IBM Power Systems Performance Report

June 16, 2008

Table of Contents

Performance of IBM UNIX, IBM i and Linux Operating System Servers

June 16, 2008

This document contains performance and benchmark results for IBM servers and workstations running the UNIX® (AIX®), IBM i and Linux® operating systems. This includes the IBM Power™ Systems servers (System p™, System p5™, eServer™ p5, pSeries®, OpenPower® and IBM RS/6000®; BladeCenter® Power Architecture® technology-based blades) and IntelliStation® POWER™ workstations.

This document contains the IBM Power 595 server TPC-C benchmark result, new Power 570 SPECjbb2005 results, a Power 550 Linux TPC-C result and Power 575 Linux benchmark results. Also included are SPECjbb2005 results run using IBM i and SAP SD 3-tier results run using the BladeCenter JS12 and AIX. Finally new results for ABAQUS, NAMD, and WRF are included..

Section One of this report includes the SPEC CPU2006 and LINPACK results. SPEC CPU2000 results are presented in Section 1a.

Section Two is multiuser performance. The rPerf and SPEC_rate2006 are presented in this section. Multiuser Performance of SPEC CPU2000 along with rPerf and SPECweb99 are presented in Section 2a. Multiuser performance using AIX® V5.2 is presented in Section 2b. The SPECweb99_SSL results are presented in Section 2c. Capacity Upgrade on Demand relative performance guidelines are presented in Section 2d. Section 2e of this report includes CPW benchmark information provided for new POWER6 processor-based servers running the IBM i operating system.

Section Three presents the TPC-C version 5 results. The version 3 results are included in Section 3a. Starting April 20, 2001, TPC-C will not accept version 3 results. TPC-C version 3 results can not be compared to version 5 results. Section Four provides published TPC-H results.

Section Five reflects the published SPECsfs97 benchmark results. The NotesBench results to date are presented in Section 5a.

Section Six reflects the published SPECjvm98, SPECjbb2000 and SPECjbb2005 Java™ benchmarks.

Section Seven reflects the published ECperf benchmarks.

Sections Eight through Fourteen include published application performance benchmarks for SAP, PeopleSoft, Oracle Applications, Baan, J.D. Edwards, Seibel, Sybase and Manugistics.

Section Fifteen contains technical computing benchmark results for UNIX operating system-based systems. This includes STREAM, SPEC OMP2001, FLUENT, ABAQUS, AVL FIRE, LS-DYNA, ANSYS, CHARMm, Gaussian98, Focus, STAR-CD and MSC.Nastran benchmark results.

Section Sixteen contains Linux operating system performance results.

Section Seventeen is a historical list of commercial performance estimates for IBM System p™, RS/6000 models and RS/6000 SP™ nodes that have been withdrawn from marketing. IBM has discontinued Relative OLTP results.

All performance measurements for the IBM System p, IBM System p5, IBM eServer p5, IBM eServer pSeries, IBM RS/6000 servers, IntelliStation POWER workstations and BladeCenter blades were made with systems running the AIX operating system unless otherwise indicated to have used Linux. For new and upgraded systems, AIX Version 4.3 or AIX 5L™ were used. All other systems used previous versions of AIX.

Footnotes used in following tables:
Yellow highlight - New in June 16, 2008 version
- System has been announced as withdrawn from marketing; * - Submitted to SPEC, waiting review; e – estimate; n – new; u – upgrade; N/A - not available; P2SC – POWER2™ Super Chip; P3 – POWER3™; P3-II – POWER3-II; P4 – POWER4™; P4+ – POWER4+™; P5 – IBM POWER5™; P5+ – IBM POWER5+™; P6 – IBM POWER6™; IS – IntelliStation, OP – OpenPower, PPC – PowerPC®

Section 1 - AIX SPEC CPU2006 and LINPACK HPC Performance

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2006	SPEC int_ base 2006	SPEC fp 2006	SPEC fp_ base 2006	LINPACK HPC
520	P6/1	4200	64/64	8/-	--	--	--	--	13,500
520	P6/4	4200	64/64	16/-	--	--	--	--	53,600
550	P6/1	4200	64/64	8/32	--	--	--	--	13,600
550	P6/8	4200	64/64	32/128	--	--	--	--	104,600
570	P6/1	4700	64/64	8/32	21.6	17.8	22.3	18.7	15,530
570	P6/4	4700	64/64	16/64	--	--	--	--	61,560
570	P6/8	4700	64/64	32/128	--	--	--	--	120,600
570	P6/16	4700	64/64	64/256	--	--	--	--	239,400
575	P6/1	4700	64/64	32/128	--	--	--	--	15,000
575	P6/32	4700	64/64	128/512	--	--	--	--	466,900
595	P6/1	5000	64/64	32/128	--	--	24.9	20.1	16,380
595	P6/64	5000	64/64	256/1024	--	--	--	--	1,028,000

Section 1a - AIX SPEC CPU2000 and LINPACK Performance

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2000	SPEC int_ base 2000	SPEC fp 2000	SPEC fp_ base 2000	LINPACK DP	LINPACK TPP	LINPACK HPC
JS20	PPC970/1	2200	64/32	0.5/-	1,040	986	1,241	1,178	1,681	3,840	--
JS20	PPC970/2	2200	64/32	1.0/-	--	--	--	--	--	5,817	--
JS21	PPC970+/1	2500	64/32	1.0/-	1,587	1,509	2,119	1,936	--	--	--
JS21	PPC970+/4	2500	64/32	4.0/-	--	--	--	--	--	--	32,220
JS21	PPC970+/1	2700	64/32	1.0/-	1,706	1,623	2,259	2,060	--	--	--
JS21	PPC970+/2	2700	64/32	2.0/-	--	--	--	--	--	--	17,650
IS-185	PPC970+/1	2500	64/32	1.0/-	1,459	1,393	1,569	1,452	--	--	--
IS-185	PPC970+/2	2500	64/32	2.0/-	--	--	--	--	--	--	15,280
#IS-265	P3-II/1	450	32/64	4.0/-	318	298	401	396	--	--	--
#IS-275	P4+/1	1000	64/32	1.5/8	683	617	901	862	860	2,327	2,824
#IS-275	P4+/1	1450	64/32	1.5/8	978	883	1,180	1,129	1,245	3,338	4,015
#IS-275	P4+/2	1450	64/32	1.5/8	--	--	--	--	--	5,993	7,693
#IS-285	P5+/1	1900	64/32	1.9/36	1,512	1,469	3,027	2,838	--	--	--
#IS-285	P5+/2	1900	64/32	1.9/36	--	--	--	--	--	--	14,350
IS-285	P5+/1	2100	64/32	1.9/36	1,747	1,670	3,324	3,100	--	--	--
IS-285	P5+/2	2100	64/32	1.9/36	--	--	--	--	--	--	15,880
#43P-140u	604e	233	32/32	1.0/-	--	--	--	--	22.6	156.2	--
#43P-140n	604e	233	32/32	1.0/-	--	--	--	--	56	156.2	--
#43P-140	604e	332	32/32	1.0/-	--	--	--	--	59.9	179.7	--
#43P-150	604e	250	32/32	1.0/-	105	99.4	90.8	90.8	43	170	--
#43P-150	604e	375	32/32	1.0/-	--	--	--	--	64.8	255.7	--
#44P-170	P3-II	333	32/64	1.0/-	202	196	277	274	363	833	--
#44P-170	P3-II	400	32/64	4.0/-	280	271	359	355	461	1,052	--
#44P-170	P3-II	450	32/64	8.0/-	346	333	434	426	503	1,440	--
#43P-260	P3/1	200	32/64	4.0/-	--	--	--	180	--	--	--
#44P-270	P3-II/1	375	32/64	4.0/-	262	239	366	313	426	1,109	--
#44P-270	P3-II/2	375	32/64	4.0/-	--	--	--	--	--	--	2,270
#44P-270	P3-II/4	375	32/64	4.0/-	--	--	--	--	--	--	4,530
#44P-270	P3-II/1	375	32/64	8.0/-	273	247	378	327	426	1,234	--
#44P-270	P3-II/2	375	32/64	8.0/-	--	--	--	--	--	--	2,380
#44P-270	P3-II/4	375	32/64	8.0/-	--	--	--	--	--	--	4,640

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2000	SPEC int_ base 2000	SPEC fp 2000	SPEC fp_ base 2000	LINPACK DP	LINPACK TPP	LINPACK HPC
#44P-270	P3-II/1	450	32/64	8.0/-	334	313	433	426	503	1,451	--
#44P-270	P3-II/2	450	32/64	8.0/-	--	--	--	--	--	2,521	--
#44P-270	P3-II/4	450	32/64	8.0/-	--	--	--	--	--	4,396	--
#B50	604e	375	32/32	1.0/-	--	--	--	--	64.8	255.7	--
#p5-185	PPC970+/1	2500	64/32	1.0/-	1,459	1,393	1,569	1,452	--	--	--
#p5-185	PPC970+/2	2500	64/32	2.0/-	--	--	--	--	--	--	15,280
#p5-505	P5/1	1650	64/32	1.9/0	1,297	1,259	2,528	2,390	--	--	6,231
#p5-505	P5/2	1650	64/32	1.9/36	--	--	--	--	--	--	12,390
p5-505	P5+/1	2100	64/32	1.9/36	1,704	1,617	3,301	3,057	--	--	--
p5-505Q	P5+/1	1650	64/32	1.9/72	1,371	1,311	2,610	2,442	--	--	--
#p640	P3-II/1	375	32/64	4.0/-	262	239	366	313	426	1,109	--
#p640	P3-II/2	375	32/64	4.0/-	--	--	--	--	--	--	2,270
#p640	P3-II/4	375	32/64	4.0/-	--	--	--	--	--	--	4,530
#p640	P3-II/1	375	32/64	8.0/-	273	247	378	327	426	1,234	--
#p640	P3-II/2	375	32/64	8.0/-	--	--	--	--	--	--	2,380
#p640	P3-II/4	375	32/64	8.0/-	--	--	--	--	--	--	4,640
#p640	P3-II/1	450	32/64	8.0/-	334	313	433	426	503	1,451	--
#p640	P3-II/2	450	32/64	8.0/-	--	--	--	--	--	2,521	--
#p640	P3-II/4	450	32/64	8.0/-	--	--	--	--	--	4,396	--
#F40	604e/1	233	32/32	1.0/-	--	--	--	--	48.5	145.6	--
#F50	604e/1	166	32/32	0.2/-	--	--	--	--	70.2	166.4	--
#F50	604e/1	332	32/32	0.2/-	--	--	--	--	115.7	273.4	--
#F80	RS64 III/1	450	128/128	2.0/-	234	225	210	205	--	--	--
#p610-6E1	P3-II/1	333	32/64	4.0/-	241	226	333	329	--	--	--
#p610-6E1	P3-II/1	375	32/64	4.0/-	277	259	372	368	--	--	--
#p610-6E1	P3-II/1	450	32/64	8.0/-	334	313	433	426	503	1,451	--
#p610-6E1	P3-II/2	450	32/64	8.0/-	--	--	--	--	--	2,521	--
#p610-6C1	P3-II/1	333	32/64	4.0/-	241	226	333	329	--	--	--
#p610-6C1	P3-II/1	375	32/64	4.0/-	277	259	372	368	--	--	--
#p610-6C1	P3-II/1	450	32/64	8.0/-	334	313	433	426	503	1,451	--
#p610-6C1	P3-II/2	450	32/64	8.0/-	--	--	--	--	--	2,521	--
#p615-6C3	P4+/1	1200	64/32	1.5/8	822	739	1,018	966	1,032	--	--
#p615-6E3	P4+/1	1200	64/32	1.5/8	822	739	1,018	966	1,032	--	--
#p5-510	P5/1	1650	64/32	1.9/36	1,260	1,203	2,236	2,071	--	--	--
#p5-510	P5/2	1650	64/32	1.9/36	--	--	--	--	--	--	12,140
#p5-510	P5+/1	1900	64/32	1.9/36	1,536	1,479	3,048	2,850	--	--	--
p5-510	P5+/1	2100	64/32	1.9/36	1,704	1,617	3,301	3,057	--	--	--
#p5-510Q	P5+/1	1500	64/32	1.9/72	1,231	1,164	2,377	2,217	--	--	--
p5-510Q	P5+/1	1650	64/32	1.9/72	1,371	1,311	2,610	2,442	--	--	--
#p5-520	P5/1	1500	64/32	1.9/0	--	--	2,041	1,909	--	--	--
#p5-520	P5/2	1500	64/32	1.9/36	--	--	--	--	--	--	10,800
#p5-520	P5/1	1650	64/32	1.9/36	1,248	1,201	2,138	2,034	--	--	--
#p5-520	P5/2	1650	64/32	1.9/36	--	--	--	--	--	--	11,780
#p5-520	P5+/1	1650	64/32	1.9/0	1,337	1,288	2,676	2,502	--	--	--
#p5-520	P5+/1	1900	64/32	1.9/36	1,513	1,470	3,030	2,839	--	--	7,281
#p5-520	P5+/2	1900	64/32	1.9/36	--	--	--	--	--	--	14,310
p5-520	P5+/1	2100	64/32	1.9/36	1,704	1,617	3,301	3,057	--	--	--
p5-520Q	P5+/1	1650	64/32	1.9/72	1,371	1,311	2,610	2,442	--	--	--
#p620-6F0	RS64 IV/1	600	128/128	2.0/-	310	295	252	245	--	--	--
#p620-6F0	RS64 IV/1	750	128/128	8.0/-	458	431	410	396	--	--	--
#p620-6F1	RS64 IV/1	600	128/128	2.0/-	310	295	252	245	360	833	--
#p620-6F1	RS64 IV/2	600	128/128	4.0/-	--	--	--	--	--	1,650	--
#p620-6F1	RS64 IV/4	600	128/128	4.0/-	--	--	--	--	--	3,144	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2000	SPEC int_ base 2000	SPEC fp 2000	SPEC fp_ base 2000	LINPACK DP	LINPACK TPP	LINPACK HPC
#p620-6F1	RS64 IV/6	668	128/128	8.0/-	--	--	--	--	--	4529	--
#p620-6F1	RS64 IV/1	750	128/128	8.0/-	458	431	410	396	--	--	--
#p630-6C4	P4/1	1000	64/32	1.44/8	639	624	886	843	842	2,172	--
#p630-6C4	P4/4	1000	64/32	2.88/16	--	--	--	--	--	6,769	--
#p630-6E4	P4/1	1000	64/32	1.44/8	639	624	886	843	842	2,172	--
#p630-6E4	P4/4	1000	64/32	2.88/16	--	--	--	--	--	6,769	--
#p630-6C4	P4+/1	1200	64/32	1.5/8	767	745	1,014	961	1,025	2,727	--
#p630-6C4	P4+/4	1200	64/32	3.0/16	--	--	--	--	--	9,255	13,030
#p630-6E4	P4+/1	1200	64/32	1.5/8	767	745	1,014	961	1,025	2,727	--
#p630-6E4	P4+/4	1200	64/32	3.0/16	--	--	--	--	--	9,255	13,030
#p630-6C4	P4+/1	1450	64/32	1.5/8	910	884	1,158	1,097	1,229	3,297	--
#p630-6C4	P4+/4	1450	64/32	3.0/16	--	--	--	--	--	10,990	15,340
#p630-6E4	P4+/1	1450	64/32	1.5/8	910	884	1,158	1,097	1,229	3,297	--
#p630-6E4	P4+/4	1450	64/32	3.0/16	--	--	--	--	--	10,990	15,340
#p5-550	P5/1	1500	64/32	3.8/72	--	--	2,072	1,914	--	--	--
#p5-550	P5/4	1500	64/32	3.8/72	--	--	--	--	--	--	21,600
#p5-550	P5/1	1650	64/32	1.9/36	1,248	1,200	2,221	2,121	--	--	--
#p5-550	P5/4	1650	64/32	3.8/72	--	--	--	--	--	--	23,570
#p5-550	P5+/1	1650	64/32	1.9/36	1,336	1,288	2,657	2,483	--	--	--
p5-550	P5+/1	1900	64/32	1.9/36	1,510	1,467	3,007	2,815	--	--	7,254
p5-550	P5+/4	1900	64/32	3.8/72	--	--	--	--	--	--	28,490
p5-550	P5+/1	2100	64/32	1.9/36	1,743	1,669	3,321	3,125	--	--	--
p5-550	P5+/4	2100	64/32	3.8/72	--	--	4,051	3,210	--	--	31,500
#p5-550Q	P5+/1	1500	64/32	1.9/72	1,187	1,156	2,263	2,179			5,596
#p5-550Q	P5+/8	1500	64/32	7.6/144	--	--	--	--	--	--	44,680
p5-550Q	P5+/1	1650	64/32	1.9/72	1,367	1,307	2,612	2,458			--
p5-550Q	P5+/8	1650	64/32	7.6/144	--	--	--	--	--	--	48,960
#H70	RS64 II/1	340	64/64	4.0/-	--	168	--	--	187.6	498.3	--
#H80	RS64 III/1	450	128/128	2.0/-	234	225	210	205	--	--	--
#p650	P4+/1	1450	64/32	1.5/32	935	909	1295	1221	1,220	3,245	3,683
#p650	P4+/2	1450	64/32	1.5/32	--	--	--	--	--	6,165	7,279
#p650	P4+/4	1450	64/32	3.0/64	--	--	--	--	--	11,190	14,480
#p650	P4+/8	1450	64/32	6.0/128	--	--	--	--	--	19,930	28,410
p5-560Q	P5+/1	1500	64/32	1.9/72	1,204	1,160	2,360	2,197	--	--	5,650
p5-560Q	P5+/16	1500	64/32	15.2/288	--	--	--	--	--	--	87,770
p5-560Q	P5+/1	1800	64/32	1.9/72	--	--	--	--	--	--	6,800
p5-560Q	P5+/16	1800	64/32	15.2/288	--	--	--	--	--	--	104,200
#p5-570	P5/1	1900	64/32	1.9/36	1,452	1,398	2,702	2,576	--	--	--
#p5-570	P5/4	1900	64/32	3.8/72	--	--	--	--	--	--	27,520
#p5-570	P5/8	1900	64/32	7.6/144	--	--	--	--	--	--	53,800
#p5-570	P5/16	1900	64/32	15.2/288	--	--	--	--	--	--	103,100
#p5-575	P5/1	1500	64/32	1.9/36	1,143	1,087	2,185	2,050	1,315	--	--
#p5-575	P5/16	1500	64/32	15.2/288	--	--	--	--	--	--	87,340
#p5-575	P5/1	1900	64/32	1.9/36	1,456	1,385	2,600	2,413	1,776	5,872	7,120
#p5-575	P5/8	1900	64/32	15.2/288	--	--	--	--	--	34,570	56,670
p5-575	P5+/1	1900	64/32	1.9/36	1,526	1,473	3,042	2,830	--	--	7,140
p5-575	P5+/16	1900	64/32	15.2/288	--	--	--	--	--	--	111,400
p5-575	P5+/1	2200	64/32	1.9/36	1,765	1,705	3,513	3,271	--	--	8,330
p5-575	P5+/8	2200	64/32	15.2/288	--	--	--	--	--	--	66,440
#p655	P4/1	1100	64/32	1.44/128	722	700	1,103	1,037	937	2,484	2,933
#p655	P4/8	1100	64/32	5.7/128	--	--	--	--	--	16,170	22,340
#p655	P4+/1	1500	64/32	1.5/128	970	941	1,488	1,398	1,293	3,421	--
#p655	P4+/8	1500	64/32	6.0/128	--	--	--	--	--	22,770	32,590

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2000	SPEC int_ base 2000	SPEC fp 2000	SPEC fp_ base 2000	LINPACK DP	LINPACK TPP	LINPACK HPC
#p655	P4/1	1300	64/32	1.44/128	848	822	1,281	1,200	1,135	2,899	3,450
#p655	P4/4	1300	64/32	5.7/128	--	--	--	--	--	10,880	13,520
#p655	P4+/1	1700	64/32	1.5/128	1,158	1,064	1,776	1,642	1,468	3,874	4,870
#p655	P4+/4	1700	64/32	6.0/128	--	--	--	--	--	14,730	18,990
#p655	P4+/8	1700	64/32	6.0/128	--	--	--	--	--	25,630	37,290
#p660-6H0	RS64 IV/1	600	128/128	2.0/-	310	295	252	245	--	--	--
#p660-6H0	RS64 IV/1	750	128/128	8.0/-	458	431	410	396	--	--	--
#p660-6H1	RS64 IV/1	600	128/128	2.0/-	310	295	252	245	360	833	--
#p660-6H1	RS64 IV/2	600	128/128	4.0/-	--	--	--	--	--	1,650	--
#p660-6H1	RS64 IV/4	600	128/128	4.0/-	--	--	--	--	--	3,144	--
#p660-6H1	RS64 IV/6	668	128/128	8.0/-	--	--	--	--	--	4,529	--
#p660-6H1	RS64 IV/1	750	128/128	8.0/-	458	431	410	396	--	--	--
#M80	RS64 III/1	500	128/128	4.0/-	275	264	250	243	--	--	--
#M80	RS64 IV/1	750	128/128	8.0/-	439	409	376	359	--	--	--
#p660-6M1	RS64 IV/1	750	128/128	8.0/-	439	409	376	359	--	--	--
#p670	P4/1	1100	64/32	1.44/128	708	680	1,075	1,017			--
#p670	P4+/1	1500	64/32	1.5/128	981	950	1,520	1,432	1,294	3.402	--
#p670	P4+/8	1500	64/32	6.0/128	--	--	--	--	--	22,860	--
#p670	P4+/16	1500	64/32	12.0/256	--	--	--	--	--	33,980	64,660
#p5-590	P5/1	1650	64/32	1.9/144	1,259	1,200	2,450	2,276	--	--	--
#p5-590	P5/32	1650	64/32	30.4/576	--	--	--	--	--	--	187,800
#p690	P4/1	1300	64/32	1.44/128	839	804	1,266	1,202	1,074	2,894	--
#p690	P4/16	1300	64/32	11.5/256	--	--	--	--	--	28,080	--
#p690	P4/32	1300	64/32	23.0/512	--	--	--	--	--	--	95,260
#p690	P4+/1	1700	64/32	1.5/128	1,113	1,077	1,699	1,598	1,462	3,817	--
#p690	P4+/8	1700	64/32	6.0/128	--	--	--	--	--	25,130	--
#p690	P4+/16	1700	64/32	12.0/256	--	--	--	--	--	36,530	--
#p690	P4+/32	1700	64/32	24.0/512	--	--	--	--	--	--	143,300
#p5-595	P5/1	1900	64/32	1.9/144	1,452	1,392	2,796	2,585	--	--	--
#p5-595	P5/64	1900	64/32	60.8/1152	--	--	--	--	--	--	418,000
p5-595	P5+/1	2300	64/32	1.9/144	1,900	1,820	3,642	3,369	--	--	--

RS/6000 SP Models

Model	Proc. / #Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2000	SPEC int_ base 2000	SPEC Fp 2000	SPEC fp_ base 2000	LINPACK DP	LINPACK TPP	LINPACK HPC
#160 Thin	P2SC	160	32/128	0.0/-	--	--	--	--	311.9	528	--
#332 Thin	604e/1	332	32/32	0.2/-	--	--	--	--	115.7	273	--
#332 Wide	604e/1	332	32/32	0.2/-	--	--	--	--	115.7	273	--
#POWER3 High	P3/1	222	32/64	4.0/-	--	--	--	--	250	656	--
#POWER3 Thin	P3-II/1	375	32/64	8.0/-	260	248	382	330	409	1,236	--
#POWER3 Thin	P3-II/1	450	32/64	8.0/-	334	313	433	426	503	1,451	--
#POWER3 Thin	P3-II/2	450	32/64	8.0/-	--	--	--	--	--	2,521	--
#POWER3 Thin	P3-II/4	450	32/64	8.0/-	--	--	--	--	--	4,396	--
#POWER3 Wide	P3-II/1	375	32/64	8.0/-	260	248	382	330	409	1,236	--
#POWER3 Wide	P3-II/1	450	32/64	8.0/-	334	313	433	426	503	1,451	--
#POWER3 Wide	P3-II/2	450	32/64	8.0/-	--	--	--	--	--	2,521	--
#POWER3 Wide	P3-II/4	450	32/64	8.0/-	--	--	--	--	--	4,396	--
#POWER3 High	P3-II/1	375	32/64	8.0/-	252	229	337	322	424	1,208	--

Section 2 - AIX Multiuser Performance (rPerf, SPEC CPU2006)

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2006	SPEC int_ rate_ base 2006	SPEC fp_ rate 2006	SPEC fp_ rate_ base 2006
JS12	P6/2	3800	64/64	16/-	14.71	--	--	--	--
JS22	P6/4	4000	64/64	16/-	30.26	84.7	77.8	75.6	67.8
520	P6/1	4200	64/64	8/-	8.39	--	--	--	--
520	P6/2	4200	64/64	8/-	15.95	--	--	--	--
520	P6/4	4200	64/64	16/-	31.48	90.6	82.3	80.8	71.4
550	P6/2	3500	64/64	8/32	15.85	--	--	--	--
550	P6/4	3500	64/64	16/64	31.27	--	--	--	--
550	P6/6	3500	64/64	24/96	45.04	--	--	--	--
550	P6/8	3500	64/64	32/128	58.80	179	152	154	135
550	P6/2	4200	64/64	8/32	18.38	--	--	--	--
550	P6/4	4200	64/64	16/64	36.28	--	--	--	--
550	P6/6	4200	64/64	24/96	52.24	--	--	--	--
550	P6/8	4200	64/64	32/128	68.20	212	179	178	156
570	P6/2	3500	64/64	8/32	15.85	--	--	--	--
570	P6/4	3500	64/64	16/64	31.69	--	--	--	--
570	P6/8	3500	64/64	32/128	58.95	--	--	--	--
570	P6/12	3500	64/64	48/192	83.35	--	--	--	--
570	P6/16	3500	64/64	64/256	105.75	--	--	--	--
570	P6/2	4200	64/64	8/32	18.38	--	--	--	--
570	P6/4	4200	64/64	16/64	36.76	--	--	--	--
570	P6/8	4200	64/64	32/128	68.38	--	--	--	--
570	P6/12	4200	64/64	48/192	96.68	--	--	--	--
570	P6/16	4200	64/64	64/256	122.67	--	--	--	--
570	P6/2	4700	64/64	8/32	20.13	60.9	53.2	58.0	51.5
570	P6/4	4700	64/64	16/64	40.26	122	106	115	102
570	P6/8	4700	64/64	32/128	74.89	240	206	213	189
570	P6/12	4700	64/64	48/192	105.89	--	--	--	--
570	P6/16	4700	64/64	64/256	134.35	478	410	426	379
575	P6/32	4700	64/64	128/512	--	934	812	839	730
595	P6/8	4200	64/64	32/128	75.58	--	--	--	--
595	P6/16	4200	64/64	64/256	142.90	--	--	--	--
595	P6/32	4200	64/64	128/512	266.51	--	--	--	--
595	P6/48	4200	64/64	192/768	373.60	--	--	--	--
595	P6/64	4200	64/64	256/1024	479.89	1650	1420	--	--
595	P6/8	5000	64/64	32/128	87.10	--	--	--	--
595	P6/16	5000	64/64	64/256	164.67	--	--	--	--
595	P6/32	5000	64/64	128/512	307.12	--	--	--	--
595	P6/48	5000	64/64	192/768	430.53	--	--	--	--
595	P6/64	5000	64/64	256/1024	553.01	2083	1822	2108	1822

Section 2a - AIX Multiuser Performance (rPerf, SPEC CPU2000, SPECweb99)

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
JS20	PPC970/1	1600	64/32	0.5/-	1.53	--	--	--	--	--
JS20	PPC970/2	1600	64/32	1.0/-	2.65	--	--	--	--	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
JS20	PPC970/1	2200	64/32	0.5/-	1.95	--	--	--	--	--
JS20	PPC970/2	2200	64/32	1.0/-	3.40	21.5	20.2	20.0	19.2	--
JS21	PPC970+/2	2700	64/32	2.0/-	5.31	38.5	36.6	43.9	40.9	--
JS21	PPC970+/4	2500	64/32	4.0/-	8.72	67.5	64.2	58.8	56.1	--
JS21	PPC970+/4	2300	64/32	4.0/-	8.15	--	--	--	--	--
IS-185	PPC970+/2	2500	64/32	2.0/-	--	30.9	29.5	24.7	23.5	--
#IS-265	P3-II/2	450	32/64	4.0/-	--	7.30	6.84	8.19	8.1	--
#IS-275	P4+/2	1450	64/32	1.5/8	--	20.0	18.0	19.9	19.6	--
#IS-285	P5+/2	1900	64/32	1.9/36	--	39.6	38.8	67.6	65.4	--
IS-285	P5+/2	2100	64/32	1.9/36	--	45.0	43.9	72.9	70.0	--
#43P-150	604e	250	32/32	1.0/-	0.18	--	--	--	--	--
#43P-150	604e	375	32/32	1.0/-	0.26	--	--	--	--	--
#44P-170	P3-II	333	32/64	1.0/-	0.58	--	--	--	--	--
#44P-170	P3-II	400	32/64	4.0/-	0.73	--	--	--	--	460
#44P-170	P3-II	450	32/64	8.0/-	0.79	--	--	--	--	1,025
#44P-270	P3-II/1	375	32/64	4.0/-	1.00	--	--	--	--	--
#44P-270	P3-II/2	375	32/64	4.0/-	1.92	6.0	5.5	7.6	6.6	--
#44P-270	P3-II/3	375	32/64	4.0/-	2.55	--	--	--	--	--
#44P-270	P3-II/4	375	32/64	4.0/-	3.47	11.7	10.7	11.9	10.6	1,359
#44P-270	P3-II/2	375	32/64	8.0/-	1.99	6.2	5.6	8.0	7.0	--
#44P-270	P3-II/4	375	32/64	8.0/-	3.59	12.4	11.2	12.8	11.5	2,175
#44P-270	P3-II/2	450	32/64	8.0/-	2.27	7.7	7.2	8.99	8.91	--
#44P-270	P3-II/4	450	32/64	8.0/-	4.01	15.2	14.2	14.1	14.0	3,497
#B50	604	375	32/32	1.0/-	0.26	--	--	--	--	--
#p5-185	PPC970+/1	2500	64/32	1.0/-	2.48	--	--	--	--	--
#p5-185	PPC970+/2	2500	64/32	2.0/-	4.34	30.9	29.5	24.7	23.5	--
#p5-505	P5/2	1500	64/32	1.9/36	9.13	--	--	--	--	--
#p5-505	P5/1	1650	64/32	1.9/0	3.51	--	--	--	--	--
#p5-505	P5/2	1650	64/32	1.9/36	9.86	34.1	33.5	59.4	57.0	--
p5-505	P5+/1	1900	64/32	1.9/0	4.10	--	--	--	--	--
p5-505	P5+/2	1900	64/32	1.9/36	11.49	--	--	--	--	--
p5-505	P5+/2	2100	64/32	1.9/36	12.46	44.6	43.4	73.4	71.6	--
p5-505Q	P5+/4	1650	64/32	1.9/72	20.25	70.0	68.6	100	97.2	--
#p640	P3-II/1	375	32/64	4.0/-	1.00	--	--	--	--	--
#p640	P3-II/2	375	32/64	4.0/-	1.92	6.0	5.5	7.6	6.6	--
#p640	P3-II/3	375	32/64	4.0/-	2.55	--	--	--	--	--
#p640	P3-II/4	375	32/64	4.0/-	3.47	11.7	10.7	11.9	10.6	--
#p640	P3-II/2	375	32/64	8.0/-	1.99	6.2	5.6	8.0	7.0	--
#p640	P3-II/4	375	32/64	8.0/-	3.59	12.4	11.2	12.8	11.5	2,175
#p640	P3-II/2	450	32/64	8.0/-	2.27	7.7	7.2	8.99	8.91	--
#p640	P3-II/4	450	32/64	8.0/-	4.01	15.2	14.2	14.1	14.0	3,569
#p610-6E1	P3-II/1	333	32/64	4.0/-	0.92	--	--	--	--	--
#p610-6E1	P3-II/2	333	32/64	4.0/-	1.77	5.57	5.21	7.1	7.04	--
#p610-6E1	P3-II/1	375	32/64	4.0/-	1.00	--	--	--	--	--
#p610-6E1	P3-II/2	375	32/64	4.0/-	1.92	6.34	5.95	7.82	7.74	--
#p610-6E1	P3-II/1	450	32/64	8.0/-	1.19	--	--	--	--	--
#p610-6E1	P3-II/2	450	32/64	8.0/-	2.27	7.7	7.2	8.99	8.91	--
#p610-6C1	P3-II/1	333	32/64	4.0/-	0.92	--	--	--	--	--
#p610-6C1	P3-II/2	333	32/64	4.0/-	1.77	5.57	5.21	7.1	7.04	--
#p610-6C1	P3-II/1	375	32/64	4.0/-	1.00	--	--	--	--	--
#p610-6C1	P3-II/2	375	32/64	4.0/-	1.92	6.34	5.95	7.82	7.74	--
#p610-6C1	P3-II/1	450	32/64	8.0/-	1.19	--	--	--	--	--
#p610-6C1	P3-II/2	450	32/64	8.0/-	2.27	7.7	7.2	8.99	8.91	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
#p615-6C3	P4+/1	1200	64/32	1.5/8	2.50	--	--	--	--	--
#p615-6C3	P4+/2	1200	64/32	1.5/8	4.00	16.9	15.2	18.0	17.5	--
#p615-6E3	P4+/1	1200	64/32	1.5/8	2.50	--	--	--	--	--
#p615-6E3	P4+/2	1200	64/32	1.5/8	4.00	16.9	15.2	18.0	17.5	--
#p615-6C3	P4+/2	1450	64/32	1.5/8	4.41	--	--	--	--	--
#p615-6E3	P4+/2	1450	64/32	1.5/8	4.41	--	--	--	--	--
#p5-510	P5/1	1500	64/32	1.9/0	3.25	--	--	--	--	--
#p5-510	P5/2	1500	64/32	1.9/36	9.13	--	--	--	--	--
#p5-510	P5/1	1650	64/32	1.9/36	5.24	--	--	--	--	--
#p5-510	P5/2	1650	64/32	1.9/36	9.86	33.0	31.6	43.2	41.5	--
#p5-510	P5+/1	1900	64/32	1.9/36	6.11	--	--	--	--	--
#p5-510	P5+/2	1900	64/32	1.9/36	11.49	39.9	39.4	67.1	65.9	--
p5-510	P5+/1	2100	64/32	1.9/36	6.63	--	--	--	--	--
p5-510	P5+/2	2100	64/32	1.9/36	12.46	44.6	43.4	73.4	71.6	--
#p5-510Q	P5+/4	1500	64/32	1.9/72	18.75	63.0	61.4	95.5	89.8	--
p5-510Q	P5+/4	1650	64/32	1.9/72	20.25	70.0	68.6	100	97.2	--
#p5-520	P5/1	1500	64/32	1.9/0	3.25	--	--	--	--	--
#p5-520	P5/2	1500	64/32	1.9/36	9.13	--	--	40.0	38.7	--
#p5-520	P5/2	1650	64/32	1.9/36	9.86	32.9	30.3	43.0	41.5	--
#p5-520	P5+/1	1650	64/32	1.9/0	3.62	--	--	--	--	--
#p5-520	P5+/2	1650	64/32	1.9/36	10.15	34.8	34.4	61.5	59.0	--
#p5-520	P5+/2	1900	64/32	1.9/36	11.16	39.6	38.9	67.6	65.4	--
p5-520	P5+/1	2100	64/32	1.9/36	6.63	--	--	--	--	--
p5-520	P5+/2	2100	64/32	1.9/36	12.46	44.6	43.4	73.4	71.6	--
#p5-520Q	P5+/4	1500	64/32	1.9/72	18.75	63.0	61.4	95.5	89.8	--
p5-520Q	P5+/4	1650	64/32	1.9/72	20.25	70.0	68.6	100	97.2	--
#p620-6F0	RS64 III/1	450	128/128	2.0/-	0.93	--	--	--	--	--
#p620-6F0	RS64 III/2	450	128/128	4.0/-	2.02	--	--	--	--	--
#p620-6F0	RS64 III/4	450	128/128	4.0/-	3.55	--	--	--	--	--
#p620-6F0	RS64 IV/1	600	128/128	2.0/-	1.26	--	--	--	--	--
#p620-6F0	RS64 IV/2	600	128/128	4.0/-	2.69	--	--	--	--	--
#p620-6F0	RS64 IV/4	600	128/128	4.0/-	4.57	15.0	14.1	11.1	10.9	3,280
#p620-6F0	RS64 IV/1	750	128/128	8.0/-	1.91	--	--	--	--	--
#p620-6F0	RS64 IV/2	750	128/128	8.0/-	3.49	--	--	--	--	--
#p620-6F0	RS64 IV/4	750	128/128	8.0/-	5.85	20.5	19.3	15.6	15.2	5,440
#p620-6F1	RS64 III/1	450	128/128	2.0/-	0.93	--	--	--	--	--
#p620-6F1	RS64 III/2	450	128/128	4.0/-	2.02	--	--	--	--	--
#p620-6F1	RS64 III/4	450	128/128	4.0/-	3.55	--	--	--	--	--
#p620-6F1	RS64 IV/1	600	128/128	2.0/-	1.26	--	--	--	--	--
#p620-6F1	RS64 IV/2	600	128/128	4.0/-	2.69	--	--	--	--	--
#p620-6F1	RS64 IV/4	600	128/128	4.0/-	4.57	15.0	14.1	11.1	10.9	3,280
#p620-6F1	RS64 IV/6	668	128/128	8.0/-	7.46	26.5	24.9	17.3	16.9	4,654
#p620-6F1	RS64 IV/1	750	128/128	8.0/-	1.91	--	--	--	--	--
#p620-6F1	RS64 IV/2	750	128/128	8.0/-	3.49	--	--	--	--	--
#p620-6F1	RS64 IV/4	750	128/128	8.0/-	5.85	20.5	19.3	15.6	15.2	5,440
#p620-6F1	RS64 IV/6	750	128/128	8.0/-	8.23	--	--	--	--	--
#p630-6C4	P4/1	1000	64/32	1.44/8	1.72	--	--	--	--	--
#p630-6C4	P4/2 (1 2-w)	1000	64/32	1.44/8	3.68	--	--	--	--	--
#p630-6C4	P4/2 (2 1-w)	1000	64/32	2.88/16	4.46	--	--	--	--	--
#p630-6C4	P4/4	1000	64/32	2.88/16	7.12	--	--	--	--	--
#p630-6E4	P4/1	1000	64/32	1.44/8	1.72	--	--	--	--	--
#p630-6E4	P4/2 (1 2-w)	1000	64/32	1.44/8	3.68	--	--	--	--	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
#p630-6E4	P4/2 (2 1-w)	1000	64/32	2.88/16	4.46	--	--	--	--	--
#p630-6E4	P4/4	1000	64/32	2.88/16	7.12	--	--	--	--	--
#p630-6C4	P4+/1	1200	64/32	1.5/8	2.50	--	--	--	--	--
#p630-6C4	P4+/2 (1 2-w)	1200	64/32	1.5/8	4.00	--	--	--	--	--
#p630-6C4	P4+/2 (2 1-w)	1200	64/32	3.0/16	5.13	--	--	--	--	--
#p630-6C4	P4+/4	1200	64/32	3.0/16	8.05	31.4	30.4	35.1	34.2	--
#p630-6E4	P4+/1	1200	64/32	1.5/8	2.50	--	--	--	--	--
#p630-6E4	P4+/2 (1 2-w)	1200	64/32	1.5/8	4.00	--	--	--	--	--
#p630-6E4	P4+/2 (2 1-w)	1200	64/32	3.0/16	5.13	--	--	--	--	--
#p630-6E4	P4+/4	1200	64/32	3.0/16	8.05	31.4	30.4	35.1	34.2	--
#p630-6C4	P4+/1	1450	64/32	1.5/8	2.94	--	--	--	--	--
#p630-6C4	P4+/2 (1 2-w)	1450	64/32	1.5/8	4.41	--	--	--	--	--
#p630-6C4	P4+/2 (2 1-w)	1450	64/32	3.0/16	6.07	--	--	--	--	--
#p630-6C4	P4+/4	1450	64/32	3.0/16	8.69	37.0	35.8	38.8	38.1	6,895
#p630-6E4	P4+/1	1450	64/32	1.5/8	2.94	--	--	--	--	--
#p630-6E4	P4+/2 (1 2-w)	1450	64/32	1.5/8	4.41	--	--	--	--	--
#p630-6E4	P4+/2 (2 1-w)	1450	64/32	3.0/16	6.07	--	--	--	--	--
#p630-6E4	P4+/4	1450	64/32	3.0/16	8.69	37.0	35.8	38.8	38.1	6,895
#p5-550	P5/1	1500	64/32	1.9/0	3.25	--	--	--	--	--
#p5-550	P5/2	1500	64/32	1.9/36	9.13	--	--	--	--	--
#p5-550	P5/4	1500	64/32	3.8/72	18.20	--	--	80.6	77.4	--
#p5-550	P5/2	1650	64/32	1.9/36	9.86	--	--	--	--	--
#p5-550	P5/4	1650	64/32	3.8/72	19.66	65.5	60.4	84.8	82.1	--
#p5-550	P5+/2	1650	64/32	1.9/36	10.15	--	--	--	--	--
#p5-550	P5+/4	1650	64/32	3.8/72	20.25	69.0	68.1	119	117	--
p5-550	P5+/2	1900	64/32	1.9/36	11.16	--	--	--	--	--
p5-550	P5+/4	1900	64/32	3.8/72	22.26	78.5	77.1	133	129	--
p5-550	P5+/2	2100	64/32	1.9/36	12.46	--	--	--	--	--
p5-550	P5+/4	2100	64/32	3.8/72	24.86	90.0	87.5	149	139	--
#p5-550Q	P5+/4	1500	64/32	3.8/72	18.20	--	--	--	--	--
#p5-550Q	P5+/8	1500	64/32	7.6/144	34.46	124	122	178	174	--
p5-550Q	P5+/4	1650	64/32	3.8/72	20.25	--	--	--	--	--
p5-550Q	P5+/8	1650	64/32	7.6/144	38.34	140	137	202	189	--
#p650	P4+/2	1200	64/32	1.5/8	4.00	--	--	--	--	--
#p650	P4+/4	1200	64/32	3.0/16	8.05	--	--	--	--	--
#p650	P4+/6	1200	64/32	4.5/24	11.77	--	--	--	--	--
#p650	P4+/8	1200	64/32	6.0/32	15.49	--	--	--	--	--
#p650	P4+/2	1450	64/32	1.5/32	4.47	--	--	--	--	--
#p650	P4+/4	1450	64/32	3.0/64	9.12	--	--	--	--	--
#p650	P4+/6	1450	64/32	4.5/96	13.47	--	--	--	--	--
#p650	P4+/8	1450	64/32	6.0/128	18.67	75.5	72.7	82.4	79.7	12,400
#p5-560Q	P5+/4	1500	64/32	3.8/72	18.75	--	--	--	--	--
#p5-560Q	P5+/8	1500	64/32	7.6/144	35.50	--	--	--	--	--
#p5-560Q	P5+/16	1500	64/32	7.6/288	65.24	248	243	368	360	--
p5-560Q	P5+/4	1800	64/32	3.8/72	21.72	--	--	--	--	--
p5-560Q	P5+/8	1800	64/32	7.6/144	41.12	--	--	--	--	--
p5-560Q	P5+/16	1800	64/32	7.6/288	75.58	--	;;	--	--	--
#p5-570	P5/2	1500	64/32	1.9/36	9.13	--	--	--	--	--
#p5-570	P5/4	1500	64/32	3.8/72	18.20	--	--	--	--	--
#p5-570	P5/8	1500	64/32	7.6/144	34.46	--	--	--	--	--
#p5-570	P5/2	1650	64/32	1.9/36	9.86	--	--	--	--	--
#p5-570	P5/4	1650	64/32	3.8/72	19.66	--	--	--	--	--
#p5-570	P5/8	1650	64/32	7.6/144	37.22	--	--	--	--	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
#p5-570	P5/12	1650	64/32	11.4/216	53.43	--	--	--	--	--
#p5-570	P5/16	1650	64/32	15.2/288	68.40	--	--	--	--	--
#p5-570	P5/2	1900	64/32	1.9/36	11.16	--	--	--	--	--
#p5-570	P5/4	1900	64/32	3.8/72	22.26	76.3	74.4	130	125	--
#p5-570	P5/8	1900	64/32	7.6/144	42.14	147	141	249	241	--
#p5-570	P5/12	1900	64/32	11.4/216	60.50	--	--	--	--	--
#p5-570	P5/16	1900	64/32	15.2/288	77.45	294	273	460	438	--
p5-570	P5+/2	1900	64/32	1.9/36	12.27	--	--	--	--	--
p5-570	P5+/4	1900	64/32	3.8/72	24.48	--	--	--	--	--
p5-570	P5+/8	1900	64/32	7.6/144	46.36	--	--	--	--	--
p5-570	P5+/12	1900	64/32	11.4/216	66.55	--	--	--	--	--
p5-570	P5+/16	1900	64/32	15.2/288	85.20	--	--	--	--	--
p5-570	P5+2	2200	64/32	1.9/36	13.83	--	--	--	--	--
p5-570	P5+/4	2200	64/32	3.8/72	27.58	--	--	--	--	--
p5-570	P5+/8	2200	64/32	7.6/144	52.21	--	--	--	--	--
p5-570	P5+/12	2200	64/32	11.4/216	74.95	--	--	--	--	--
p5-570	P5+/16	2200	64/32	15.2/288	95.96	--	--	--	--	--
#p5-575	P5/16	1500	64/32	15.2/288	--	238	230	385	359	--
#p5-575	P5/8	1900	64/32	15.2/288	--	167	159	282	266	--
p5-575	P5+/16	1900	64/32	15.2/288	--	314	310	571	541	--
p5-575	P5+/8	2200	64/32	15.2/288	--	200	196	382	355	--
#p655	P4/8	1100	64/32	5.7/128	--	56.9	54.5	68.1	65.7	--
#p655	P4/4	1300	64/32	5.7/128	--	38.3	37.1	51.7	48.7	--
#p655	P4+/8	1500	64/32	6.0/128	--	77.5	74.5	92.8	89.4	--
#p655	P4+/4	1700	64/32	6.0/128	--	52.5	47.7	70.1	66.5	10,291
#p655	P4+/4-LPAR	1700	64/32	6.0/128	--	52.4	47.6	70.2	66.6	--
#p655	P4+/8	1700	64/32	6.0/128	--	92.0	83.5	111	103	--
#p660-6H0	RS64 III/1	450	128/128	2.0/-	0.93	--	--	--	--	--
#p660-6H0	RS64 III/2	450	128/128	4.0/-	2.02	--	--	--	--	--
#p660-6H0	RS64 III/4	450	128/128	4.0/-	3.55	--	--	--	--	--
#p660-6H0	RS64 IV/1	600	128/128	2.0/-	1.26	--	--	--	--	--
#p660-6H0	RS64 IV/2	600	128/128	4.0/-	2.69	--	--	--	--	--
#p660-6H0	RS64 IV/4	600	128/128	4.0/-	4.57	15.0	14.1	11.1	10.9	3,279
#p660-6H0	RS64 IV/1	750	128/128	8.0/-	1.91	--	--	--	--	--
#p660-6H0	RS64 IV/2	750	128/128	8.0/-	3.49	--	--	--	--	--
#p660-6H0	RS64 IV/4	750	128/128	8.0/-	5.85	20.5	19.3	15.6	15.2	5,480
#p660-6H1	RS64 III/1	450	128/128	2.0/-	0.93	--	--	--	--	--
#p660-6H1	RS64 III/2	450	128/128	4.0/-	2.02	--	--	--	--	--
#p660-6H1	RS64 III/4	450	128/128	4.0/-	3.55	--	--	--	--	--
#p660-6H1	RS64 IV/1	600	128/128	2.0/-	1.26	--	--	--	--	--
#p660-6H1	RS64 IV/2	600	128/128	4.0/-	2.69	--	--	--	--	--
#p660-6H1	RS64 IV/4	600	128/128	4.0/-	4.57	15.0	14.1	11.1	10.9	3,279
#p660-6H1	RS64 IV/6	668	128/128	8.0/-	7.46	26.5	24.9	17.3	16.9	4,522
#p660-6H1	RS64 IV/1	750	128/128	8.0/-	1.91	--	--	--	--	--
#p660-6H1	RS64 IV/2	750	128/128	8.0/-	3.49	--	--	--	--	--
#p660-6H1	RS64 IV/4	750	128/128	8.0/-	5.85	20.5	19.3	15.6	15.2	5,480
#p660-6H1	RS64 IV/6	750	128/128	8.0/-	8.23	--	--	--	--	--
#M80	RS64 III/2	500	128/128	4.0/-	2.49	--	--	--	--	--
#M80	RS64 III/4	500	128/128	4.0/-	4.42	--	--	--	--	--
#M80	RS64 III/6	500	128/128	4.0/-	6.49	--	--	--	--	--
#M80	RS64 III/8	500	128/128	4.0/-	8.53	25.1	24.0	21.1	20.6	5,509
#M80	RS64 IV/2	750	128/128	8.0/-	3.71	--	--	--	--	--
#M80	RS64 IV/4	750	128/128	8.0/-	6.68	20.3	18.7	16.5	15.7	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
#M80	RS64 IV/6	750	128/128	8.0/-	10.14	--	--	--	--	--
#M80	RS64 IV/8	750	128/128	8.0/-	13.28	38.5	36.9	30.0	28.8	8,145
#p660-6M1	RS64 III/2	500	128/128	4.0/-	2.49	--	--	--	--	--
#p660-6M1	RS64 III/4	500	128/128	4.0/-	4.42	--	--	--	--	--
#p660-6M1	RS64 IV/2	750	128/128	8.0/-	3.71	--	--	--	--	--
#p660-6M1	RS64 IV/4	750	128/128	8.0/-	6.68	20.3	18.7	16.5	15.7	--
#p660-6M1	RS64 IV/6	750	128/128	8.0/-	10.14	--	--	--	--	--
#p660-6M1	RS64 IV/8	750	128/128	8.0/-	13.28	38.5	36.9	30.0	28.8	10,000
#p670	P4/4	1100	64/32	5.7/128	10.18	--	--	--	--	--
#p670	P4/8	1100	64/32	5.7/128	18.02	--	--	--	--	--
#p670	P4/16	1100	64/32	11.5/256	34.66	--	--	--	--	--
#p670	P4+/4	1500	64/32	6.0/128	13.66	--	--	--	--	--
#p670	P4+/8	1500	64/32	6.0/128	24.18	--	--	--	--	--
#p670	P4+/16	1500	64/32	12.0/256	46.79	156	149	187	181	--
#p680	RS64 III/6	450	128/128	8.0/-	6.14	--	--	--	--	--
#p680	RS64 III/12	450	128/128	8.0/-	11.66	--	--	--	--	--
#p680	RS64 III/18	450	128/128	8.0/-	16.29	--	--	--	--	--
#p680	RS64 III/24	450	128/128	8.0/-	20.27	--	--	--	--	--
#p680	RS64 IV/4	600	128/128	16.0/-	5.60	--	--	--	--	--
#p680	RS64 IV/6	600	128/128	16.0/-	8.23	--	--	--	--	--
#p680	RS64 IV/12	600	128/128	16.0/-	15.63	--	--	--	--	9,106
#p680	RS64 IV/18	600	128/128	16.0/-	21.91	--	--	--	--	--
#p680	RS64 IV/24	600	128/128	16.0/-	27.65	--	--	--	--	--
#p5-590	P5/8	1650	64/32	7.6/144	41.68	--	--	--	--	--
#p5-590	P5/16	1650	64/32	15.2/288	80.86	--	--	--	--	--
#p5-590	P5/24	1650	64/32	22.8/432	116.29	--	--	--	--	--
#p5-590	P5/32	1650	64/32	30.4/576	151.72	529	503	870	824	--
p5-590	P5+/8	2100	64/32	7.6/144	55.74	--	--	--	--	--
p5-590	P5+/16	2100	64/32	15.2/288	108.13	--	--	--	--	--
p5-590	P5+/24	2100	64/32	22.8/432	155.51	--	--	--	--	--
p5-590	P5+/32	2100	64/32	30.4/576	202.88	--	--	--	--	--
#p690	P4/8	1100	64/32	5.7/128	18.02	--	--	--	--	--
#p690	P4/16	1100	64/32	11.5/256	34.66	--	--	--	--	--
#p690	P4/24	1100	64/32	17.2/384	48.11	--	--	--	--	--
#p690	P4/32	1100	64/32	23.0/512	60.66	--	--	--	--	--
#p690	P4+/8	1500	64/32	6.0/128	24.18	--	--	--	--	--
#p690	P4+/16	1500	64/32	12.0/256	46.79	--	--	--	--	--
#p690	P4+/24	1500	64/32	18.0/384	64.99	--	--	--	--	--
#p690	P4+/32	1500	64/32	24.0/512	81.95	--	--	--	--	--
#p690	P4/8	1300	64/32	5.7/128	21.20	--	--	--	--	--
#p690	P4/16	1300	64/32	11.5/256	40.92	131	125	145	140	--
#p690	P4/24	1300	64/32	17.2/384	56.46	--	--	--	--	--
#p690	P4/32	1300	64/32	23.0/512	71.44	249	232	260	251	--
#p690 HPC	P4/8	1300	64/32	11.5/256	22.71	--	--	--	--	--
#p690 HPC	P4/16	1300	64/32	23.0/512	42.09	149	144	187	179	21,000
#p690	P4+/8	1700	64/32	6.0/128	27.11	--	--	--	--	--
#p690	P4+/16	1700	64/32	12.0/256	52.45	--	--	--	--	--
#p690	P4+/24	1700	64/32	18.0/384	72.86	--	--	--	--	--
#p690	P4+/32	1700	64/32	24.0/512	92.19	339	322	372	358	--
#p690	P4+/8	1900	64/32	6.0/128	30.63	--	--	--	--	--
#p690	P4+/16	1900	64/32	12.0/256	59.26	--	--	--	--	--
#p690	P4+/24	1900	64/32	18.0/384	82.32	--	--	--	--	--
#p690	P4+/32	1900	64/32	24.0/512	104.17	--	--	--	--	--

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
#p5-595	P5/16	1650	64/32	15.2/288	80.86	--	--	--	--	--
#p5-595	P5/24	1650	64/32	22.8/432	116.29	--	--	--	--	--
#p5-595	P5/32	1650	64/32	30.4/576	151.72	--	--	--	--	--
#p5-595	P5/40	1650	64/32	38.0/720	182.07	--	--	--	--	--
#p5-595	P5/48	1650	64/32	45.6/864	212.41	--	--	--	--	--
#p5-595	P5/56	1650	64/32	53.2/1008	242.76	--	--	--	--	--
#p5-595	P5/64	1650	64/32	60.8/1152	273.10	--	--	--	--	--
#p5-595	P5/16	1900	64/32	15.2/288	90.67	--	--	--	--	--
#p5-595	P5/24	1900	64/32	22.8/432	130.39	--	--	--	--	--
#p5-595	P5/32	1900	64/32	30.4/576	170.11	--	--	--	--	--
#p5-595	P5/40	1900	64/32	38.0/720	204.14	--	--	--	--	--
#p5-595	P5/48	1900	64/32	45.6/864	238.16	--	--	--	--	--
#p5-595	P5/56	1900	64/32	53.2/1008	272.18	--	--	--	--	--
#p5-595	P5/64	1900	64/32	60.8/1152	306.21	1,147	1,063	1,752	1,684	--
p5-595	P5+/16	2100	64/32	15.2/288	108.13	--	--	--	--	--
p5-595	P5+/24	2100	64/32	22.8/432	155.51	--	--	--	--	--
p5-595	P5+/32	2100	64/32	30.4/576	202.88	--	--	--	--	--
p5-595	P5+/40	2100	64/32	38.0/720	243.46	--	--	--	--	--
p5-595	P5+/48	2100	64/32	45.6/864	284.04	--	--	--	--	--
p5-595	P5+/56	2100	64/32	53.2/1008	324.61	--	--	--	--	--
p5-595	P5+/64	2100	64/32	60.8/1152	365.19	--	--	--	--	--
p5-595	P5+/16	2300	64/32	15.2/288	116.53	--	--	--	--	--
p5-595	P5+/24	2300	64/32	22.8/432	167.58	--	--	--	--	--
p5-595	P5+/32	2300	64/32	30.4/576	218.64	--	--	--	--	--
p5-595	P5+/40	2300	64/32	38.0/720	262.37	--	--	--	--	--
p5-595	P5+/48	2300	64/32	45.6/864	306.10	--	--	--	--	--
p5-595	P5+/56	2300	64/32	53.2/1008	349.83	--	--	--	--	--
p5-595	P5+/64	2300	64/32	60.8/1152	393.55	1,513	1,488	2,406	2,215	--

RS/6000 SP Models

Model	Proc. / # Cores	# Nodes	MHz	L1 Cache (KB)	L2 Cache (MB)	rPerf	SPEC int_ rate 2000	SPEC into rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	SPEC web99
#POWER3 Thin	P3-II/2	1	375	32/64	8.0	1.99	--	--	--	--	--
#POWER3 Thin	P3-II/4	1	375	32/64	8.0	2.64	--	--	--	--	--
#POWER3 Thin	P3-II/2	1	450	32/64	8.0	2.27	7.7	7.2	8.99	8.91	--
#POWER3 Thin	P3-II/4	1	450	32/64	8.0	2.95	15.2	14.2	14.1	14.0	--
#POWER3 Wide	P3-II/2	1	375	32/64	8.0	1.99	--	--	--	--	--
#POWER3 Wide	P3-II/4	1	375	32/64	8.0	3.59	--	--	--	--	--
#POWER3 Wide	P3-II/2	1	450	32/64	8.0	2.27	7.7	7.2	8.99	8.91	--
#POWER3 Wide	P3-II/4	1	450	32/64	8.0	4.01	15.2	14.2	14.1	14.0	--
#POWER3 High	P3-II/4	1	375	32/64	8.0	3.07	11.6	10.6	14.5	--	--
#POWER3 High	P3-II/8	1	375	32/64	8.0	6.03	23.1	21.0	28.0	27.0	--
#POWER3 High	P3-II/12	1	375	32/64	8.0	9.11	34.6	31.4	41.1	39.0	--
#POWER3 High	P3-II/16	1	375	32/64	8.0	12.01	46.0	41.7	51.7	49.7	--

Section 2b - System p5 and eServer p5 Multiuser Performance using AIX 5L V5.2

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf
#p5-505	P5/2	1500	64/32	1.9/36	7.02
#p5-505	P5/1	1650	64/32	1.9/0	2.70
#p5-505	P5/2	1650	64/32	1.9/36	7.58
p5-505	P5+/1	1900	64/32	1.9/0	3.15
p5-505	P5+/2	1900	64/32	1.9/36	8.84
p5-505	P5+/2	2100	64/32	1.9/36	9.59
p5-505Q	P5+/4	1650	64/32	1.9/72	15.57
#p5-510	P5/1	1500	64/32	1.9/0	2.50
#p5-510	P5/2	1500	64/32	1.9/36	7.02
#p5-510	P5/1	1650	64/32	1.9/36	4.03
#p5-510	P5/2	1650	64/32	1.9/36	7.58
#p5-510	P5+/1	1900	64/32	1.9/36	4.70
#p5-510	P5+/2	1900	64/32	1.9/36	8.83
p5-510	P5+/1	2100	64/32	1.9/0	5.10
p5-510	P5+/2	2100	64/32	1.9/36	9.59
#p5-510Q	P5+/4	1500	64/32	1.9/72	14.42
p5-510Q	P5+/4	1650	64/32	1.9/72	15.57
#p5-520	P5/1	1500	64/32	1.9/0	2.50
#p5-520	P5/2	1500	64/32	1.9/36	7.02
#p5-520	P5/2	1650	64/32	1.9/36	7.58
#p5-520	P5+/1	1650	64/32	1.9/0	2.78
#p5-520	P5+/2	1650	64/32	1.9/36	7.80
#p5-520	P5+/2	1900	64/32	1.9/36	8.58
p5-520	P5+/1	2100	64/32	1.9/36	5.10
p5-520	P5+/2	2100	64/32	1.9/36	9.59
#p5-520Q	P5+/4	1500	64/32	1.9/72	14.42
p5-520Q	P5+/4	1650	64/32	1.9/72	15.57
#p5-550	P5/1	1500	64/32	1.9/0	2.50
#p5-550	P5/2	1500	64/32	1.9/36	7.02
#p5-550	P5/4	1500	64/32	3.8/72	14.00
#p5-550	P5/2	1650	64/32	1.9/36	7.58
#p5-550	P5/4	1650	64/32	3.8/72	15.12
#p5-550	P5+/2	1650	64/32	1.9/36	7.80
#p5-550	P5+/4	1650	64/32	3.8/72	15.57
p5-550	P5+/2	1900	64/32	1.9/36	8.58
p5-550	P5+/4	1900	64/32	3.8/72	17.12
p5-550	P5+/2	2100	64/32	1.9/36	9.59
p5-550	P5+/4	2100	64/32	3.8/72	19.12
#p5-550Q	P5+/4	1500	64/32	3.8/72	14.00
#p5-550Q	P5+/8	1500	64/32	7.6/144	26.50
p5-550Q	P5+/4	1650	64/32	3.8/72	15.57
p5-550Q	P5+/8	1650	64/32	7.6/144	29.49
p5-560Q	P5+/4	1500	64/32	3.8/72	14.42
p5-560Q	P5+/8	1500	64/32	7.6/144	27.30
p5-560Q	P5+/16	1500	64/32	15.2/288	50.18
p5-560Q	P5+/4	1800	64/32	3.8/72	16.71
p5-560Q	P5+/8	1800	64/32	7.6/144	31.63
p5-560Q	P5+/16	1800	64/32	15.2/288	58.14
#p5-570	P5/2	1500	64/32	1.9/36	7.02
#p5-570	P5/4	1500	64/32	3.8/72	14.00
#p5-570	P5/8	1500	64/32	7.6/144	26.50
#p5-570	P5/2	1650	64/32	1.9/36	7.58
#p5-570	P5/4	1650	64/32	3.8/72	15.12
#p5-570	P5/8	1650	64/32	7.6/144	28.63

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf
#p5-570	P5/12	1650	64/32	11.4/216	41.10
#p5-570	P5/16	1650	64/32	15.2/288	52.61
#p5-570	P5/2	1900	64/32	1.9/36	8.58
#p5-570	P5/4	1900	64/32	3.8/72	17.12
#p5-570	P5/8	1900	64/32	7.6/144	32.41
#p5-570	P5/12	1900	64/32	11.4/216	46.53
#p5-570	P5/16	1900	64/32	15.2/288	59.57
p5-570	P5+/2	1900	64/32	1.9/36	9.43
p5-570	P5+/4	1900	64/32	3.8/72	18.83
p5-570	P5+/8	1900	64/32	7.6/144	35.66
p5-570	P5+/12	1900	64/32	11.4/216	51.19
p5-570	P5+/16	1900	64/32	15.2/288	65.53
p5-570	P5+/2	2200	64/32	1.9/36	10.63
p5-570	P5+/4	2200	64/32	3.8/72	21.21
p5-570	P5+/8	2200	64/32	7.6/144	40.16
p5-570	P5+/12	2200	64/32	11.4/216	57.65
p5-570	P5+/16	2200	64/32	15.2/288	73.81
#p5-590	P5/8	1650	64/32	7.6/144	32.06
#p5-590	P5/16	1650	64/32	15.2/288	62.20
#p5-590	P5/24	1650	64/32	22.8/432	89.46
#p5-590	P5/32	1650	64/32	30.4/576	116.71
p5-590	P5+/8	2100	64/32	7.6/144	42.87
p5-590	P5+/16	2100	64/32	15.2/288	83.18
p5-590	P5+/24	2100	64/32	22.8/432	119.62
p5-590	P5+/32	2100	64/32	30.4/576	156.06
#p5-595	P5/16	1650	64/32	15.2/288	62.20
#p5-595	P5/24	1650	64/32	22.8/432	89.46
#p5-595	P5/32	1650	64/32	30.4/576	116.71
#p5-595	P5/40	1650	64/32	38.0/720	140.05
#p5-595	P5/48	1650	64/32	45.6/864	163.39
#p5-595	P5/56	1650	64/32	53.2/1008	186.74
#p5-595	P5/64	1650	64/32	60.8/1152	210.08
#p5-595	P5/16	1900	64/32	15.2/288	69.74
#p5-595	P5/24	1900	64/32	22.8/432	100.30
#p5-595	P5/32	1900	64/32	30.4/576	130.86
#p5-595	P5/40	1900	64/32	38.0/720	157.03
#p5-595	P5/48	1900	64/32	45.6/864	183.20
#p5-595	P5/56	1900	64/32	53.2/1008	209.37
#p5-595	P5/64	1900	64/32	60.8/1152	235.54
p5-595	p5+/16	2100	64/32	15.2/288	83.18
p5-595	P5+/24	2100	64/32	22.8/432	119.62
p5-595	P5+/32	2100	64/32	30.4/576	156.06
p5-595	P5+/40	2100	64/32	38.0/720	187.28
p5-595	P5+/48	2100	64/32	45.6/864	218.49
p5-595	P5+/56	2100	64/32	53.2/1008	249.70
p5-595	P5+/64	2100	64/32	60.8/1152	280.92
p5-595	P5+/16	2300	64/32	15.2/288	89.64
p5-595	P5+/24	2300	64/32	22.8/432	128.91
p5-595	P5+/32	2300	64/32	30.4/576	168.19
p5-595	P5+/40	2300	64/32	38.0/720	201.82
p5-595	P5+/48	2300	64/32	45.6/864	235.46
p5-595	P5+/56	2300	64/32	53.2/1008	269.10
p5-595	P5+/64	2300	64/32	60.8/1152	302.73

Section 2c - AIX SPECweb99_SSL Performance

Model	Proc. / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	Encryption card	SPEC Web99
#p630-6C4	P4/4	1000	64/32	2.88/16	None	986
#p630-6E4	P4/4	1000	64/32	2.88/16	None	986
#p630-6C4	P4+/4	1450	64/32	3.0/16	None	1,988
#p630-6E4	P4+/4	1450	64/32	3.0/16	None	1,988
#p655	P4+/4	1700	64/32	6.0/128	None	3,699

Section 2d - AIX Capacity Upgrade on Demand Relative Performance Guidelines

Model	Processor / # Cores	MHz	rPerf
#p5-570	P5/4	1650	19.66
#p5-570	P5/6	1650	28.44
#p5-570	P5/8	1650	37.22
#p5-570	P5/10	1650	45.33
#p5-570	P5/12	1650	53.43
#p5-570	P5/14	1650	60.92
#p5-570	P5/16	1650	68.40
#p5-570	P5/4	1900	22.26
#p5-570	P5/6	1900	32.20
#p5-570	P5/8	1900	42.14
#p5-570	P5/10	1900	51.32
#p5-570	P5/12	1900	60.50
#p5-570	P5/14	1900	68.98
#p5-570	P5/16	1900	77.45
p5-570	P5+/4	1900	24.48
p5-570	P5+/6	1900	35.42
p5-570	P5+/8	1900	46.36
p5-570	P5+/10	1900	56.45
p5-570	P5+/12	1900	66.55
p5-570	P5+/14	1900	75.87
p5-570	P5+/16	1900	85.20
p5-570	P5+/4	2200	27.58
p5-570	P5+/6	2200	39.90
p5-570	P5+/8	2200	52.21
p5-570	P5+/10	2200	63.58
p5-570	P5+/12	2200	74.95
p5-570	P5+/14	2200	85.46
p5-570	P5+/16	2200	95.96
570	P6/4	3500	31.69
570	P6/6	3500	45.32
570	P6/8	3500	58.95
570	P6/10	3500	71.15
570	P6/12	3500	83.35
570	P6/14	3500	94.55
570	P6/16	3500	105.75
570	P6/4	4200	36.76
570	P6/6	4200	52.57
570	P6/8	4200	68.38
570	P6/10	4200	82.53
570	P6/12	4200	96.68
570	P6/14	4200	109.67

Model	Processor / # Cores	MHz	rPerf
570	P6/16	4200	122.67
570	P6/4	4700	40.26
570	P6/6	4700	57.58
570	P6/8	4700	74.89
570	P6/10	4700	90.39
570	P6/12	4700	105.89
570	P6/14	4700	120.12
570	P6/16	4700	134.35
#p670	P4/4	1100	10.18
#p670	P4/8	1100	18.02
#p670	P4/12	1100	26.34
#p670	P4/14	1100	30.50
#p670	P4/16	1100	34.66
#p670	P4+/4	1500	13.66
#p670	P4+/8	1500	24.18
#p670	P4+/12	1500	35.49
#p670	P4+/14	1500	41.14
#p670	P4+/16	1500	46.79
#p5-590	P5/8	1650	41.68
#p5-590	P5/10	1650	51.48
#p5-590	P5/12	1650	61.27
#p5-590	P5/14	1650	71.07
#p5-590	P5/16	1650	80.86
#p5-590	P5/18	1650	89.72
#p5-590	P5/20	1650	98.58
#p5-590	P5/22	1650	107.44
#p5-590	P5/24	1650	116.29
#p5-590	P5/26	1650	125.15
#p5-590	P5/28	1650	134.01
#p5-590	P5/30	1650	142.87
#p5-590	P5/32	1650	151.72
p5-590	P5+/8	2100	55.74
p5-590	P5+/10	2100	68.84
p5-590	P5+/12	2100	81.93
p5-590	P5+/14	2100	95.03
p5-590	P5+/16	2100	108.13
p5-590	P5+/18	2100	119.98
p5-590	P5+/20	2100	131.82
p5-590	P5+/22	2100	143.67
p5-590	P5+/24	2100	155.51
p5-590	P5+/26	2100	167.35
p5-590	P5+/28	2100	179.20
p5-590	P5+/30	2100	191.04
p5-590	P5+/32	2100	202.88
#p690	P4/8	1100	18.02
#p690	P4/12	1100	26.34
#p690	P4/14	1100	30.50
#p690	P4/16	1100	34.66
#p690	P4/18	1100	38.02
#p690	P4/20	1100	41.39
#p690	P4/22	1100	44.75

Model	Processor / # Cores	MHz	rPerf
#p690	P4/24	1100	48.11
#p690	P4/26	1100	51.25
#p690	P4/28	1100	54.39
#p690	P4/30	1100	57.52
#p690	P4/32	1100	60.66
#p690	P4/8	1300	21.20
#p690	P4/12	1300	31.06
#p690	P4/14	1300	35.99
#p690	P4/16	1300	40.92
#p690	P4/18	1300	44.81
#p690	P4/20	1300	48.69
#p690	P4/22	1300	52.58
#p690	P4/24	1300	56.46
#p690	P4/26	1300	60.21
#p690	P4/28	1300	63.95
#p690	P4/30	1300	67.70
#p690	P4/32	1300	71.44
#p690	P4+/8	1500	24.18
#p690	P4+/12	1500	35.49
#p690	P4+/14	1500	41.14
#p690	P4+/16	1500	46.79
#p690	P4+/18	1500	51.34
#p690	P4+/20	1500	55.89
#p690	P4+/22	1500	60.44
#p690	P4+/24	1500	64.99
#p690	P4+/26	1500	69.23
#p690	P4+/28	1500	73.47
#p690	P4+/30	1500	77.71
#p690	P4+/32	1500	81.95
#p690	P4+/8	1700	27.11
#p690	P4+/12	1700	39.78
#p690	P4+/14	1700	46.11
#p690	P4+/16	1700	52.45
#p690	P4+/18	1700	57.55
#p690	P4+/20	1700	62.65
#p690	P4+/22	1700	67.76
#p690	P4+/24	1700	72.86
#p690	P4+/26	1700	77.69
#p690	P4+/28	1700	82.52
#p690	P4+/30	1700	87.36
#p690	P4+/32	1700	92.19
#p690	P4+/8	1900	30.63
#p690	P4+/12	1900	44.95
#p690	P4+/14	1900	52.10
#p690	P4+/16	1900	59.26
#p690	P4+/18	1900	65.03
#p690	P4+/20	1900	70.79
#p690	P4+/22	1900	76.56
#p690	P4+/24	1900	82.32
#p690	P4+/26	1900	87.78
#p690	P4+/28	1900	93.25
#p690	P4+/30	1900	98.71
#p690	P4+/32	1900	104.17
#p5-595	P5/16	1650	80.86
#p5-595	P5/18	1650	89.72

Model	Processor / # Cores	MHz	rPerf
#p5-595	P5/20	1650	98.58
#p5-595	P5/22	1650	107.44
#p5-595	P5/24	1650	116.29
#p5-595	P5/26	1650	125.15
#p5-595	P5/28	1650	134.01
#p5-595	P5/30	1650	142.87
#p5-595	P5/32	1650	151.72
#p5-595	P5/34	1650	159.31
#p5-595	P5/36	1650	166.90
#p5-595	P5/38	1650	174.48
#p5-595	P5/40	1650	182.07
#p5-595	P5/42	1650	189.65
#p5-595	P5/44	1650	197.24
#p5-595	P5/46	1650	204.83
#p5-595	P5/48	1650	212.41
#p5-595	P5/50	1650	220.00
#p5-595	P5/52	1650	227.58
#p5-595	P5/54	1650	235.17
#p5-595	P5/56	1650	242.76
#p5-595	P5/58	1650	250.34
#p5-595	P5/60	1650	257.93
#p5-595	P5/62	1650	265.52
#p5-595	P5/64	1650	273.10
#p5-595	P5/16	1900	90.67
#p5-595	P5/18	1900	100.60
#p5-595	P5/20	1900	110.53
#p5-595	P5/22	1900	120.46
#p5-595	P5/24	1900	130.39
#p5-595	P5/26	1900	140.32
#p5-595	P5/28	1900	150.25
#p5-595	P5/30	1900	160.18
#p5-595	P5/32	1900	170.11
#p5-595	P5/34	1900	178.62
#p5-595	P5/36	1900	187.13
#p5-595	P5/38	1900	195.63
#p5-595	P5/40	1900	204.14
#p5-595	P5/42	1900	212.64
#p5-595	P5/44	1900	221.15
#p5-595	P5/46	1900	229.65
#p5-595	P5/48	1900	238.16
#p5-595	P5/50	1900	246.67
#p5-595	P5/52	1900	255.17
#p5-595	P5/54	1900	263.68
#p5-595	P5/56	1900	272.18
#p5-595	P5/58	1900	280.69
#p5-595	P5/60	1900	289.19
#p5-595	P5/62	1900	297.70
#p5-595	P5/64	1900	306.21
p5-595	P5+/16	2100	108.13
p5-595	P5+/18	2100	119.98
p5-595	P5+/20	2100	131.82
p5-595	P5+/22	2100	143.67
p5-595	P5+/24	2100	155.51
p5-595	P5+/26	2100	167.35
p5-595	P5+/28	2100	179.20
p5-595	P5+/30	2100	191.04

Model	Processor / # Cores	MHz	rPerf
p5-595	P5+/32	2100	202.88
p5-595	P5+/34	2100	213.03
p5-595	P5+/36	2100	223.17
p5-595	P5+/38	2100	233.32
p5-595	P5+/40	2100	243.46
p5-595	P5+/42	2100	253.61
p5-595	P5+/44	2100	263.75
p5-595	P5+/46	2100	273.90
p5-595	P5+/48	2100	284.04
p5-595	P5+/50	2100	294.18
p5-595	P5+/52	2100	304.33
p5-595	P5+/54	2100	314.47
p5-595	P5+/56	2100	324.61
p5-595	P5+/58	2100	334.76
p5-595	P5+/60	2100	344.90
p5-595	P5+/62	2100	355.05
p5-595	P5+/64	2100	365.19
p5-595	P5+/16	2300	116.53
p5-595	P5+/18	2300	129.29
p5-595	P5+/20	2300	142.06
p5-595	P5+/22	2300	154.82
p5-595	P5+/24	2300	167.58
p5-595	P5+/26	2300	180.35
p5-595	P5+/28	2300	193.11
p5-595	P5+/30	2300	205.88
p5-595	P5+/32	2300	218.64
p5-595	P5+/34	2300	229.57
p5-595	P5+/36	2300	240.51
p5-595	P5+/38	2300	251.44
p5-595	P5+/40	2300	262.37
p5-595	P5+/42	2300	273.30
p5-595	P5+/44	2300	284.24
p5-595	P5+/46	2300	295.17
p5-595	P5+/48	2300	306.10
p5-595	P5+/50	2300	317.03
p5-595	P5+/52	2300	327.97
p5-595	P5+/54	2300	338.90
p5-595	P5+/56	2300	349.83
p5-595	P5+/58	2300	360.76
p5-595	P5+/60	2300	371.69
p5-595	P5+/62	2300	382.62
p5-595	P5+/64	2300	393.55
595	P6/8	4200	75.58
595	P6/10	4200	92.41
595	P6/12	4200	109.24
595	P6/14	4200	126.07
595	P6/16	4200	142.90
595	P6/18	4200	158.35
595	P6/20	4200	173.80
595	P6/22	4200	189.25
595	P6/24	4200	204.70
595	P6/26	4200	220.15
595	P6/28	4200	235.60
595	P6/30	4200	251.06
595	P6/32	4200	266.51
595	P6/34	4200	279.89
595	P6/36	4200	293.28

Model	Processor / # Cores	MHz	rPerf
595	P6/38	4200	306.67
595	P6/40	4200	320.05
595	P6/42	4200	333.44
595	P6/44	4200	346.83
595	P6/46	4200	360.21
595	P6/48	4200	373.60
595	P6/50	4200	386.89
595	P6/52	4200	400.17
595	P6/54	4200	413.46
595	P6/56	4200	426.74
595	P6/58	4200	440.03
595	P6/60	4200	453.32
595	P6/62	4200	466.60
595	P6/64	4200	479.89
595	P6/8	5000	87.10
595	P6/10	5000	106.49
595	P6/12	5000	125.88
595	P6/14	5000	145.28
595	P6/16	5000	164.67
595	P6/18	5000	182.48
595	P6/20	5000	200.28
595	P6/22	5000	218.09
595	P6/24	5000	235.90
595	P6/26	5000	253.70
595	P6/28	5000	271.51
595	P6/30	5000	289.31
595	P6/32	5000	307.12
595	P6/34	5000	322.54
595	P6/36	5000	337.97
595	P6/38	5000	353.40
595	P6/40	5000	368.82
595	P6/42	5000	384.25
595	P6/44	5000	399.68
595	P6/46	5000	415.10
595	P6/48	5000	430.53
595	P6/50	5000	445.84
595	P6/52	5000	461.15
595	P6/54	5000	476.46
595	P6/56	5000	491.77
595	P6/58	5000	507.08
595	P6/60	5000	522.39
595	P6/62	5000	537.70
595	P6/64	5000	553.01

Section 2e - CPW Published Results

Model	Processor / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	CPW
JS12	P6/2	3800	64/64	16/-	7100
JS22	P6/4	4000	64/64	16/-	13800
520	P6/1	4200	64/64	8/-	4300
520	P6/2	4200	64/64	8/-	8300
550	P6/4	4200	64/64	16/64	18000
570	P6/2	3500	64/64	8/32	8150
570	P6/4	3500	64/64	16/64	16100

570	P6/8	3500	64/64	32/128	30100
570	P6/16	3500	64/64	64/256	57600
570	P6/2	4200	64/64	8/32	9650
570	P6/4	4200	64/64	16/64	19200
570	P6/8	4200	64/64	32/128	35500
570	P6/16	4200	64/64	64/256	68600
570	P6/2	4700	64/64	8/32	10800
570	P6/4	4700	64/64	16/64	21200
570	P6/8	4700	64/64	32/128	40100
570	P6/16	4700	64/64	64/256	76900

CPW values for non-POWER6 System i™ models may be obtained from http://www.ibm.com/systems/i/solutions/perfmgmt/resource.html .

Section 3 - TPC-C Version 5 Published Results

Model	Processor / # Cores	# Nodes	MHz	L2/L3 Cache (MB)	tpmC	$/tmpC	Database	AIX	Avail. Date
#p660-6H1	RS64 IV/6	1	668	8.0/-	57,346.93	28.47	Oracle V901	4.3.3	06/19/01
#M80	RS64 III/8	1	500	4.0/-	66,750.27	39.24	Oracle V817	4.3.3	09/30/00
#p660-6M1	RS64 IV/8	1	750	8.0/-	105,025.02	23.45	Oracle V901	4.3.3	09/21/01
550	P6/8	1	4200	32/128	629,159.00	2.49	DB2 9.5	5.3.0	04/20/08
#p5-570	P5/4	1	1900	3.8/72	194,391.43	5.62	Oracle DB 10g	5.3.0	09/30/04
#p5-570	P5/4	1	1900	3.8/72	203,439.87	3.93	Oracle DB 10g	5.3.0	10/17/05
#p5-570	P5/8	1	1900	7.6/144	371,044.22	5.26	Oracle DB 10g	5.3.0	09/30/04
#p5-570	P5/8	1	1900	7.6/144	429,899.7	4.99	DB2® UDB V8.1	5.3.0	09/30/04
#p5-570	P5/16	1	1900	15.2/288	809,144.09	4.95	DB2 UDB V8.1	5.3.0	09/30/04
p5-570	P5+/16	1	2200	15.2/288	1,025,169.69	4.42	DB2 UDB V8.2	5.3.0	05/31/06
570	P6/4	1	4700	16/64	404,462.54	3.50	Oracle DB 10g	5.3.0	11/26/07
570	P6/16	1	4700	64/256	1,616,162.84	3.54	DB2 9.1	5.3.0	11/21/07
#p680	RS64 IV/24	1	600	16.0/-	220,807.27	29.30	Oracle V817	4.3.3	04/13/01
#p690	P4/32	1	1300	23.0/512	403,255.46	17.80	Oracle9i	5.2.0	11/22/02
#p690	P4/32	1	1300	23.0/512	427,760.83	17.75	Oracle9i	5.2.0	05/31/03
#p690	P4+/32	1	1700	24.0/512	680,613.12	11.13	DB2 UDB 8.1	5.2.0	11/08/03
#p690	P4+/32	1	1700	24.0/512	763,898.39	8.25	DB2 UDB V8.1	5.2.0	11/08/03
#p690	P4+/32	1	1700	24.0/512	768,839.4	8.55	Oracle DB 10g	5.2.0	02/29/04
#p690	P4+/32	1	1900	24.0/512	1,025,486.17	5.43	DB2 UDB V8.1	5.2.0	08/16/04
#p5-595	P5/32	1	1900	30.4/576	1,601,784.98	5.05	Oracle DB 10g	5.3.0	04/20/05
#p5-595	P5/64	1	1900	60.8/1152	3,210,540.63	5.07	DB2 UDB V8.2	5.3.0	05/14/05
p5-595	P5+/64	1	2300	60.8/1152	4,033,378.00	2.97	DB2 9.1	5.3.0	12/20/06
595	P6/64	1	5000	256/1024	6,085,166.00	2.81	DB2 9.5	5.3.0	12/10/10

Section 3a - TPC-C Version 3 Published Results

Model	Processor / # Cores	# Nodes	MHz	L2 Cache (MB)	tpmC	$/tmpC	Database	AIX	Availability Date
#F50	604e/4	1	166	0.2	8,142.4	62.71	Sybase 11.5	4.2.1	02/09/98
#F50	604e/4	1	332	0.2	9,853.13	64.22	Sybase 11.5	4.2.1	02/20/98
#R50	604e/8	1	200	2.0	9,165.13	98.83	Sybase 11.5	4.2.1	09/30/97
#S70	RS64/12	1	125	4.0	18,666.73	108.62	Oracle V8	4.3.0	09/02/98
#S70	RS64 II/12	1	262	8.0	34,139.63	88.09	Oracle V8	4.3.1	01/21/99
#S7A	RS64 II/12	5	262	8.0	110,434.1	122.44	Oracle OPS	4.3.2	06/28/99
#H70	RS64 II/4	1	340	4.0	17,133.73	78.50	Oracle V815	4.3.2	11/19/99

Model	Processor / # Cores	# Nodes	MHz	L2 Cache (MB)	tpmC	$/tmpC	Database	AIX	Availability Date
#S80	RS64 III/24	1	450	8.0	135,815.7	52.70	Oracle V816	4.3.3	03/01/00
#F80	RS64 III/6	1	500	4.0	33,571.39	58.94	Oracle V816	4.3.3	06/09/00
#M80	RS64 III/8	1	500	4.0	66,750.27	45.46	Oracle V817	4.3.3	09/30/00
#p680	RS64 IV/24	1	600	16.0	220,807.27	43.30	Oracle V817	4.3.3	04/13/01

Section 4 - TPC-H Published Results

TPC-H 1000 GB (1 TB):

Proc.	# Nodes	MHz	QphH	QppH	QthH	$/ QphH	AIX	Database	Avail. Date
#SP P3-II/4	32	375	12,866	12,812.3	12,921.6	649	4.3.3	DB2 UDB V7.1	08/15/00
#p5-570 P5	4	1900	26,156	35,789.6	19,115.9	53	5.3.0	DB2 UDB V8.2	12/15/04
#p655	4	1700	20,221	26,905.9	15,197.1	69	5.2.0	DB2 UDB V8.1	06/08/04

TPC-H 3000 GB (3 TB):

Model	Proc./# Cores	# Nodes	MHz	QphH	$/ QphH	AIX	Database	Avail. Date
#p5-595	P5/64	1	1900	100,512	53.00	5.3.0	Oracle DB 10g	03/01/06

TPC-H 10000 GB (10 TB):

Model	Proc./# Cores	# Nodes	MHz	QphH	$/ QphH	AIX	Database	Avail. Date
p570	P6/4	32	4700	343,551.2	32.89	5.3.0	DB2 Warehouse 9.5	04/15/08
#p5-575	P5/8	8	1900	104,100.1	61	5.3.0	DB2 UDB V8.2	08/15/05
p5-575	P5+/8	16	2200	180,108	47.00	5.3.0	DB2 UDB V8.2	08/30/06
#p690	P4/32	5	1300	62,214.7	266	5.2.0	DB2 UDB V8.1	05/15/03

Section 5 - AIX SPECsfs97_R1 Benchmark Results

Model	Proc./ # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC sfs97_R1.v2 UDP	SPEC sfs97_R1.v2 TCP	SPEC sfs97_R1.v3 UDP	SPEC sfs97_R1.v3 TCP
#p5-510	P5/2	1650	64/32	1.9/36	--	--	--	42,033
#p620-6F0	RS64 IV/4	750	128/128	8.0/-	36,427	--	19,843	--
#p620-6F1	RS64 IV/4	750	128/128	8.0/-	36,427	--	19,843	--
#p630-6C4	P4+/4	1450	64/32	3.0/16	44,983	45,063	33,593	33,569
#p630-6E4	P4+/4	1450	64/32	3.0/16	44,983	45,063	33,593	33,569
#p5-550	P5/4	1650	64/32	3.8/72	--	--	--	75,839
#p5-550Q	P5+/8	1500	64/32	7.6/144	--	--	--	118,391
#p650	P4+/8	1450	64/32	6.0/128	70,894	71,075	55,825	55,526
#p5-570	P5/8	1900	64/32	7.6/144	--	--	--	145,362
p5-570	P5+/8	2200	64/32	7.6/144	--	--	--	169,786
#p655	P4+/4	1700	64/32	6.0/128	58,830	--	42,706	--
#p660-6M1	RS64 IV/8	750	128/128	8.0/-	53,745	--	29,962	--
#p690	P4/16	1300	64/32	11.5/256	111,687	--	61,120	--
#p690	P4+/16	1700	64/32	24.0/256	--	167,007	--	136,200

Section 5a - AIX NotesBench Published Results

Model	Processor / # Cores	MHz	L2/L3 Cache (MB)	Users	TPM	Response Time	$/User	DominoVers.	Work Load
#43P-140n	604e	233	1.0/-	1,450	1,917	0.484	11.97	4.52	R5Mail
#F50	604e/1	332	0.2/-	6,000	7,947	0.406	14.87	4.53b	R5Mail
#F50	604e/1	332	0.2/-	6,400	8,919	0.292	16.15	4.6	R5Mail
#F80	RS64 III/6	500	4.0/-	17,400	23,973	0.430	19.61	5.0	R5Mail
#H70	RS64 II/4	340	4.0/-	15,372	11,000	--	19.65	4.6	R5Mail
#S70	RS64 II/12	262	8.0/-	28,800	40,075	0.213	21.32	4.6	R5Mail
#S80	RS64 III/24	450	8.0/-	57,600	71,904	--	27.51	5.0	R5Mail
#M80	RS64 III/8	500	4.0/-	28,032	38,235	1.424	23.91	5.0	R5Mail
#p620-6F1	RS64 IV/6	668	8.0/-	5,000	2,581	0.162	39.21	5.08	R5iNotes
#p680	RS64 IV/24	600	16.0/-	108,000	150,197	0.584	27.34	5.06a	R5Mail
#p5-570	P5/8	1500	1.9/36	17,400	14,740	0.270	10.19	6.5.3	R6iNotes

R7iNotes

Model	Proc.	MHz	Work Load	# Notes Bench Users	Notes Mark (TPM)	Resp. Time (ms.)	$/User	$/Notes Mark	# Cores	# Users/ Core
#p5-550Q	P5+	1500	DWA7	24,000	20,108	932	5.97	7.13	8	3,000
p5-560Q	P5+	1800	DWA7	55,000	46,193	848	4.89	5.82	16	3,438

Section 6 - AIX Java Benchmarks (SPECjvm98, SPECjbb2000, SPECjbb2005) Published Results

Model	Proc / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC jvm98 (256MB)	SPEC jbb2000 ops/sec	SPECjbb2005 bops	SPECjbb2005 JVM inst.	SPECjbb2005 bops/JVM
JS20	PPC970/2	2200	64/32	1.0/-	--	39,605	--	--	--
#44P-170	P3-II	450	32/64	8.0/-	57.2	--	--	--	--
#44P-270	P3-II/4	375	32/64	8.0/-	--	14,644	--	--	--
#44P-270	P3-II/4	450	32/64	8.0/-	--	25,147	--	--	--
p5-505	P5+/2	2100	64/32	1.9/36	--	--	41,751	1	41,751
p5-505Q	P5+/4	1650	64/32	1.9/72	--	--	63,544	2	31,772
#p640	P3-II/4	375	32/64	8.0/-	--	14,644	--	--	--
#p640	P3-II/4	450	32/64	8.0/-	--	25,145	--	--	--
#p610-6E1	P3-II/2	333	32/64	4.0/-	--	11,024	--	--	--
#p610-6E1	P3-II/2	450	32/64	8.0/-	--	13,124	--	--	--
#p610-6C1	P3-II/2	333	32/64	4.0/-	--	11,024	--	--	--
#p610-6C1	P3-II/2	450	32/64	8.0/-	--	13,124	--	--	--
#p5-510	P5/2	1500	64/32	1.9/36	--	68,029	--	--	--
#p5-510	P5/2	1650	64/32	1.9/36	--	76,040	--	--	--
#p5-510	P5+/2	1900	64/32	1.9/36	--	--	36,039	1	36,039
#p5-510Q	P5+/4	1500	64/32	1.9/72	--	--	54,785	1	54,785
#p5-520	P5/2	1650	64/32	1.9/36	--	75,607	--	--	--
#p5-520	P5+/2	1900	64/32	1.9/36	--	99,844	32,820	1	32,820
#p620-6F0	RS64 IV/4	600	128/128	4.0/-	--	25,087	--	--	--
#p620-6F0	RS64 IV/4	750	128/128	8.0/-	--	47,698	--	--	--
#p620-6F1	RS64 IV/4	600	128/128	4.0/-	--	25,087	--	--	--
#p620-6F1	RS64 IV/6	668	128/128	8.0/-	--	41,855	--	--	--
#p620-6F1	RS64 IV/4	750	128/128	8.0/-	--	47,698	--	--	--
#p5-550	P5+/4	1650	64/32	3.8/72	--	--	60,419	1	60,419

	Proc /	MHz	L1 Cache	L2/L3 Cache	SPEC jvm98	SPEC jbb2000	SPECjbb2005		
p5-550	P5+/4	1900	64/32	3.8/72	--	190,445	61,789	1	61,789
#p5-550Q	P5+/8	1500	64/32	7.6/144	--	294,315	91,806	1	91,806
p5-550Q	P5+/8	1650	64/32	7.6/144	--	--	127,851	8	15,981
#p650	P4+/8	1450	64/32	6.0/128	--	114,892	--	--	--
550	P6/8	4200	64/64	32/128	--	--	333,779	4	83,445
#p5-560Q	P5+/16	1500	64/32	15.2/288	--	--	226,291	8	28,286
p5-560Q	P5+/16	1800	64/32	15.2/288	--	--	278,384	8	34,798
#p5-570	P5/2	1900	64/32	1.9/36	--	86,267	--	--	--
#p5-570	P5/4	1900	64/32	3.8/72	--	170,127	--	--	--
#p5-570	P5/8	1900	64/32	7.6/144	--	328,996	--	--	--
#p5-570	P5/16	1900	64/32	15.2/288	--	633,106	224,200	1	224,200
#p5-570	P5/16	1900	64/32	15.2/288	--	--	244,361	8	30,545
p5-570	P5+/16	2200	64/32	15.2/288	--	--	326,651	8	40,831
570	P6/2	4700	64/64	8/32	--	--	88,089	1	88,089
570	P6/4	4700	64/64	16/64	--	--	175,474	2	87,737
570	P6/8	4700	64/64	32/128	--	--	346,742	4	86,686
570	P6/16	4700	64/64	64/256	--	--	691,975	8	86,497
570	P6/4	4700	64/64	16/64	--	--	205.917	2	102,959
570	P6/8	4700	64/64	32/128	--	--	402,923	4	100,731
570	P6/16	4700	64/64	64/256	--	--	798,752	8	99,844
#p655	P4+/4	1700	64/32	6.0/128	--	96,377	--	--	--
#p660-6H0	RS64 IV/4	600	128/128	4.0/-	--	25,158	--	--	--
#p660-6H0	RS64 IV/4	750	128/128	8.0/-	--	47,604	--	--	--
#p660-6H1	RS64 IV/4	600	128/128	4.0/-	--	25,158	--	--	--
#p660-6H1	RS64 IV/6	668	128/128	8.0/-	--	41,640	--	--	--
#p660-6H1	RS64 IV/4	750	128/128	8.0/-	--	47,604	--	--	--
#M80	RS64 III/8	500	128/128	4.0/-	--	36,806	--	--	--
#M80	RS64 IV/2	750	128/128	8.0/-	--	18,327	--	--	--
#M80	RS64 IV/4	750	128/128	8.0/-	--	37,074	--	--	--
#M80	RS64 IV/8	750	128/128	8.0/-	--	72,437	--	--	--
#p655	P4+/4	1700	64/32	6.0/128	--	96,377	--	--	--
#p660-6M1	RS64 IV/2	750	128/128	8.0/-	--	23,495	--	--	--
#p660-6M1	RS64 IV/4	750	128/128	8.0/-	--	47,409	--	--	--
#p660-6M1	RS64 IV/8	750	128/128	8.0/-	--	93,272	--	--	--
#p670	P4/16	1100	64/32	11.2/256	--	161,904	--	--	--
#p680	RS64 IV/8	600	128/128	16.0/-	--	51,565	--	--	--
#p680	RS64 IV/12	600	128/128	16.0/-	--	71,303	--	--	--
#p680	RS64 IV/24	600	128/128	16.0/-	--	231,346	--	--	--
#p690 HPC	P4/16	1300	64/32	23.0/512	--	202,081	--	--	--
#p690	P4/32	1300	64/32	23.0/512	--	339,484	--	--	--
#p690	P4+/32	1700	64/32	24.0/512	--	553,480	--	--	--
#p5-595	P5/64	1900	64/32	60.8/1152	--	2,200,162	--	--	--
#p5-595	P5/64	1900	64/32	60.8/1152	--	2,505,245	--	--	--
595	P6/64	5000	64/64	256/1024	--	--	3,435,485	32*	107,359

Section 6a - IBM i Java Benchmarks (SPECjbb2005) Published Results

Model	Proc / # Cores	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPECjbb2005 bops	SPECjbb2005 JVM inst.	SPECjbb2005 bops/JVM
570	P6/8	4700	64/64	32/128	--	--	345,809

Section 6b - AIX SPECjAppServer2004 Benchmark Published

J2EE Server	GHz	J2EE AppServer	J2EE Nodes / Cores	DB Server	GHz	Database	DB Nodes / Cores	JOPS
JS22	4.0	WebSphere 6.1	26/4	P5-595	2.1	DB2 9.5	1/40	14,004.42
p5-505	2.1	WebSphere® 6.0	1/2	p5-505	1.65	DB2 UDB V8.2	1/2	349.11
p5-505	2.1	WebSphere 6.1	1/2	p5-505Q	1.65	DB2 UDB V8.2	1/4	404.88
p5-505Q	1.65	WebSphere 6.1	1/4	p5-550	2.1	DB2 UDB V8.2	1/4	618.38
570	4.7	WebSphere 6.1	1/4	p5-550	2.1	DB2 9.1	1/4	1,197.51

Section 7 - AIX ECperf Benchmarks Published Results

Java Server	Application Server Version	Database Server	Database Version	BBops/ min@std	$/BBops/ min@std
2x4w #p640 (375 MHz 8MB L2)	WebSphere app server 4.01, Java 2 SDK Std. Ed. V1.3.0 1	1x4-core p640 375 MHz 8MB L2	DB2 V7.1	10,316.13	$27

Section 8 - SAP Standard Application Benchmarks Published Results

Sales and Distribution – SD 2-Tier - AIX

Model (GHz)	# Core	Users	Avg. Resp. Time	Dialog Steps Per Hour (K)	Fully Proc. Line Items Per Hour	SAPS (K)	OS	Database	CPU Util. %	SAP ECC Ver.	Cert. #
#p650	8	900	1.97	271	90,330	4.52	AIX 5.1	DB2 UDB V7.2	97%	4.6 C	2002060
#p650	8	1220	1.95	368	122,670	6.13	AIX 5.2	DB2 UDB V8.1	98%	4.6 C	2003002
#p660-6H1	6	570	1.87	173	57,670	2.88	AIX 5.1	DB2 V7.2	98%	4.6 C	2002054
#p670	8	860	1.84	261	87,000	4.38	AIX 5.1	DB2 UDB V7.2	99%	4.6 C	2002032
#p670	8	860	1.79	263	87,670	4.35	AIX 5.1	DB2 UDB V7.2	99%	4.6 C	2002033
#p690	32	4,128	1.89	1,250	416,670	20.83	AIX 5.1	DB2 V7.2	99%	4.6 C	2002050
#p5-520 P5 1.65	2	572	1.96	172	57,330	2.87	AIX 5.3	DB2 UDB V8.1	98%	4.70	2004061
p5-505 P5+ 2.1	2	680	1.98	204	68,000	3.4	AIX 5.3	DB2 9.1	98%	5.0	2006047
p5-505Q P5+ 1.65	4	1,100	1.97	331	110,330	5.52	AIX 5.3	DB2 9.1	99%	5.0	2006046
#p5-570 P5 1.9	4	1,313	1.97	395	131,670	6.58	AIX 5.3	DB2 UDB V8.1	99%	4.70	2004042
#p5-570 P5 1.9	8	2,600	1.99	781	260,330	13.02	AIX 5.3	DB2 UDB V8.1	99%	4.70	2004041
#p5-570 P5 1.9	16	5,056	1.99	1,518	506,000	25.3	AIX 5.3	DB2 UDB V8.1	99%	4.70	2004040
p5-570 P5+ 2.2	16	5,520	1.97	1,660	553,330	27.67	AIX 5.3	DB2 UDB V8.2	99%	5.0	2006044
570 P6 4.7	4	2,035	1.99	611	203,670	10.18	AIX 5.3	Oracle DB 10g	99%	6.0	2007037
570 P6 4.7	8	4,010	1.96	1,207	402,330	20.12	AIX 5.3	Oracle DB 10g	99%	6.0	2007038
570 P6 4.7	16	8,000	1.98	2,404	801,330	40.07	AIX 5.3	DB2 9.5	99%	6.0	2007039
#p5-595 P5 1.9	64	20,000	1.92	6,042	2,014,000	100.7	AIX 5.3	DB2 UDB V8.1	97%	4.70	2004062
p5-595 P5+ 2.3	64	23,456	1.98	7,051	2,350,330	117.52	AIX 5.3	DB2 9.1	99%	5.0	2006045
595 P6 5.0	64	35,400	1.94	10,677	3,559,000	177.95	AIX 6.1	DB2 9.5	99%	6.0	20080xx

Sales and Distribution – SD 2-Tier Parallel

Model (GHz)	# Cores	Users S&D	Avg. Resp. Time	Dialog Steps Per Hour (K)	Fully Proc. Line Items Per Hour (K)	SAPS	OS	Database	Avg. CPU Util. %	SAP ECC Ver.	Cert. #
p5-570 P5 1.9	2 x 4c	2,400	1.95	723	241	12050	AIX 5.3	Oracle 9i	99%	4.7	2005033

Model (GHz)	# Cores	Users S&D	Avg. Resp. Time	Dialog Steps Per Hour (K)	Fully Proc. Line Items Per Hour (K)	SAPS	OS	Database	Avg. CPU Util. %	SAP ECC Ver.	Cert. #
570 P6 4.7	5 x 16c	36,000	1.76	11,021	3,673.67	183680	AIX.5.3	Oracle 10g r2	99%	6.0	2007066
570 P6 4.7	2 x 16c	15,520	1.94	1,559.33	4,678	77,970	AIX 5.3	Oracle 10g r2	98%	6.0	2008010
570 P6 4.7	3 x 16c	22,416	1.94	2,252.33	6,757	112,620	AIX 5.3	Oracle 10g r2	99%	6.0	2008011
570 P6 4.7	4 x 16c	30,016	1.86	3,036	9,108	151,800	AIX 5.3	Oracle 10g r2	99%	6.0	2008012
570 P6 4.7	5 x 16c	37,040	1.86	3,749	11,247	187,450	AIX 5.3	Oracle 10g r2	99%	6.0	2008013

Sales and Distribution – SD 3-Tier

Model (GHz)	# Cores	Users	Avg. Resp. Time	Fully Proc. Line Items Per Hour (K)	Dialog Steps Per Hour (K)	SAPS	OS	Database	CPU Util. DB (%)	SAP ECC Ver.	Cert. #
#p690	32	47,008	1.97	4,713	14,139	235,650	AIX 5.1	DB2 V7.2	99	4.6C	2002046
#p690	32	47,528	1.88	4,799.33	14,398	239,970	AIX 5.1	DB2 V8.1	96	4.6C	2002053
JS12 (4.0)	2	14,000	1.95	1,406,.33	4,219	70,320	AIX 6.1	DB2 9.5	97	6.0	2008031
550 P6 (4.2)	4	32,000	1.89	3,230.33	9,691	161,520	AIX.5.3	DB2 9.5	99	6.0	2008001
#p5-570 P5	4	21,712	1.96	2,178.67	6,536	108,930	AIX 5.3	DB2 UDB V8.2	97	4.70	2004076
#p5-595 P5	32	168,300	1.95	16,896.67	50,690	844,330	AIX 5.3	DB2 UDB V8.2.2	99	4.70	2005021

BI Data Mart

Model	# Core	Query Steps/ Hour	CPU Util. (%)	OS	Database	Platform Release	Cert. #
#i5-520 1.9 GHz	2	26,224	97%	i5/OS V5R4	DB2 for i5/OS V5R4	NW 7.0 (2004s)	2007061
520 p6 4.2 GHz	2	41,297	96%	i 6.1	DB2 for IBM i 6.1	NW 7.0 (2004s)	2008xxx
#i5-570 2.2 GHz	4	51,875	98%	i5/OS V5R4	DB2 for i5/OS V5R4	NW 2004s	2007003
#i5-570 2.2 GHz	8	114,687	95%	i5/OS V5R4	DB2 for i5/OS V5R4	NW 2004s	2007027
570 p6 4.7 GHz	4	92,716	98%	i5/OS V5R4M5	DB2 for i5/OS V5R4M5	NW 7.0 (2004s)	2007047

Assemble-to-Order (ATO)

Benchmark	Model	# Cores	AO_Per _Hour	Dialog_ Req_ Time	Update_ Req_ Time	Database	Utilization (%)	Version
ATO Two-tier	#S80	24	7,700	0.14	0.109	DB2 UDB V6.1	94	4.0 B
	#S80	24	6,300	--	--	DB2 UDB V7.1	92	4.6 B
	#p680	24	8,570	--	--	DB2 UDB V7.1	93	4.6 B

Benchmark	Model	# Cores	AO_Per _Hour	Disk_ Space	Database	Utilization (%)	Version
ATO Three-tier	#S80	24	54,220	1,296	DB2 UDB V7.1	94	4.6 B

Benchmark	Model	# Cores	CC_Per _Hour	Database	APO Version	LiveCache	Memory
APO Two-tier	#M80	8	53,199	DB2 UDB V6.1	3.0 A	7.2.5.1	32GB
APO Two-tier	#p660-6M1	8	129,871	DB2 UDB V7.1	3.0 A	7.2.5.7	32GB
APO Two-tier	#p660-6M1	8	79,611	DB2 UDB V7.1	3.0 A	7.2.5.1	32GB
APO Two-tier	#p690	32	474,162	Oracle9i	3.0 A	7.4.1.18	128GB

Advanced Planning and Optimization (APO-DP)
Business Warehouse

Benchmark	Model	# Cores/L2/ Memory	Throughput Rows/Hour	Time (minutes)	Dialog Steps /Hour	Database	BW Ver.	R3 Ver.
Business Warehouse	#S80	24/8MB/8GB	3,144,179	14,600,000	115,570	DB2 UDB V6.1	1.2 B	4.6 B

Section 9 - AIX PeopleSoft Benchmarks Published Results

Financials Online Benchmark (Users + Average Load/Save)

PS Version	Model	# Cores - MHz	Maximum Users	Load Rate	Save Rate	Database
8.0	#p680	12 - 600	15,000	1.50	2.01	DB2 UDB V7.1

General Ledger w/Combo Edit Benchmark (Journal Lines per Hour)

PS Vers.	Model	# Cores - MHz	L2/L3 Cache (MB)	Mem. (GB)	Disk (GB)	Medium Rate	Large Rate	Xtra Large Rate	Database
8.0	#F80	6 - 500	4/-	16	355	2,941,176	3,982,301	--	DB2 V7.1
8.0	#p620-6F1	6 - 668	8/-	16	355	--	5,341,246	--	DB2 V7.1
8.4	#p630-6C4	4 - 1450	3/16	32	1,854	--	10,227,215	--	DB2 V7.2
8.4	#p630-6E4	4 - 1450	3/16	32	1,854	--	10,227,215	--	DB2 V7.2
8.0	#S80	24 - 450	8/-	24	1,800	--	--	6,595,823	DB2 V7.1
8.0	#p660-6M1	8 - 750	8/-	8	723	--	15,254,237	--	DB2 V7.2
8.4	#p660-6M1	8 - 750	8/-	16	1,587	--	16,744,186	--	DB2 V7.2
8.0	#p680	24 - 600	16/-	64	2,300	--	--	22,189,349	DB2 V7.2

Asset Management 8.0 Sp1

PS Version	Model	# Cores - MHz	DB Model Size	Trans/Hour Time	Trans/Hour Rate	Database
8.0 Sp1	#S80	24 - 450	“Large”	89.08	13,470.00	Oracle

ABM Batch 8.0 Sp3

PS Version	Model	# Cores - MHz	DB Model Size	Primary ABM Proc Time	Database
8.0 Sp3	#S80	6 - 450	“Large”	19.37	DB2 V7.2

HRMS Online

PS Version	Model	# Cores - MHz	Maximum Users	Search	Save	Database
8.0	#M80	8 - 500	20,000	1.7 sec.	2.3 sec.	--

HRMS Online DoD

PS Version	Model	# Cores - MHz	Maximum Users	Web Server	Load	Update	Database
8.3	#p690	32 - 1000	105,000	WebLogic	1.6 sec.	1.5 sec.	DB2 V7.2
8.3	#p690	32 - 1100	105,000	WebSphere	1.1 sec.	0.9 sec.	DB2 V7.2

HRMS Self-service Online

PS Version	Model	# Cores - MHz	Concurrent Users	Search	Save	Database
8.9	p5-570	12 - 1900	4,000	1.74 sec.	1.25 sec.	Oracle 10.1.0.3

Order Management (OM)

PS Version	Model	# Cores - MHz	L2 Cache (MB)	Memory (GB)	Disk (GB)	Average Thruput 5 Line Orders	Average Thruput 50 Line Orders	Database
8.4	#p640-B80	4 - 375	8	4	164	22,500 lines/hr.	12,500 lines/hr.	DB2 V7.2
8.8	#p630+	4 - 1500	0.768	16	396	22,500 lines/hr.	12,500 lines/hr.	DB2 V8.1

Funds Transfer Pricing (FTP)

PS Version	Model	# Cores - MHz	L2 (MB)	Mem (GB)	Disk (GB)	Convert Mortgage	Convert Other	Monthly Mortgage	Monthly Other	Database
8.3	#p660-6M1	8 - 750	8	24	4,128	5.86 hrs.	21.14 hrs.	0.87 hrs.	9.17 hrs.	DB2 V7.2

Global Payroll France – Version 1

PS Version	Model	# Cores - MHz	Maximum Payees	Payroll Non Retro	Payroll Retro	Database
8.9	p570	8 - 4700	200,222	44.95	73.56	Oracle 9i

Global Payroll France – Version 2

PS Version	Model	# Cores - MHz	L2/L3 Cache (MB)	Memory (GB)	Disk (GB)	Large Rate	Database
8.9	p570	8 - 4700	32/128	84	550	200,222	Oracle 9.2.0.6

Global Payroll Swiss

PS Version	Model	# Cores - MHz	L2/L3 Cache (MB)	Memory (GB)	Disk (GB)	Medium Elapsed Time	Large Elapsed Time	Database
8.3	#p660-6M1	8 – 750	8/-	29	1,392	7.15 hrs.	11.99 hrs.	DB2 V7.2

Customer Relationship Management (CRM)

PS Version	Model	# Cores - MHz	Maximum Users	Retrieve	Update	Database
8.0	#p660-6M1	4 - 750	30,000	1.241	1.522	DB2 UDB V7.2

Customer Relationship Management (CRM) - DB (2-core LPAR), AppServ (12-core LPAR), WebServ (2-core LPAR)

PS Version	Model	# Cores - MHz	Maximum Users	Retrieve	Update	Database
8.0	#p670	2 - 1100	15,000	1.24	1.55	DB2 V7.2

Customer Relationship Management (CRM) for Communications

PS Version	Model	# Cores - MHz	Maximum Users	Average Response	Database
8.9	#p650	8 - 1450	4,250	2,693	DB2 V8.1

North American Payroll - Checks per Hour

PS Version	Model	# Cores - MHz	L2/L3 Cache (MB)	Memory (GB)	Disk (GB)	Large Rate	Database
8.3	#p660-6M1	8 - 750	8/-	16	1,179	123,350	DB2 V7.2
8.0	#p670	16 -1500	12.0/256	64	2,330	343,948	DB2 V7.2
8.8	p5-570	8 - 1900	0.95/18	64	3,931	393,000	DB2 V8.1

Section 10 - AIX Oracle e-Business Suite (eBS) Benchmarks Published Results

V11.0 (This benchmark has been retired)

Model	# Cores	Users	Average Response Time (sec)	Release
#H70	4	1,525	1.31	11.0.3
#S80	24	14,000	1.27	11.0.3

11i – 11.5.3 (This benchmark has been retired)

Model	GHz	# Cores	Users	Average Response Time (sec)	Release
#p670	1.1	16	12,600	1.19	11.5.3
#p680	.6	18	10,024	1.53	11.5.3
#p690	1.3	24	19,040	1.43	11.5.3
#p690	1.3	8	6,216	1.42	11.5.3

11i – 11.5.6 (This benchmark has been retired)

Model	GHz	# Cores	Users	Average Response Time (sec)	Release
#p630	1.45	4	5,320	0.885	11.5.6
#p690	1.7	16	22,008	0.48	11.5.6

11i – 11.5.9

Model	GHz	# Cores	Users	Average Response Time (sec)	Release
#p5-570 P5	1.9	8	15,004	0.553	11.5.9

11i – 11.5.10

Model	GHz	# Cores	Kit	Online : Users / Batch : Order Lines / Batch: Payroll Employees	User load % of maximum	Online : Average Response Time (sec)	Batch : Lines/Hour	Batch : Checks /Hour
p5-570 P5+	2.2	8	Medium	2,000 / 50,000 / 10,000	100% (full)	0.983	56,391	51,948
p5-570 P5+	2.2	8	Medium	1,800 / 50,000 / 10,000	90%	0.857	59,678	56,818
p5-570 P5+	2.2	8	Medium	1,400 / 50,000 / 10,000	70%	0.712	61,894	65,076
p570 P6	4.7	8	Medium	3000 / 50,000 / 10,000	100% (full)	0.764	94,757	74,257
p570 P6	4.7	8	Medium	2,700 / 50,000 / 10,000	90%	0.702	97,784	84,270
p570 P6	4.7	8	Medium	2,100 / 50,000 / 10,000	70%	0.625	106,838	91,047

11i – 11.5.10 Real Application Clusters (RAC)

Model	GHz	# Nodes x # Cores	Kit	Online : Users / Batch : Order Lines / Batch: Payroll Employees	User load % of maximum	Online Average Response Time (sec)	Batch : Lines/Hour	Batch : Checks /Hour
p5-505 P5+	2.1	2 x 2c	Small	1,000 / 10,000 / 5,000	100% (full)	0.780	11,080	13,043
p5-505 P5+	2.1	2 x 2c	Small	900 / 10,000 / 5,000	90%	0.758	12,280	17,493
p5-505 P5+	2.1	2 x 2c	Small	700 / 10,000 / 5,000	70%	0.656	17,207	26,087

Section 11 - AIX Baan Benchmarks Published Results

Model	# Cores	2-Tier Host (BRUs)	3-Tier Server (BRUs)	Database	Baan Version
#p680	24	11,886	--	DB2 UDB V7.1	5.0b
#p680	24	9,622	--	Oracle V8.17	5.0b
#p680	18	8,950	--	DB2 UDB V7.1	5.0b
#S80	24	8,750	17,500	DB2 UDB V7.1	5.0b
#S80	24	6,836	17,441	Oracle V8.16	5.0b
#p660-6M1	8	5,460	--	DB2 UDB V7.2 FP#4	5.0b
#p660-6M1	8	4,424	--	Oracle V8.17	5.0b
#p630	4	3,290	--	Oracle V.1.7.4	5.0c
#M80	8	2,622	--	Oracle	5.0b
#M80	8	2,590	--	Informix	5.0b
#F80	6	2,345	--	DB2 UDB V7.1	5.0b
#F80	6	2,100	--	Oracle	5.0b
#F80	6	1,750	--	Informix	5.0b
#F50	4	490	--	DB2	
#F50	4	350	--	Oracle	
#F50	4	378	--	Informix	
#H70	4	1,120	--		
#H70	4	1,050	--	Oracle	
#H70	4	910	--	Informix	

Section 12 - AIX J.D. Edwards Benchmarks Published Results

eFulfillment Benchmark for J.D. Edwards OneWorld(R) Xe Product

DB Server	# Cores / Memory	App. Servers	# Cores / Memory	Sales Order Lines per Hour	Database
#p680	24/64GB	2x p680	24/64GB	1,029,200	Oracle V8.1.6

J.D. Edwards HTML User-based Benchmark

DB Server	# Cores / Memory	App. Servers	# Cores / Memory	# Users	Database
#p660-6M1	8/64GB	1x p680	24/96GB	5,440	DB2 V7.2

Section 13 - AIX Siebel Benchmarks Published Results

Siebel 7 Performance and Scalability Benchmark

DB Server	# Cores / Memory	App. Servers	# Cores / Memory	Gateway Servers	# Cores / Memory	Concurrent Users	Database
#p650	8/16GB	(incl on p650)		(incl on p650)		2,500	DB2 UDB V7.1
#p690	32/128GB	p690	24/64GB	#p660	6/16GB	30,000	DB2 UDB V7.2

Siebel 7.7 Industry Applications Performance and Scalability Benchmark

DB Server	# Cores / Memory	App./Gateway Servers	# Cores / Memory	Concurrent Users	Database
#p5-570 P5	4/32GB	5x p690	16/64GB	12,500	DB2 UDB V8.1

Siebel CRM Release 8.0 Industry Applications Benchmark

Gateway / Application Servers	App Server # Cores / Memory	Concurrent Users	%CPU	DB Server	DB Server # Cores / Memory	Database
1x p570 P6 4.7 GHz	8 / 64GB	7,000	84%	1x p570 P6 4.7 GHz	4 / 32GB	Oracle 10gR2

Section 14 - AIX Sybase Benchmarks Published Results

Sybase Risk Analysis Platform Benchmark

DB Server	# Cores / Memory	Load Test with 16-Stream Binary Data (GB/Hour/Core)	Query Test: Cumulative Query Processing Times @ 50 Users (lower is better)	Database
p5-570 P5+ 2.2 GHz	8 / 32GB	7.407	2,308,842 msec	Sybase IQ
p570 P6 4.7 GHz	4 / 32GB	6.692	3,376,891 msec	Sybase IQ
p570 P6 4.7 GHz	8 / 32GB	11.254	1,459,035 msec	Sybase IQ

Section 15 - AIX Manugistics Benchmarks Published Results

Manugistics NetWORKS Fulfillment Benchmark

Server	# Cores	SKUs/Hour	SKUs/Hour/Core	Release
#p690	32	14,957,799	467,431	7.1
#p5-590	32	38,475,727	1,202,366	7.2
p5-595 2.3 GHz	64	116,500,032	1,820,313	7.3

Section 16 - AIX Technical Computing Benchmarks

STREAM Benchmarks

Model	Processor / # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Standard STREAM Triad MB/sec	Tuned STREAM Triad MB/sec
JS21	PPC970+/2	2.7	64/32	2.0/0	--	6,521
JS22	P6/4	4.0	64/64	16.0/0	15,456	--
#p5-505	P5/2	1.65	64/32	1.9/36	7,653	9,012
#p5-510	P5/2	1.65	64/32	1.9/36	4,095	4,511
#p5-520	P5/2	1.5	64/32	1.9/36	3,931	4,345
#p5-520	P5/2	1.65	64/32	1.9/36	4,275	4,510
#p5-520	P5+/2	1.9	64/32	1.9/36	9,672	10,319
#p5-550	P5/4	1.5	64/32	3.8/72	7,815	8,998
#p5-550	P5/4	1.65	64/32	3.8/72	8,201	8,986
p5-550	P5+/4	1.9	64/32	3.8/72	19,043	20,403
p5-550	P5+/4	1.9	64/32	3.8/72	--	20,722
#p5-550Q	P5+/8	1.5	64/32	7.6/144	17,331	18,756
p5-550Q	P5+/8	1.65	64/32	7.6/144	--	19,509
#p650	P4+/8	1.45	64/32	6.0/128	7,306	10,372
p5-560Q	P5+/16	1.5	64/32	15.2/288	38,954	40,777
#p5-570	P5/4	1.9	64/32	3.8/72	19,250	26,214
#p5-570	P5/8	1.9	64/32	7.6/144	35,934	43,037
#p5-570	P5/16	1.9	64/32	15.2/288	44,241	45,187
#p5-575	P5/16	1.5	64/32	15.2/288	42,631	55,870
#p5-575	P5/8	1.9	64/32	15.2/288	41,585	55,733
p5-575	P5+/16	1.9	64/32	15.2/288	86,062	86,379
p5-575	P5+/8	2.2	64/32	15.2/288	96,327	100,523
575	P6/32	4.7	64/64	128/512	162,844	--
#p655	P4/8	1.1	64/32	5.7/128	11,275	15,960

Model	Processor / # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Standard STREAM Triad MB/sec	Tuned STREAM Triad MB/sec
#p655	P4/4	1.3	64/32	5.7/128	11,172	15,963
#p655	P4+/8	1.5	64/32	6.0/128	15,090	19,741
#p655	P4+/4	1.7	64/32	6.0/128	12,039	19,973
#p655	P4+/8	1.7	64/32	6.0/128	15,141	--
#p670	P4+/16	1.5	64/32	12.0/256	25,368	36,818
#p690 HPC	P4/16	1.3	64/32	23.0/512	25,058	--
#p690	P4/32	1.3	64/32	23.0/512	32,249	--
#p690	P4/32	1.3	64/32	24.0/512	41,064	58,891
#p5-595	P5/64	1.9	64/32	60.8/1152	173,564	174,567
p5-595	P5+64	2.3	64/32	60.8/1152	206,243	--
595	P6/64	5.0	64/64	256/1024	805,804	--

SPEC OMP2001 Performance

Model	Proc /Chips /Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	OMP Threads	SPEC OMP™ Mpeak 2001	SPEC OMP Mbase 2001	OMP Threads	SPEC OMP Lpeak 2001	SPEC OMP Lbase 2001
JS22	P6/2/4	4.0	64/64	16.0/-	4	19,568	18,218			
#p5-510	P5/1/2	1.65	64/32	1.9/36	4	6,108	5,478		--	--
#p5-520	P5/1/2	1.65	64/32	1.9/36	4	5,228	5,051		--	--
#p5-520	P5/1/2	1.65	64/32	1.9/36	4	8,174	8,141		--	--
#p630-6C4	P4+/2/4	1.45	64/32	3.0/16	4	4,918	4,695		--	--
#p630-6E4	P4+/2/4	1.45	64/32	3.0/16	4	4,918	4,695		--	--
#p5-550	P5/2/4	1.65	64/32	3.8/72	8	9,884	9,649		--	--
p5-550	P5+/2/4	1.9	64/32	3.8/72	8	15,392	14,878		--	--
p5-550	P5+/2/4	2.1	64/32	3.8/72	8	19,983	15,355		--	--
#p5-550Q	P5+/4/8	1.5	64/32	7.6/144	16	20,122	18,536		--	--
p5-550Q	P5+/4/8	1.65	64/32	7.6/144	16	25,662	17,126		--	--
#p650	P4+/2/4	1.45	64/32	3.0/64	4	5,526	5,294		--	--
#p650	P4+/4/8	1.45	64/32	6.0/128	8	9,694	9,458		--	--
#p5-570	P5/2/4	1.9	64/32	3.8/72	8	16,096	14,335		--	--
#p5-570	P5/8/16	1.9	64/32	15.2/288	32	38,282	37,444		--	--
570	P6/8/16	4.7	64/64	64/256	32	86,624	80,769		--	--
#p5-575	P5/8/8	1.9	64/32	15.2/288	16	28,035	24,805		--	--
p5-575	P5+/8/16	1.9	64/32	15.2/288	32	56,211	45,275		--	--
p5-575	P5+/8/8	2.2	64/32	15.2/288	16	40,560	33,521		--	--
#p655	P4+/4/8	1.5	64/32	6.0/128	8	12,739	11,627		--	--
#p655	P4+/4/4	1.7	64/32	6.0/128	4	8,356	7,565		--	--
#p655	P4+/4/8	1.7	64/32	6.0/128	8	14,380	13,565		--	--
#p690	P4+/16/32	1.7	64/32	24.0/512	32	38,447	35,267		--	--
#p690	P4+/16/32	1.9	64/32	24.0/512	32	43,708	38,278		--	--
#p5-595	P5/32/64	1.9	64/32	60.8/1152	120	92,979	81,677	128	672,757	620,741
p5-595	P5+/32/64	2.3	64/32	60.8/1152	128	157,880	148,510	128	1,056,459	1,005,583

Aerospace, Defense, and Automotive: CFD

AVL FIRE

System	1 Processor	2 Processors	4 Processors
#p690 HPC 1.3 GHz P4	525	296	181

FLUENT Benchmark Version 5 Results

FLUENT rating: Higher is better

System	# Cores	Small Class			Medium Class			Large Class		
		FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
	serial	1,290.7	1,133.6	732.8	311.7	649.3	120.6	--	--	--
#p690	1	1,285.7	1,147.8	739.4	310.7	660.2	121.2	--	--	--
1.3 GHz	2	2,451.8	2,275.7	1,448.4	603.0	1,204.6	243.4	--	--	--
P4	4	4,644.7	4,300.6	2,620.2	1,147.0	2,264.7	427.1	--	--	--
	8	6,799.4	6,260.9	4,453.6	2,036.5	4,179.0	788.7	484.9	390.6	65.4
	16	7,843.1	10,810.8	5,308.8	3,358.6	6,981.8	1,054.3	882.5	694.1	121.6
	32	--	--	--	4,826.8	9,216.0	1,265.0	1,522.5	1,133.1	199.7

System	# Cores	Small Class			Medium Class			Large Class		
		FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
#p670	1	1,090.2	958.7	624.5	265.1	562.0	103.9	63.0	--	--
1.1 GHz	2	2,162.4	1,890.0	1,239.2	511.5	1,030.4	210.2	123.4	--	--
P4	4	3,973.1	3,645.9	2,300.9	980.1	1,969.2	376.1	233.2	192.0	--
	8	5,888.8	5,351.2	3,878.8	1,804.7	3,680.5	721.1	443.1	363.8	54.9
	16	6,981.3	9,338.5	4,608.0	2,294.8	6,084.5	942.7	763.4	616.5	105.2

FLUENT Benchmark Version 6 Results

FLUENT rating: Higher is better

System	# Cores	Small Class			Medium Class			Large Class		
		FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
#p630	1	1,520.9	1,782.2	919.9	323.9	626.3	125.5	88.5	64.5	12.0
1.45 GHz	2	2,940.8	3,423.1	1,686.7	650.2	1,175.5	266.1	166.1	127.1	23.2
P4	4	5,035.0	5,669.3	2,732.0	1,134.2	1,937.2	414.0	285.7	240.6	42.3

System	# Cores	Small Class			Medium Class			Large Class		
		FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
#p650	1	1,472.5	1,750.4	935.2	338.5	673.4	140.3	88.6	69.1	11.8
1.45 GHz	2	2,889.9	3,546.0	1,836.0	653.3	1,219.9	278.0	170.6	136.7	24.7
P4	4	5,233.0	6,771.0	3,263.0	1,222.0	2,250.0	521.0	320.0	266.0	49.2

FLUENT Benchmark Version 6.1.22 Results

FLUENT rating: Higher is better; Simultaneous multithreading used where appropriate

System	Physical Cores	FL5S3	FL5M3	FL5L2
#p5-520	1	1565	212	101
1.65 GHz P5	2	2767	415	185

FLUENT Benchmark Version 6.1.22 Results

FLUENT rating: Higher is better; Simultaneous multithreading used where appropriate

System	Physical Cores	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
	1	2864	3985	1881	646	1207	268	155	131	22
#p5-570	2	5316	7152	3432	1178	2245	508	294	242	43
1.9 GHz P5 DDR2	4	7912	10909	6295	1965	4385	950	562	479	86
	8	10847	18422	9818	2860	7783	1500	1060	914	161
	16	12549	26261	12705	3797	13401	2169	1811	1641	327

FLUENT Benchmark Version 6.1.22 Results

FLUENT rating: Higher is better; Simultaneous multithreading used where appropriate

System	Physical Cores	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
#p5-595 1.9 GHz P5 DDR1	1	2993.8	4014.9	1911.5	617.7	1231.2	275.4	157.6	120.6	21.3
	2	5192.3	7152.3	3323.1	980.1	2179.1	520.1	297.8	226.5	42.7
	4	7819.0	10909.1	6272.2	1768.7	4374.7	938.9	550.6	445.2	86.4
	8	11034.5	15360.0	9959.7	2802.9	7872.4	1523.8	1022.8	902.3	170.5
	16	12800.0	26261.4	12752.8	4056.3	12847.6	2186.0	1787.9	1771.4	326.7
	32	13333.3	--	--	5494.4	18782.6	--	2805.2	3042.3	589.5
	64	--	--	--	6967.7	19748.6	2992.2	--	4806.7	966.7

FLUENT Benchmark Version 6.1.22 Results

FLUENT rating: Higher is better; Simultaneous multithreading used where appropriate

System	Physical Cores	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
#p5-575 1.9 GHz P5	1	2864.7	3857.1	1907.3	594.3	1218.2	268.7	157.6	127.9	22.4
	2	5316.9	7422.7	3661.0	1008.2	2314.8	525.5	301.5	253.9	44.4
	4	7912.1	10964.5	6750.0	1800.0	4553.4	984.1	590.1	502.5	93.0
	8	11034.5	18560.7	10134.9	2870.4	8074.8	1558.2	1110.9	1058.5	186.5

FLUENT Benchmark Version 6.2.16 Results

FLUENT rating: Higher is better; Simultaneous multithreading used where appropriate

System	Physical Cores	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
p5-575 2.2 GHz P5+	1	3180.0	5197.0	2307.1	669.8	1362.8	309.7	186.5	145.2	25.1
	2	5830.0	9757.2	4363.6	1133.5	2592.6	599.7	362.5	296.3	49.8
	4	8648.6	14606.9	7663.0	2019.9	4994.2	1127.7	692.0	597.5	104.9
	8	12549.0	18113.2	11443.7	3147.5	8816.3	1906.2	1297.8	1205.0	214.4

STAR-CD Standard Benchmark: Engine Block, 157K Cells

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors	8 Processors	16 Processors
#p650 1.45 GHz P4+	749.5	380.67	193.63	128.91	--
#p655 1.3 GHz P4	705.36	361.76	187.92	98.86	56.82

STAR-CD Standard Benchmark: Aclass, 6 Million Cells

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors	8 Processors	16 Processors	32 Processors
#p650 1.45 GHz P4+	6349.98	--	1877.91	1372.64	--	--
#p655 1.3 GHz P4	6352.44	3345.96	1904.14	950.22	483.24	274.12

STAR-CD Standard Benchmark: 262K Cell, Car Interior

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors	8 Processors	16 Processors
#p655 1.3 GHz P4	1159.5	606.4	325.6	168.0	--

STAR-CD, Standard Benchmark: 250K Cell, S-bend

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors	8 Processors	16 Processors	32 Processors
#p655 1.3 GHz P4	1161.9	596.64	353.04	179.44	99.0	72.86

STAR-CD V 3.150A Standard Benchmark: Engine Block, 157K Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System	1 Logical Processor	2 Logical Processors	4 Logical Processors	8 Logical Processors	16 Logical Processors
#p5-520 1.65 GHz P5	559	293	--	--	--
#p5-570 1.9 GHz P5 DDR2	475	235	118	62	37
#p5-575 1.9 GHz P5	482	238	119	63	--

STAR-CD V 3.150A Standard Benchmark: A-Class, 6 Million Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System	1 Logical Processor	2 Logical Processors	4 Logical Processors	8 Logical Processors	16 Logical Processors
#p5-570 1.9 GHz P5 DDR2	4660	2143	1100	546	354
#p5-575 1.9 GHz P5	4717	--	1145	552	--

STAR-CD V 3.22 Standard Benchmark: Engine Block, 157K Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System	1 Logical Processor	2 Logical Processors	4 Logical Processors	8 Logical Processors
#p5-575 1.9 GHz P5	483	239	120	64

STAR-CD V 3.22 Standard Benchmark: A-Class, 6 Million Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System	1 Logical Processor	2 Logical Processors	4 Logical Processors	8 Logical Processors
#p5-575 1.9 GHz P5	4527	2232	1105	543

STAR-CD V 3.26 Standard Benchmark: Engine Block, 157K Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 /4	8 / 8	8 / 16
p5-575 2.2 GHz P5+	419.80	206.17	104.89	54.96	46.45

STAR-CD V 3.26 Standard Benchmark: A-Class, 6 Million Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 /4	8 / 8	8 / 16
p5-575 2.2 GHz P5+	3829.20	1884.95	979.84	483.70	422.51

STAR-CD V 3.26 Standard Benchmark: Large A-Class, 21 Million Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 /4	8 / 8	8 / 16
p5-575 2.2 GHz P5+	35634.10	18806.93	9382.02	4820.10	4119.85

STAR-CD V 3.26 Standard Benchmark: Engine Block, 157K Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	4 / 4	4 / 8
JS22 4.0 GHz P6	114.35	71.43

STAR-CD V 3.26 Standard Benchmark: A-Class, 6 Million Cells

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	4 / 4	4 / 8
JS22 4.0 GHz P6	1238.10	906.61

Aerospace, Defense, and Automotive: Crash

LS-DYNA V960-1647 - **Refined Neon - 535K Elements, 30 ms**

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors	8 Processors
#p630 1.45 GHz P4+	25,821	14,831	10,828	--
#p650 1.45 GHz P4+	--	--	7,282	--
#p655 1.1 GHz P4	30,578	16,070	8,648	5,935
#p655 1.3 GHz P4	24,104	10,509	6,955	--
#p690 1.3 GHz P4	25,414	13,507	7,352	4,573

Aerospace, Defense, and Automotive: NVH, Structural and Thermal Analysis

ABAQUS

System	Cores	T1-STD	T2-STD	T3-STD	T4-STD	T5-STD	T6-STD	T7-STD	Total
#p690 HPC 1.3 GHz P4	1	1:14	1:13	0:30	23:32	1:46	0:22	2:10	30:47

ABAQUS / Standard V6.3 - Sum of 7 Standard Runs, t1-std through t7-std

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors
#p655 1.3 GHz P4	2,762	1,895	1,433

ABAQUS / Explicit V6.3 - Sum of 7 Standard Runs, t1-exp through t7-exp

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors
#p655 1.3 GHz P4	1,771	1,116	738

ABAQUS / Standard V6.4 - Sum of 7 Standard Runs, t1-std through t7-std

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System	1 Logical Processor	2 Logical Processors	4 Logical Processors
#p5-520 1.65 GHz P5	2,127	1,453	--
#p5-570 1.9 GHz P5 DDR2	1,783	1,230	1,036

ABAQUS/Standard V6.4 performance:
1-core run performance; Elapsed time in seconds, lower is better

Test Case	1.9 GHz P5 #p5-570 8-core (DDR2) AIX 5L V5.3	1.65 GHz P5 #p5-520 2-core AIX 5L V5.3	1.7 GHz #p655 4-core
T1-STD	47	60	57
T2-STD	55	65	64
T3-STD	738	932	1061
T4-STD	740	850	852
T5-STD	108	101	94
T6-STD	19	27	23
T7-STD	76	92	92
Total Time	**1783**	**2127**	**2243**

ABAQUS/Standard V6.4 performance:
2-core run performance; Elapsed time in seconds, lower is better

Test Case	#p5-570 1.9 GHz P5 8-core (DDR2) AIX 5L V5.3	#p5-520 1.65 GHz P5 2-core AIX 5L V5.3	#p655 1.7 GHz 4-core
T1-STD	38	51	46
T2-STD	47	55	54
T3-STD	532	644	688
T4-STD	431	510	542
T5-STD	107	94	92
T6-STD	17	24	21
T7-STD	58	75	70
Total Time	**1230**	**1453**	**1513**

ABAQUS/Standard V6.4 performance:
4-core run performance; Elapsed time in seconds, lower is better

Test Case	1.9 GHz P5 #p5-570 8-core (DDR2) AIX 5L V5.3	1.7 GHz #p655 4-core
T1-STD	34	42
T2-STD	48	48
T3-STD	501	541
T4-STD	278	349
T5-STD	107	91
T6-STD	17	17
T7-STD	51	60
Total Time	**1036**	**1148**

Abaqus V6.6.7 - *S1 Benchmark: 1,085,406 degrees of freedom*
Elapsed time in seconds, lower is better.

	Physical Cores				
System	**1**	**2**	**4**	**8**	**16**
575 4.7 GHZ p6	88	67	54	49	48
550 4.2 GHz P6	97	74	59	59	- -
p5-550 2.1 GHz P5+	127	96	78	- -	- -
p5-570 2.2 GHz P5+	112	86	70	30	- -

Abaqus V6.6.7 - *S2a Benchmark: 474,744 degrees of freedom (direct solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1	2	4	8	16
575 4.7 GHZ p6	2318	1231	683	411	297
550 4.2 GHz P6	2594	1381	767	471	- -
p5-550 2.1 GHz P5+	3411	1903	1072	- -	- -
p5-570 2.2 GHz P5+	3428	1853	1065	- -	- -

Abaqus V6.6.7 - *S2b Benchmark: 474,744 degrees of freedom (iterative solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1	2	4	8	16
575 4.7 GHZ p6	1882	1008	564	353	262
550 4.2 GHz P6	2022	1143	682	585	- -
p5-550 2.1 GHz P5+	2545	1358	777	- -	- -
p5-570 2.2 GHz P5+	2429	1283	720	- -	- -

Abaqus V6.6.7 - *S3a Benchmark: 362,168 degrees of freedom (Lanczos Eigen Solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1
575 4.7 GHZ p6	446
550 4.2 GHz P6	485
p5-550 2.1 GHz P5+	560
p5-570 2.2 GHz P5+	518

Abaqus V6.6.7 - *S3b Benchmark: 1,112,703 degrees of freedom (Lanczos Eigen Solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1
575 4.7 GHZ p6	2369
550 4.2 GHz P6	2592
p5-550 2.1 GHz P5+	3226
p5-570 2.2 GHz P5+	2986

Abaqus V6.6.7 - *S3c Benchmark: 1,112,703 degrees of freedom (AMS Eigen Solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1
575 4.7 GHZ p6	2077
550 4.2 GHz P6	2306
p5-550 2.1 GHz P5+	3168

Abaqus V6.6.7 - *S4a Benchmark: 720,059 degrees of freedom (direct solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1	2	4	8	16
575 4.7 GHZ p6	769	543	404	340	328
550 4.2 GHz P6	845	601	449	388	- -
p5-550 2.1 GHz P5+	993	727	543	- -	- -
p5-570 2.2 GHz P5+	956	689	508	450	420

Abaqus V6.6.7 - *S4b Benchmark: 5,236,958 degrees of freedom (direct solver)*
Elapsed time in seconds, lower is better.

System	Physical Cores 1	2	4	8	16
575 4.7 GHZ p6	8450	4745	2912	2002	1608

550 4.2 GHz P6	9318	5208	3142	2161	- -
p5-550 2.1 GHz P5+	13177	7351	4725	- -	- -
p5-570 2.2 GHz P5+	11212	6026	3432	2578	1616

Abaqus V6.6.7 - *S4c Benchmark: 5,236,958 degrees of freedom (iterative solver)*
Elapsed time in seconds, lower is better.

	Physical Cores				
System	**1**	**2**	**4**	**8**	**16**
575 4.7 GHZ p6	4592	2933	1941	1509	1534
550 4.2 GHz P6	4995	3209	2199	1810	- -
p5-550 2.1 GHz P5+	5900	3815	- -	- -	- -
p5-570 2.2 GHz P5+	5730	3410	2372	1950	- -

Abaqus V6.6.7 - *S5 Benchmark: 181,692 degrees of freedom non-linear*
Elapsed time in seconds, lower is better.

	Physical Cores				
System	**1**	**2**	**4**	**8**	**16**
575 4.7 GHZ p6	2379	1381	908	686	636
550 4.2 GHz P6	2626	1510	1001	773	- -
p5-550 2.1 GHz P5+	2778	1689	1145	- -	- -
p5-570 2.2 GHz P5+	2695	1591	1070	896	- -

Abaqus V6.6.7 - *S6 Benchmark: 729,264 degrees of freedom non-linear*
Elapsed time in seconds, lower is better.

	Physical Cores				
System	**1**	**2**	**4**	**8**	**16**
575 4.7 GHZ p6	8263	5027	3185	2837	2227
550 4.2 GHz P6	8999	5486	3542	2837	- -
p5-550 2.1 GHz P5+	9653	6224	3993	- -	- -
p5-570 2.2 GHz P5+	9543	5786	3630	3263	- -

ANSYS V6.1 - Sum of 11 Standard ANSYS runs, Seconds
Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors
#p630 1.45 GHz P4+	1,910	1,585	1,390
#p650 1.45 GHz P4+	1,905	1,580	1,387
#p655 1.1 GHz P4	2,351	1,928	1,685
#p655 1.3 GHz P4	1,949	1,609	1,421
#p690 HPC 1.3 GHz P4	2,078	1,711	1,511

ANSYS V7.1 - Sum of 12 Standard ANSYS runs, Seconds
Elapsed time in seconds, lower is better.

System	1 Processor	2 Processors	4 Processors
#p5-520 1.65 GHz P5	1742	1337	--
#p5-570 1.9 GHz P5 DDR2	1459	1137	935

ANSYS V8.1 - Sum of 19 Standard ANSYS runs, Seconds
Elapsed time in seconds, lower is better.

System	1 Processor	2 Processors	4 Processors	8 Processors
#p655 1.7 GHz P4+	4432	2949	2171	--
#p5-575 1.9 GHz P5	3716	2511	1913	1708

ANSYS V8.1 - Sum of 7 Standard ANSYS runs (brakerotor), Seconds

Elapsed time in seconds, lower is better.

System	1 Processor	2 Processors	4 Processors	8 Processors
#p655 1.7 GHz P4+	975	703	546	--
#p5-575 1.9 GHz P5	795	581	453	405

ANSYS V8.1 - Sum of 4 Standard ANSYS runs (carrier), Seconds

Elapsed time in seconds, lower is better.

System	1 Processor	2 Processors	4 Processors	8 Processors
#p655 1.7 GHz P4+	729	571	476	--
#p5-575 1.9 GHz P5	589	465	396	361

ANSYS V8.1 - Sum of 4 Standard ANSYS runs (wing-pcg), Seconds

Elapsed time in seconds, lower is better.

System	1 Processor	2 Processors	4 Processors	8 Processors
#p655 1.7 GHz P4+	339	227	169	--
#p5-575 1.9 GHz P5	289	203	155	140

ANSYS V8.1 - Sum of 4 Standard ANSYS runs (wing-subs), Seconds

Elapsed time in seconds, lower is better.

System	1 Processor	2 Processors	4 Processors	8 Processors
#p655 1.7 GHz P4+	2389	1448	980	--
#p5-575 1.9 GHz P5	2043	1262	909	802

ANSYS V11.0 - ***bm-1 Benchmark: 850,000 degrees of freedom, sparse solver***

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	171	140	123	115
p5-550 2.1 GHz P5+	194	150	125	

ANSYS V11.0 - ***bm-2 Benchmark: 765,000 degrees of freedom, sparse solver/Block Lanczos***

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	1154	1095	1055	1046
p5-550 2.1 GHz P5+	1157	1100	1074	

ANSYS V11.0 - ***bm-3 Benchmark: 250,000 degrees of freedom, sparse solver (Nonlinear with contact)***

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	555	482	442	424
p5-550 2.1 GHz P5+	585	482	414	

ANSYS V11.0 - ***bm-4 Benchmark: 250,000 degrees of freedom, sparse solver (Emag application, Nonlinear)***

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	286	250	231	218
p5-550 2.1 GHz P5+	339	294	269	

ANSYS V11.0 - *bm-5 Benchmark: 230,000 degrees of freedom, JCG Solver*

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	287	186	154	151
p5-550 2.1 GHz P5+	320	211	154	

ANSYS V11.0 - *bm-6 Benchmark: 250,000 degrees of freedom, sparse solver*

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	255	170	137	124
p5-550 2.1 GHz P5+	311	197	143	

ANSYS V11.0 - *bm-7 Benchmark: 800,000 degrees of freedom, sparse solver*

Elapsed time in seconds, lower is better.

	Physical Cores			
System	1	2	4	**8**
550 4.2 GHz P6	1603	1000	702	587
p5-550 2.1 GHz P5+	2337	1177	760	

MSC.Nastran (1 Core)

System	XLEMF	XLRST	LGQDF	XLTDF
#p690 HPC 1.3 GHz P4	2,929	344	3,807	6,936

MSC.Nastran V 2001.0.1 Serial (1 Core) Execution Times

Elapsed time in seconds, lower is better

System	lgqd0	xltd0	xlem0	xl0oop1	xxcm0	xxdm0
#p655 1.3 GHz P4	3,271	6,388	2,550	7,993	12,890	9,774

MSC.Nastran V 2004 Serial (1 Core) Execution Times

Elapsed time in seconds, lower is better

System	LGQDF	XLOOP	XLEMF	XLTDF	XXAFST	XXCMD	XXCDMA
#p5-575 1.9 GHz P5	1757	6564	1550	3521	754	7302	2215

MSC Nastran V2005 Serial (1 Physical Core) Execution Times

Elapsed time in seconds, lower is better

System	B1	LGQDF	OX12	XLEMF	XLTDF	XXAFST	XXCMD	XXCDMA
550 4.2 GHz P6	5332	1531	11136	1388	1986	515	5882	1325
p5-550 1.65 GHz P5	7209	1766	13539	1787	3274	767	8089	1459

MSC Nastran V2006 Serial (1 Physical Core) Execution Times

Elapsed time in seconds, lower is better

System	XLTDF	XXCMD	XXCDMA	XXMST
550 4.2 GHz P6	1911	5768	1050	5209
p5-550 2.1 GHz P5+	2435	5439	1186	5401

Life Sciences: BioInformatics

HMMER V2.3.2 Benchmark: hmmsearch small benchmark

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 / 4	4 / 8
JS22 4.0 GHz P6	509.82	256.50	140.14	88.38
p5-550 2.1 GHz P5+	1958.84	983.91	509.90	391.07

HMMER V2.3.2 Benchmark: hmmsearch large benchmark

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 / 4	4 / 8
JS22 4.0 GHz P6	2388.05	1217.96	606.98	424.99
p5-550 2.1 GHz P5+	10305.32	5237.20	2592.34	2095.81

Life Sciences: Molecular Dynamics/Mechanics

CHARMm Vc28b1

Elapsed time in hours, lower is better

System	1 Processor	2 Processors	4 Processors
#p630 1.0 GHz P4	12.36	6.39	3.32
#p630 1.45 GHz P4+	8.65	4.43	2.34
#p655 1.1 GHz P4	11.21	5.84	3.07

NAMD V2.6 apoA1 Benchmark: 92,224 atoms, 12A cutoff + PME every 4 steps, periodic, total 500 steps

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System / Physical Cores	1	2	4	8	16	32	64	128
Power 575 4.7 GHz POWER6	401	203	104	57	28	15	9	6
P5-575 1.9 GHz POWER5+	863	451	235	140	78	47	35	25

NAMD V2.6 JAC Benchmark: Dihydrofolate reductase in explicit solvent, PME simulation total 1000 steps

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System / Physical Cores	1	2	4	8	16	32	64	128
Power 575 4.7 GHz POWER6	123	68	32	18	10	8	5.8	5.5
P5-575 1.9 GHz POWER5+	257	137	72	40	25	20	15	13

NAMD V2.6 AHLRU Benchmark: 475,202 atoms, 18.5A cutoff + PME every 4 Steps, periodic, total 1500 Steps

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System / Physical Cores	16	32	64	128
Power 575 4.7 GHz POWER6	1835	1026	620	404
P5-575 1.9 GHz POWER5+	3550	1944	1145	750

NAMD V2.6 apoA1 Benchmark: 92,224 atoms, 12A cutoff + PME every 4 steps, periodic, total 500 steps

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 / 4	4 / 8
JS22 4.0 GHz P6	776.70	377.53	192.54	127.67
p5-550 2.1 GHz P5+	1105.68	572.10	288.37	
p5-595 2.3 GHz P5+	982.48	490.00	249.67	190.60

NAMD V2.6 JAC Benchmark: Dihydrofolate reductase in explicit solvent, PME simulation total 1000 steps

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

Physical Cores / MPI Tasks	1 / 1	2 / 2	4 / 4	4 / 8
JS22 Express 4.0 GHz P6	236.59	117.87	62.42	43.10
p5-550 2.1 GHz P5+	324.77	171.40	91.99	
p5-595 2.3 GHz P5+	292.10	147.06	77.74	58.02

Life Sciences: Quantum Chemistry

GAMESS Version December 12, 2003: *l-rotenone - Direct RHF, single point, 479 atomic orbitals*

Elapsed time in seconds, lower is better

GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#p5-595 1.9 GHz P5 64-core DDR1 AIX 5L V5.3	2566	1314	688	368	213
#p5-570 1.9 GHz P5 8-core DDR2 AIX 5L V5.3	2580	1326	687	375	--
#p690 1.7 GHz 32-core AIX 5L V5.2	3009	1543	800	427	229
#p630 1.45 GHz 4-core AIX 5L V5.2	3206	1640	878	--	--

GAMESS Version December 12, 2003: *luciferin - Direct RHF, gradient, 294 atomic orbitals*

Elapsed time in seconds, lower is better

GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#p5-595 1.9 GHz P5 64-core DDR1 AIX 5L V5.3	818	418	218	118	69
#p5-570 1.9 GHz P5 8-core DDR2 AIX 5L V5.3	811	416	216	120	--
#p690 1.7 GHz 32-core AIX 5L V5.2	985	503	259	137	76
#p630 1.45 GHz 4-core AIX 5L V5.2	1030	525	272	--	--

GAMESS Version December 12, 2003: *nicotine - Direct RHF, gradient, 208 atomic orbitals*

Elapsed time in seconds, lower is better

GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#p5-595 1.9 GHz P5 64-core DDR1 AIX 5L V5.3	374	192	102	57	36
#p5-570 1.9 GHz P5 8-core DDR2 AIX 5L V5.3	369	190	102	61	--
#p690 1.7 GHz 32-core AIX 5L V5.2	439	225	117	63	36

GAMESS Version December 12, 2003: *siccc - Direct GVB, Hessian, 180 atomic orbitals*

Elapsed time in seconds, lower is better

GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks
#p5-595 1.9 GHz P5 64-core DDR1 AIX 5L V5.3	533	296	177	120
#p5-570 1.9 GHz P5 8-core DDR2 AIX 5L V5.3	527	287	164	112

GAUSSIAN98 Rev A.11.3, a-pinene HF/6-311G (df,p) SP Energy Calculation

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors
#p630 1.45 GHz P4+	1,054	524	404
#p655 1.1 GHz P4	886	482	288
#p655 1.3 GHz P4	766	422	256
#p650 1.45 GHz P4+	986	512	313

System	1 Processor	2 Processors	4 Processors
#p690 1.3 GHz P4	847	444	288

GAUSSIAN98 Rev A.11.3, a-pinene B3-LYP/6-31G* Frequency Calculation

Elapsed time in seconds, lower is better

System	1 Processor	2 Processors	4 Processors
#p630 1.45 GHz P4+	4,785	2,457	1,533
#p655 1.1 GHz P4	5,229	2,720	1,559
#p655 1.3 GHz P4	4,450	2,319	1,325
#p650 1.45 GHz P4+	4,538	2,325	1,370
#p690 1.3 GHz P4	4,603	2,403	1,416

GAUSSIAN03 Rev B.05: *hf/6-311g(df,p) Calculation*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads					
System	1/1	2/2	4/4	8/8	16/16	16/32
#p5-570 1.9 GHz P5 DDR2	517	263	136	73	47	43

GAUSSIAN03 Rev B.05: *a-pinene rb3lyp/6-31G* Frequency Calculation*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads					
System	1/1	2/2	4/4	8/8	16/16	16/32
#p5-570 1.9 GHz P5 DDR2	3365	1716	881	494	278	260

GAUSSIAN03 Rev B.05: *CIS=DIRECT/6-31++G SCF=DIRECT FORCE*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	1/1	2/2	4/4	8/8	16/16
#p5-570 1.9 GHz P5 DDR2	454	235	125	76	44

GAUSSIAN03 Rev B.05: *td_sp: TD B3LYP 6-31G* SCF=(Direct,Conver=8)*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	1/1	2/2	4/4	8/8	16/16
#p5-570 1.9 GHz P5 DDR2	1895	965	498	265	155

GAUSSIAN03 Rev B.05: *rb3lyp/3-21g force test scf=novaracc Calculation*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads					
System	1/1	2/2	4/4	8/8	16/16	16/32
#p5-570 1.9 GHz P5 DDR2	5968	3064	1599	837	531	507

GAUSSIAN03 Rev C.02: *hf/6-311g(df,p) Calculation*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	1/1	2/2	4/4	8/8	8/16
#p5-570 1.9 GHz P5 DDR2	522	264	137	73	63

GAUSSIAN03 Rev C.02: *a-pinene rb3lyp/6-31G* Frequency Calculation*

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	1/1	2/2	4/4	8/8	8/16
#p5-570 1.9 GHz P5 DDR2	2979	1496	766	458	369

GAUSSIAN03 Rev C.02: ***CIS=DIRECT/6-31++G SCF=DIRECT FORCE***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
#p5-570 1.9 GHz P5 DDR2	436	225	120	68	51

GAUSSIAN03 Rev C.02: ***td_sp: TD B3LYP 6-31G* SCF=(Direct,Conver=8)***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
#p5-570 1.9 GHz P5 DDR2	1860	947	486	255	222

GAUSSIAN03 Rev C.02: ***rb3lyp/3-21g force test scf=novaracc Calculation***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical CPUs / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
#p5-570 1.9 GHz P5 DDR2	5957	3049	1578	845	703

GAUSSIAN03 Rev.D.01: ***NMR test, C2H3F (Test415) RB3LYP/6-31G* FREQ, C10H16 (Pinene)***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
550 4.2 GHz P6	1974	999	513	272	190
p5-550 2.1 GHz P5+	2654	1333	698		
p5-570 2.2 GHz P5+	2533	1274	668		

GAUSSIAN03 Rev.D.01: ***HF/6-311G(df,p), C10H16 (table II_A)***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
550 4.2 GHz P6	386	196	101	55	42
p5-550 2.1 GHz P5+	469	238	126		
p5-570 2.2 GHz P5+	447	227	121		

GAUSSIAN03 Rev.D.01: ***CIS=DIRECT/6-31++G SCF=Direct FORCE, C8H8O2 (table IV)***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
550 4.2 GHz P6	322	167	89	51	37
p5-550 2.1 GHz P5+	394	204	113		
p5-570 2.2 GHz P5+	378	194	110		

GAUSSIAN03 Rev.D.01: ***TD B3LYP 6-31G* SCF=(Direct,Conver=8), C14H12N2O2 (td_sp)***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
550 4.2 GHz P6	1494	759	388	208	156
p5-550 2.1 GHz P5+	1685	850	452		
p5-570 2.2 GHz P5+	1606	815	436		

GAUSSIAN03 Rev.D.01: ***RB3LYP/3-21g FORCE, C54H90N6O18 (test397)***

Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
550 4.2 GHz P6	4636	2378	1230	657	452

p5-550 2.1 GHz P5+	5174	2631	1387
p5-570 2.2 GHz P5+	4943	2514	1327

Petroleum: Reservoir Simulation

ECLIPSE V2004A: Standard Benchmark MILLION (ONEM1)
Black Oil, Fully Implicit, 256 x 256 x 20 Grid Cells 2000 Days Simulation
Elapsed time in seconds, lower is better; Simultaneous multithreading used where appropriate

System	1 Logical Processor	2 Logical Processors	4 Logical Processors	8 Logical Processors	16 Logical Processors
#p5-570 1.9 GHz P5 DDR2	7212	3327	2123	1211	991

Petroleum: Seismic

Focus 5.1, SAGA Marine 2D Benchmark (Serial Runs)
Execution times in seconds for job components, lower is better

System	DECONA	COHERE	VELEX	NMO	MIGRATX
#p655 1.1 GHz P4	24.80	25.57	17.18	7.22	5.99
#p690 1.3 GHz P4	21.18	21.83	14.69	5.73	5.16

Focus 5.1, Seismic Migration Modules (Serial Runs)
Execution times in seconds for modules, lower is better

System	MIGRATE	MIGRATX	MIGZWE(T)	MIGZWE(D)	MIGFX(T)	MIGZX(D)	MIGDMO	MIGTX
#p655 1.1 GHz P4	27.77	30.71	24.04	41.16	180.62	350.75	19.31	203.29
#p690 1.3 GHz P4	24.52	26.88	20.87	35.53	150.13	294.38	16.61	171.74

Weather/Climate Modeling

MM5
MM5 T3A benchmark performance: Gflop/s
Higher values indicate better performance

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks
#p5-595 1.9 GHz P5 DDR1 AIX 5L V5.3	--	2.56	5.08	9.85	19.12
#p5-570 1.9 GHz P5 DDR2 16-core AIX 5L V5.3	1.31	2.63	5.20	9.94	18.57
#p690 1.7 GHz 32-core SMP	1.06	2.10	4.10	7.70	14.60
#p655 1.7 GHz 4-core SP Switch2	1.10	2.10	3.97	7.71	14.57
#p655 1.7 GHz 8-core High Performance Switch	1.08	2.10	4.00	6.76	12.30

MM5 V3.6
MM5 T3A Standard benchmark performance: Gflop/s
Higher values indicate better performance

	Physical CPUs / Computation Threads				
System	1/1	2/2	4/4	8/8	8/16
#p5-575 1.9 GHz P5	1.29	2.61	5.18	9.97	12.30
#p655 1.7 GHz 8-core High Performance Switch	1.10	2.10	4.10	7.71	--

MM5 V3.6 (IBM Optimized)
MM5 T3A Standard benchmark performance: Gflop/s
Higher values indicate better performance

	Physical CPUs / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
#p5-575 1.9 GHz P5	2.0	3.83	7.55	14.83	17.56

MM5 V3.6.2
MM5 T3A Standard benchmark performance: Gflop/s
Higher values indicate better performance

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
p5-575 2.2 GHz P5+	1.62	3.22	6.23	11.89	14.89

MM5 V3.6.2 (IBM Optimized)
MM5 T3A Standard benchmark performance: Gflop/s
Higher values indicate better performance

	Physical Cores / Computation Threads				
System	**1/1**	**2/2**	**4/4**	**8/8**	**8/16**
p5-575 2.2 GHz P5+	2.33	4.51	8.91	17.05	19.83

WRF V2.1.1
WRF Standard benchmark 12km CONUS: Seconds per step, averaged over 149 time steps
Lower values indicate better performance; Simultaneous multithreading used where appropriate

	Physical Cores							
System	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**
Power 575 4.7 GHz POWER6	12.17	6.38	3.53	1.80	0.92	0.49	0.27	0.16
P5-575 1.9 GHz POWER5+	22.99	11.56	6.23	3.24	1.64	0.89	0.47	0.28
JS22 Express 4.0 GHz POWER6	14.99	7.77	4.88	- -	- -	- -	- -	- -

Section 17 - Linux Published Benchmark Results

SPEC CPU2006 and LINPACK Performance

Model	Proc / #Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2006	SPEC int_ base 2006	SPEC fp 2006	SPEC fp_ base 2006	LINPACK HPC	Linux Version
JS12	P6/2	3.8	64/64	16/-	16.1	13.6	17.9	14.2	24,670	RHEL5.1
520	P6/4	4.2	64/64	16/-	-	-	-	-	51,500	SLES10 SP1
550	P6/8	4.2	64/64	32/128	-	-	-	-	104,200	RHEL5.1
570	P6/1	4.7	64/64	8/32	21.7	17.8	22.5	18.1	--	RHEL5.1
570	P6/1	4.7	64/64	8/32	21.3	17.5	22.4	17.8	--	SLES10 SP1
570	P6/4	4.7	64/64	16/64	--	--	--	--	60,370	RHEL5.1
570	P6/4	4.7	64/64	16/64	--	--	--	--	60,080	SLES10 SP1
570	P6/8	4.7	64/64	32/128	--	--	--	--	116,400	RHEL5.1
570	P6/8	4.7	64/64	32/128	--	--	--	--	118,400	SLES10 SP1
570	P6/16	4.7	64/64	64/256	--	--	--	--	229,400	RHEL5.1
570	P6/16	4.7	64/64	64/256	--	--	--	--	235,100	SLES10 SP1
575	P6/32	4.7	64/64	128/512	--	--	--	--	500,000	RHEL 5.2

SPEC CPU2000 and LINPACK Performance

Model	Proc / #Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int 2000	SPEC int_ base 2000	SPEC fp 2000	SPEC fp_ base 2000	LINPACK DP	LINPACK TPP	LINPACK HPC	Linux Version
JS20	PPC970/2	2.2	64/32	1.0/-	--	--	--	--	--	--	13,270	SLES9
JS21	PPC970+/2	2.7	64/32	2.0/-	--	--	--	--	--	--	18,960	SLES9
JS21	PPC970+/4	2.5	64/32	4.0/-	--	--	--	--	--	--	33,720	SLES9
#OP710	P5/2	1.65	64/32	1.9/36	--	--	--	--	--	--	12,120	SLES9
#OP710	P5/1	1.65	64/32	1.9/36	1,144	1,129	1,919	1,828	--	--	--	RHEL AS4
#OP710	P5/2	1.65	64/32	1.9/36	--	--	--	--	--	--	12,120	RHEL AS4
#OP720	P5/1	1.65	64/32	1.9/36	1,138	1,121	1,966	1,865	--	--	--	SLES9
#OP720	P5/4	1.65	64/32	1.9/36	--	--	--	--	--	--	24,120	RHEL AS4
#p5-505	P5/2	1.65	64/32	1.9/36	--	--	--	--	--	--	12,470	RHEL AS4 U1
p5-505	P5+/1	2.1	64/32	1.9/36	1655	1594	3293	2773	--	--	--	SLES10
#p615-6C3	P4+/1	1.2	64/32	1.5/8	--	727	--	877	--	--	--	SLES8
#p615-6E3	P4+/1	1.2	64/32	1.5/8	--	727	--	877	--	--	--	SLES8
p5-510	P5+/1	2.1	64/32	1.9/36	1655	1594	3293	2773	--	--	--	SLES10
p5-520	P5+/1	2.1	64/32	1.9/36	1655	1595	3283	2772	--	--	--	SLES10
p5-520Q	P5+/1	1.65	64/32	1.9/72	1302	1255	2580	2152	--	--	--	SLES10
#p630-6C4	P4+/1	1.2	64/32	1.5/8	--	720	--	852	--	--	--	SLES8
#p630-6E4	P4+/1	1.2	64/32	1.5/8	--	720	--	852	--	--	--	SLES8
#p630-6C4	P4+/1	1.45	64/32	1.5/8	--	856	--	984	--	--	--	SLES8
#p630-6E4	P4+/1	1.45	64/32	1.5/8	--	856	--	984	--	--	--	SLES8
p5-550	P5+/1	2.1	64/32	1.9/36	1656	1596	3282	2778	--	--	--	SLES10
p5-550Q	P5+/1	2.1	64/32	1.9/72	1303	1256	2573	2157	--	--	--	SLES10
#p650	P4+/1	1.45	64/32	1.5/32	--	886	--	1,091	--	--	--	SLES8
#p655	P4+/1	1.7	64/32	1.5/128	--	1,031	--	1,405	--	--	--	SLES8
#p655	P4+/1-LPAR	1.7	64/32	1.5/128	--	1,023	--	1,405	--	--	--	SLES8
p5-560Q	P5+/16	1.8	64/32	15.2/288	--	--	--	--	--	--	104,700	SLES10
#p5-575	P5/8	1.9	64/32	15.2/288	--	--	--	--	--	--	56,780	RHEL AS4
p5-575	P5+/1	2.2	64/32	1.9/36	1730	1666	3418	2896	--	--	--	SLES10
p5-575	P5+/1	1.9	64/32	1.9/36	1501	1445	2979	2543	--	--	--	SLES10
#p5-595	P5/32	1.9	64/32	30.4/576	--	--	--	--	--	--	217,100	SLES9
#p5-595	P5/64	1.9	64/32	60.8/1152	--	--	--	--	--	--	416,800	SLES9 SP3

Multiuser Performance SPEC CPU2006

Model	Processor/ # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int_ rate 2006	SPEC int_ rate_ base 2006	SPEC fp_ rate 2006	SPEC fp_ rate_ base 2006	Linux Version
JS12	P6/2	3.8	64/64	16/-	45.9	41.2	42.5	36.2	RHEL5.1
JS22	P6/4	4.0	64/64	16/-	84.7	77.2	75.0	65.7	SLES0 SP1
520	P6/4	4.2	64/64	16/-	89.2	81.2	79.7	69.0	SLES10 SP1
550	P6/8	4.2	64/64	32/128	213	182	176	151	RHEL5.1
570	P6/4	4.7	64/64	16/64	122	108	116	98.8	RHEL5.1
570	P6/4	4.7	64/64	16/64	118	105	115	97.5	SLES10 SP1
570	P6/8	4.7	64/64	32/128	243	210	216	185	RHEL5.1
570	P6/8	4.7	64/64	32/128	234	204	215	182	SLES10 SP1
570	P6/16	4.7	64/64	64/256	484	420	430	369	RHEL5.1
570	P6/16	4.7	64/64	64/256	466	407	428	364	SLES10 SP1
575	P6/32	4.7	64/64	128/512	928	809	813	681	RHEL 5.2

Multiuser Performance SPEC CPU2000

Model	Processor/ # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC int_ rate 2000	SPEC int_ rate_ base 2000	SPEC fp_ rate 2000	SPEC fp_ rate_ base 2000	Linux Version
#OP710	P5/2	1.65	64/32	1.9/36	--	--	40.2	39.5	SLES9
#OP710	P5/2	1.65	64/32	1.9/36	29.8	29.5	40.1	39.0	RHEL AS4
#OP720	P5/4	1.65	64/32	3.8/72	59.8	58.8	80.8	78.8	SLES9
p5-505	P5+/2	2.1	64/32	1.9/36	43.5	42.4	72.4	66.5	SLES10
p5-510	P5+/2	2.1	64/32	1.9/36	43.5	42.4	72.4	66.5	SLES10
p5-520	P5+/2	2.1	64/32	1.9/36	43.6	42.6	71.7	66.0	SLES10
p5-520Q	P5+/4	1.65	64/32	3.8/72	68.2	66.6	99.0	92.9	SLES10
p5-550	P5+/4	2.1	64/32	1.9/72	86.7	85.0	143	131	SLES10
p5-550Q	P5+/8	1.65	64/32	7.6/144	136	133	196	183	SLES10
#p5-575	P5/8	1.9	64/32	15.2/288	--	--	238	229	RHEL AS4
p5-575	P5+/8	2.2	64/32	1.9/288	199	193	370	310	SLES10
p5-575	P5+/16	1.9	64/32	1.9/288	311	305	541	478	SLES10
#p5-595	P5/32	1.9	64/32	30.4/576	--	--	781	754	SLES9 SP1

Java Performance (VolanoMark)

Model	Proc / #Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	VolanoMark Loopback Msg/Sec	Linux Version
#p630-6C4	P4+/4	1.2	64/32	3.0/16	37,381	SLES8
#p630-6E4	P4+/4	1.2	64/32	3.0/16	37,381	SLES8
#p630-6C4	P4+/4	1.45	64/32	3.0/16	45,082	SLES8
#p630-6E4	P4+/4	1.45	64/32	3.0/16	45,082	SLES8
#p650	P4+/8	1.45	64/32	6.0/128	91,879	SLES8

Java Performance (SPECjbb2000, SPECjbb2005)

Model	Processor / # Cores Memory	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC jbb2000 ops/sec	SPEC jbb2005 ops/sec			Linux Version
						bops	JVM inst.	bops / JVM	
#OP720	P5/4	1.65	64/32	3.8/72	136,167	-	-	-	SLES9
#OP720	P5/4	1.65	64/32	3.8/72	136,261	-	-	-	RHEL AS4
550	P6/8	4.2	64/64	32/128	-	328,343	4	82,086	RHEL5.1
#p5-570	P5/2 DDR2	1.9	64/32	1.9/36	82,615	-	-	-	SLES9
#p5-570	P5/4 DDR2	1.9	64/32	3.8/72	160,995	-	-	-	SLES9
#p5-570	P5/8 DDR1	1.9	64/32	7.6/144	299,197	-	-	-	SLES9
#p5-570	P5/16 DDR1	1.9	64/32	15.2/288	542,145	-	-	-	SLES9
570	P6/4	4.7	64/64	16/64	-	169,304	2	84,652	RHEL5.1
570	P6/8	4.7	64/64	32/128	-	335,424	4	83,856	RHEL5.1
570	P6/16	4.7	64/64	64/256	-	664,167	8	83,021	RHEL5.1
#p690	P4+/16	1.7	64/32	12/256	256,002	-	-	-	SLES8 SP3
#p5-595	P5/32	1.9	64/32	30.4/576	1,076,309	-	-	-	SLES9

Web Serving SPECweb99 and SPECweb99_SSL Performance

Model	Proc./ # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Encryption card	SPEC web99	SPEC web99 ssl	Linux Version
#p5-570	P5/4	1.9	64/32	3.8/72	Yes, ICA	-	4,970	SLES9
#p5-570	P5/4	1.9	64/32	3.8/72	None	13,500	-	RHEL AS3
#p5-570	P5/8	1.9	64/32	7.6/144	None	25,000	-	RHEL AS4

Web Serving SEPCweb2005 Performance

Model	Proc./ # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Encryption card	Result	Banking	Ecommerce	Support	Linux Version
#p5-550	P5+/4	1.9	64/32	3.8/72	None	7,881	12,240	11,820	7,500	SLES9 SP2

SPECsfs97_R1 Benchmark Results

Model	Proc./ # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC sfs97_R1.v3 UDP	SPEC sfs97_R1.v3 TCP	Linux Version
#OP720	P5/4	1.65	64/32	3.8/72	--	67,347	SLES9
#OP720	P5/4	1.65	64/32	3.8/72	--	73,092	SLES9 SP1
#p5-570	P5/2	1.9	64/32	1.9/36	--	45,586	SLES9
#p5-570	P5/4	1.9	64/32	3.8/72	--	81,889	SLES9 SP1

NetBench® Published Results

Model	Processor / # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Mbps
#p5-520	P5/1	1.65	64/32	1.9/36	787
#p5-520	P5/2	1.65	64/32	3.8/72	1,457
#p5-550	P5+/2	1.9	64/32	1.9/36	2,054
#p5-550	P5+/4	1.9	64/32	3.8/72	3,055

SAP Standard Application Benchmark Published Results
Sales and Distribution – SD 2-Tier

Model	# Core	Users	Average Resp. Time	Dialog Steps Per Hour	SAPS	Fully Proc. Line Items Per Hour	OS	Database	CPU Util. %	Kit Ver.	Cert. #
#OP720 1.65 GHz	4	864	1.95	260,000	4,330	86,670	SLES9	DB2 UDB V8.2	99	4.70	2005032
#p5-550 1.9 GHz P5	4	1000	1.97	301,000	5,020	100,330	SLES9	DB2 UDB V8.2.2	99	5.0	2005040
#p5-570 1.9 GHz P5	8	2000	1.95	603,000	10,050	201,000	SLES9	DB2 UDB V8.2.2	99	4.70	2004057
570 4.2 GHz P6	8	3104	1.91	938,000	15,630	312,670	RHEL5.1	DB2 9.5	97	6.0	2008002

SPEC OMP2001 Performance

Model	Proc /Chips /Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	OMP Threads	SPEC OMP Mpeak2001	SPEC OMP Mbase2001	Linux Version
JS12	P6/1/2	3.80	64/64	16/-	4	12,885	12,086	RHEL5.1
JS22	P6/2/4	4.0	64/64	16/-	4	19,688	17,980	SLES10 SP1
#OP710	P5/1/2	1.65	64/32	1.9/36	4	5,282	4,930	SLES9
#OP710	P5/1/2	1.65	64/32	1.9/36	4	5,382	5,020	RHEL AS4
#OP720	P5/2/4	1.65	64/32	3.8/72	8	10,522	9,664	SLES9
#OP720	P5/2/4	1.65	64/32	3.8/72	8	10,750	9,804	RHEL AS4
#p5-520	P5/1/2	1.65	64/32	1.9/36	4	5,287	4,758	RHEL AS3
520	P6/4	4.2	64/64	16/-	8	20,443	18,950	SLES10 SP1
550	P6/8	4.2	64/64	32/128	16	40,773	36,903	RHEL5.1
p5-560Q	P5+/8/16	1.8	64/32	15.2/288	32	45,895	35,534	RHEL AS5
#p5-570	P5/2/4	1.9	64/32	3.8/72	8	14,062	12,403	SLES9
570	P6/8/16	4.7	64/64	64/256	16	94,350	84,017	RHEL5.1
570	P6/8/16	4.7	64/64	64/256	16	85,533	74,670	SLES10 SP1
#p5-575	P5/8/8	1.9	64/32	15.2/288	16	25,683	23,640	RHEL AS4

STREAM Benchmarks

Model	Processor / # Cores	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Standard STREAM Triad MB/sec	Tuned STREAM Triad MB/sec	Linux Version
JS22	P6/4	4.0	64/64	16/-	15,701	--	SLES10 SP1
#p650	P4+/8	1.45	64/32	6.0/128	7,588	--	SLES8
#OP710	P5/2	1.65	64/32	1.9/36	3,948	4,427	RHEL AS4
#OP720	P5/4	1.65	64/32	3.8/72	7,532	8,802	SLES9
570	P6/4	4.7	64/64	16/64	29,404	--	RHEL5.1
575	P6/32	4.7	64/64	128/512	158,639	--	RHEL 5.2

TPC-C Version 5.4 Published Results

Model	Processor / # Cores	# Nodes	GHz	L2/L3 Cache (MB)	tpmC	$/tmpC	Database	Linux Version	Avail. Date
#p5-570	P5/4	1	1.9	3.8/72	197,669.81	3.93	DB2 UDB V8.2	RHEL AS4	02/07/06
p5-570	P5+/4	1	2.2	3.8/72	236,271	2.56	Oracle 10g R2 EE	RHEL5	04/04/08
#p5-520	P5+/2	1	1.65	1.9/36	81,439.30	2.99	Sybase ASE	SLES9	12/22/06
550	P6/4	1	4.2	16/64	276,383	2.22	Sybase ASE	RHEL 5.1	12/16/08

TPC-H 100 GB Published Results

Model	# Nodes	GHz	QphH	$/ QphH	Linux Version	Database	Avail. Date
#OP720	1	1.65	6,357	41.76	SLES9	DB2 UDB V8.2 FP1	1/28/05

TPC-H 300 GB Published Results

Model	# Nodes	GHz	QphH	$/ QphH	Linux Version	Database	Avail. Date
#OP720	2	1.65	12,006	40.32	SLES9	DB2 UDB V8.2 FP1	1/28/05

SPECjAppServer2004 Performance

J2EE Model/GHz	J2EE OS	J2EE AppServer	# J2EE Nodes / Cores	DB Model/GHz	Database OS	Database	# DB Nodes	JOPS
#OP720 1.65 GHz	SLES 9	WebSphere 6.0	4 nodes 16 cores	OP720 / 1.65	SLES9	DB2 UDB V8.2	1 node 4 cores	1334.96
#p5-550 1.9 GHz	SLES 9	WebSphere 6.0	8 nodes 32 cores	p5-570 / 1.9	SLES9	DB2 UDB V8.2.3	1 node 8 cores	2921.48

Life Sciences: BioInformatics

BLAST-2.2.13: *BLASTn Test Case Description*

Description	Input Query	Database
A nucleotide sequence is compared with the contents of a nucleotide sequence database to find sequences with regions homologous to regions of the original sequence	est100.fa: 500 bp/seq mito.nt: 16,000 bp/seq seq_lg.fa: 1 million bp/seq	Nt (11.7 GB)

BLAST-2.2.13: *BLASTn Test Case Results – Default Engine, Word Size = 22*

Elapsed time in seconds, lower is better

	JS21 2.6 GHz PowerPC 970MP installed in BladeCenter 8677-3XU chassis			
Test Cases	**Number of Threads**	**Standard Version**	**AltiVec™ Enabled Version**	**Improvement**
Est100.fa versus nt	1	995	1685	1.69x
	2	593	921	1.55x
Mito.nt versus nt	1	153	255	1.66x
	2	79	133	1.69x
Seq_lg.fa versus nt	1	5286	14082	2.66x
	2	2863	7279	2.54x

FASTA 34t25b1: *Smith-Waterman (ssearch_34t) Test Case Descriptions*

Test Cases	Descriptions
Small Protein Search	An input of 413 amino acids was used to search against a SwissProt database containing 156,079 sequences and 58,554,914 residues
Large Protein Search	An input of 1350 amino acids was used to search against the nr database containing 2,321,957 sequences and 787,608,532 residues

Small DNA Search	An input of 88 nucleotides was used to search against the mouse_est database containing 1,715,033,129 residues in 3,819,720 sequences
Large DNA Search	An input of 380 nucleotides was used to search against mouse_est database containing 1,715,033,129 residues in 3,819,720 sequences

FASTA 34t25b1: *Smith-Waterman (ssearch_34t) Test Case Results*
Elapsed time in seconds, lower is better

	JS21 2.6 GHz PowerPC 970MP installed in BladeCenter 8677-3XU chassis			
Test Cases	**Number of Threads**	**Standard Version**	**AltiVec Enabled Version**	**Improvement**
Small Protein Search	1 2	206 105	10 6.4	20.6x 16.4x
Large Protein Search	1 2	8971 4569	478 298	18.8x 15.3x
Small DNA Search	1 2	2150 1096	104 68	20.7x 16.1x
Large DNA Search	1 2	10328 5208	471 257	21.9x 20.3x

HMMER 2.3.2: *hmmsearch Test Case Descriptions*

Test Cases	**Descriptions**
Small Case	A HMM of 500 amino acids was used to search against SwissProt database consisting of 126,539 sequences and 46,382,439 residues.
Large Case	A HMM of 236 amino acids was used to search against nr database consisting of 2,317,995 sequences and 786,442,666 residues.

HMMER 2.3.2: *hmmsearch Test Case Results*
Elapsed time in seconds, lower is better

	JS21 2.6 GHz PowerPC 970MP installed in BladeCenter 8677-3XU chassis			
Test Cases	**Number of Threads**	**Standard Version**	**AltiVec Enabled Version**	**Improvement**
Small Case	1 2	660 333	179 109	3.69x 3.05x
Large Case	1 2	6107 2849	1371 813	4.46x 3.50x

Life Sciences: Molecular Mechanics

CPMD (Car-Parinello Molecular Dynamics) Version 3.9.1
Test Case 1 (32 water molecules): elapsed time in seconds

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks
#OP720 1.65 GHz 4-core SLES9	2175	1569	636		
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	1472		653	232	142

CPMD (Car-Parinello Molecular Dynamics) Version 3.9.1
Test Case 2 (64 atom Si): elapsed time in seconds

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks
#OP720 1.65 GHz 4-core SLES9	415	249	138	--	--
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	398	232	120	72	51

CPMD (Car-Parinello Molecular Dynamics) Version 3.9.2
Test Case 1 (32 water molecules): elapsed time in seconds

Platform / Tasks	1 MPI Task on 1 System	2 MPI Tasks on 1 System	4 MPI Tasks on 2 Systems	8 MPI Tasks on 4 Systems	16 MPI Tasks on 8 Systems
#OP710 1.65 GHz 2-core SLES9	2003	1429	705	429	--
#p5-505 1.65 GHz 2-core SLES9	1561	929	503	293	293

CPMD (Car-Parinello Molecular Dynamics) Version 3.9.2
Test Case 2 (64 atom Si): elapsed time in seconds

Platform / Tasks	1 MPI Task on 1 System	2 MPI Tasks on 1 System	4 MPI Tasks on 2 Systems	8 MPI Tasks on 4 Systems	16 MPI Tasks on 8 Systems
#OP710 1.65 GHz 2-core SLES9	353	206	159	107	--
#p5-505 1.65 GHz 2-core SLES9	347	174	124	65	43

CPMD (Car-Parinello Molecular Dynamics) Version 3.9.2
Test Case 1 (32 water molecules): elapsed time in seconds

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	1602.6	660.7	305.8	151.6

CPMD (Car-Parinello Molecular Dynamics) Version 3.9.2
Test Case 2 (64 atom Si): elapsed time in seconds

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	300.6	146.9	72.4	43.4

Life Sciences: Quantum Chemistry

GAMESS Version December 12, 2003: *I-rotenone - Direct RHF, single point, 479 atomic orbitals*
Elapsed time in seconds, lower is better
GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#OP710 1.65 GHz 2-core SLES9	--	1410	731	394	--
#OP720 1.65 GHz 4-core SLES9	2916	1497	782	--	--
#p5-520 1.65 GHz P5 2-core SLES9	2907	1515	--	--	--
#p630 1.45 GHz 4-core SLES8	3272	1676	917	--	--
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	2528	1298	676	363	210
#p5-570 1.9 GHz P5 4-core DDR1 SLES9	2540	1301	679	--	--
#p5-575 1.9 GHz P5 8-core SLES9	2388	1218	635	341	--

GAMESS Version December 12, 2003: *luciferin - Direct RHF, gradient, 294 atomic orbitals*
Elapsed time in seconds, lower is better
GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI asks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#OP710 1.65 GHz 2-core SLES9	--	444	228	122	--
#OP720 1.65 GHz 4-core SLES9	916	467	241	--	--
#p5-520 1.65 GHz P5 2-core SLES9	923	477	--	--	--
#p630 1.45 GHz 4-core SLES8	1033	529	290	--	--
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	797	407	210	113	65
#p5-570 1.9 GHz P5 4-core DDR1 SLES9	797	406	210	--	--
#p5-575 1.9 GHz P5 8-core SLES9	758	386	199	109	--

GAMESS Version December 12, 2003: *nicotine - Direct RHF, gradient, 208 atomic orbitals*
Elapsed time in seconds, lower is better
GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#OP710 1.65 GHz 2-core SLES9	--	198	103	56	--
#OP720 1.65 GHz 4-core SLES9	420	215	112	--	--
#p5-520 1.65 GHz P5 2-core SLES9	422	218	--	--	--
#p630 1.45 GHz 4-core SLES8	478	244	131	--	--
#p5-570 1.9 GHz P5 4-core DDR1 SLES9	365	187	98	--	--
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	366	189	98	55	33

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	337	173	90	49	--

GAMESS Version December 12, 2003: *siccc - Direct GVB, Hessian, 180 atomic orbitals*
Elapsed time in seconds, lower is better
GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
#OP710 1.65 GHz 2-core SLES9	--	288	161	105	--
#OP720 1.65 GHz 4-core SLES9	598	331	189	--	--
#p5-520 1.65 GHz P5 2-core SLES9	600	334	--	--	--
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	519	285	164	117	87
#p5-570 1.9 GHz P5 4-core DDR1 SLES9	522	286	166	--	--
#p5-575 1.9 GHz P5 8-core SLES9	465	245	135	--	--

GAMESS Version December 12, 2003: *tetrodotoxin - Direct RHF, single point, 364 atomic orbitals*
Elapsed time in seconds, lower is better
GAMESS creates 2N MPI tasks for what is essentially an N-way job.

Platform / Tasks	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks
#OP720 1.65 GHz 4-core SLES9	760	416	273	--
#p5-520 1.65 GHz P5 2-core SLES9	746	437	--	--
#p5-570 1.9 GHz P5 16-core DDR2 SLES9	666	353	219	146
#p5-575 1.9 GHz P5 8-core SLES9	622	321	173	95

GAMESS Version November 22, 2004: *l-rotenone - Direct RHF, single point, 479 atomic orbitals*
Elapsed time in seconds, lower is better

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	1745	880	447	234

GAMESS Version November 22, 2004: *luciferin - Direct RHF, gradient, 294 atomic orbitals*
Elapsed time in seconds, lower is better

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	545	276	142	77

GAMESS Version November 22, 2004: *nicotine - Direct RHF, gradient, 208 atomic orbitals*
Elapsed time in seconds, lower is better

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	255	131	69	38

GAMESS Version November 22, 2004: *siccc - Direct GVB, Hessian, 180 atomic orbitals*

Elapsed time in seconds, lower is better

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	455	241	132

GAMESS Version November 22, 2004: *tetrodotoxin - Direct RHF, single point, 364 atomic orbitals*

Elapsed time in seconds, lower is better

Platform / Tasks	1 MPI Task	2 MPI Tasks	4 MPI Tasks	8 MPI Tasks
#p5-575 1.9 GHz P5 8-core SLES9	634	325	170	105

Section 18 - Historical Multiuser Performance

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7006-41T	RS/6000 41T	1994/05/24	1997/01/10	PowerPC 601	80	1	N/A	
7006-41W	RS/6000 41W	1994/05/24	1997/07/18	PowerPC 601®	80	1	N/A	
7006-42T	RS/6000 42T	1995/07/07	1997/09/24	PowerPC 604™	120	1	N/A	
7006-42W	RS/6000 42W	1995/07/07	1997/09/24	PowerPC 604	120	1	N/A	
7007-N40	RS/6000 N40	1994/03/08	1995/09/19	PowerPC 601	50	1	N/A	
7008-M20	RS/6000 M20	1993/02/02	1995/01/06	POWER	33	1	N/A	
7008-M2A	RS/6000 M2A	1993/02/02	1994/10/16	POWER	33	1	N/A	
7009-C10	RS/6000 C10	1994/05/24	1997/07/18	PowerPC 601	80	1	1.6	
7009-C20	RS/6000 C20	1995/06/19	1998/01/30	PowerPC 604	120	1	2.1	
7011-220	RS/6000 220	1992/01/21	1995/01/06	POWER	33	1	.3[e]	
7011-22W	RS/6000 22W	1992/01/21	1995/01/06	POWER	33	1	N/A	
7011-230	RS/6000 230	1993/05/18	1995/01/06	POWER	45	1	.5[e]	
7011-23S	RS/6000 23S	1993/05/18	1994/10/26	POWER	45	1	.5[e]	
7011-23T	RS/6000 23T	1993/05/18	1994/10/26	POWER	45	1	N/A	
7011-23W	RS/6000 23W	1993/05/18	1994/10/26	POWER	45	1	N/A	
7011-250	RS/6000 250	1993/09/21	1997/07/18	PowerPC 601	66	1	1.0	
7011-2xxu			1997/07/18	PowerPC 601	80	1	1.3	
7011-25S	RS/6000 25S	1993/09/21	1996/10/25	PowerPC 601	66	1	1.0	
7011-25T	RS/6000 25T	1993/09/21	1997/07/18	PowerPC 601	66/80	1	N/A	
7011-25W	RS/6000 25W	1993/09/21	1996/10/25	PowerPC 601	66/80	1	N/A	
7012-320	RS/6000 320	1990/02/15	1992/10/28	POWER	20	1	.3[e]	
7012-32H	RS/6000 32H	1991/03/12	1994/10/26	POWER	25	1	.4[e]	
7012-340	RS/6000 340	1992/01/21	1994/11/04	POWER	33	1	.5[e]	
7012-34H	RS/6000 34H	1993/07/13	1994/10/26	POWER	41.6	1	.8[e]	
7012-350	RS/6000	1992/01/21	1993/08/18	POWER	41	1	.8[e]	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
	350							
7012-355	RS/6000 355	1993/02/02	1994/10/26	POWER	41	1	N/A	
7012-360	RS/6000 360	1993/02/02	1994/11/04	POWER	50	1	.9[e]	
7012-365	RS/6000 365	1993/02/02	1994/10/26	POWER	50	1	N/A	
7012-36T	RS/6000 36T	1993/05/18	1994/10/26	POWER	50	1	N/A	
7012-370	RS/6000 370	1993/02/02	1996/05/20	POWER	62	1	1.7	
7012-375	RS/6000 375	1993/02/02	1994/10/26	POWER	62	1	N/A	
7012-37T	RS/6000 37T	1993/05/18	1996/05/20	POWER	62	1	N/A	
7012-380	RS/6000 380	1994/05/24	1996/05/20	POWER2	59	1	2.3	
7012-390	RS/6000 390	1994/05/24	1997/07/18	POWER2	67	1	3.0	
7012-39H	RS/6000 39H	1995/02/07	1998/01/30	POWER2	67	1	3.3	
7012-397	RS/6000 397	1997/10/06	1999/03/19	POWER2 SC	160	1	6.7	
7012-G30	RS/6000 G30	1994/10/04	1996/10/23	PowerPC 601	75	2	3.1	
7012-G30				PowerPC 601	75	4	5.2	
7012-G40	RS/6000 G40	1996/07/23	1998/01/08	PowerPC 604	112	1	2.6	
7012-G40				PowerPC 604	112	2	4.8	
7012-G40				PowerPC 604	112	4	8.8	
7013-520	RS/6000 520	1990/02/15	1992/04/21	POWER	20	1	.3[e]	
7013-52H	RS/6000 52H	1992/01/21	1995/01/06	POWER	25	1	.4[e]	
7013-530	RS/6000 530	1990/02/15	1992/01/02	POWER	25	1	.4[e]	
7013-53H	RS/6000 53H	1991/10/02	1993/08/18	POWER	33	1	.5[e]	
7013-540	RS/6000 540	1990/02/15	1992/01/02	POWER	30	1	.5[e]	
7013-550	RS/6000 550	1990/10/30	1993/08/18	POWER	41	1	.8[e]	
7013-55L	RS/6000 55L	1993/05/18	1994/10/26	POWER	41.6	1	.8[e]	
7013-560	RS/6000 560	1992/01/21	1993/12/21	POWER	50	1	.9[e]	
7013-570	RS/6000 570	1993/02/02	1996/05/20	POWER	50	1	1.3	
7013-580	RS/6000 580	1992/09/22	1996/05/20	POWER	62.5	1	1.7	
7013-58H	RS/6000 58H	1993/09/21	1996/10/25	POWER2	55	1	3.2	
7013-590	RS/6000 590	1993/09/21	1997/09/24	POWER2	66	1	3.9	
7013-59H	RS/6000	1994/05/24	1997/01/10	POWER2	66	1	4.4	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
	59H							
7013-591	RS/6000 591	1995/07/25	1997/07/18	POWER2	77	1	4.5	
7013-595	RS/6000 595	1996/10/08	1999/01/08	POWER2 SC	135	1	5.8	
7013-J30	RS/6000 J30	1994/10/04	1996/10/23	PowerPC 601	75	2	4.5	
7013-J30				PowerPC 601	75	4	7.5	
7013-J30				PowerPC 601	75	6	10.3	
7013-J30				PowerPC 601	75	8	11.7	
7013-J40	RS/6000 J40	1996/07/23	1998/01/08	PowerPC 604	112	2	5.8	
7013-J40				PowerPC 604	112	4	10.0	
7013-J40				PowerPC 604	112	6	14.5	
7013-J40				PowerPC 604	112	8	19.2	
7013-J50	RS/6000 J50	1997/04/15	1999/01/18	PowerPC 604e	200	2	9.3	
7013-J50				PowerPC 604e	200	4	17.0	
7013-J50				PowerPC 604e	200	6	23.8	
7013-J50				PowerPC 604e	200	8	30.6	
7015-930	RS/6000 930	1990/02/15	1992/07/15	POWER	25	1	.4[e]	
7015-950	RS/6000 950	1991/05/07	1993/12/21	POWER	41	1	.8[e]	
7015-970	RS/6000 970	1992/04/21	1993/08/18	POWER	50	1	.8[e]	
7015-97B	RS/6000 97B	1993/02/02	1995/01/06	POWER	50	1	1.3[e]	
7015-980	RS/6000 980	1992/09/22	1993/08/18	POWER	62.5	1	1.7[e]	
7015-98B	RS/6000 98B	1993/02/02	1996/05/20	POWER	62.5	1	1.7	
7015-990	RS/6000 990	1993/09/21	1996/05/20	POWER2	71.5	1	3.3	
7015-R10	RS/6000 R10	1994/05/24	1996/05/20	POWER	50	1	1.6	
7015-R20	RS/6000 R20	1994/05/24	1998/01/30	POWER2	66	1	4.4	
7015-R21	RS/6000 R21	1995/07/25	1996/10/25	POWER2	77	1	4.5	
7015-R24	RS/6000 R24	1994/05/24	1998/01/30	POWER2	71.5	1	4.9	
7015-R30	RS/6000 R30	1994/10/04	1996/10/23	PowerPC 601	75	2	4.5	
7015-R30				PowerPC 601	75	4	7.5	
7015-R30				PowerPC 601	75	6	10.3	
7015-R30				PowerPC 601	75	8	11.7	
7015-R40	RS/6000 R40	1996/07/23	1998/01/08	PowerPC 604	112	2	5.8	
7015-R40				PowerPC 604	112	4	10.0	
7015-R40				PowerPC 604	112	6	14.5	
7015-R40				PowerPC 604	112	8	19.2	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7015-R50	RS/6000 R50	1997/04/15	2000/08/15	PowerPC 604e	200	4	17.0	
7015-R50				PowerPC 604e	200	6	23.8	
7015-R50				PowerPC 604e	200	8	30.6	
7017-S70	RS/6000 S70	1997/10/06	1999/12/13	RS64	125	4	24.2	
7017-S70				RS64	125	8	46.3	
7017-S70				RS64	125	12	62.2	
7017-S70		1998/10/05	1999/12/13	RS64 II	262	4	46.0	
7017-S70				RS64 II	262	8	82.7	
7017-S70				RS64 II	262	12	113.8	
7017-S7A	RS/6000 S7A	1998/10/05	2000/12/01	RS64 II	262	4	52.7	
7017-S7A				RS64 II	262	8	98.7	
7017-S7A				RS64 II	262	12	136.7	
7017-S80	RS/6000 S80	1999/09/13	2001/08/31	RS64 III	450	6	161.7	
7017-S80				RS64 III	450	12	306.7	
7017-S80				RS64 III	450	18	428.7	
7017-S80				RS64 III	450	24	533.3	
7017-S80		2000/10/03	2001/08/31	RS64 IV	600	6	219.0	
7017-S80				RS64 IV	600	12	416.0	
7017-S80				RS64 IV	600	18	583.3	
7017-S80				RS64 IV	600	24	736.0	
7024-E20	RS/6000 E20	1995/10/10	1997/07/18	PowerPC 604	100	1	2.5	
7024-E20				PowerPC 604	133	1	2.8[e]	
7024-E20		1996/10/08	1997/07/18	PowerPC 604	166	1	3.7[e]	
7024-E30	RS/6000 E30	1996/04/23	1999/03/19	PowerPC 604	133	1	2.8	
7024-E30		1996/10/08	1999/03/19	PowerPC 604	166	1	3.7	
7024-E30		1997/04/15	1999/03/19	PowerPC 604e	233	1	4.7	
7025-F30	RS/6000 F30	1996/02/20	1998/01/08	PowerPC 604	133	1	2.8	
7025-F30		1996/10/08	1998/01/08	PowerPC 604	166	1	3.7	
7025-F40	RS/6000 F40	1996/10/08	2000/05/08	PowerPC 604	166	1	2.8	
7025-F40				PowerPC 604	166	2	4.2	
7025-F40		1997/04/15	2000/05/08	PowerPC 604e	233	1	3.7	
7025-F40				PowerPC 604e	233	2	5.2	
7025-F50	RS/6000 F50	1997/04/15	2001/07/17	PowerPC 604e	166	1	8.2	
7025-F50				PowerPC 604e	166	2	14.9	
7025-F50				PowerPC 604e	166	3	21.0	
7025-F50				PowerPC 604e	166	4	27.1	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7025-F50		1998/02/09	2001/07/17	PowerPC 604e	332	1	10.0	
7025-F50				PowerPC 604e	332	2	17.9	
7025-F50				PowerPC 604e	332	3	25.2	
7025-F50				PowerPC 604e	332	4	32.8	
7025-F80	RS/6000 F80	2000/05/09	2001/07/13	RS64 III	450	1	23.0	
7025-F80				RS64 III	450	2	50.0	
7025-F80				RS64 III	450	4	87.7	
7025-F80				RS64 III	500	6	111.9	
7025-F80		2001/04/17	2001/07/13	RS64 IV	600	1	32.3	
7025-F80				RS64 IV	600	2	69.0	
7025-F80				RS64 IV	600	4	117.0	
7025-F80				RS64 IV	668	6	191.2	
7025-6F0	pSeries 660 - 6F0	2001/06/05	2002/04/09	RS64 III	450	1		0.93
7025-6F0				RS64 III	450	2		2.02
7025-6F0				RS64 III	450	4		3.55
7025-6F0		2001/06/05	2003/09/13	RS64 IV	600	1		1.26
7025-6F0				RS64 IV	600	2		2.69
7025-6F0				RS64 IV	600	4		4.57
7025-6F0		2002/04/08	2003/09/13	RS64 IV	750	1		1.91
7025-6F0				RS64 IV	750	2		3.49
7025-6F0				RS64 IV	750	4		5.85
7025-6F1	pSeries 660 - 6F1	2001/04/17	2002/04/09	RS64 III	450	1		0.93
7025-6F1				RS64 III	450	2		2.02
7025-6F1				RS64 III	450	4		3.55
7025-6F1				RS64 IV	668	6		7.46
7025-6F1		2001/04/17	2003/09/13	RS64 IV	600	1		1.26
7025-6F1				RS64 IV	600	2		2.69
7025-6F1				RS64 IV	600	4		4.57
7025-6F1		2002/04/08	2003/09/13	RS64 IV	750	1		1.91
7025-6F1				RS64 IV	750	2		3.49
7025-6F1				RS64 IV	750	4		5.85
7025-6F1				RS64 IV	750	6		8.23
7026-B80	pSeries 640	2000/10/03	2003/12/12	POWER3-II 4MB L2	375	1		1.00
7026-B80				POWER3-II 4MB L2	375	2		1.92
7026-B80				POWER3-II 4MB L2	375	3		2.55
7026-B80				POWER3-II 4MB L2	375	4		3.47
7026-B80				POWER3-II 8MB L2	375	2		1.99
7026-B80				POWER3-II 8MB L2	375	4		3.59
7026-B80		2001/10/04	2003/12/12	POWER3-II 8MB L2	450	2		2.27
7026-B80				POWER3-II 8MB L2	450	4		4.01

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7026-H10	RS/6000 H10	1996/10/08	1998/02/27	PowerPC 604e	233	2	5.2[e]	
7026-H50	RS/6000 H50	1998/02/09	2000/12/01	PowerPC 604e	332	1	10.0	
7026-H50				PowerPC 604e	332	2	17.9	
7026-H50				PowerPC 604e	332	3	25.2	
7026-H50				PowerPC 604e	332	4	32.8	
7026-H70	RS/6000 H70	1999/04/06	2001/07/17	RS64 II	340	1	16.7	
7026-H70				RS64 II	340	2	31.9	
7026-H70				RS64 II	340	3	44.5	
7026-H70				RS64 II	340	4	57.1	
7026-H80	RS/6000 H80	2000/05/09	2001/07/13	RS64 III	450	1	23.0	
7026-H80				RS64 III	450	2	50.0	
7026-H80				RS64 III	450	4	87.7	
7026-H80				RS64 III	500	6	111.9	
7026-H80		2001/04/17	2001/07/13	RS64 IV	600	1	32.3	
7026-H80				RS64 IV	600	2	69.0	
7026-H80				RS64 IV	600	4	117.0	
7026-H80				RS64 IV	668	6	191.2	
7026-M80	RS/6000 M80	2000/05/09	2002/01/31	RS64 III	500	2		2.49
7026-M80				RS64 III	500	4		4.42
7026-M80				RS64 III	500	6		6.49
7026-M80				RS64 III	500	8		8.53
7026-M80		2001/09/04	2002/01/31	RS64 IV	750	2		3.71
7026-M80				RS64 IV	750	4		6.68
7026-M80				RS64 IV	750	6		10.14
7026-M80				RS64 IV	750	8		13.28
7026-6H0	pSeries 620 - 6H0	2001/06/05	2002/04/09	RS64 III	450	1		0.93
7026-6H0				RS64 III	450	2		2.02
7026-6H0				RS64 III	450	4		3.55
7026-6H0		2001/06/05	2003/09/13	RS64 IV	600	1		1.26
7026-6H0				RS64 IV	600	2		2.69
7026-6H0				RS64 IV	600	4		4.57
7026-6H0		2002/04/08	2003/09/13	RS64 IV	750	1		1.91
7026-6H0				RS64 IV	750	2		3.49
7026-6H0				RS64 IV	750	4		5.85
7026-6H1	pSeries 620 - 6H1	2001/04/17	2002/04/09	RS64 III	450	1		0.93
7026-6H1				RS64 III	450	2		2.02
7026-6H1				RS64 III	450	4		3.55
7026-6H1				RS64 IV	668	6		7.46
7026-6H1		2001/04/17	2003/09/13	RS64 IV	600	1		1.26
7026-6H1				RS64 IV	600	2		2.69
7026-6H1				RS64 IV	600	4		4.57
7026-6H1		2002/04/08	2003/09/13	RS64 IV	750	1		1.91
7026-6H1				RS64 IV	750	2		3.49
7026-6H1				RS64 IV	750	4		5.85

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7026-6H1				RS64 IV	750	6		8.23
7026-6M1	pSeries 660 - 6M1	2001/09/04	2003/09/13	RS64 IV	500	2		2.49
7026-6M1				RS64 IV	500	4		4.42
7026-6M1				RS64 IV	750	2		3.71
7026-6M1				RS64 IV	750	4		6.68
7026-6M1				RS64 IV	750	6		10.14
7026-6M1				RS64 IV	750	8		13.28
7028-6C1	pSeries 610 - 6C1	2001/10/04	2003/12/09	POWER3-II	333	1		0.92
7028-6C1				POWER3-II	375	1		1.00
7028-6C1				POWER3-II	450	1		1.19
7028-6C1				POWER3-II	333	2		1.77
7028-6C1				POWER3-II	375	2		1.92
7028-6C1				POWER3-II	450	2		2.27
7028-6C4	pSeries 630 - 6C4	2002/06/25	2003/10/31	POWER4	1000	1		1.72
7028-6C4				POWER4	1000	2		3.68
7028-6C4				POWER4	1000	2 1-w		4.46
7028-6C4				POWER4	1000	4		7.12
7028-6C4		2003/04/08	2005/03/31	POWER4+	1200	1		2.50
7028-6C4				POWER4+	1200	2		4.00
7028-6C4				POWER4+	1200	2 1-w		5.13
7028-6C4				POWER4+	1200	4		8.05
7028-6C4		2003/02/18	2005/03/31	POWER4+	1450	1		2.94
7028-6C4				POWER4+	1450	2		4.41
7028-6C4				POWER4+	1450	2 1-w		6.07
7028-6C4				POWER4+	1450	4		8.69
7028-6E1	pSeries 610 - 6E1	2001/10/04	2003/12/09	POWER3-II	333	1		0.92
7028-6E1				POWER3-II	375	1		1.00
7028-6E1				POWER3-II	450	1		1.19
7028-6E1				POWER3-II	333	2		1.77
7028-6E1				POWER3-II	375	2		1.92
7028-6E1				POWER3-II	450	2		2.27
7028-6E4	pSeries 630 - 6E4	2002/06/25	2003/10/31	POWER4	1000	1		1.72
7028-6E4				POWER4	1000	2		3.68
7028-6E4				POWER4	1000	2 1-w		4.46
7028-6E4				POWER4	1000	4		7.12
7028-6E4		2003/04/08	2005/12/13	POWER4+	1200	1		2.50
7028-6E4				POWER4+	1200	2		4.00
7028-6E4				POWER4+	1200	2 1-w		5.13
7028-6E4				POWER4+	1200	4		8.05
7028-6E4		2003/02/18	2005/12/13	POWER4+	1450	1		2.94
7028-6E4				POWER4+	1450	2		4.41
7028-6E4				POWER4+	1450	2 1-w		6.07
7028-6E4				POWER4+	1450	4		8.69
7029-6C3	pSeries 615 - 6C3	2003/05/27	2005/03/31	POWER4+	1200	1		2.50

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7029-6C3				POWER4+	1200	2		4.00
7029-6C3		2003/10/14	2005/03/31	POWER4+	1450	1		-
7029-6C3				POWER4+	1450	2		4.41
7029-6E3	pSeries 615 - 6E3	2003/05/27	2005/03/31	POWER4+	1200	1		2.50
7029-6E3				POWER4+	1200	2		4.00
7029-6E3		2003/10/14	2005/03/31	POWER4+	1450	1		-
7029-6E3				POWER4+	1450	2		4.41
7037-A50	System p5 185	2006/02/14	2007/05/18	PowerPC 970	2500	1	2.48	
				PowerPC 970	2500	2	4.34	
7038-6M2	pSeries 650	2002/11/12	2005/06/21	POWER4+	1200	2		4.00
7038-6M2				POWER4+	1200	4		8.05
7038-6M2				POWER4+	1200	6		11.77
7038-6M2				POWER4+	1200	8		15.49
7038-6M2				POWER4+	1450	2		4.47
7038-6M2				POWER4+	1450	4		9.12
7038-6M2				POWER4+	1450	6		13.47
7038-6M2				POWER4+	1450	8		18.67
7039-651	pSeries 655	2002/11/12	2003/12/31	POWER4	1100	8		12.00
7039-651				POWER4	1300	4		9.05
7039-651		2003/05/06	2005/11/18	POWER4+	1500	8		21.87
7039-651				POWER4+	1700	4		15.22
7040-671	pSeries 670	2002/04/09	2003/12/31	POWER4	1100	4		10.18
7040-671				POWER4	1100	8		18.02
7040-671				POWER4	1100	16		34.66
7040-671		2003/05/06	2005/11/18	POWER4+	1500	4		13.66
7040-671				POWER4+	1500	8		24.18
7040-671				POWER4+	1500	16		46.79
7040-681	pSeries 690	2001/10/04	2003/12/31	POWER4	1100	8		18.02
7040-681				POWER4	1100	16		34.66
7040-681				POWER4	1100	24		48.11
7040-681				POWER4	1100	32		60.66
7040-681				POWER4	1300	8		21.20
7040-681				POWER4	1300	16		40.92
7040-681				POWER4	1300	24		56.46
7040-681				POWER4	1300	32		71.44
7040-681	HPC			POWER4	1300	8		22.71
7040-681	HPC			POWER4	1300	16		42.09
7040-681		2003/05/06	2005/11/18	POWER4+	1500	8		24.18
7040-681				POWER4+	1500	16		46.79
7040-681				POWER4+	1500	24		64.99
7040-681				POWER4+	1500	32		81.95
7040-681				POWER4+	1700	8		27.11
7040-681				POWER4+	1700	16		52.45
7040-681				POWER4+	1700	24		72.86
7040-681				POWER4+	1700	32		92.19

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7040-681		2004/02/24	2005/11/18	POWER4+	1900	8		30.63
7040-681				POWER4+	1900	16		59.26
7040-681				POWER4+	1900	24		82.32
7040-681				POWER4+	1900	32		104.17
7043-140	RS/6000 43P-140	1996/10/08	2000/12/01	PowerPC 604e	166	1	2.9	
7043-140				PowerPC 604e	200	1	3.6	
7043-140u		1997/04/15	2000/12/01	PowerPC 604e	233	1	3.6	
7043-140n				PowerPC 604e	233	1	3.9	
7043-140		1997/10/06	2000/12/01	PowerPC 604e	332	1	5.3	
7043-150	RS/6000 43P-150	1998/10/05	2003/12/12	PowerPC 604e	250	1		0.18
7043-150				PowerPC 604e	375	1		0.26
7043-240	RS/6000 43P-240	1996/10/08	1999/03/19	PowerPC 604e	166	1	2.8	
7043-240				PowerPC 604e	166	2	4.2	
7043-240		1997/04/15	1999/03/19	PowerPC 604e	233	1	3.7	
7043-240				PowerPC 604e	233	2	5.2	
7043-260	RS/6000 43P-260	1998/10/05	2000/12/01	POWER3	200	1	10.5	
7043-260				POWER3	200	2	21.0	
7044-170	RS/6000 44P-170	2000/02/07	2003/12/12	POWER3-II 1MB L2	333	1		0.58
7044-170				POWER3-II 4MB L2	400	1		0.73
7044-170		2000/10/03	2003/12/12	POWER3-II 8MB L2	450	1		0.79
7044-270	RS/6000 44P-270	2000/02/07	2003/09/13	POWER3-II 4MB L2	375	1		1.00
7044-270				POWER3-II 4MB L2	375	2		1.92
7044-270				POWER3-II 4MB L2	375	3		2.55
7044-270				POWER3-II 4MB L2	375	4		3.47
7044-270		2000/10/03	2003/09/13	POWER3-II 8MB L2	375	2		1.99
7044-270				POWER3-II 8MB L2	375	4		3.59
7044-270		2001/10/04	2003/09/13	POWER3-II	450	2		2.27
7044-270				POWER3-II	450	4		4.01
7046-B50	RS/6000 B50	1999/09/13	2003/09/13	PowerPC 604e	375	1		0.26
7248-100	RS/6000	1995/06/19	1997/01/10	PowerPC 604	100	1	1.5	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
7248-120	43P-100 RS/6000 43P-120			PowerPC 604	120	1	1.9	
7248-132	RS/6000 43P-132			PowerPC 604	133	1	2.1	
7248-xxxu		1996/10/08	1997/01/10	PowerPC 604e	166	1	2.6	
7317-F3L	RS/6000 F3L	1996/10/08	1999/12/13	PowerPC 604	133	1	2.8[e]	
7317-F3L				PowerPC 604e	166	1	3.7[e]	
7317-F3L		1997/06/24	1999/12/13	PowerPC 604e	233	1	4.7[e]	
9110-510	eServer p5 510	2005/02/18	2006/11/13	POWER5	1500	1		3.25
9110-510				POWER5	1500	2		9.13
9110-510			2006/05/31	POWER5	1650	1		5.24
9110-510				POWER5	1650	2		9.86
9110-51A	System p5 510	2006/02/14	2007/02/12	POWER5+	1900	1		6.11
9110-51A				POWER5+	1900	2		11.49
9110-51A	System p5 510Q			POWER5+	1500	4		18.75
9111-285	Intelli Station 285	2005/10/04	2007/02/12	POWER5+	1900	1		
9111-285				POWER5+	1900	2		
9111-520	eServer p5 520	2004/07/13	2006/05/31	POWER5	1500	1		3.25
9111-520				POWER5	1500	2		9.13
9111-520				POWER5	1650	2		9.86
9112-265	Intelli Station 265	2002/02/05	2003/12/12	POWER3-II	450	2		N/A
9113-550	eServer p5 550	2004/07/13	2006/05/31	POWER5	1500	1		3.25
9113-550				POWER5	1500	2		9.13
9113-550				POWER5	1500	4		18.20
9113-550				POWER5	1650	2		9.86
9113-550				POWER5	1650	4		19.66
9114-275	Intelli Station 275	2003/06/24	2006/05/31	POWER4+	1000	1		N/A
9114-275				POWER4+	1450	1		N/A
9114-275				POWER4+	1450	2		N/A
9115-505	System p5 505	2005/10/04	2006/01/13	POWER5+	1500	2		9.13

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
9115-505				POWER5+	1650	1		3.51
9115-505				POWER5+	1650	2		9.86
9116-561	System p5 560Q	2006/02/14	2008/02/25	POWER5+	1500	4		18.75
9116-561				POWER5+	1500	8		35.50
9116-561				POWER5+	1500	16		65.24
9117-570	eServer p5 570	2004/07/13	2006/05/31	POWER5	1500	2		9.13
9117-570				POWER5	1500	4		18.20
9117-570				POWER5	1500	8		34.46
9117-570				POWER5	1650	2		9.86
9117-570				POWER5	1650	4		19.66
9117-570				POWER5	1650	8		37.22
9117-570				POWER5	1650	12		53.43
9117-570				POWER5	1650	16		68.40
9117-570				POWER5	1900	2		11.16
9117-570				POWER5	1900	4		22.26
9117-570				POWER5	1900	8		42.14
9117-570				POWER5	1900	12		60.50
9117-570				POWER5	1900	16		77.45
9118-575	System p5 575	2005/02/08	2006/11/17	POWER5	1500	16		N/A
9118-575		2005/02/08	2006/11/10	POWER5	1900	8		N/A
9119-590	eServer p5 590	2004/10/15	2007/02/12	POWER5	1650	8		41.68
9119-590				POWER5	1650	16		80.86
9119-590				POWER5	1650	24		116.29
9119-590				POWER5	1650	32		151.72
9119-595	eServer p5 595	2004/10/15	2007/02/12	POWER5	1650	16		80.86
9119-595				POWER5	1650	24		116.29
9119-595				POWER5	1650	32		151.72
9119-595				POWER5	1650	40		182.07
9119-595				POWER5	1650	48		212.41
9119-595				POWER5	1650	56		242.76
9119-595				POWER5	1650	64		273.10
9119-595				POWER5	1900	16		90.67
9119-595				POWER5	1900	24		130.39
9119-595				POWER5	1900	32		170.11
9119-595				POWER5	1900	40		204.14
9119-595				POWER5	1900	48		238.16
9119-595				POWER5	1900	56		272.18
9119-595				POWER5	1900	64		306.21
9123-710	eServer Open Power 710	2005/01/25	2006/05/31	POWER5	1650	1		N/A
				POWER5	1650	2		N/A
9124-720	eServer Open	2004/09/14	2006/05/31	POWER5	1500	1		N/A

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Cores	ROLTP	rPerf
	Power 720							
9124-720				POWER5	1500	2		N/A
9124-720				POWER5	1500	4		N/A
9124-720				POWER5	1650	2		N/A
9124-720				POWER5	1650	4		N/A
9131-52A	System p5 520	2005/10/04	2007/02/12	POWER5+	1650	1		3.62
9131-52A				POWER5+	1650	2		10.15
9131-52A				POWER5+	1900	2		11.16
9131-52A	System p5 520Q			POWER5+	1500	4		18.75
9133-55A	System p5 550	2005/10/04	2007/02/12	POWER5+	1650	2		10.15
9133-55A				POWER5+	1650	4		20.25
9133-55A		2005/10/04	2007/04/27	POWER5+	1500	4		18.20
9133-55A				POWER5+	1500	8		34.46

Note: The Relative OLTP and/or rPerf projections are based on different levels of AIX / AIX 5L and databases. As a result, actual performance may vary. Estimates have been provided where no historical projections were available.

RS/6000 SP Models
(Machine type 9076)

Node Type	Announce Date	Marketing Withdrawn	Processor	MHz	# Cores	ROLTP	rPerf
SP1	1993/02/02	1994/12/16	POWER	62.5	1	1.7	
Thin 1	1995/08/22	1996/12/20	POWER2	66	1	3.0	
Thin 2	1995/08/22	1997/06/27	POWER2	66	1	3.3	
Thin P2SC	1996/10/08	1998/04/21	POWER2 SC	120	1	5.8	
Wide 1	1995/08/22	1996/12/20	POWER2	66	1	3.9	
Wide 2	1995/08/22	1997/06/27	POWER2	77	1	4.5	
Wide P2SC	1996/10/08	1998/04/21	POWER2 SC	135	1	5.8	
High 1	1996/07/23	1998/01/08	PowerPC 604	112	2	5.8	
High 1			PowerPC 604	112	4	10.0	
High 1			PowerPC 604	112	6	14.5	
High 1			PowerPC 604	112	8	19.2	
High 2	1997/08/26	1998/04/21	PowerPC 604e	200	2	9.3	
High 2			PowerPC 604e	200	4	17.0	
High 2			PowerPC 604e	200	6	23.8	
High 2			PowerPC 604e	200	8	30.6	
160 Thin	1997/10/06	1998/04/21	POWER2 SC	160	1	6.7	
332 Thin	1998/04/21	2000/12/29	PowerPC 640e	332	2	17.9	
332 Wide	1998/04/21	2000/12/29	PowerPC 640e	332	2	17.9	
332 Thin			PowerPC 640e	332	4	32.8	
332 Wide			PowerPC 640e	332	4	32.8	
POWER3 Thin	1999/02/01	2000/06/30	POWER3	200	1	10.5	
POWER3 Thin			POWER3	200	2	21.0	
POWER3 Wide	1999/02/01	2000/06/30	POWER3	200	1	10.5	
POWER3 Wide			POWER3	200	2	21.0	
POWER3 High	1999/09/13	2000/12/29	POWER3	222	2	23.0	
POWER3 High			POWER3	222	4	43.3	
POWER3 High			POWER3	222	6	64.0	
POWER3 High			POWER3	222	8	81.3	
POWER3 High	2000/07/18	2002/12/27	POWER3-II	375	2	N/A	3.07

Node Type	Announce Date	Marketing Withdrawn	Processor	MHz	# Cores	ROLTP	rPerf
POWER3 High			POWER3-II	375	4	N/A	6.03
POWER3 High			POWER3-II	375	6	N/A	9.11
POWER3 High			POWER3-II	375	8	N/A	12.01
POWER3 Thin	2000/02/07	2003/04/08	POWER3-II	375	2	N/A	1.99
POWER3 Thin			POWER3-II	375	4	N/A	2.64
POWER3 Thin	2002/01/22	2003/04/08	POWER3-II	450	2	N/A	2.27
POWER3 Thin			POWER3-II	450	4	N/A	2.95
POWER3 Wide	2000/02/07	2003/04/08	POWER3-II	375	2	N/A	1.99
POWER3 Wide			POWER3-II	375	4	N/A	3.59
POWER3 Wide	2002/01/22	2003/04/08	POWER3-II	450	2	N/A	2.27
POWER3 Wide			POWER3-II	450	4	N/A	4.01

Note: The Relative OLTP and/or rPerf projections are based on different levels of AIX / AIX 5L and databases. As a result, actual performance may vary. Estimates have been provided where no historical projections were available.

Notes on Performance Benchmarks and Values

The performance benchmarks and the values shown here were derived using particular, well configured, development-level computer systems. Unless otherwise indicated for a system, the values were derived using external cache if external cache is supported on the system. All performance benchmark values are provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. Buyers should consult other sources of information to evaluate the performance of systems they are considering buying and should consider conducting application oriented testing. For additional information about the performance benchmarks, values and systems tested, please contact your IBM local Branch Office or IBM Authorized Reseller or access the following on the Web:

SPEC	-	http://www.spec.org
TPC	-	http://www.tpc.org
LINPACK	-	http://www.netlib.org/benchmark/performance.pdf
ECperf	-	http://ecperf.theserverside.com/ecperf/

All performance measurements for the IBM System p, System p5, eServer p5, eServer pSeries and RS/6000 servers were made with systems running AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, AIX Version 4.3 or AIX 5L were used. All other systems used previous versions of AIX.

The SPEC CPU2006, SPEC CPU2000, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C Enterprise Edition V9.0 for AIX, XL C/C++ Enterprise Edition V9.0 for AIX, XL FORTRAN Enterprise Edition V11.1 for AIX, XL C/C++ Advanced Edition V8.0 for Linux, and XL FORTRAN Advanced Edition V10.1 for Linux.

The following SPEC and LINPACK benchmarks reflect the performance of the microprocessor, memory architecture and compiler of the tested system:

SPECint2006 - New SPEC component-level benchmark that measures integer performance. Result is the geometric mean of twelve tests that comprise the CINT2006 benchmark suite.

SPECint_base2006 - The result of the same tests in CINT2006 with the same compiler options that must be used in all twelve tests.

SPECint_rate2006 - Geometric average of the twelve SPEC rates from the SPEC integer tests (CINT2006).

SPECint_rate_base2006 - The result of the same tests as CINT2006 with the same compiler options that must be used in all twelve tests.

SPECfp2006 - New SPEC component-level benchmark that measures floating-point performance. Result is the geometric mean of seventeen tests, all written in FORTRAN and C languages, that are included in the CFP2006 benchmark suite.

SPECfp_base2006 - The result of the same tests in CFP2006 with the same compiler options that must be used in all seventeen tests.

SPECfp_rate2000 - Geometric mean of the seventeen SPEC rates from SPEC floating-point tests (CFP2006).

SPECfp_rate_base2000 - The result of the same tests as CFP2000 with the same compiler options that must be used in all seventeen tests.

SPECint2000 - SPEC component-level benchmark that measures integer performance. Result is the geometric mean of twelve tests that comprise the CINT2000 benchmark suite. All of these are written in C language except for one which is in C++.

SPECint_base2000 - The result of the same tests in CINT2000 with a maximum of four compiler options that must be used in all twelve tests.

SPECint_rate2000 - Geometric average of the twelve SPEC rates from the SPEC integer tests (CINT2000).

SPECint_rate_base2000 - The result of the same tests as CINT2000 with a maximum of four compiler options that must be used in all twelve tests.

SPECfp2000 - SPEC component-level benchmark that measures floating-point performance. Result is the geometric mean of fourteen tests, all written in FORTRAN and C languages, that are included in the CFP2000 benchmark suite.

SPECfp_base2000 - The result of the same tests in CFP2000 with a maximum of four compiler options that must be used in all fourteen tests.

SPECfp_rate2000 - Geometric mean of the fourteen SPEC rates from SPEC floating-point tests (CFP2000).

SPECfp_rate_base2000 - The result of the same tests as CFP2000 with a maximum of four compiler options that must be used in all fourteen tests.

SPEC OMP2001 – Geometric mean 11 compute intensive parallel workload tests, written in Fortran and C languages.

SPECweb99 - Number of conforming, simultaneous connections the Web server can support using a predefined workload. The SPECweb99 test harness emulates clients sending the HTTP requests in the workload over slow Internet connections to the Web server. The Web server software is Zeus from Zeus Technology Ltd.

SPECweb2005 - Emulates users sending browser requests over broadband Internet connections to a Web server. It provides three new workloads: a banking site (HTTPS), an e-commerce site (HTTP/HTTPS mix); and a support site (HTTP.

SPECweb99_SSL - Number of conforming, simultaneous SSL encryption/decryption connections the Web server can support using a predefined workload. The Web server software is Zeus from Zeus Technology Ltd.

SPECjvm99 - Contains eight different tests. Each test measures the time it takes to load the program, verify the class files, compile on the fly if a JIT compiler is used, and execute the test. A geometric mean is used to compute a composite score. Test scores are normalized against a reference machine. Higher scores indicate better performance.

SPECjbb2000 - Expressed in operations per second; evaluates the performance of servers running typical Java business applications; it represents an order processing application for a wholesale supplier. The benchmark can be used to evaluate performance of hardware and software aspects of Java Virtual Machine (JVM) servers.

SPECjbb2005 - Expressed in bops and bops/JVM; evaluates the performance of servers running typical Java business applications; it represents an order processing application for a wholesale supplier. The benchmark can be used to evaluate performance of hardware and software aspects of Java Virtual Machine (JVM) servers.

SPECsfs97_R1 - Measures speed and request-handling capabilities of NFS (network file server) computers.

SPECjAppServer2004 - Measures the performance of Java Enterprise Application Servers using a subset of J2EE APIs in a complete end-to-end Web application.

LINPACK DP (Double Precision) - n=100 data array. Units are Megaflop/second.

LINPACK TPP (Toward Peak Performance) - n=1,000 data array. Units are Megaflop/second. ESSL Version 3.1.1, 3.1.2, or 3.3 was used in this test.

LINPACK HPC (Highly Parallel Computing) - n= largest data array. Units are Megaflop/second. ESSL Version 3.1.1, 3.1.2, or 3.3 was used in this test. Linux submissions use Kazushige Goto's BLAS Library.

VolanoMark – A Java server benchmark characterized by long-lasting network connections and high thread counts.

ECperf - benchmark measures performance and scalability of Java (J2EE) server**.**

The following Transaction Processing Council (TPC) benchmarks reflect the performance of the microprocessor, memory subsystem, disk subsystem and some portions of the network:

tpmC - TPC Benchmark C throughput measured as the average number of transactions processed per minute during a valid TPC-C configuration run of at least twenty minutes.

$/tpmC - TPC Benchmark C price-performance ratio reflects the estimated five year total cost of ownership for system hardware, software and maintenance and is determined by dividing such estimated total cost by the tpmC for the system.

QppH - The power metric of TPC-H and is based on a geometric mean of the 17 TPC-H queries, the insert test and the delete test. It measures the ability of the system to give a single user the best possible response time by harnessing all available resources. QppH is scaled based on database size from 30GB to 1TB.

QthH - The throughput metric of TPC-H and is a classical throughput measure characterizing the ability of the system to support a multiuser workload in a balanced way. A number of query users is chosen, each of which must execute the full set of 17 queries in a different order. In the background, there is an update stream that runs a series of insert/delete operations. QthH is scaled based on the database size from 30GB to 1TB.
QphH is the geometric mean of the power tests (QppH) and the throughput tests (QthH).

$/QphH - The price/performance metric for the TPC-H benchmark where QphH is the geometric mean of QppH and QthH. The price is the five year cost of ownership for the tested configuration and includes maintenance and software support.

Notes on Performance Estimates

rPerf (Relative Performance) - An estimate of commercial processing performance relative to other IBM UNIX systems. It is derived from an IBM analytical model which uses characteristics from IBM internal workloads, TPC and SPEC benchmarks. The rPerf model is not intended to represent any specific public benchmark results and should not be reasonably used in that way. The model simulates some of the system operations such as CPU, cache and memory. However, the model does not simulate disk or network I/O operations.

rPerf estimates are calculated based on systems with the latest levels of AIX 5L and other pertinent software at the time of system announcement. Actual performance will vary based on application and configuration details. The pSeries 640 is the baseline reference system and has a value of 1.0. Although rPerf may be used to compare estimated IBM UNIX commercial processing performance, actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. Note that the rPerf methodology used for the POWER6 systems is identical to that used for the POWER5 systems. Variations in incremental system performance may be observed in commercial workloads due to changes in the underlying system architecture.

Commercial Processing Workload (CPW) is a relative measure of performance of processors running the IBM i operating system. Performance in client environments may vary. The value is based on maximum configurations. More performance information is available in the Performance Capabilities Reference at:
http://www.ibm.com/systems/i/solutions/perfmgmt/resource.html .

All performance estimates are provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, and application sizing guides to evaluate the performance of a system they are considering buying. For additional information about rPerf and CPW, contact your local IBM office or IBM authorized reseller.

IBM withdrew Relative OLTP (ROLTP). Starting June 2001, IBM will not publish/update ROLTP results. ROLTP results of systems that are withdrawn from the market are left in Section 14, Historical Multiuser Performance.

Application Benchmarks

SAP - Benchmark overview information: http://www.sap.com/benchmark/

PeopleSoft - To get information on PeopleSoft benchmarks, contact PeopleSoft directly or the PeopleSoft/IBM International Competency Center in San Mateo, CA.

Oracle Applications - Benchmark overview information:
http://www.oracle.com/apps_benchmark/html/results.html

Baan - The Baan benchmark demonstrates the scalability of Baan ERP solutions. The test results provide the number of Baan Reference Users (BRUs) that can be supported on a specific system. BRU is a single on-line user or a batch unit workload. These metrics are consistent with those used internally by both IBM and Baan to size systems. To get information on Baan benchmarks, go to http://www.ssaglobal.com.

NetBench - The Ziff Davis Media benchmark that measures the throughput and response time of a file server using the CIFS protocol to serve 32-bit Windows clients. Reports can be found at http://www.veritest.com/clients/reports/ and http://www.ibm.com/systems/p/benchmarks/.

NotesBench - The driver program to test various aspects of Lotus® Notes®. It is designed to execute the commands in customized workload scripts, simulating Notes client actions. Source: http://www.notesbench.org/.

> **Total Users** - Number of active users supported in the workload, each producing approximately one transaction/minute.
>
> **TPM** - Transactions per minute (NotesMark)
>
> **Average Response Time** - Average time for a transaction to be completed for an average user action.
>
> **$/User** - Total cost of the hardware and software including discounts quoted by a supplier.

Technical Computing Benchmarks

STREAM - A simple synthetic benchmark program that measures sustainable memory bandwidth (in MB/s) and the corresponding computation rate for simple vector kernels. Both standard and tuned results may be reported.
http://www.cs.virginia.edu/stream/

Aerospace, Defense, and Automotive: CFD

AVL FIRE - Problem setting is called EXT3D which has these characteristics:
Flow case - incompressible gas flow; isothermal steady state
Boundary conditions: inlet velocity; outlet zero gradient; global continuity
Mesh type: Unstructured, 711,360 active cells.
Results are shown in elapsed time (seconds).
http://www.avl.com/internet2000/pdf/020_Products_Services/030_Simulation/010_Software_Products/010_Product_Description/FIRE_Platform_Benchmarks.pdf

FLUENT - Results are for version 5.5 and 6.0 as indicated. The measurements are called "ratings", and the definition of rating is as follows: rating is the primary metric used to report performance results of the Fluent benchmarks. It is defined as the number of benchmarks that can be run on a given machine (in sequence) in a 24 hour period. It is computed by dividing the number of seconds in a day (86,400 seconds) by the number of seconds required to run the benchmark. A higher rating means faster performance.

FL5S1, FL5S2 - Turbulent flow in a bend
FL5S3 - Flow in a compressor
FL5M1 - Coal combustion in a boiler
FL5M2 - Turbulent flow in an engine valveport
FL5M3 - Combustion in a high velocity burner
FL5L1 - Transonic flow around a fighter
FL5L2 - External aerodynamics around a car body
FL5L3 - Turbulent flow in a transition duct
http://www.fluent.com/software/fluent/fl5bench

STAR-CD - A leading Computational Fluid Dynamics (CFD) Software package produced by the CD adapco Group. It is used for simulating fluid flow, heat and mass transfer, and chemically reacting flow. STAR-CD along with its suite of pre- and post-processor software covers the entire CFD modeling process: concept, design, analysis and simulation. Typical industries that use STAR-CD are Automotive (largest segment), Aerospace/Defense, Electronic Cooling, HVAC&R, Turbomachinery, Environment (pollutant dispersal).
http://www.cd-adapco.com/support/bench/315/index.htm

Aerospace, Defense, and Automotive: Crash

LS-DYNA - An advanced general purpose nonlinear finite element program, LS-DYNA is capable of simulating complex real world problems, and is widely accepted as the premier analysis software package for today's most challenging engineering applications and covers the entire modeling of a wide range of physical events - concept, design, analysis and simulation. LS-DYNA is used in a wide variety of simulation applications: automotive crashworthiness and occupant safety; sheet metal forming, military and defense applications, aerospace industry applications, electronic component design.
http://www.lsdyna.com/

Aerospace, Defense, and Automotive: NVH, Structural and Thermal Analysis

ABAQUS - The jobs are representative of typical ABAQUS/Standard applications: linear and nonlinear statics and dynamics, eigenvalue analysis and crack propagation analysis. The sparse equation solver is used for all problems, including both symmetric and asymmetric analyses. The problem set includes some larger models: one with about 493,000 degrees of freedom and a maximum floating-point operations per iteration of 9.6E+10 (T1-STD); one with about 180,000 degrees of freedom and a maximum floating-point operations per iteration of 3.2E+11 (T4-STD); and one with about 108,000 degrees of freedom and a maximum floating-point operations per iteration of 1.4E+11 (T7-STD). Results are shown as minutes:seconds.
http://www.hks.com/products/p_performance62.html#c4

ANSYS - A Finite Element Analysis Simulation Software package that provides solutions for conceptual design through final stage testing and performance validation from design concept to final-stage testing and performance validation. The ANSYS

Product Suite is used in Structural, Thermal, Mechanical, Acoustics, Computational Fluid Dynamics (CFD), Electrical and Electromagnetic Analyses.
http://www.ansys.com/services/hardware_support/61benchmarks.htm

MSC.Nastran - The premier computer aided engineering tool for stress, vibration, heat-transfer, acoustic, and aeroelasticity analysis. For over 30 years, it has been the analysis solution of choice in the aerospace, automotive, medical, heavy machinery, electronic device, and consumer products industries.

Serial test results on several structural analysis problems:
XLEMF - Car body with 658,354 degrees of freedom (dof)
XLRST - Engine with 739,651 dof
LGQDF - Cube with interior, with 93,375 dof
XLTDF - Car body with 529,257 dof
http://www.mscsoftware.com/support/prod_support/nastran/performance/v707_sngl.cfm

Lgqd0 -
Xltd0 -
Xlem0 -
Xl0oop1 - Car body, 486,573 ndof
Xxcm0 -
Xxdm0 -
http://www.mscsoftware.com/support/prod_support/nastran/performance/v01_sngl.cfm

Life Sciences: Molecular Mechanics

CHARMm - CHARMm (Chemistry at HARvard Macromolecular Mechanics) is a highly regarded and widely used simulation package. CHARMm combines standard minimization and dynamics capabilities with expert features including normal mode calculations, correlation analysis, and combined quantum and molecular mechanics (QM/MM) methods. Simulations provide information concerning molecular-level structure, interactions, and energetics.
http://www.accelrys.com/insight/charmm.html

CPMD - A plane wave/pseudopotential implementation of Density Functional Theory, particularly designed for ab-initio molecular dynamics. Its first version was developed by Jurg Hutter at IBM Zurich Research Laboratory starting from the original Car-Parrinello codes and then developed in many groups around the world.
The current version, 3.9, is copyrighted jointly by IBM Corp and by Max Planck Institute, Stuttgart and is distributed free of charge to non-profit organizations by the CPMD consortium.
http://www.cpmd.org/

Life Sciences: Quantum Chemistry

GAMESS (General Atomic and Molecular Electronic Structure System) - A general ab initio quantum chemistry package maintained by the members of the Mark Gordon research group at Iowa State University
GAMESS can compute SCF wavefunctions ranging from RHF, ROHF, UHF, GVB, and MCSCF. Correlation corrections to these SCF wavefunctions include Configuration Interaction, second order perturbation theory, and Coupled-Cluster approaches, as well as the Density Functional Theory approximation. Analytic gradients are available, for automatic geometry optimization, transition state searches, or reaction path following. Computation of the energy hessian permits prediction of vibrational frequencies, with IR or Raman intensities. Solvent effects may be modeled by the discrete Effective Fragment Potentials, or continuum models such as the Polarizable Continuum Model. Numerous relativistic computations are available, including third order Douglas-Kroll scalar corrections, and numerous spin-orbit coupling options. The November 12 2004 version incorporates significant improvements to the code. One major difference between the versions November 22, 2004 and December 12, 2003 versions is that the Nov 22 2004 version creates N MPI tasks for an N-way job whereas the Dec 12, 2003 version creates 2N tasks for what is effectively an N-way job.
http://www.msg.ameslab.gov/GAMESS/GAMESS.html

GAUSSIAN - Researchers at Carnegie Mellon University initially developed the Gaussian program in the late 1960s. Today, the Gaussian program is the technology and market leader in electronic structure modeling applications for chemical research. GAUSSIAN can predict the structure of molecules, as well as the chemical properties of complex reactions, under a variety of conditions -- information that is often difficult or impossible to observe experimentally. Gaussian is used worldwide to perform chemical modeling for theoretical and practical research in a variety of industries, including pharmaceuticals, chemicals, material sciences, automotive, universities, and government research labs.
http://www.gaussian.com/

Petroleum: Reservoir Simulation

ECLIPSE - A general purpose commercial petroleum reservoir simulator, with options for black oil, compositional, and thermal models, and partially, fully, or adaptive implicit solution algorithms. Parallel versions use the distributed memory programming model implemented via the Message Passing Interface (MPI) standard. Schlumberger produces and supports the Eclipse application, along with a large array of pre- and post-processing applications. It has worldwide operations and large customer bases in all regions.
http://www.sis.slb.com/content/software/simulation/index.asp?seg=geoquest&

Petroleum: Seismic

Focus - A leading 2D and 3D seismic processing software package. Focus is part of Paradigm Geophysical's PG2.0 release, which is comprised of applications used for seismic processing, interpretation and reservoir imaging. Typical clients and Focus users are oil companies and service providers who process seismic data. FOCUS has a long history and a substantial presence within the petroleum industry.
http://www.paradigmgeo.com/products/focus.php

Weather/Climate Modeling

MM5 - The PSU/NCAR mesoscale model (known as MM5) is a limited-area, nonhydrostatic, terrain-following sigma-coordinate model designed to simulate or predict mesoscale atmospheric circulation. The model is supported by several pre- and post-processing programs, which are referred to collectively as the MM5 modeling system. The MM5 modeling system software is mostly written in Fortran and has been developed at Penn State and NCAR as a community mesoscale model with contributions from users worldwide. Two versions of MM5 were tested. V3.6 is the standard download available from NCAR. Results from an IBM optimized version of the Version 3.6 code are also included.
http://www.mmm.ucar.edu/mm5/

IBM Corporation
Marketing Communications
Systems and Technology Group
Route 100
Somers, New York 10589

Produced in the United States of America
xxx 2008

POO03014-USEN-04