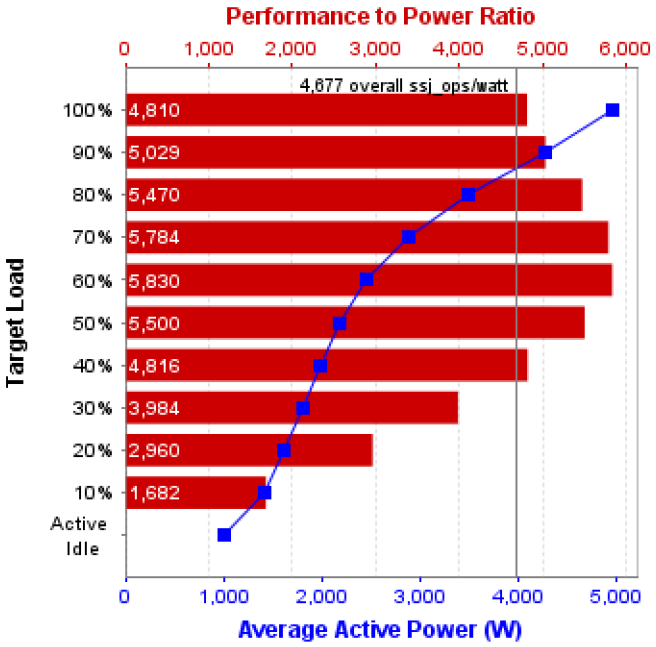
SPECpower_ssj2008

Fujitsu PRIMERGY BX920 S3 (Intel Xeon E5-2470)			SPECpower_ssj2008 = 4,677 overall ssj_ops/watt		
Test Sponsor:	Fujitsu	SPEC License #:	19	Test Method:	Multi Node
Tested By:	Fujitsu	Test Location:	Paderborn, NRW, Germany	Test Date:	Apr 26, 2012
Hardware Availability:	May-2012	Software Availability:	Dec-2011	Publication:	Unpublished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%	99.8%	23,884,347	4,965	4,810
90%	90.0%	21,545,239	4,284	5,029
80%	80.0%	19,131,418	3,498	5,470
70%	70.0%	16,752,658	2,896	5,784
60%	60.0%	14,353,206	2,462	5,830
50%	50.0%	11,968,288	2,176	5,500
40%	40.0%	9,577,156	1,989	4,816
30%	30.0%	7,182,867	1,803	3,984
20%	20.0%	4,789,561	1,618	2,960
10%	10.0%	2,399,599	1,426	1,682
Active Idle		0	1,014	0
		∑ssj_ops / ∑power =		**4,677**



Aggregate SUT Data

# of Nodes	# of Chips	# of Cores	# of Threads	Total RAM (GB)	# of OS Images	# of JVM Instances
18	36	288	576	432	18	288

System Under Test

Shared Hardware

Shared Hardware	
Enclosure:	PRIMERGY BX900 S2
Form Factor:	10U
Power Supply Quantity and Rating (W):	3 x 2880
Power Supply Details:	Fujitsu Technology Solutions S26113-E579-V20
Network Switch:	1 x GbE Switch
Network Switch Details:	PRIMERGY Connection Blade Ethernet Switch 1Gb 18/6
KVM Switch:	PRIMERGY BX900 Management Blade S1
KVM Switch Details:	iRMC S3 Video Redirection through PRIMERGY BX900 Management Blade S1
Other Hardware:	None
Comment:	Set "PSU Dynamic Mode = Enabled" in MMB.

Set: 'BX920 S3'

Set Identifier:	BX920 S3
Set Description:	Set of identically configured Fujitsu PRIMERGY BX920 S3 Server Blades

# of Identical Nodes:	18
Comment:	Multi Node

Hardware per Node	
Hardware Vendor:	Fujitsu
Model:	PRIMERGY BX920 S3 (Intel Xeon E5-2470)
Form Factor:	Blade
CPU Name:	Intel Xeon E5-2470
CPU Characteristics:	8-Core, 2.30GHz, 20MB L3 Cache (Turbo Boost Technology up to 3.10 GHz)
CPU Frequency (MHz):	2300
CPU(s) Enabled:	16 cores, 2 chips, 8 cores/chip
Hardware Threads:	32 (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:	20 MB I+D on chip per chip
Other Cache:	None
Memory Amount (GB):	24
# and size of DIMM:	6 x 4096 MB
Memory Details:	4 GB 2Rx8 PC3L-12800E-11, ECC; slots 1A, 1B, 1C, 1D, 1E, 1F populated
Power Supply Quantity and Rating (W):	None
Power Supply Details:	N/A
Disk Drive:	1 x 32GB, SSD, 2.5" SATA, S26361-F3298-E320
Disk Controller:	Integrated SATA Controller
# and type of Network Interface Cards (NICs) Installed:	2 x Emulex OneConnect OCL11102-LOM 2-port PCIe 10GbE Converged Network Adapter (onboard)
NICs Enabled in Firmware / OS / Connected:	2/1/1
Network Speed (Mbit):	1000
Keyboard:	None
Mouse:	None
Monitor:	None
Optical Drives:	No
Other Hardware:	None

Software per Node	
Power Management:	Enabled ("Fujitsu Enhanced Power Settings" power plan)
Operating System (OS):	Microsoft Windows Server 2008 R2 Enterprise SP1
OS Version:	Version 6.1.7601 Service Pack 1 Build 7601
Filesystem:	NTFS
JVM Vendor:	Oracle Corporation
JVM Version:	Oracle Java HotSpot(TM) 64-Bit Server VM on Windows, version 1.6.0_30
JVM Command-line Options:	-server -Xmx1024m -Xms1024m -Xmn853m -XX:ParallelGCThreads=2 -XX:SurvivorRatio=60 -XX:Targe XX:InlineSmallCode=3900 -XX:MaxInlineSize=270 -XX:FreqInlineSize=2500 -XX:AllocatePrefetchDistan XX:InitialTenuringThreshold=12 -XX:MaxTenuringThreshold=15 -XX:LoopUnrollLimit=45 -XX:+UseComp XX:+UseLargePages -XX:+UseParallelOldGC
JVM Affinity:	start /affinity [0x3,0xC,0x30,0xC0,0x300,0xC00,0x3000,0xC000,0x30000,0xC0000,0x300000,0xC00000,0x3000000,0
JVM Instances:	16
JVM Initial Heap (MB):	1024
JVM Maximum Heap (MB):	1024
JVM Address Bits:	64
Boot Firmware Version:	R1.4.0
Management	

Firmware Version:	6.23
Workload Version:	SSJ 1.2.9
Director Location:	Controller
Other Software:	None

Boot Firmware Settings

- Set "Adjacent Sector Prefetch = Disable" in BIOS.
- Set "Hardware Prefetch = Disable" in BIOS.
- Set "DCU Streamer Prefetch = Disable" in BIOS.
- Set "DDR Performance = Low-Voltage optimized" in BIOS. (effective memory frequency = 1333MHz)
- Set "USB Configuration = Disable External Ports" in BIOS.
- Set "QPI Link Speed = 6.4GT/s" in BIOS.
- Set "P-State coordination = SW_ANY" in BIOS.
- Set "Intel Virtualization Technology = Disable" in BIOS.
- Set "ASPM Support = Auto" 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.

Controller System

Hardware	
Hardware Vendor:	Fujitsu
Model:	PRIMERGY TX120 S2
CPU Description:	Intel Core 2 Duo T9400
Memory amount (GB):	8

Software	
Operating System (OS):	Windows Server 2008 Enterprise + SP2
JVM Vendor:	Oracle Corporation
JVM Version:	Oracle HotSpot(TM) 64-Bit Server VM (build 22.0-b10, mixed mode)
CCS Version:	1.2.5

Measurement Devices

Power Analyzer pwr1	
Hardware Vendor:	ZES Zimmer Electronic Systems GmbH
Model:	LMG95
Serial Number:	11780806
Connectivity:	RS-232
Input Connection:	Default (20A)
Metrology Institute:	PTB (Physikalisch Technische Bundesanstalt)
Accredited by:	Kalibrierdienst Stenger
Calibration Label:	11080967
Date of Calibration:	03-Aug-2011
PTDaemon Host System:	same as CCS
PTDaemon Host OS:	same as CCS
PTDaemon Version:	1.4.1-1271fb18-20110728
Setup Description:	Connected to 1st and 2nd PSU

Power Analyzer pwr2	
Hardware Vendor:	Yokogawa
Model:	WT210
Serial Number:	91HA48097
Connectivity:	RS-232

Input Connection:	Default (20A)
Metrology Institute:	PTB (Physikalisch Technische Bundesanstalt)
Accredited by:	Kalibrierdienst Stenger
Calibration Label:	11111753
Date of Calibration:	14-Nov-2011
PTDaemon Host System:	same as CCS
PTDaemon Host OS:	same as CCS
PTDaemon Version:	1.4.1-1271fb18-20110728
Setup Description:	Connected to 3rd PSU

Temperature Sensor temp1	
Hardware Vendor:	Digi International Inc.
Model:	Watchport/H
Driver Version:	Watchport Virtual Port 5.10.26.0
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 32 due to a known inconsistency in processor reporting with this Java version.

Aggregate Electrical and Environmental Data

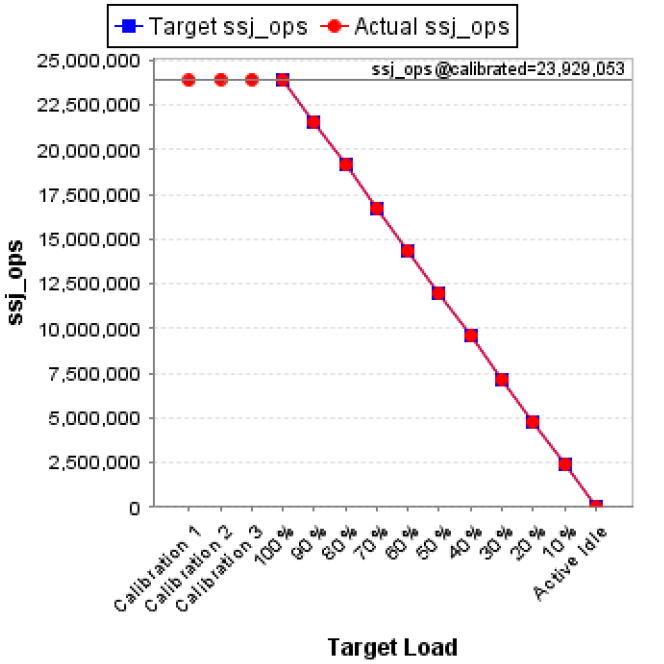
Target Load	Average Active Power (W)	Minimum Ambient Temperature (°C)
100%	4,965	23.2
90%	4,284	23.7
80%	3,498	23.8
70%	2,896	23.3
60%	2,462	23.0
50%	2,176	22.9
40%	1,989	22.7
30%	1,803	22.6
20%	1,618	22.5
10%	1,426	22.4
Active Idle	1,014	22.3

Line Standard	Minimum Temperature (°C)	Elevation (m)
230V / 50 Hz / 1 phase / 2 wires	22.3	117

See the Power/Temperature Details Report for additional details.

Aggregate Performance Data

Target Load	Actual Load	ssj_ops	
		Target	Actual
Calibration 1			23,862,237
Calibration 2			23,936,840
Calibration 3			23,921,266
ssj_ops@calibrated=23,929,053			
100%	99.8%	23,929,053	23,884,347
90%	90.0%	21,536,148	21,545,239
80%	80.0%	19,143,242	19,131,418
70%	70.0%	16,750,337	16,752,658
60%	60.0%	14,357,432	14,353,206
50%	50.0%	11,964,526	11,968,288
40%	40.0%	9,571,621	9,577,156
30%	30.0%	7,178,716	7,182,867
20%	20.0%	4,785,811	4,789,561
10%	10.0%	2,392,905	2,399,599
Active Idle		0	0



See the Aggregate Performance Report for additional details.