFFFFF
JVM Instances:	4
JVM Initial Heap (MB):	13000
JVM Maximum Heap (MB):	13000
JVM Address Bits:	64
Boot Firmware Version:	R1.5.0
Management Firmware Version:	8.13F
Workload Version:	SSJ 1.2.10
Director Location:	Controller
Other Software:	None

Boot Firmware Settings

- Set "Hardware Prefetcher = Disabled" in BIOS.
- Set "Adjacent Cache Line Prefetch = Disabled" in BIOS.
- Set "DCU Streamer Prefetcher = Disabled" in BIOS.
- Set "ASPM Support = L1 Only" in BIOS.
- Set "DMI Control = Gen1" in BIOS.
- Set "Onboard USB Controllers = Disabled" in BIOS.
- Set "Power Technology = Custom" in BIOS.

- Set "Turbo Mode = Disabled" in BIOS.
- Set "Autonomous C-state Support = Enabled" in BIOS.
- Set "Uncore Frequency Override = Nominal" in BIOS.
- Set "QPI Link Frequency Select = 6.4 GT/s" in BIOS.
- Set "Override OS Energy Performance = Enabled" in BIOS.
- Set "Energy Performance = Energy Efficient" in BIOS.
- Set "DDR Performance = Energy optimized" in BIOS. (effective memory frequency = 1866 MHz)
- Set "Intel Virtualization Technology = Disabled" in BIOS.
- Set "COD Enable = Enabled" in BIOS.

Management Firmware Settings

None

System Under Test Notes

- Set "Turn off hard disk after = 1 Minute" in OS.
- Using the local security settings console, "lock pages in memory" was enabled for the user running the benchmark.
- Benchmark was started via Windows Remote Desktop Connection.
- Each JVM instance was affinized to 22 logical processors.

Controller System

Hardware	
Hardware Vendor:	Fujitsu
Model:	PRIMERGY RX200 S6
CPU Description:	Intel Xeon X5680
Memory amount (GB):	48

Software	
Operating System (OS):	Microsoft Windows Server 2008 R2 Enterprise SP1
JVM Vendor:	Oracle Corporation
JVM Version:	Oracle Java HotSpot(TM) 64-Bit Server VM (build 25.25-b02, mixed mode)
CCS Version:	1.2.6

Measurement Devices

Power Analyzer pwr1	
Hardware Vendor:	ZES Zimmer Electronic Systems GmbH
Model:	LMG95
Serial Number:	11210802
Connectivity:	RS-232
Input Connection:	Default (20A)
Metrology Institute:	PTB (Physikalisch Technische Bundesanstalt)
Accredited by:	Atlas Copco Tools Central Europe GmbH
Calibration Label:	W15113632
Date of Calibration:	30-Nov-2015
PTDaemon Host System:	same as CCS
PTDaemon Host OS:	same as CCS
PTDaemon Version:	1.8.0-efc0c004-20160120
Setup Description:	Connected to PSU 1

Temperature Sensor temp1	
Hardware Vendor:	Digi International Inc.
Model:	Watchport/H
Driver Version:	Watchport Virtual Port 5.70.105.0
Connectivity:	USB
PTDaemon Host System:	same as CCS
PTDaemon Host OS:	same as CCS
Setup Description:	5 mm in front of SUT main air intake

Notes

- SPECpower_ssj.props input.load_level.number_warehouses set to 88 due to a known inconsistency in processor reporting with this Java version.

Aggregate Electrical and Environmental Data

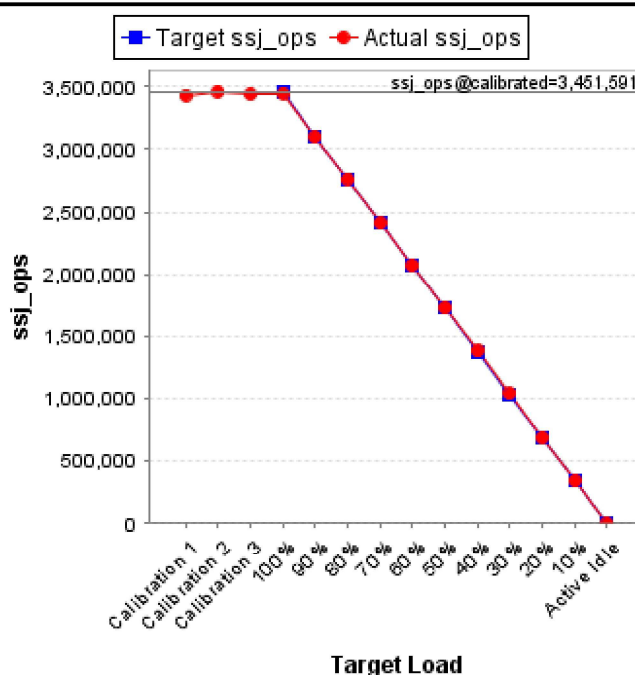
Target Load	Average Active Power (W)	Minimum Ambient Temperature (°C)
100%	243	20.4
90%	218	20.6
80%	192	21.1
70%	167	21.0
60%	152	20.7
50%	139	20.4
40%	127	20.4
30%	113	20.7
20%	96.9	21.0
10%	82.0	20.8
Active Idle	41.7	20.4

Line Standard	Minimum Temperature (°C)	Elevation (m)
230V / 50 Hz / 1 phase / 2 wires	20.4	117

See the [Power/Temperature Details Report](#) for additional details.

Aggregate Performance Data

Target Load	Actual Load	ssj_ops	
		Target	Actual
Calibration 1			3,432,572
Calibration 2			3,462,340
Calibration 3			3,440,842
<i>ssj_ops@calibrated=3,451,591</i>			
100%	99.9%	3,451,591	3,448,187
90%	89.8%	3,106,432	3,097,846
80%	80.1%	2,761,273	2,766,075
70%	69.9%	2,416,114	2,411,569
60%	60.0%	2,070,955	2,071,973
50%	50.0%	1,725,796	1,726,591
40%	40.1%	1,380,636	1,384,205
30%	30.2%	1,035,477	1,041,259
20%	20.0%	690,318	690,526
10%	10.0%	345,159	343,507
Active Idle		0	0



See the [Host Performance Report](#) for additional details.

Copyright © 2007-2016 Standard Performance Evaluation Corporation

<http://www.spec.org> - info@spec.org

SPECpower_ssj2008 Reporter Version: [SSJ 1.2.10, May 9, 2012]