IBM System p5, @server p5, pSeries, OpenPower and IBM RS/6000 Performance Report

January 11, 2006

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Performance of IBM UNIX® and Linux® Operating System Servers

January 11, 2006

Special Note: A small number of outdated obsolete benchmark results, such as SPECcpu95, will be deleted from the next publication of this document. This current version of the document will be archived, so that one can access the deleted data if necessary.

New in this document are SPECjbb2000 and updated TPC-C $/tpmC results of IBM @server® p5 595 system.

Section One of this report includes the SPEC2000 and LINPACK results. The SPEC95 results are included in Section 1a.

Section Two is multiuser performance. The rPerf, SPEC_rate, and SPECweb99 are presented in this section. The SPECweb99_SSL results are presented in Section 2a. The SPEC_rate95 and SPECweb96 results are included in Section 2b. Capacity Upgrade on Demand relative performance guidelines are presented in Section 2c.

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 Twelve include published application performance benchmarks for SAP, PeopleSoft, Oracle Applications, Baan and J.D. Edwards.

Section Thirteen, Technical Computing, includes STREAM, SPEC OMP2001, FLUENT, ABAQUS, AVL FIRE, LS-DYNA, ANSYS, CHARMm, Gaussian98, Focus, STAR-CD and MSC.Nastran benchmark results.

Section Fourteen contains Manugistics benchmark results.

Section Fifteen contains technical computing benchmark results for UNIX operating system-based systems.

Section Sixteen contains Linux performance results for System p5, @server p5 and pSeries® systems.

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a historical list of commercial performance estimates for IBM RS/6000® models and IBM RS/6000 SP™ nodes that have been withdrawn from marketing.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

All performance measurements for the IBM System p5, IBM @server p5, IBM @server pSeries and IBM RS/6000 systems 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 from November 11, 2005 version
- System has been withdrawn from marketing; a - Submitted to SPEC, waiting approval; 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+™; IS – IntelliStation®, OP – OpenPower™

Section 1 - SPEC2000 and LINPACK Performance

Model	Processor /#CPUs	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	970/1	2200	64/32	0.5/-	1,040	986	1,241	1,178	1,681	3,840	--
JS20	970/2	2200	64/32	1.0/-	--	--	--	--	--	5,817	--
#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
#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
#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	--
p5-505	P5/1	1650	64/32	1.9/36	1,297	1,259	2,528	2,390	--	--	6,231
p5-505	P5/2	1650	64/32	1.9/36	--	--	--	--	--	--	12,390
#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	--	--

Model	Processor /#CPUs	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
#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
p5-520	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	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
#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	--
#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	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
p5-550Q	P5+/4	1500	64/32	1.9/36	1,187	1,156	2,263	2,179			5,596
p5-550Q	P5+/8	1500	64/32	7.6/144	--	--	--	--	--	--	44,680
#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
p5-570	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
#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	--

Model	Processor /#CPUs	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+/8	1500	64/32	6.0/128	--	--	--	--	--	22,770	32,590
#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

RS/6000 SP Models

Model	Proc./ #CPUs	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 1a - SPEC95 Performance

Model	Processor/ #CPUs	MHz	L1 Cache (KB)	L2 Cache (MB)	SPEC int95	SPEC int_ base95	SPEC fp95	SPEC fp_ base95
#43P-140u	604e	233	32/32	1.0	8.66	7.77	5.63	5.30
#43P-140n	604e	233	32/32	1.0	9.24	8.29	5.75	5.48
#43P-140	604e	332	32/32	1.0	12.9	12.2	6.21	5.99
#43P-150	604e	250	32/32	1.0	11.1	10.9	8.78	8.28
#43P-150	604e	375	32/32	1.0	15.1	14.5	10.1	9.76
#44P-170	P3-II	333	32/64	1.0	19.8	18.6	35.6	34.0
#44P-170	P3-II	400	32/64	4.0	25.3	23.5	47.9	46.0
#44P-170	P3-II	450	32/64	8.0	29.0	26.9	58.4	56.3
#43P-260	P3/1	200	32/64	4.0	12.5	11.5	27.0	25.1
#44P-270	P3-II/1	375	32/64	4.0	24.3	22.6	48.2	46.0
#44P-270	P3-II/1	375	32/64	8.0	24.5	22.7	53.2	50.7
#B50	604e	375	32/32	1.0	15.1	14.5	10.1	9.76
#p640	P3-II/1	375	32/64	4.0	24.3	22.6	48.2	46.0
#p640	P3-II/1	375	32/64	8.0	24.5	22.7	53.2	50.7
#F40	604e/1	233	32/32	1.0	8.71	7.8	5.34	5.12
#F50	604e/1	166	32/32	0.2	7.52	6.79	8.52	8.11
#F50	604e/1	332	32/32	0.2	14.4	14.0	12.6	12.1
#F80	RS64 III/1	450	128/128	2.0	21.0	18.7	25.4	24.8
#H50	604e/1	332	32/32	0.2	14.4	14.0	12.6	12.1
#H70	RS64 II/1	340	64/64	4.0	16.0	13.7	21.2	20.2
#H80	RS64 III/1	450	128/128	2.0	21.0	18.7	25.4	24.8
#M80	RS64 III/1	500	128/128	4.0	24.1	20.7	29.1	28.5

RS/6000 SP Models

Model	Processor/ #CPUs	MHz	L1 Cache (KB)	L2 Cache (MB)	SPEC int95	SPEC int_ base95	SPEC fp95	SPEC fp_ base95
#160 Thin	P2SC	160	32/128	0	8.62	7.77	26.6	23.6
#332 Thin	604e/1	332	32/32	0.2	14.4	14.0	12.6	12.1
#332 Wide	604e/1	332	32/32	0.2	14.4	14.0	12.6	12.1
#POWER3 Thin	P3/1	200	32/64	4.0	12.5	11.5	27.0	25.1
#POWER3 Thin	P3/1	200	32/64	4.0	12.5	11.5	27.0	25.1
#POWER3 High	P3/1	222	32/64	4.0	13.9	12.8	28.6	26.3
#POWER3 Thin	P3-II/1	375	32/64	8.0	24.4	22.6	50.9	47.1
#POWER3 Wide	P3-II/1	375	32/64	8.0	24.4	22.6	50.9	47.1
#POWER3 High	P3-II/1	375	32/64	8.0	23.5	21.8	51.3	48.8

Section 2 - Multiuser Performance

Model	Processor/ # CPUs	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	970/1	1600	64/32	0.5/-	1.53	--	--	--	--	--
JS20	970/2	1600	64/32	1.0/-	2.65	--	--	--	--	--
JS20	970/1	2200	64/32	0.5/-	1.95	--	--	--	--	--
JS20	970/2	2200	64/32	1.0/-	3.40	21.5	20.2	20.0	19.2	--
#IS-265	P3-II/2	450	32/64	4.0/-	--	7.30	6.84	8.19	8.10	--
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	--
#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	--	--	--	--	1025
#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	--	--	--	--	--
p5-505	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	--
#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	--
#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	--	--	--	--	--

Model	Processor/ # CPUs	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
#p615-6E3	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	--
p5-520	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+/2	1900	64/32	1.9/36	11.16	39.6	38.9	67.6	65.4	--
#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	--	--	--	--	--
#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	--	--	--	--	--

Model	Processor/ # CPUs	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+/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	18.2	--	--	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	1900	64/32	1.9/36	11.16	--	--	--	--	--
p5-550	P5+/4	1900	64/32	3.8/72	22.26	78.5	77.1	133.0	129.0	--
p5-550Q	P5+/4	1500	64/32	3.8/72	18.20	--	--	--	--	--
p5-550Q	P5+/8	1500	64/32	7.6/144	34.46	124.0	122.0	178.0	174.0	--
#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
p5-570	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	--	--	--	--	--
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	--
p5-575	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	--
#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	--	--	--	--	--

Model	Processor/ # CPUs	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
#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	--
#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	--
#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	--

Model	Processor/ # CPUs	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
#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	--	--	--	--	--
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	1147	1063	1752	1684	--

RS/6000 SP Models

Model	Proc./ # CPUs	# 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 2a – System p5 and @server p5 Multiuser Performance using AIX 5L V5.2

Model	Processor / # CPUs	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
p5-510	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
p5-520	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+/2	1900	64/32	1.9/36	8.58
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	1900	64/32	1.9/36	8.58
p5-550	P5+/4	1900	64/32	3.8/72	17.12
p5-550Q	P5+/4	1500	64/32	3.8/72	14.00
p5-550Q	P5+/8	1500	64/32	7.6/144	26.51
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
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

Model	Processor / # CPUs	MHz	L1 Cache (KB)	L2/L3 Cache (MB)	rPerf
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
p5-590	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
p5-595	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

Section 2b - SPECweb99_SSL Performance

Model	Proc. / # CPUs	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 2c - SPEC95 AND SPECweb96 Performance

Model	Processor / #CPUs	MHz	L1 Cache (KB)	L2 Cache (MB)	SPEC int_ rate95	SPEC int_ rate_ base95	SPEC fp_ rate95	SPEC fp_ rate_ base95	SPEC web96
#43P-260	P3/1	200	32/64	4.0	112	104	243	225	--
#43P-260	P3/2	200	32/64	4.0	221	205	464	434	4,597
#44P-270	P3-II/1	375	32/64	4.0	218	203	434	434	--
#44P-270	P3-II/2	375	32/64	4.0	437	406	767	749	--
#44P-270	P3-II/4	375	32/64	4.0	872	811	1146	1142	--
#F40	604e/1	233	32/32	1.0	78.0	69.9	52.0	50.1	--
#F40	604e/2	233	32/32	1.0	151	132	89.0	85.1	--
#F50	604e/1	166	32/32	0.2	67.5	61.0	76.5	72.8	--
#F50	604e/2	166	32/32	0.2	135	121	149	143	--
#F50	604e/4	166	32/32	0.2	267	241	283	267	2,148
#F50	604e/1	332	32/32	0.2	128	124	116	109	--
#F50	604e/2	332	32/32	0.2	255	245	218	206	--
#F50	604e/3	332	32/32	0.2	380	365	310	292	--

Model	Processor / #CPUs	MHz	L1 Cache (KB)	L2 Cache (MB)	SPEC int_ rate95	SPEC int_ rate_ base95	SPEC fp_ rate95	SPEC fp_ rate_ base95	SPEC web96
#F50	604e/4	332	32/32	0.2	485	389	364	6716	--
#F80	RS64 III/1	450	128/128	2.0	189	168	229	223	--
#F80	RS64 III/4	450	128/128	4.0	783	674	837	821	--
#F80	RS64 III/6	500	128/128	4.0	1,298	1,118	1,153	1,135	--
#H50	604e/1	332	32/32	0.2	128	124	116	109	--
#H50	604e/2	332	32/32	0.2	255	245	218	206	--
#H50	604e/3	332	32/32	0.2	380	365	310	292	--
#H50	604e/4	332	32/32	0.2	501	485	389	364	6,716
#H70	RS64 II/1	340	64/64	4.0	144	124	191	182	--
#H70	RS64 II/2	340	64/64	4.0	287	247	370	354	6,958
#H70	RS64 II/3	340	64/64	4.0	430	370	534	512	--
#H70	RS64 II/4	340	64/64	4.0	573	492	674	645	11,774
#H80	RS64 III/1	450	128/128	2.0	189	168	229	223	--
#H80	RS64 III/4	450	128/128	4.0	783	674	837	821	--
#H80	RS64 III/6	500	128/128	4.0	1,298	1,118	1,153	1,135	--
#R50	604e/2	200	32/32	2.0	137	121	92.5	90.3	--
#R50	604e/4	200	32/32	2.0	268	244	183	176	--
#R50	604e/6	200	32/32	2.0	396	343	261	248	--
#R50	604e/8	200	32/32	2.0	509	445	332	320	--
#S7A	RS64 II/12	262	64/64	8.0	--	--	--	--	20,200
#M80	RS64 III/8	500	128/128	4.0	1,728	1,489	1,958	1,910	--
#S80	RS64 III/12	450	128/128	8.0	--	--	--	--	40,161

RS/6000 SP Models

Model	Proc. / # CPUs	# Nodes	MHz	L1 Cache (KB)	L2 Cache (MB)	SPEC int_ rate95	SPEC int_ rate_ base95	SPEC fp_ rate95	SPEC fp_ rate_ base95	SPEC web96
#160 Thin	P2SC	1	160	32/128	0	--	--	243	218	--
#332 Thin	604e/2	1	332	32/32	.2	255	245	218	206	--
#332 Thin	604e/4	1	332	32/32	.2	501	485	389	364	6,716
#332 Wide	604e/2	1	332	32/32	.2	255	245	218	206	--
#332 Wide	604e/4	1	332	32/32	.2	501	485	389	364	6,716
#POWER3 Thin	P3/1	1	200	32/64	4.0	112	104	243	225	--
#POWER3 Thin	P3/2	1	200	32/64	4.0	221	205	464	434	4,597
#POWER3 Wide	P3/1	1	200	32/64	4.0	112	104	243	225	--
#POWER3 Wide	P3/2	1	200	32/64	4.0	221	205	464	434	4,597
#POWER3 High	P3/2	1	222	32/64	4.0	249	229	503	461	--
#POWER3 High	P3/4	1	222	32/64	4.0	493	450	999	910	--
#POWER3 High	P3/6	1	222	32/64	4.0	724	661	1,464	1,329	--
#POWER3 High	P3/8	1	222	32/64	4.0	966	908	1,877	1,760	--
#POWER3 Thin	P3-II/2	1	375	32/64	8.0	438	407	844	804	--
#POWER3 Thin	P3-II/4	1	375	32/64	8.0	875	812	1,382	1,359	--
#POWER3 Wide	P3-II/2	1	375	32/64	8.0	438	407	844	804	--
#POWER3 Wide	P3-II/4	1	375	32/64	8.0	875	812	1,382	1,359	--
#POWER3 Wide	P3-II/4	8	375	32/64	8.0	6,014	5,616	10,605	10,395	--
#POWER3 Wide	P3-II/4	16	375	32/64	8.0	10,366	10,001	20,251	20,220	--
#POWER3 Wide	P3-II/4	32	375	32/64	8.0	17,920	17,239	38,073	38,073	--
#POWER3 High	P3-II/4	1	375	32/64	8.0	845	786	1,739	1,670	--
#POWER3 High	P3-II/8	1	375	32/64	8.0	1,684	1,569	3,418	3,290	--
#POWER3 High	P3-II/12	1	375	32/64	8.0	2,523	2,345	4,685	4,832	--
#POWER3 High	P3-II/16	1	375	32/64	8.0	3,352	3,121	6,353	6,202	--

Section 2d - Capacity Upgrade on Demand Relative Performance Guidelines

Model	Processor / # CPUs	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
#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
#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
#p690	P4/24	1100	48.11
#p690	P4/26	1100	51.25
#p690	P4/28	1100	54.39
#p690	P4/30	1100	57.52

Model	Processor / # CPUs	MHz	rPerf
#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

Model	Processor / # CPUs	MHz	rPerf
p5-595	P5/18	1650	89.72
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

Section 3- TPC-C Version 5 Published Results

Model	Processor / # CPUs	# 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
#p5-570	P5/4	1	1900	3.8/72	194,391.43	5.62	Oracle V10g	5.3.0	09/30/04
p5-570	P5/4	1	1900	3.8/72	203,439.87	3.93	Oracle V10g	5.3.0	10/17/05
p5-570	P5/8	1	1900	7.6/144	371,044.22	5.26	Oracle V10g	5.3.0	09/30/04
p5-570	P5/8	1	1900	7.6/144	429,899.7	4.99	DB2® UDB 8.1	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
#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	Oracle V9i	5.2.0	11/22/02
#p690	P4/32	1	1300	23.0/512	427,760.83	17.75	Oracle V9i	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	768,839.40	8.55	Oracle V10g	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 V10g	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

Section 3a - TPC-C Version 3 Published Results

Model	Processor / # CPUs	# Nodes	MHz	L2 Cache (MB)	tpmC	$/tmpC	Database	AIX	Availability Date
#F50	604e/4	1	166	0.2	8,142.40	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	110,434.10	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
#S80	RS64 III/24	1	450	8.0	135,815.70	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 1000GB (1TB):

Proc.	# Nodes	MHz	QphH	QppH	QthH	$/ QphH	AIX	Database	Avail. Date
#SP - P3-II/4	32	375	12,866.8	12,812.3	12,921.6	649	4.3.3	DB2 UDB V7.1	08/15/00
p5-570	4	1900	26,156.3	35,789.6	19,115.9	53	5.3.0	DB2 UDB V8.2	12/15/04
#p655	4	1700	20,221.0	26,905.9	15,197.1	69	5.2.0	DB2 UDB V8.1	06/08/04

TPC-H 3000GB (3TB):

Model	Proc./ #CPUs	# Nodes	MHz	QphH	$/ QphH	AIX	Database	Avail. Date
p5-595	P5/64	1	1900	100,512.3	53.00	5.3.0	Oracle V10g	03/01/06

TPC-H 10000GB (10TB):

Model	Proc. / #CPUs	# Nodes	MHz	QphH	$/ QphH	AIX	Database	Avail. Date
p5-575	P5/8	8	1900	104,100.1	61	5.3.0	DB2 UDB V8.2	08/15/05
#p690	P4/32	5	1300	62,214.7	266	5.2.0	DB2 UDB V8.1	05/15/03

Section 5 - SPECsfs97_R1 Benchmark Results

Model	Proc. / # CPUs	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 [a]
#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
#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 - NotesBench Published Results

Model	Processor / # CPUs	MHz	L2/L3 Cache (MB)	Users	TPM	Response Time	$/User	Dom Vers.	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-way	1500	1.9/36	17,400	14,740	0.270	10.19	6.5.3	R6iNotes

R7iNotes

Model	Proc. / # CPUs	MHz	Work Load	# Notes Bench Users	Notes Mark (TPM)	Resp. Time	Price per User	Price per Notes Mark	# Cores	# Users per Core
p5-550Q	P5+ / 8-way	1500	DWA7	24,000	20,108	932 ms	US$ 5.97	US$ 7.13	8	3,000

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

Model	Proc / # CPUs	MHz	L1 Cache (KB)	L2/L3 Cache (MB) (MB)	SPEC jvm98 (256MB) (256MB)	SPEC jbb2000 ops/sec	SPECjbb2005 bops	SPECjbb2005 JVM inst.	SPECjbb2005 bops/JVM
JS20	970/2	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	--	--	--
#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	--	--	--
p5-520	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	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
#p650	P4+/8	1450	64/32	6.0/128	--	114,892	--	--	--
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
#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 [a]	--	--	--

Section 7 - 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-way 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

Model	# CPUs	Dialog Steps Per Hour	Users	Average Response Time	Fully Processed Line Items Per Hour	Database	Version	Cert. #
#F50	4	38,000	120	1.47	13,000	Oracle 7.2.3	3.0 F	1997010
#S80	24	513,000	1,708	1.98	171,000	DB2 UDB V6.1	4.0 B	1999040
#p650	8	271,000	900	1.97	90,330	DB2 UDB V7.2	4.6 C	2002060
#p650	8	368,000	1220	1.95	122,670	DB2 UDB V8.1	4.6 C	2003002
#p660-6H1	6	173,000	570	1.87	57,670	DB2 V7.2	4.6 C	2002054
#p670	8	261,000	860	1.84	87,000	DB2 UDB V7.2	4.6 C	2002032
#p670	8	263,000	860	1.79	87,670	DB2 UDB V7.2	4.6 C	2002033
#p690	32	1,250,000	4,128	1.89	416,670	DB2 V7.2	4.6 C	2002050
p5-520 @ 1.65	2	172,000	572	1.96	57,330	DB2 UDB v8.1	4.70	2004061
p5-570 @ 1.9	4	395,000	1313	1.97	131,670	DB2 UDB V8.1	4.70	2004042
p5-570 @ 1.9	8	781,000	2600	1.99	260,330	DB2 UDB V8.1	4.70	2004041
p5-570 @ 1.9	16	1,518,000	5056	1.99	506,000	DB2 UDB v8.1	4.70	2004040
p5-595 @ 1.9	64	6,042,000	20,000	1.92	2,014,000	DB2 UDB v8.1	4.70	2004062

Sales and Distribution – SD 3-Tier

Model	# CPUs	Steps Per Hour	Users	Average Response Time	Database	Utilization (%)	Version	Cert. #
#S70	12	1,518,000	4,960	1.76	Oracle V8.0.5	98	4.0 B	1998028
#S70	12	833,000	2,520	0.89	Oracle V7.3.3	98	3.0 F	1997031
#S80	24	5,007,000	16,640	1.96	Oracle V8.0.5	99	4.0 B	1999024
#p680	24	7,720,000	25,560	1.92	DB2 V7.2	94	4.6 C	2001046
#p690	32	14,139,000	47,008	1.97	DB2 V7.2	99	4.6C	2002046
#p690	32	14,398,000	47,528	1.88	DB2 V8.1	96	4.6C	2002053
p5-570	4	6,536,000	21,712	1.96	DB2 UDB V8.2	97	4.70	2004076
p5-595	32	50,690,000	168,300	1.95	DB2 UDB V8.2.2	99	4.70	2005021

Assemble-to-Order (ATO)

Benchmark	Model	# CPUs	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	# CPUs	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	# CPUs	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	Oracle 9i	3.0 A	7.4.1.18	128GB

Advanced Planning and Optimization (APO-DP)

Business Warehouse

Benchmark	Model	# CPUs/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 - PeopleSoft Benchmarks Published Results

Financials Online Benchmark (Users + Average Load/Save)

PS Version	Model	# CPUs - 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	# CPUs - MHz	L2/ L3 (MB)	Mem (GB)	Disk (GB)	Small Rate	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	# CPUs - MHz	DB Model Size	Trans/Hr Time	Trans/Hr Rate	Database
8.0 Sp1	#S80	24 - 450	“Large”	89.08	13,470.00	Oracle

ABM Batch 8.0 Sp3

PS Version	Model	# CPUs - MHz	DB Model Size	Primary ABM Proc Time	Database
8.0 Sp3	#S80	6 - 450	“Large”	19.37	

HRMS Online

PS Version	Model	# CPUs - 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	# CPUs - 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

Order Management (OM)

PS Version	Model	# CPUs - 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

Funds Transfer Pricing (FTP)

PS Version	Model	# CPUs - 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 Swiss

PS Version	Model	# CPUs - 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	# CPUs - 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-way LPAR), AppServ (12-way LPAR), WebServ (2-way LPAR)

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

North American Payroll - Checks per Hour

PS Version	Model	# CPUs - MHz	L2/L3 (MB)	Mem. (GB)	Disk (GB)	Small Rate	Medium Rate	Large Rate	Xtra 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

Section 10 - Oracle Applications Standard Benchmarks Published Results

V11.0 (This benchmark has been retired)

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

V11i – 11.5.3

Model	GHz	# CPUs	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

V11i – 11.5.6

Model	GHz	# CPUs	Users	Average Response Time (sec)	Release
#p630	1.45	4	5,320	.885	11.5.6
#p690	1.7	16	22,008	.48	11.5.6

V11i – 11.5.9

Model	GHz	# CPUs	Users	Average Response Time (sec)	Release
p5-570	1.9	8	15,004	.553	11.5.9

Section 11 - Baan Benchmarks Published Results

Model	# CPUs	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 - J.D. Edwards Benchmarks Published Results

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

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

J.D. Edwards HTML User-based Benchmark

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

Section 13 - Siebel Benchmarks Published Results

Siebel 7.7 Industry Applications Performance and Scalability Benchmark

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

Siebel 7 Performance and Scalability Benchmark

DB Server	# CPUs / Memory	App. Servers	# CPUs / Memory	Gateway Servers	#CPUs/ 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

Section 14 – Manugistics Benchmarks Published Results

Manugistics NetWORKS Fulfillment Benchmark

Server	# CPUs /	SKU's/HR	SKU's/HR/CPU	Release
#p690	32	14,957,799	467,431	7.1
p5-590	32	38,475,727	1,202,366	7.2

Section 15 - Technical Computing Benchmarks

STREAM Benchmarks

Model	Processor / # CPUs	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Standard STREAM Triad MB/sec	Tuned STREAM Triad MB/sec
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	1.50	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	1.90	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	1.90	64/32	3.8/72	19,043	20,403
p5-550Q	P5+/8	1.50	64/32	7.6/144	17,331	18,756
#p650	P4+/8	1.45	64/32	6.0/128	7,306	10,372
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
#p655	P4/8	1.1	64/32	5.7/128	11,275	15,960
#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

SPEC OMP2001 Performance

Model	Processor / # CPUs	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC OMP™ Mpeak2001	SPEC OMP Mbase2001	SPEC OMP Lpeak2001	SPEC OMP Lbase2001
p5-510	P5/2	1.65	64/32	1.9/36	6,108	5,478	--	--
p5-520	P5/2	1.65	64/32	1.9/36	5,228	5,051	--	--
p5-520	P5/2	1.65	64/32	1.9/36	8,174	8,141	--	--
#p630-6C4	P4+/4	1.45	64/32	3.0/16	4,918	4,695	--	--
#p630-6E4	P4+/4	1.45	64/32	3.0/16	4,918	4,695	--	--
p5-550	P5/4	1.65	64/32	3.8/72	9,884	9,649	--	--
p5-550	P5/4	1.9	64/32	3.8/72	15,392	14,878	--	--
p5-550Q	P5+/8	1.5	64/32	7.6/144	18,536	20,122	--	--
#p650	P4+/4	1.45	64/32	3.0/64	5,526	5,294	--	--
#p650	P4+/8	1.45	64/32	6.0/128	9,694	9,458	--	--
p5-570	P5/4	1.9	64/32	3.8/72	16,096	14,335	--	--
p5-570	P5/16	1.9	64/32	15.2/288	38,282	37,444	--	--
p5-575	P5/8	1.9	64/32	15.2/288	28,035	24,805	--	--
#p655	P4+/8	1.5	64/32	6.0/128	12,739	11,627	--	--
#p655	P4+/4	1.7	64/32	6.0/128	8,356	7,565	--	--
#p655	P4+/8	1.7	64/32	6.0/128	14,380	13,565	--	--
#p690	P4+/32	1.7	64/32	24.0/512	38,447	35,267	--	--
#p690	P4+/32	1.9	64/32	24.0/512	43,708	38,278	--	--
p5-595	P5/64	1.9	64/32	60.8/1152	92,979	81,677	672,757	620,741

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

	#	Small Class			Medium Class			Large Class		
System	CPUs	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

	#	Small Class			Medium Class			Large Class		
System	CPUs	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

	#	Small Class			Medium Class			Large Class		
System	CPUs	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

	#	Small Class			Medium Class			Large Class		
System	CPUs	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 CPUs	FL5S3	FL5M3	FL5L2
p5-520	1	1565	212	101
1.65 GHz	2	2767	415	185

FLUENT Benchmark Version 6.1.22 Results

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

System	Physical CPUs	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
p5-570 1.9 GHz DDR2	1	2864	3985	1881	646	1207	268	155	131	22
	2	5316	7152	3432	1178	2245	508	294	242	43
	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 CPUs	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
p5-595 1.9 GHz 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 CPUs	FL5S1	FL5S2	FL5S3	FL5M1	FL5M2	FL5M3	FL5L1	FL5L2	FL5L3
p5-575 1.9 GHz	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	1008.2	2314.8	525.5	301.5	253.9	44.4
	4	7912.1	10964.5	6750	1800	4553.4	984.1	590.1	502.5	93
	8	11034.5	18560.7	10134.9	2870.4	8074.8	1558.2	1110.9	1058.5	186.5

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	-

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	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	559	293	-	-	-
p5-570 1.9 GHz DDR2	475	235	118	62	37
p5-575 1.9 GHz	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 DDR2	4660	2143	1100	546	354
p5-575 1.9 GHz	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	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	4527	2232	1105	543

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	CPUs	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	2127	1453	
p5-570 1.9 GHz DDR2	1783	1230	1036

ABAQUS/Standard V6.4 performance:

1-way run performance; Elapsed time in seconds, lower is better

Test Case	1.9 GHz p5-570 8-way (DDR2) AIX 5L V5.3	1.65 GHz p5-520 2-way AIX 5L V5.3	1.7 GHz #p655 4-way
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-way run performance; Elapsed time in seconds, lower is better

Test Case	1.9 GHz p5-570 8-way (DDR2) AIX 5L V5.3	1.65 GHz p5-520 2-way AIX 5L V5.3	1.7 GHz #p655 4-way
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-way run performance; Elapsed time in seconds, lower is better

Test Case	1.9 GHz p5-570 8-way (DDR2) AIX 5L V5.3	1.7 GHz #p655 4-way
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**

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	1742	1337	-
p5-570 1.9 GHz 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 POWER4+	4432	2949	2171	
p5-575 1.9 GHz POWER5	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 POWER4+	975	703	546	
p5-575 1.9 GHz POWER5	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 POWER4+	729	571	476	
p5-575 1.9 GHz POWER5	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 POWER4+	339	227	169	
p5-575 1.9 GHz POWER5	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 POWER4+	2389	1448	980	
p5-575 1.9 GHz POWER5	2043	1262	909	802

MSC.Nastran (1 CPU)

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 CPU) 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 CPU) Execution Times

Elapsed time in seconds, lower is better

System	LGQDF	XLOOP	XLEMF	XLTDF	XXAFST	XXCMD	XXCDMA
p5-575 1.9 GHz POWER5	1757	6564	1550	3521	754	7302	2215

Life Sciences: Molecular 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

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 64-way DDR1 AIX 5L V5.3	2566	1314	688	368	213
p5-570 1.9 GHz 8-way DDR2 AIX 5L V5.3	2580	1326	687	375	
#p690 1.7 GHz 32-way AIX 5L V5.2	3009	1543	800	427	229
#p630 1.45 GHz 4-way 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 64-way DDR1 AIX 5L V5.3	818	418	218	118	69
p5-570 1.9 GHz 8-way DDR2 AIX 5L V5.3	811	416	216	120	
#p690 1.7 GHz 32-way AIX 5L V5.2	985	503	259	137	76
#p630 1.45 GHz 4-way 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 64-way DDR1 AIX 5L V5.3	374	192	102	57	36
p5-570 1.9 GHz 8-way DDR2 AIX 5L V5.3	369	190	102	61	
#p690 1.7 GHz 32-way 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 64-way DDR1 AIX 5L V5.3	533	296	177	120
p5-570 1.9 GHz 8-way 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
#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 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 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 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 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 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 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 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 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 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 DDR2	5957	3049	1578	845	703

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 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 DDR1 AIX 5L V5.3		2.56	5.08	9.85	19.12
p5-570 1.9 GHz 16-way DDR2 AIX 5L V5.3	1.31	2.63	5.20	9.94	18.57
#p690 1.7 GHz 32-way SMP	1.06	2.10	4.10	7.70	14.60
#p655 1.7 GHz 4-way, SP Switch2	1.10	2.10	3.97	7.71	14.57
#p655 1.7 GHz 8-way, High Perf. 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 AIX 5L V5.3	1.29	2.61	5.18	9.97	12.30
#p655 1.7 GHz 8-way, High Perf. 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 AIX 5L V5.3	2.0	3.83	7.55	14.83	17.56

Section 16 - Linux Published Benchmark Results

SPEC2000 and LINPACK Performance

Model	Proc / #CPUs	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	970/2	2.2	64/32	1.0/-	-	-	-	-	-	-	13,270	SLES 9
OP710	P5/2	1.65	64/32	1.9/36	-	-	-	-	-	-	12,120	SLES 9
OP710	P5/1	1.65	64/32	1.9/36	1,144	1,129	1,919	1,828	-	-	-	RHEL AS 4
OP710	P5/2	1.65	64/32	1.9/36	-	-	-	-	-	-	12,120	RHEL AS 4
OP720	P5/1	1.65	64/32	1.9/36	1,138	1,121	1,966	1,865	-	-	-	SLES 9
OP720	P5/4	1.65	64/32	1.9/36	-	-	-	-	-	-	24,120	RHEL AS 4
p5-505	P5/2	1.65	64/32	1.9/36	--	--	--	--	--	--	12,470	RHEL AS4 U1
#p615-6C3	P4+/1	1.2	64/32	1.5/8	-	727	-	877	-	-	-	SLES 8
#p615-6E3	P4+/1	1.2	64/32	1.5/8	-	727	-	877	-	-	-	SLES 8
#p630-6C4	P4+/1	1.2	64/32	1.5/8	-	720	-	852	-	-	-	SLES 8
#p630-6E4	P4+/1	1.2	64/32	1.5/8	-	720	-	852	-	-	-	SLES 8
#p630-6C4	P4+/1	1.45	64/32	1.5/8	-	856	-	984	-	-	-	SLES 8
#p630-6E4	P4+/1	1.45	64/32	1.5/8	-	856	-	984	-	-	-	SLES 8
#p650	P4+/1	1.45	64/32	1.5/32	-	886	-	1,091	-	-	-	SLES 8
#p655	P4+/1	1.7	64/32	1.5/128	-	1,031	-	1,405	-	-	-	SLES 8
#p655	P4+/1-LPAR	1.7	64/32	1.5/128	-	1,023	-	1,405	-	-	-	SLES 8
p5-575	P5/8	1.9	64/32	15.2/288	-	-	-	-	-	-	56,780	RHEL AS 4
p5-595	P5/32	1.9	64/32	30.4/576	-	-	-	-	-	-	217,100	SLES 9

Multiuser Performance

Model	Processor/ # CPUs	GHz	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	Linux Version
OP710	P5/2	1.65	64/32	1.9/36	-	-	-	40.2	39.5	SLES 9
OP710	P5/2	1.65	64/32	1.9/36	-	29.8	29.5	40.1	39.0	RHEL AS 4
OP720	P5/4	1.65	64/32	3.8/72	-	59.8	58.8	80.8	78.8	SLES 9
p5-575	P5/8	1.9	64/32	15.2/288	-	-	-	238	229	RHEL AS 4
p5-595	P5/32	19	64/32	30.4/576	-	-	-	781	754	SLES 9 SP1

Java Performance (VolanoMark)

Model	Proc / #CPUs	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	SLES 8
#p630-6E4	P4+/4	1.2	64/32	3.0/16	37,381	SLES 8
#p630-6C4	P4+/4	1.45	64/32	3.0/16	45,082	SLES 8
#p630-6E4	P4+/4	1.45	64/32	3.0/16	45,082	SLES 8
#p650	P4+/8	1.45	64/32	6.0/128	91,879	SLES 8

Java Performance (SPECjbb2000)

Model	Processor / # CPUs Memory	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC jbb2000 ops/sec	Linux Verison
OP720	P5/4	1.65	64/32	3.8/72	136,167	SLES 9
OP720	P5/4	1.65	64/32	3.8/72	136,261	RHEL AS 4
p5-570	P5/2 DDR2	1.9	64/32	1.9/36	82,615	SLES 9
p5-570	P5/4 DDR2	1.9	64/32	3.8/72	160,995	SLES 9
p5-570	P5/8 DDR1	1.9	64/32	7.6/144	299,197	SLES 9
p5-570	P5/16 DDR1	1.9	64/32	15.2/288	542,145	SLES 9
#p690	P4+/16	1.7	64/32	12/256	256,002	SLES 8 SP3
p5-595	P5/32	1.9	64/32	30.4/576	1,076,309	SLES 9

Web Serving SEPCweb99 and SPECweb99_SSL Performance

Model	Proc./ # CPUs	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	SLES 9
p5-570	P5/4	1.9	64/32	3.8/72	None	13,500	-	RHEL AS 3
p5-570	P5/8	1.9	64/32	7.6/144	None	25,000	-	RHEL AS 4

Web Serving SEPCweb2005 Performance

Model	Proc./ # CPUs	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Encryption card	Simul. User Sessions	Banking	Ecommerce	Support	Linux Version
p5-550	p5+/4	1.9	64/32	3.8/72	None	7,881 [a]	12,240 [a]	11,820 [a]	7,500 [a]	SLES 9 SP2

SPECsfs97_R1 Benchmark Results

Model	Proc./ # CPUs	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	SLES 9
OP720	P5/4	1.65	64/32	3.8/72	-	73,092	SLES 9 SP1
p5-570	P5/2	1.9	64/32	1.9/36	-	45,586	SLES 9
p5-570	P5/4	1.9	64/32	3.8/72	-	81,889	SLES 9 SP1

NetBench® Published Results

Model	Processor / # CPUs	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	# CPUs	Users	Average Response Time	Dialog Steps Per Hour	SAPS	Fully Processed Line Items Per Hour	OS	Database	Kit Version	Cert. #
OP720 1.65 GHz	4	864	1.95	260,000	4,330	86,670	SLES 9	DB2 UDB V8.2	4.70	2005032
p5-550 1.9 GHz	4	1000	1.97	301,000	5,020	100,330	SLES 9	DB2 UDB V8.2.2	5.0	Pending
p5-570 1.9 GHz	8	2000	1.95	603,000	10,050	201,000	SLES 9	DB2 UDB V8.2.2	4.70	2004057

SPEC OMP2001 Performance

Model	Processor / # CPUs	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	SPEC OMP Mpeak2001	SPEC OMP Mbase2001	Linux Version
OP710	P5/2	1.65	64/32	1.9/36	5,282	4,930	SLES 9
OP710	P5/2	1.65	64/32	1.9/36	5,382	5,020	RHEL AS 4
OP720	P5/4	1.65	64/32	3.8/72	10,522	9,664	SLES 9
OP720	P5/4	1.65	64/32	3.8/72	10,750	9,804	RHEL AS 4
p5-520	P5/2	1.65	64/32	1.9/36	5,287	4,758	RHEL AS 3
p5-570	P5/4	1.9	64/32	3.8/72	14,062	12,403	SLES 9
p5-575	P5/8	1.9	64/32	15.2/288	25,683	23,640	RHEL AS 4

STREAM Benchmarks

Model	Processor / # CPUs	GHz	L1 Cache (KB)	L2/L3 Cache (MB)	Standard STREAM Triad MB/sec	Tuned STREAM Triad MB/sec	Linux Version
#p650	P4+/8	1.45	64/32	6.0/128	7,588	--	SLES 8
OP710	P5/2	1.65	64/32	1.9/36	3,948	4,427	RHEL AS 4
OP720	P5/4	1.65	64/32	3.8/72	7,532	8,802	SLES 9

TPC-C Version 5.4 Published Results

Model	Processor / # CPUs	# Nodes	GHz	L2/L3 Cache (MB)	tpmC	$/tmp C	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 AS 4	02/07/06

TPC-H 100GB Published Results

Model	# Nodes	GHz	QphH	$/ QphH	Linux Version	Database	Avail. Date
OP720	1	1.65	6,357.2	42	SLES 9	DB2 UDB V8.2 FP1	1/28/05

TPC-H 300GB Published Results

Model	# Nodes	GHz	QphH	$/ QphH	Linux Version	Database	Avail. Date
OP720	2	1.65	12,006	40	SLES 9	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	SLES 9	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	SLES 9	DB2 UDB V8.2.3	1 node 8 cores	2921.48

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-way SLES 9	2175	1569	636		
p5-570 1.9 GHz 16-way DDR2 SLES 9	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-way SLES 9	415	249	138		
p5-570 1.9 GHz 16-way DDR2 SLES 9	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-way SLES 9	2003	1429	705	429	
p5-505 1.65 GHz 2-way SLES 9	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-way SLES 9	353	206	159	107	
p5-505 1.65 GHz 2-way SLES 9	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 8-way SLES 9	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 8-way SLES 9	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-way SLES 9		1410	731	394	
OP720 1.65 GHz 4-way SLES 9	2916	1497	782		
p5-520 1.65 GHz 2-way SLES 9	2907	1515			
#p630 1.45 GHz 4-way SLES 8	3272	1676	917		
p5-570 1.9 GHz 16-way DDR2 SLES 9	2528	1298	676	363	210
p5-570 1.9 GHz 4-way DDR1 SLES 9	2540	1301	679		
p5-575 1.9 GHz 8-way SLES 9	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 Tasks	4 MPI Tasks	8 MPI Tasks	16 MPI Tasks	32 MPI Tasks
OP710 1.65 GHz 2-way SLES 9		444	228	122	
OP720 1.65 GHz 4-way SLES 9	916	467	241		
p5-520 1.65 GHz 2-way SLES 9	923	477			
#p630 1.45 GHz 4-way SLES 8	1033	529	290		
p5-570 1.9 GHz 16-way DDR2 LES 9	797	407	210	113	65
p5-570 1.9 GHz 4-way DDR1 SLES 9	797	406	210		
p5-575 1.9 GHz 8-way SLES 9	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-way SLES 9		198	103	56	
OP720 1.65 GHz 4-way SLES 9	420	215	112		
p5-520 1.65 GHz 2-way SLES 9	422	218			
#p630 1.45 GHz 4-way SLES 8	478	244	131		
p5-570 1.9 GHz 4-way DDR1 SLES 9	365	187	98		
p5-570 1.9 GHz 16-way DDR2 SLES 9	366	189	98	55	33
p5-575 1.9 GHz 8-way SLES 9	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-way SLES 9		288	161	105	
OP720 1.65 GHz 4-way SLES 9	598	331	189		
p5-520 1.65 GHz 2-way SLES 9	600	334			
p5-570 1.9 GHz 16-way DDR2 SLES 9	519	285	164	117	87
p5-570 1.9 GHz 4-way DDR1 SLES 9	522	286	166		
p5-575 1.9 GHz 8-way SLES 9	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-way SLES 9	760	416	273	
p5-520 1.65 GHz 2-way SLES 9	746	437		
p5-570 1.9 GHz 16-way DDR2 SLES 9	666	353	219	146
p5-575 1.9 GHz 8-way SLES 9	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 8-way SLES 9	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 8-way SLES 9	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 8-way SLES 9	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 8-way SLES 9	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 8-way SLES 9	634	325	170	105

Section 17 - Historical Multiuser Performance

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	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]	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
7012-350	RS/6000 350	1992/01/21	1993/08/18	POWER	41	1	.8[e]	
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	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
7013-59H	RS/6000 59H	1994/05/24	1997/01/10	POWER2	66	1	4.4	
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	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
7015-R40				PowerPC 604	112	8	19.2	
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	

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
7025-F50				PowerPC 604e	166	4	27.1	
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

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
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
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

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
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
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		3.78
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

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
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
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
7038-6M2	pSeries 650	2002/11/12	2005/06/21	POWER4+	1200	2	N/A	4.00
7038-6M2				POWER4+	1200	4	N/A	8.05
7038-6M2				POWER4+	1200	6	N/A	11.77
7038-6M2				POWER4+	1200	8	N/A	15.49
7038-6M2				POWER4+	1450	2	N/A	4.47
7038-6M2				POWER4+	1450	4	N/A	9.12
7038-6M2				POWER4+	1450	6	N/A	13.47
7038-6M2				POWER4+	1450	8	N/A	18.67
7039-651	pSeries 655	2002/11/12	2003/12/31	POWER4	1100	8	N/A	12.00
7039-651				POWER4	1300	4	N/A	9.05
7039-651		2003/05/06	2005/11/18	POWER4+	1500	8	N/A	21.87
7039-651				POWER4+	1700	4	N/A	15.22
7040-671	pSeries 670	2002/04/09	2003/12/31	POWER4	1100	4	N/A	10.18
7040-671				POWER4	1100	8	N/A	18.02
7040-671				POWER4	1100	16	N/A	34.66
7040-671		2003/05/06	2005/11/18	POWER4+	1500	4	N/A	13.66
7040-671				POWER4+	1500	8	N/A	24.18
7040-671				POWER4+	1500	16	N/A	46.79
7040-681	pSeries 690	2001/10/04	2003/12/31	POWER4	1100	8	N/A	18.02
7040-681				POWER4	1100	16	N/A	34.66
7040-681				POWER4	1100	24	N/A	48.11
7040-681				POWER4	1100	32	N/A	60.66
7040-681				POWER4	1300	8	N/A	21.20
7040-681				POWER4	1300	16	N/A	40.92
7040-681				POWER4	1300	24	N/A	56.46
7040-681				POWER4	1300	32	N/A	71.44
7040-681	HPC			POWER4	1300	8	N/A	22.71
7040-681	HPC			POWER4	1300	16	N/A	42.09
7040-681		2003/05/06	2005/11/18	POWER4+	1500	8	N/A	24.18
7040-681				POWER4+	1500	16	N/A	46.79
7040-681				POWER4+	1500	24	N/A	64.99
7040-681				POWER4+	1500	32	N/A	81.95
7040-681				POWER4+	1700	8	N/A	27.11

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
7040-681				POWER4+	1700	16	N/A	52.45
7040-681				POWER4+	1700	24	N/A	72.86
7040-681				POWER4+	1700	32	N/A	92.19
7040-681		2004/02/24	2005/11/18	POWER4+	1900	8	N/A	30.63
7040-681				POWER4+	1900	16	N/A	59.26
7040-681				POWER4+	1900	24	N/A	82.32
7040-681				POWER4+	1900	32	N/A	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

Type Model	Product Name	Announce Date	Marketing Withdrawal	Processor	MHz	# Proc.	ROLTP	rPerf
7046-B50	RS/6000 B50	1999/09/13	2003/09/13	PowerPC 604e	375	1		0.26
7248-100	RS/6000 43P-100	1995/06/19	1997/01/10	PowerPC 604	100	1	1.5	
7248-120	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]	
9112-265	IntelliSta t'n 265	2002/02/05	2003/12/12	POWER3-II 4MB L2	450	2		N/A

Note: The Relative OLTP projections are based on different levels of AIX 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	# Proc.	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	

Node Type	Announce Date	Marketing Withdrawn	Processor	MHz	# Proc.	ROLTP	rPerf
POWER3 High			POWER3	222	8	81.3	
POWER3 High	2000/07/18	2002/12/27	POWER3-II	375	2	N/A	3.07
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 projections are based on different levels of AIX 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.ps
ECperf	-	http://ecperf.theserverside.com/ecperf/

All performance measurements for the IBM System p5, @server p5, @server pSeries and RS/6000 systems 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 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 V7.0 for AIX, XL C/C++ Enterprise Edition V7.0 for AIX, XL FORTRAN Enterprise Edition V9.1 for AIX, XL C/C++ Advanced Edition V7.0 for Linux, and XL FORTRAN Advanced Edition V9.1 for Linux. The SPEC CPU95 tests used preprocessors, KAP 3.2 for FORTRAN and KAP/C 1.4.2 from Kuck & Associates and VAST-2 v4.01X8 from Pacific-Sierra Research. The preprocessors were purchased separately from these vendors.

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

SPECint95 - SPEC component-level benchmark that measures integer performance. Result is the geometric mean of eight tests that comprise the CINT95 benchmark suite. All of these are written in C language. This benchmark was retired in July, 2000.

SPECint_base95 - The result of the same tests in CINT95 with a maximum of four compiler flags that must be used in all eight tests. This benchmark was retired in July, 2000.

SPECint_rate95 - Geometric average of the eight SPEC rates from the SPEC integer tests (CINT95). This benchmark was retired in July, 2000.

SPECint_rate_base95 - The result of the same tests as CINT95 with a maximum of four compiler flags that must be used in all eight tests. This benchmark was retired in July, 2000.

SPECfp95 - SPEC component-level benchmark that measures floating-point performance. Result is the geometric mean of ten tests, all written in FORTRAN, that are included in the CFP95 benchmark suite. This benchmark was retired in July, 2000.

SPECfp_base95 - The result of the same tests in CFP95 with a maximum of four compiler flags that must be used in all ten tests. This benchmark was retired in July, 2000.

SPECfp_rate95 - Geometric average of the ten SPEC rates from SPEC floating-point tests (CFP95). This benchmark was retired in July, 2000.

SPEC_rate_base95 - The result of the same tests as CFP95 with a maximum of four compiler flags that must be used in all ten tests. This benchmark was retired in July, 2000.

SPECint2000 - New 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 - New 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.

SPECweb96 - Maximum number of Hypertext Transfer Protocol (HTTP) operations per second achieved on the SPECweb96 benchmark without significant degradation of response time. The Web server software is IBM HTTP Server or ZEUS from Zeus Technology Ltd. This benchmark was retired in April, 2000.

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.

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, 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/

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