

February 14, 2006



IBM System p5 and *e*server® p5 facts and features



Product line	IBM System p5™ 185 Express	IBM System p5 505 Express
Machine type	7037-A50	9115-505
System packaging	Deskside or 19" rack drawer (5U)	19" rack drawer (1U)
Microprocessor type	64-bit IBM PowerPC®	64-bit IBM POWER5™
# of processors/system	1 or 2	1 or 2
Clock rates available	2.5 GHz	1.5 GHz ^a ; 1.65 GHz
System memory (standard - maximum)	0.5GB - 8GB	1GB - 32GB ^{a, w}
Data - instruction (L1) cache	32KB - 64KB ^b	32KB - 64KB ^b
Level 2 (L2) cache	1MB per processor	1.9MB
Level 3 (L3) cache	-	36MB ^c
Reliability, availability, serviceability		
Chipkill™ memory	-	X
Service processor	X	X
Hot-swappable disks (internal and external)	-	X
Dynamic Processor Deallocation	-	X ^e
Dynamic deallocation: PCI-X bus slots	-	X
Hot-plug slots	-	-
Blind-swap slots	-	-
Redundant hot-plug power	-	O
Redundant hot-plug cooling	-	X
Capacity and expandability		
Capacity on Demand (CoD) functions	-	-
Maximum logical partitions/micro-partitions	-	20
Advanced POWER™ Virtualization	-	O
Maximum available PCI-X slots ^f	4 (64-bit) ^h	2 ^g (64-bit)
Maximum PCI-X bus speed (MHz)	133	266
Disk media bays	3 2	2 1
Minimum maximum internal disk storage ^f	73.4GB 1.2TB	73.4GB ⁱ 0.6TB
Required optional I/O drawers	-	-
Connectivity^a		
10 Gigabit Ethernet - PCI-X	-	X
2 Gigabit Fibre Channel - PCI-X	X	X
4 Gigabit Dual Port Fibre Channel	X	-
4x InfiniBand	-	X
12x InfiniBand	-	-
pSeries® High Performance Switch	-	-
Display adapter (maximum)	GXT135P (2)	GXT135P (1)
Benchmarks (AIX 5L™ V5.3)	1-, 2-core	1-, 2-core; 1.65 GHz
SPECint2000	1,459 [*]	1,297
SPECfp2000	1,569 [*]	2,528
SPECint_rate2000	30.9 (2-core) [*]	34.1 (2-core)
SPECfp_rate2000	24.7 (2-core) [*]	59.4 (2-core)
SPECjbb2000	-	-
SPECjbb2005	-	-
LINPACK HPC	-	12,390 (2-core)
rPerf	2.48, 4.34 ^h	9.13 ^{z, h} / 3.51, 9.86 ^h

* Submitted to SPEC; awaiting approval

Product line	IBM System p5 510 Express	IBM System p5 510Q Express
Machine type	9110-51A	9110-51A
System packaging	19" rack drawer (2U)	19" rack drawer (2U)
Microprocessor type	64-bit IBM POWER5+™	64-bit POWER5+
# of processors/system	1 or 2	4
Clock rates available	1.9 GHz	1.5 GHz
System memory (standard - maximum)	1GB - 32GB ^{a,v}	1GB - 32GB ^{a,v}
Data - instruction (L1) cache	32KB - 64KB ^b	32KB - 64KB ^b
Level 2 (L2) cache	1.9MB	3.8MB
Level 3 (L3) cache	36MB	72MB
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X ^c	X
Dynamic deallocation: PCI-X bus slots	X	X
Hot-plug slots	-	-
Blind-swap slots	-	-
Redundant hot-plug power	O	O
Redundant hot-plug cooling	X	X
Capacity and expandability		
Capacity on Demand (CoD) functions	-	-
Maximum logical partitions/micro-partitions	20	40
Advanced POWER Virtualization	O	O
Maximum available PCI-X slots ^f	3 (64-bit)	3 (64-bit)
Maximum PCI-X bus speed (MHz)	266	266
Disk media bays	4 1	4 1
Minimum maximum internal disk storage ^f	73.4GB ⁱ 1.2TB	73.4GB ⁱ 1.2TB
Required optional I/O drawers	-	-
Connectivity^g		
10 Gigabit Ethernet - PCI-X	X	X
2 Gigabit Fibre Channel - PCI-X	X	X
4x InfiniBand	X	X
12x InfiniBand	-	-
pSeries High Performance Switch	-	-
Display adapter (maximum)	GXT135P (2)	GXT135P (2)
Benchmarks (AIX 5L V5.3)		
SPECint2000*	1-, 2-core 1,536	1,231
SPECfp2000*	3,048	2,377
SPECint_rate2000*	39.9 (2-core)	63.0
SPECfp_rate2000*	67.1 (2-core)	95.5
SPECjbb2000	-	-
SPECjbb2005	36,039 (2-core)	54,785
LINPACK HPC	-	-
rPerf	6.11, 11.49 ^h	18.75 ^h

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Product line	IBM System p5 520 Express	IBM System p5 520Q Express
Machine type	9131-52A	9131-52A
System packaging	deskside or 19" rack drawer (4U)	deskside or 19" rack drawer (4U)
Microprocessor type	64-bit POWER5+	64-bit POWER5+
# of processors/system	1 or 2	4
Clock rates available	1.65 GHz, 1.9 GHz ^a	1.5 GHz
System memory (standard - maximum)	1GB - 32GB ^{a,v}	1GB - 32GB ^{a,v}
Data - instruction (L1) cache	32KB - 64KB ^b	32KB - 64KB ^b
Level 2 (L2) cache	1.9MB	3.8MB
Level 3 (L3) cache	36MB ^c	72MB
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X ^e	X
Dynamic deallocation: PCI-X bus slots	X	X
Hot-plug slots	X	X
Blind-swap slots	┘	┘
Redundant hot-plug power	O	O
Redundant hot-plug cooling	X	X
Capacity and expandability^a		
Capacity on Demand (CoD) functions	-	-
Maximum logical partitions/micro-partitions	20	40
Advanced POWER Virtualization	O	O
Maximum available PCI-X slots ^f	32 (64-bit), 2 (32-bit)	32 (64-bit), 2 (32-bit)
Maximum PCI-X bus speed (MHz)	266	266
Disk media bays	56 ^f 3	56 ^f 3
Minimum maximum internal disk storage ^f	73.4GB ^g 16.8TB	73.4GB ^g 16.8TB
Required optional I/O drawers	0 4	0 4
Connectivity^a		
10 Gigabit Ethernet - PCI-X	X	X
2 Gigabit Fibre Channel - PCI-X	X	X
4x InfiniBand	X	X
12x InfiniBand	-	-
pSeries High Performance Switch	-	-
Display adapter (maximum)	GXT135P (2)	GXT135P (2)
Benchmarks (AIX 5L V5.3)	1-, 2-core; 1.9 GHz	
SPECint2000	1,513	-
SPECfp2000	3,030	-
SPECint_rate2000	39.6 (2-core)	-
SPECfp_rate2000	67.6 (2-core)	-
SPECjbb2000	99,844 (2-core)	-
SPECjbb2005	32,820 (2-core)	-
LINPACK HPC	14,310 (2-core)	-
rPerf	3.62, 10.15 ^{a,h} / 11.16 ^h	18.75 ^h

Product line	IBM System p5 550 Express	IBM System p5 550Q Express
Machine type	9133-55A	9133-55A
System packaging	deskside or 19" rack drawer (4U)	deskside or 19" rack drawer (4U)
Microprocessor type	64-bit POWER5+	64-bit POWER5+
# of processors/system	2 or 4	4 or 8
Clock rates available	1.65 GHz, 1.9 GHz	1.5 GHz
System memory (standard - maximum)	1GB - 64GB ^{a, e, v}	1GB - 64GB ^{a, e, v}
Data - instruction (L1) cache	32KB - 64KB ^b	32KB - 64KB ^b
Level 2 (L2) cache	1.9MB or 3.8MB	3.8MB or 7.6MB
Level 3 (L3) cache	36MB or 72MB	72MB or 144MB
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X	X
Dynamic deallocation: PCI-X bus slots	X	X
Hot-plug slots	X	X
Blind-swap slots	┘	┘
Redundant hot-plug power	O	O
Redundant hot-plug cooling	X	X
Capacity and expandability^a		
Capacity on Demand (CoD) functions	-	-
Maximum logical partitions/micro-partitions	40	40
Advanced POWER Virtualization	O	O
Maximum available PCI-X slots ^f	59 (64-bit)	59 (64-bit)
Maximum PCI-X bus speed (MHz)	266	266
Disk media bays	104 ^f 3	104 ^f 3
Minimum maximum internal disk storage ^f	73.4GB ^g 31.2TB	73.4GB ^g 31.2TB
Required optional I/O drawers	0 8	0 8
Connectivity^a		
10 Gigabit Ethernet - PCI-X	X	X
2 Gigabit Fibre Channel - PCI-X	X	X
4x InfiniBand	X	X
12x InfiniBand	-	-
pSeries High Performance Switch	-	-
Display adapter (maximum)	GXT135P (1)	GXT135P (1)
Benchmarks (AIX 5L V5.3)	2-, 4-core; 1.9 GHz	4-, 8-core
SPECint2000	1,510	1,187
SPECfp2000	3,007	2,263
SPECint_rate2000	78.5 (4-core)	124.0 (8-core)
SPECfp_rate2000	133.0 (4-core)	178.0 (8-core)
SPECjbb2000	190,445 (4-core)	294,315 (8-core)
SPECjbb2005	61,789 (4-core)	91,806 (8-core)
LINPACK HPC	28,490 (4-core)	44,680 (8-core)
rPerf	10.15, 20.25 ^{o, h} / 11.16, 22.26 ^h	18.20, 34.46 ^h

Product line	IBM System p5 560Q Express ^p	IBM System p5 570
Machine type	9116-561	9117-570
System packaging	19" rack drawer (4U)	19" rack drawer (4U)
Microprocessor type	64-bit POWER5+	64-bit POWER5+
# of processors/system	4, 8 or 16	2, 4, 8, 12 or 16
Clock rates available	1.5 GHz	1.9 GHz, 2.2 GHz
System memory (standard – maximum)	2GB - 128GB ^{a, v, cc}	2GB - 256GB ^{a, k}
Data - instruction (L1) cache	32KB - 64KB ^b	32KB - 64KB ^b
Level 2 (L2) cache	3.8MB ^d	1.9MB ^d
Level 3 (L3) cache	72MB ^d	36MB ^d
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X	X
Dynamic deallocation: PCI-X bus slots	X	X
Hot-plug slots	X	X
Blind-swap slots	X	X
Redundant hot-plug power	X	X
Redundant hot-plug cooling	X	X
Capacity and expandabilityⁿ		
Capacity on Demand (CoD) functions	-	P, M ^m , R, OOP, OOM ^m
Maximum logical partitions/micro-partitions	160	160
Advanced POWER Virtualization	X	X
Maximum available PCI-X slots ^f	6 (64-bit)	163 (64-bit)
Maximum PCI-X bus speed (MHz)	133	133
Disk media bays	12 4	264 ^l 8
Minimum maximum internal disk storage ^f	73.4GB ^l 3.6TB	73.4GB ^l 79.2TB
Required optional I/O drawers	-	0 20
Connectivityⁿ		
10 Gigabit Ethernet - PCI-X	X	X
2 Gigabit Fibre Channel - PCI-X	X	X
4x InfiniBand	X	X
12x InfiniBand	-	-
pSeries High Performance Switch	-	-
Display adapter (maximumⁿ)	GXT135P (8)	GXT135P (8)
Benchmarks (AIX 5L V5.3)	4-, 8-, 16-core	2-, 4-, 8-, 12-, 16-core; 2.2 GHz
SPECint2000	1,204 [*]	-
SPECfp2000	2,360 [*]	-
SPECint_rate2000	248.0 [*] (16-core)	-
SPECfp_rate2000	368.0 [*] (16-core)	-
SPECjbb2000	-	-
SPECjbb2005	226,291 [*] (16-core)	326,651 [*] (16-core)
LINPACK HPC	87,770 (16-core)	-
TPC-C: tpmC; \$/tpmC	-	1,025,169.69; 4.43 (16-core)
rPerf	18.75, 35.50, 65.24 ⁿ	12.27, 24.18, 46.36, 66.55, 85.20 ^{aa, h} / 13.83, 27.58, 52.21, 74.95, 95.96 ⁿ

* Submitted to SPEC; awaiting approval

Product line	IBM System p5 575	IBM System p5 575
Machine type	9118-575	9118-575
System packaging	24" system frame	24" system frame
Microprocessor type	64-bit POWER5	64-bit POWER5+
# of processors/system	8 or 16	8 or 16
Clock rates available	1.5 GHz (16-core), 1.9 GHz (8-core)	1.9 GHz (16-core), 2.2 GHz (8-core)
System memory (standard - maximum)	1GB - 256GB ^{u,w}	1GB - 256GB ^{u,v}
Data - instruction (L1) cache	32KB - 64KB ^p	32KB - 64KB ^p
Level 2 (L2) cache	15.2MB	15.2MB
Level 3 (L3) cache	288MB	288MB
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X	X
Dynamic deallocation: PCI-X bus slots	X	X
Hot-plug slots	X	X
Blind-swap slots	X	X
Redundant hot-plug power	X	X
Redundant hot-plug cooling	X	X
Capacity and expandability^a		
Capacity on Demand (CoD) functions	-	-
Maximum logical partitions/micro-partitions	80 or 160	80 or 160
Advanced POWER Virtualization	O	O
Maximum available PCI-X slots ^f	24 (64-bit)	24 (64-bit)
Maximum PCI-X bus speed (MHz)	133	133
Disk media bays	18 ^f -	18 ^f -
Minimum maximum internal disk storage ^f	73.4GB ⁱ 2.9TB	73.4GB ⁱ 2.9TB
Required optional I/O drawers	0 1	0 1
Connectivity^a		
10 Gigabit Ethernet - PCI-X	X	X
2 Gigabit Fibre Channel - PCI-X	X	X
4x InfiniBand	X	X
12x InfiniBand	-	-
pSeries High Performance Switch	X	X
Display adapter (maximum^a)	GXT135P (8)	GXT135P (8)
Benchmarks (AIX 5L V5.3)	8-, 16-core; 1.9, 1.5 GHz	8-, 16-core; 2.2, 1.9 GHz
SPECint2000	1,456, 1,143	1,765, 1,526*
SPECfp2000	2,600, 2,185	3,513, 3,042*
SPECint_rate2000	167,238	200.0, 314.0*
SPECfp_rate2000	282,385	382.0, 571.0*
SPECjbb2000	-	-
SPECjbb2005	-	-
LINPACK HPC	56,670, 87,340	66,440, 111,400
TPC-H: QphH; \$/QphH	10TB; 104,100.1; 61.17 (8-core)	-
rPerf	-	-

* Submitted to SPEC; awaiting approval

Product line	IBM @server® p5 590	IBM @server p5 595
Machine type	9119-590	9119-595
System packaging	24" system frame (+expansion frame)	24" system frame (+expansion frames)
Microprocessor type	64-bit POWER5	64-bit POWER5
# of processors/system	8 to 32	16 to 64
Clock rates available	1.65 GHz	1.65 GHz, 1.9 GHz
System memory (standard - maximum)	8GB - 1TB ^{a,q}	8GB - 2TB ^{a,r}
Data - instruction (L1) cache	32KB - 64KB ^p	32KB - 64KB ^p
Level 2 (L2) cache	7.6MB / MCM	7.6MB / MCM
Level 3 (L3) cache	144MB / MCM	144MB / MCM
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X ^g	X ^g
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X	X
Dynamic deallocation: PCI-X bus slots	X	X
Hot-plug slots	X	X
Blind-swap slots	X	X
Redundant hot-plug power	X	X
Redundant hot-plug cooling	X	X
Capacity and expandability		
Capacity on Demand (CoD) functions	P, M ⁿ , R, B, OOP, OOM ^m	P, M ⁿ , R, B, OOP, OOM ^m
Maximum logical partitions/micro-partitions	254	254
Advanced POWER Virtualization	X	X
Maximum available PCI-X slots ^f	160 (64-bit)	240 (64-bit)
Maximum PCI-X bus speed (MHz)	133	133
Disk media bays	128 ⁱ 3	192 ⁱ 3
Minimum maximum internal disk storage ^f	72.8GB ⁱ 18.7TB	72.8GB ⁱ 28.1TB
Required optional I/O drawers	1 7	1 11
Connectivityⁿ		
10 Gigabit Ethernet - PCI-X	X	X
2 Gigabit Fibre Channel - PCI-X	X	X
4x InfiniBand	-	-
12x InfiniBand	X	X
pSeries High Performance Switch	X	X
Display adapter (maximum^l)	GXT135P (16)	GXT135P (16)
Benchmarks (AIX 5L V5.3)	8-, 16-, 24-, 32-core	16-, 24-, 32-, 40-, 48-, 56-, 64-core;
		1.9 GHz
SPECint2000	1,259	1,452
SPECfp2000	2,450	2,796
SPECint_rate2000	529 (32-core)	1,147 (64-core)
SPECfp_rate2000	870 (32-core)	1,752 (64-core)
SPECjbb2000	-	2,200,162 (64-core)
SPECjbb2005	-	-
LINPACK HPC	187,800 (32-core)	418,000 (64-core)
TPC-C: tpmC; \$/tpmC	-	1,601,784.98; 5.05 (32-core)
TPC-C: tpmC; \$/tpmC	-	3,210,540.63; 5.07 (64-core)
TPC-H: QphH; \$/QphH	-	3TB: 100,512.3; 53.00 (64-core)
rPerf	41.68, 80.86, 116.29, 151.72 ^h	80.96, 116.29, 151.72, 182.07, 212.41, 242.76, 273.10 ^{h,o} / 90.67, 130.39, 170.11, 204.14, 238.16, 272.18, 306.21 ^h

X	=	Standard; Supported
O	=	Optionally Available; Supported
-	=	Not Applicable
P	=	Processor Capacity Upgrade on Demand option
B	=	Capacity BackUp offering
M	=	Memory Capacity Upgrade on Demand option
OOP	=	On/Off Capacity on Demand for Processors option
OOM	=	On/Off Capacity on Demand for Memory option
R	=	Reserve Capacity on Demand option
SOD	=	Statement of General Direction announced
DDR	=	Double Data Rate
SLES	=	SUSE Linux Enterprise Server
RHEL	=	Red Hat Enterprise Linux

- a Shared memory
- b Per processor
- c Not available on 1-core systems
- d Per processor card or processor book or module
- e Maximum memory on smallest system is 32GB
- f Includes adapters attachable via optional I/O drawers
- g Not available as a 1-core system
- h rPerf values using AIX 5L V5.2 can be obtained by dividing by 1.3 and rounding down to nearest hundredth
- j PCI-X slots on I/O drawers are blind-swap
- k Figures for DDR2 533 MHz memory; For DDR2 400 MHz memory available only on 2.2 GHz systems, range is 32GB to 512GB
- m Supported on DDR1 memory only
- n For details on I/O features and adapters which can be attached, go to ibm.com/systems/p/hardware/factsfeatures.html
- o Using 1.65 GHz processors
- p 16-core system is not called Express
- q Figures for DDR1 266 MHz memory; For DDR2 533 MHz memory, range is 8GB to 128GB
- r Figures for DDR1 266 MHz memory; For DDR2 533 MHz memory, range is 8GB to 256GB
- s Redundant service processor
- t 36.4GB 15K rpm disk drive available
- v DDR2 528 or 533 MHz memory
- w DDR1 266 MHz memory
- y PCI-X 2.0 DDR slots
- z Using 1.5 GHz processors
- aa Using 1.9 GHz processors
- bb Plus an additional PCI 32-bit slot
- cc Maximum memory on 4- or 8-core system is 64GB

System unit details	System p5 185 Express	System p5 505 Express	System p5 510 Express; System p5 510Q Express	System p5 520 Express; System p5 520Q Express	System p5 550 Express; System p5 550Q Express
Standard internal disk bays	3	2	4	4	4
Optional internal disk bays	-	-	-	4	4
Optional I/O drawer disk bays	-	-	-	48	96
Available media bays	2	1	1	3	3
— Standard size	2	1	-	1	1
— Slimline size	-	-	1	2	2
Standard DVD-ROM	-	-	-	-	-
System ports¹	-	2	2	2	2
Integrated USB ports	4	2	2	2	2
HMC ports	-	2	2	2	2
Integrated 10/100/1000 Ethernet port/controller	2	2	2	2	2
Integrated SCSI port/controller	2	2	2	2	2
— Max SCSI speed (Mbps)	320	320	320	320	320
PCI slots	1	-	-	-	-
— Short 32-bit 33 MHz	1	-	-	-	-
PCI-X slots²	4	2	3	6	5
— Short 32-bit 66 MHz	-	-	-	2	-
— Long 64-bit 100 MHz	2	-	-	-	-
— Long 64-bit 133 MHz	2	-	1	2	2
— Short 64-bit 133 MHz	-	-	-	1	2
— Long 64-bit 266 MHz	-	1	2	1	1
— Short 64-bit 266 MHz	-	1	-	-	-
RJ-4x connector	X	X	X	X	X
Rack light indicator	X	X	X	X	X
LED diagnostics	X	X	X	X	X

X = Available; - = Not Available

¹ Used only for modem and async terminal connections. Not supported when HMC ports are connected to Hardware Management Console.

² Assuming optional I/O drawers are not installed.

Peak bandwidth	System p5 185 Express	System p5 505 Express	System p5 510 Express; System p5 510Q Express	System p5 520 Express; System p5 520Q Express	System p5 550 Express; System p5 550Q Express
Memory to processor (GB/second)	N/A	21.1	21.1	21.1	42.2
L2 to L3 cache (GB/second)	N/A	26.4	30.4; 48.0	30.4; 48.0	60.8; 96.0
I/O subsystem (GB/second)	N/A	4.4	5.0	5.0; 4.0	10.1; 8.0

N/A = Not Applicable

System unit details	System p5 560Q Express; System p5 560Q	System p5 570	System p5 575	@server p5 590	@server p5 595
Standard internal disk bays	12 ²	24 ²	2	16 ¹	16 ¹
Optional internal disk bays	-	-	-	-	-
Optional I/O drawer disk bays	-	240 ²	16	112	176
Available media bays	4 ²	8 ²	-	3	3
— Standard size	-	-	-	3	3
— Slimline size	4 ²	8 ²	-	-	-
Standard DVD-ROM	-	X	-	-	-
System ports⁴	2	2	-	-	-
Integrated USB ports	4 ²	8 ²	-	-	-
HMC ports	2	2	2	2	2
Integrated 10/100/1000 Ethernet port	4 ²	8 ²	4	-	-
Integrated SCSI port/controller	4 ²	4 ²	2	2 ¹	2 ¹
— Max SCSI speed (Mbps)	320	320	160	160	160
PCI-X slots³	6 / building block	6 / building block	4	20	20
— Long 64-bit 133 MHz	5 / building block	5 / building block	4	20	20
— Short 64-bit 133 MHz	1 / building block	1 / building block	-	-	-
— Short 32-bit 66 MHz	-	-	-	-	-
RJ-4x connector	X	X	-	-	-
Rack light indicator	X	X	-	-	-
LED diagnostics	X	X	X	X	X

X = Available; - = Not Available

¹ Assuming single I/O drawer.

² Assuming maximum building blocks installed.

³ Assuming optional I/O drawers are not installed.

⁴ Used only for modem and async terminal connections. Not supported when HMC ports are connected to Hardware Management Console.

Peak bandwidth	System p5 560Q Express; System p5 560Q	System p5 570	System p5 575	@server p5 590	@server p5 595
Memory to processor (GB/second)	84.4	204.6	204.6	399.7*	799.5*
L2 to L3 cache (GB/second)	192.0	281.0	243.2	422.4	972.8
I/O subsystem (GB/second)	N/A	36.4	4.0	48.0	72.0

N/A = Not Applicable

* Using 533 MHz DDR2 memory

Server I/O attachment

Server	Maximum drawers per system	Slots per drawer	Maximum slots per system	Disk bays per drawer	Maximum disk bays per system	Maximum I/O drawer disk capacity	Maximum disk capacity per system
System p5 520 Express 7311-D20 drawer ⁴	4 ⁷	7 PCI-X	34	12	56	14.4TB	16.8TB
System p5 520Q Express 7311-D20 drawer ⁴	4 ⁷	7 PCI-X	34	12	56	14.4TB	16.8TB
System p5 550 Express 7311-D20 drawer ⁴	8 ⁹	7 PCI-X	59	12	104	28.8TB	31.2TB
System p5 550Q Express 7311-D20 drawer ⁴	8 ⁹	7 PCI-X	59	12	104	28.8TB	31.2TB
System p5 570 7311-D11 drawer 7311-D20 drawer ⁴	20 ⁷	6 PCI-X 7 PCI-X	163	12	264	72.0TB	79.2TB
System p5 575 F/C 5791 (internal drawer) F/C 5794 (internal drawer) 7040-61D drawer ^{5, 6}	1	20 PCI-X 20 PCI-X 20 PCI-X	24	16 8 16	18	2.3TB 1.1TB 4.8TB	2.9TB ⁸
@server p5 590¹ F/C 5791 (internal drawer) F/C 5794 (internal drawer) 7040-61D drawer ^{5, 6}	8	20 PCI-X 20 PCI-X 20 PCI or PCI-X	160	16 8 16	128	18.7TB 9.3TB 38.4TB	18.7TB ⁸
@server p5 595¹ F/C 5791 (internal drawer) F/C 5794 (internal drawer) 7040-61D drawer ^{5, 6}	12	20 PCI-X 20 PCI-X 20 PCI or PCI-X	240	16 8 16	192	28.1TB 14.0TB 57.6TB	28.1TB ⁸

¹ At least one drawer is required

² Maximum drawers of any type

³ Reduced on less than maximum-core systems

⁴ Ultra320 disk drives enabled

⁵ Ultra320 SCSI adapter provides access to external Ultra320 disk drives

⁶ Supported if migrated from another system, but not orderable as new

⁷ Maximum optional I/O drawers require use of one PCI-X slot

⁸ Using new internal I/O drawers

⁹ Maximum optional I/O drawers requires use of two PCI-X slots

Physical planning characteristics

Server	System p5 185 Express	System p5 185 Express	System p5 505 Express	System p5 510 Express; System p5 510Q Express	System p5 520 Express; System p5 520Q Express	System p5 520 Express; System p5 520Q Express	System p5 550 Express; System p5 550Q Express	System p5 550 Express; System p5 550Q Express
Packaging	Deskside	19" rack drawer (5U)	19" rack drawer (1U)	19" rack drawer (2U)	19" rack drawer (4U)	Deskside	19" rack drawer (4U)	Deskside
Number of processors	1, 2	1, 2	1 or 2	1, 2; 4	1, 2; 4	1, 2; 4	2, 4; 4, 8	2, 4; 4, 8
Maximum KVA	0.474	0.474	0.421	0.658	0.632	0.632	1.158	1.158
Maximum watts	450	450	400	625	600	600	1100	1100
Maximum BTU/hour	1536	1536	1365	2133	2046	2046	3754	3754
Noise (bels)	6.1	6.1	6.1	6.1	6.1	5.1	6.0	6.8
Voltage (AC)	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase	100 - 127, 200 - 240 1-phase
Power supply	-	-	N +1 optional	N + 1 optional	N +1 optional	N +1 optional	N +1 optional	N +1 optional
Height								
— inches	18.5	8.6	1U - 1.7	2U - 3.5	4U - 6.8	21.1	4U - 7.0	21.1
— millimeters	469	218	43	89	172	535	178	533
Width								
— inches	8.5	16.9	17.3	19.0	17.4	7.5	17.2	7.9
— millimeters	216	429	440	483	442	190	437	201
Depth								
— inches	19.5	20.6	28	27	22.6	23.2	27.0	30.7
— millimeters	496	524	710	686	573	590	686	779
Operating temperature (°C)	5 - 35	5 - 35	5 - 35	5 - 35	5 - 35	5 - 35	5 - 35	5 - 35
Operating humidity	8% - 80%	8% - 80%	8% - 80%	8% - 80%	8% - 80%	8% - 80%	8% - 80%	8% - 80%
Maximum altitude								
— feet	10000	10000	10000	10000	10000	10000	10000	10000
— meters	3048	3048	3048	3048	3048	3048	3048	3048
Weight								
— pounds	55	55	37 - 51	37 - 51.6	78.1 - 94.6	78.1 - 94.6	91 - 125	91 - 125
— kilograms	25	25	16.8 - 23.2	16.8 - 23.2	35.5 - 43	35.5 - 43	41.4 - 57	41.4 - 57

Note: The physical planning characteristics of System p5 servers are estimates and are intended for planning purposes only. More comprehensive information may be found in the IBM Sales Manual at ibm.com/common/ssi.

Physical planning characteristics (continued)

Server	System p5 560Q Express; System p5 560Q	System p5 570	System p5 575	@server p5 590	@server p5 595
Packaging	19" rack drawer (4U)**	19" rack drawer (4U)**	24" system frame	24" system frame (+expansion frame)	24" system frame (+expansion frames)
Number of processors	4, 8 or 16*	2, 4, 8, 12 or 16	8, 16	8 to 32	16 to 64
Maximum KVA	1.37	1.37	41.5	16.7	22.7
Maximum watts	1300	1300	41600	16700	22710
Maximum BTU/hour	4437	4437	142000	57000	77500
Noise (bels)	6.8	6.8	-	7.6 - 8.3	7.6 - 8.3
Voltage (AC)	200 - 240 1-phase	200 - 240 1-phase	200 - 240, 380 - 415, 480 3-phase	200 - 240, 380 - 415, 480 3-phase	200 - 240, 380 - 415, 480 3-phase
Power supply	N+1 standard	N+1 standard	N+1 standard IBB optional	N+1 standard IBB optional	N+1 standard IBB optional
Height					
— inches	4U - 6.85	4U - 6.85	42U - 79.7	42U - 79.7	42U - 79.7
— millimeters	174	174	2025	2025	2025
Width					
— inches	19.0	19.0	30.9	30.9 - 62.0	30.9 - 62.0
— millimeters	485	483	785	785 - 1575	785 - 1575
Depth					
— inches	31.1	31.1	60.2 - 74.2	52.2 - 66.2	52.2 - 66.2
— millimeters	790	790	1530 - 1885	1326 - 1681	1326 - 1681
Operating temperature (°C)	5 - 35	5 - 35	10 - 32	10 - 32	10 - 32
Operating humidity	8% - 80%	8% - 80%	8% - 80%	8% - 80%	8% - 80%
Maximum altitude					
— feet	10000	10000	10000	10000	10000
— meters	3048	3048	3048	3048	3048
Weight					
— pounds	140	140	3095 - 3479***	2735 - 4956	2735 - 5420
— kilograms	63.6	63.6	1406 - 1581	1241 - 2248	1241 - 2458

* 16-core system is not called Express

** Figures are for a 4-core (single building block) system

*** Assuming 12 nodes and one I/O drawer

Note: The physical planning characteristics of System p5 and @server p5 servers are estimates and are intended for planning purposes only. More comprehensive information may be found in the IBM Sales Manual at ibm.com/common/ssi.

Physical planning characteristics (continued)

Drawer	7311-D11 (4U)	7311-D20 (4U)
Packaging	19" rack drawer	19" rack drawer
Maximum KVA	0.24	0.358
Maximum watts	225	340
Maximum BTU/hour	765	1161
Noise (bels)	5.6	6.1
Voltage (AC)	200 - 240	100 - 127, 200 - 240
Power supply	N+1 standard	N+1 optional
Height		
— inches	4U - 6.9	4U - 7.0
— millimeters	175	178
Width		
— inches	17.5	19.0
— millimeters	445	482
Depth		
— inches	28.0	24.0
— millimeters	711	610
Operating temperature (°C)	10 - 38	5 - 35
Operating humidity	8% - 80%	8% - 80%
Maximum altitude		
— feet	10000	10000
— meters	3048	3048
Weight		
— pounds	86	101
— kilograms	39.1	45.9

Rack	7014-S11	7014-S25	7014-T00	7014-T42	7040-61R
	11U	25U	36U	42U	42U
Height					
— inches	24.0	49.0	71.0 - 75.8	79.3	79.7
— millimeters	612	1344	1804 - 1926	2015	2025
Width					
— inches	20.5	23.8	24.5 - 25.4	24.5 - 25.4	30.9
— millimeters	520	605	623 - 644	623 - 644	785
Depth					
— inches	34.4	39.4	41.0 - 45.2	41.0 - 45.2	52.8 - 58.8
— millimeters	874	1001	1042 - 1098	1043 - 1098	1342 - 1494
Weight					
— pounds	75	221	535	575	-
— kilograms	37	100.2	244	261	-

Note: The physical planning characteristics of System p5 and @server p5 racks and I/O drawers are estimates and are intended for planning purposes only. More comprehensive information may be found in the IBM Sales Manual at ibm.com/common/ssi.

Standard service warranty ^{1,4}	System p5 185 Express	System p5 505 Express	System p5 510 Express; System p5 510Q Express	System p5 520 Express; System p5 520Q Express	System p5 550 Express; System p5 550Q Express
24x7 with two hour service objective ²	○	○	○	○	○
24x7 with four hour service objective	○	○	○	○	○
24x7 with same-day service objective	-	-	-	-	-
9x5 next-business-day with four hour service objective	○	○	○	○	○
9x5 next-business-day	X ³	X ³	X ³	X ³	X ³

Standard service warranty ^{1,4}	System p5 560Q Express; System p5 560Q	System p5 570	System p5 575	@server p5 590; @server p5 595
24x7 with two hour service objective ²	○	○	○	-
24x7 with four hour service objective	○	○	○	-
24x7 with same-day service objective	-	-	-	X ³
9x5 next-business-day with four hour service objective	○	○	○	-
9x5 next-business-day	X ³	X ³	X	-

○ = Optional offering
X = Standard offering

¹ These warranty terms and conditions are for the United States and may be different in other countries. Consult your local IBM representative or IBM Business Partner for country-specific information.

² Available in selected cities

³ Customer Replaceable Unit (CRU) service

⁴ All systems have a 3-year warranty except the System p5 570, System p5 575, @server p5 590 and @server p5 595 which have a 1-year warranty.

System software	System p5 185 Express	System p5 505 Express	System p5 510 Express; System p5 510Q Express	System p5 520 Express; System p5 520Q Express
Operating system support				
AIX 5L V5.2 (5765-E61)	X	X	X	X
AIX 5L V5.3 (5765-G03)	X	X	X	X
Red Hat Enterprise Linux AS 4 for POWER (5639-RH4) ¹	X	X	X	X
SUSE Linux Enterprise Server 9 for POWER (5639-SLP) ¹	X	X	X	X
i5/OS® (5722-SS1)	-	-	-	-
HACMP™ for AIX 5L V5.3 (5765-F62)	X	X	X	X
CSM for AIX 5L V1.4 (5765-F67)	?	X	X	X
CSM for Linux on POWER V1.4 (5765-G16)	?	X	X	X

System software	System p5 550 Express; System p5 550Q Express	System p5 560Q Express; System p5 560Q	System p5 570
Operating system support			
AIX 5L V5.2	X	X	X
AIX 5L V5.3	X	X	X
Red Hat Enterprise Linux AS 4 for POWER ¹	X	X	X
SUSE Linux Enterprise Server 9 for POWER ¹	X	X	X
i5/OS	-	-	X ²
HACMP for AIX 5L V5.3	X	X	X
CSM for AIX 5L V1.4 (5765-F67)	X	X	X
CSM for Linux on POWER V1.4 (5765-G16)	X	X	X

System software	System p5 575	@server p5 590	@server p5 595
Operating system support			
AIX 5L V5.2	X	X	X
AIX 5L V5.3	X	X	X
Red Hat Enterprise Linux AS 4 for POWER ¹	X	X	X
SUSE Linux Enterprise Server 9 for POWER ¹	X	X	X
i5/OS	-	X ²	X ²
HACMP for AIX 5L V5.3	X	X	X
CSM for AIX 5L V1.4	X	X	X
CSM for Linux on POWER V1.4	X	X	X

X = Supported; - = Not Supported

SOD = Statement of General Direction announced

¹ Many of the features described in this document are operating system dependent and may not be available on Linux on POWER. For more information, please check: ibm.com/systems/p/software/whitepapers/linux_overview.html.

² Supported on 1.65 GHz processor models only. One or two processors on the p5-590 and p5-595 systems can be dedicated to i5/OS.

IBM services

IBM services provide the capabilities and solutions needed to manage virtually every aspect of an open systems environment and at any level chosen. They complement the support already included with System p5 and @server p5 systems. IBM world-class services and support allow you to better manage resources and focus on what matters most—your business.

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- Operating system migration assistance
- Systems integration
- IBM and non-IBM software customization
- IBM application development
- Site planning services

Continuing support services

- Client Support Center services
 - Electronic/voice
 - IBM and non-IBM hardware and software
- On-site software maintenance support
- Capacity planning
- Maintenance services, including multivendor environment
- Technical/application specialists
- Network custom services
- Education

Benchmark notes

The benchmark information contained herein is current as of the date of this document.

Values shown in the performance benchmarks section were derived using particular, well-configured, development-level computer systems, and used 32-bit applications and external cache if external cache is supported on the system. All performance benchmark values and 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, to evaluate the performance of a system they are considering. Actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. IBM recommends application-oriented testing for performance predictions. Additional information about the performance benchmarks, values, and systems tested is available from your IBM marketing representative or IBM Authorized Reseller or access the following on the Web:

SPEC – <http://www.spec.org>

TPC – <http://www.tpc.org>

Unless otherwise indicated, new or upgraded systems were tested with AIX 5L. All TPC-C benchmark results are TPC-C Version 5.

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 20 minutes.

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

QppH is 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 10TB.

QthH is 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 10TB.

QpH is the geometric mean of the power tests (QppH) and the throughput tests (QthH).

\$/QpH: Price-performance metric for the TPC-H benchmark where QpH is the geometric mean of QppH and QthH. The price reflects the estimated five year cost of ownership for the tested hardware configuration, software and maintenance.

rPerf (Relative Performance) is 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 specifics. The IBM @server pSeries 640 is the baseline reference system and has a value of 1.0. Although rPerf may be used to approximate relative 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.

More information

- Contact your IBM marketing representative or IBM Business Partner
- Access the System p5 and @server p5 Products and Services page on IBM's World Wide Web server at ibm.com/systems/p, and then select the appropriate hardware or software option
- Product announcement letters and Sales Manual containing more details on hardware and software offerings are available at ibm.com/common/ssi
- More detailed benchmark and performance information is available at ibm.com/systems/p/benchmarks and ibm.com/systems/p/hardware/system_perf.html
- Details on storage interface and communications/connectivity adapter support may be found in the I/O Features Report at ibm.com/systems/p/hardware/factsfeatures.html



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February 2006
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