



IBM @server pSeries and IBM RS/6000 Facts and Features

October 4, 2001



**IBM @server
pSeries 610**



**IBM @server
pSeries 660**



**IBM @server
pSeries 690**



Product Line	IBM RS/6000®	IBM RS/6000	IBM RS/6000
Machine type	7043-150	7044-170	7044-270
System packaging	desktop	desktop	desktop
Microprocessor type	32-bit 604e	64-bit POWER3-II	64-bit POWER3-II
# of processors/system	1	1	1, 2, 3 or 4
Clock rates available	250 MHz / 375 MHz	333 MHz / 400 MHz / 450 MHz	375 MHz / 450 MHz
System memory (standard/maximum)	128MB / 1GB	256MB / 2GB	256MB / 16GB ^a
Data/instruction (L1) cache)	32KB / 32KB	64KB / 32KB	64KB / 32KB ^b
Level 2 (L2) cache	1MB	1MB / 4MB / 8MB	4MB / 8MB ^b
Reliability, availability, serviceability			
Chipkill™ memory	-	-	-
Service processor	-	X	X
Hot-swappable disks (internal and external)	-	-	-
Dynamic Processor Deallocation	-	-	X
Hot-plug slots	-	-	-
Redundant hot-plug power	-	-	-
Redundant hot-plug cooling	-	-	-
NEBS3	-	-	-
Capacity			
PCI slots available	5 (32-bit)	6 (4 32-bit, 2 64-bit)	5 (3 32-bit, 2 64-bit)
PCI bus speed (MHz)	33	33 / 50	33 / 50
Disk/media bays	2 / 3	3 / 3	2 / 3
Minimum/maximum internal disk storage	9.1GB / 54.6GB	9.1GB / 145.6GB	9.1GB / 109.2GB
Storage interfaces			
Ultra SCSI SE and Ultra SCSI Differential	X	X	X
PCI 2-channel Ultra3 SCSI	X	X	X
PCI 4-channel Ultra3 SCSI RAID	X	X	X
SSA Advanced SerialRAID Plus	X	X	X
Gigabit Fibre Channel	-	X	X
Communications and connectivity			
EIA RS232D	X	X	X
Token-Ring 4/16 Mbps	X	X	X
4-port 10/100 Mbps Ethernet	X	X	X
10/100 Mbps Ethernet PCI II	X	X	X
Gigabit Ethernet (Fibre / UTP)	-	X / X	X / X
FDDI 100 Mbps (Fibre)	X	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X	X / X
ATM 622 Mbps (Fibre)	-	X	X
SP System Attachment	-	-	-
ESCON® Control Unit (host attach) ^k	-	-	-
ESCON Emulation (tape attach) ^k	-	-	-
HIPPI ^k	-	-	-
Digital Trunk Quad / Resource Adapter ^k	X / X	X / X	X / X
X.25 ^k	X	X	X
SDLC	X	X	X
BSC	X	X	X
eBusiness Cryptographic Accelerator	X	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X	X
Graphics accelerators	GXT130P	GXT130P, 4000P, 6000P	GXT130P, 4000P, 6000P
Benchmarks	(250 / 375 MHz)	(333 / 400 / 450 MHz)	(1, 2, 3, 4-way)
SPECweb99	-	- / 460 / 816	3,012 (4-way) ^{p†}
SPECint_base2000	99.4 / -	177 / 239 / 286	318 ^{p†}
SPECfp_base2000	90.8 / -	225 / 295 / 356	426 ^{p†}
SPECint_base_rate2000	-	-	-, 7.32, -, 14.4 ^{p†}
SPECfp_base_rate2000	-	-	-, 8.91, -, 14.0 ^{p†}
SPECjbb2000	-	-	25,147(4-way) ^{p†}
TPC-C: tpmC; \$/tpmC	-	-	-
TPC-H: QphH (@ 300GB)	-	-	-
TPC-H: \$/QphH (@ 300GB)	-	-	-
rPerf	0.18, 0.26	0.58, 0.73, 0.79	1.00, 1.92, 2.55, 3.47 ^o -, 2.27, -, 4.01 ^p

* Submitted to SPEC, awaiting approval

Product Line	IBM @server p610	IBM @server p610
Machine type	7028-6E1	7028-6C1
System packaging	tower	rack drawer (5U)
Microprocessor type	64-bit POWER3-II	64-bit POWER3-II
# of processors/system	1 or 2	1 or 2
Clock rates available	375 MHz / 450 MHz	375 MHz / 450 MHz
System memory (standard/maximum)	512MB / 8GB ^a	512MB / 8GB ^a
Data/instruction (L1) cache	64KB / 32KB ^b	64KB / 32KB ^b
Level 2 (L2) cache	4MB / 8MB ^b	4MB / 8MB ^b
Reliability, availability, serviceability		
Chipkill memory	-	-
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	-	-
Hot-plug slots	-	-
Redundant hot-plug power	X	X
Redundant hot-plug cooling	X	X
NEBS3	-	-
Capacity		
PCI slots available	5 (2 32-bit, 3 64-bit)	5 (2 32-bit, 3 64-bit)
PCI bus speed (MHz)	33 / 50	33 / 50
Disk/media bays	7 / 3	7 / 3
Minimum/maximum internal disk storage	18.2GB / 291.2GB	18.2GB / 291.2GB
Storage interfaces		
Ultra SCSI SE and Ultra SCSI Differential	X	X
PCI 2-channel Ultra3 SCSI	X	X
PCI 4-channel Ultra3 SCSI RAID	X	X
SSA Advanced SerialRAID Plus	X	X
Gigabit Fibre Channel	X	X
Communications and connectivity		
EIA RS232D	X	X
Token-Ring 4/16 Mbps	X	X
4-port 10/100 Mbps Ethernet	X	X
10/100 Mbps Ethernet PCI II	X	X
Gigabit Ethernet (Fibre / UTP)	X / X	X / X
FDDI 100 Mbps (Fibre)	-	-
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X
ATM 622 Mbps (Fibre)	X	X
SP System Attachment	-	-
ESCON Control Unit (host attach) ^k	-	-
ESCON Emulation (tape attach) ^k	-	-
HIPPI ^k	-	-
Digital Trunk Quad / Resource Adapter ^k	- / -	- / -
X.25 ^k	X	X
SDLC	-	-
BSC	-	-
eBusiness Cryptographic Accelerator	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X
Graphics accelerators	GXT135P	GXT135P
Benchmarks	(1, 2-way)	(1, 2-way)
SPECweb99	-	-
SPECint_base2000	318 ^{r*}	318 ^{r*}
SPECfp_base2000	426 ^{r*}	426 ^{r*}
SPECint_base_rate2000	-, 7.32 ^{r*}	-, 7.32 ^{r*}
SPECfp_base_rate2000	-, 8.91 ^{r*}	-, 8.91 ^{r*}
SPECjbb2000	13,124 (2-way) ^{r*}	13,124 (2-way) ^{r*}
TPC-C: tpmC; \$/tpmC	-	-
TPC-H: QphH (@ 300GB)	-	-
TPC-H: \$/QphH (@ 300GB)	-	-
rPerf	1.19, 2.27 ^r	1.19, 2.27 ^r

* Submitted to SPEC, awaiting approval

Product Line	IBM @server p620	IBM @server p620
Machine type	7025-6F0	7025-6F1
System packaging	tower	tower
Microprocessor type	64-bit RS64 III / RS64 IV	64-bit RS64 III / RS64 IV
# of processors/system	1, 2, or 4	1, 2, 4 or 6
Clock rates available	450 MHz / 600 MHz	450 MHz (1, 2, 4-way) / 600 MHz (1, 2, 4-way), 668 MHz (6-way)
System memory (standard/maximum)	512MB / 32GB ^{a,n}	512MB / 32GB ^{a,n}
Data/instruction (L1) cache	128KB / 128KB ^b	128KB / 128KB ^b
Level 2 (L2) cache	2MB (1-way) / 4MB (2, 4-way) ^b	2MB (1-way) / 4MB (2, 4-way) / 8MB (6-way) ^b
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X	X
Hot-plug slots	X	X
Redundant hot-plug power	O	O
Redundant hot-plug cooling	O	O
NEBS3	-	-
Capacity		
PCI slots available	10 (64-bit)	10 (64-bit)
PCI bus speed (MHz)	33 / 66	33 / 66
Disk/media bays	14 / 3	14 / 3
Minimum/maximum internal disk storage	9.1GB / 509.6GB	9.1GB / 509.6GB
Storage interfaces		
Ultra SCSI SE and Ultra SCSI Differential	X	X
PCI 2-channel Ultra3 SCSI	X	X
PCI 4-channel Ultra3 SCSI RAID	X	X
SSA Advanced SerialRAID Plus	X	X
Gigabit Fibre Channel	X	X
Communications and connectivity		
EIA RS232D	X	X
Token-Ring 4/16 Mbps	X	X
4-port 10/100 Mbps Ethernet	X	X
10/100 Mbps Ethernet PCI II	X	X
Gigabit Ethernet (Fibre / UTP)	X / X	X / X
FDDI 100 Mbps (Fibre)	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X
ATM 622 Mbps (Fibre)	X	X
SP System Attachment	-	-
ESCON Control Unit (host attach) ^k	X	X
ESCON Emulation (tape attach) ^k	X	X
HIPPI ^k	X	X
Digital Trunk Quad / Resource Adapter ^k	X / X	X / X
X.25 ^k	X	X
SDLC	X	X
BSC	X	X
eBusiness Cryptographic Accelerator	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X
Graphics accelerators	GXT130P	GXT130P
Benchmarks	(1, 2, 4-way - 600 MHz)	(1, 2, 4, 6-way - 600 / 668 MHz)
SPECweb99	3,280 (4-way)	4,654 (6-way)
SPECint_base2000	295	295
SPECfp_base2000	245	245
SPECint_base_rate2000	-, -, 14.1	-, -, 14.1, 24.9
SPECfp_base_rate2000	-, -, 10.9	-, -, 10.9, 16.9
SPECjbb2000	25,087 (4-way)	41,855 (6-way)
TPC-C: tpmC; \$/tpmC	-	-
TPC-H: QphH (@ 300GB)	-	-
TPC-H: \$/QphH (@ 300GB)	-	-
rPerf	1.26, 2.69, 4.57	1.26, 2.69, 4.57, 7.46

Product Line	IBM RS/6000	IBM @server p640
Machine type	7046-B50	7026-B80
System packaging	rack drawer (2U)	rack drawer (5U)
Microprocessor type	32-bit 604e	64-bit POWER3-II
# of processors/system	1	1, 2, 3 or 4
Clock rates available	375 MHz	375 MHz / 450 MHz
System memory (standard/maximum)	128MB / 1GB	256MB / 16GB ^a
Data/instruction (L1) cache	32KB / 32KB	64KB / 32KB ^b
Level 2 (L2) cache	1MB	4MB / 8MB ^b
Reliability, availability, serviceability		
Chipkill memory	-	-
Service processor	-	X
Hot-swappable disks (internal and external)	-	X
Dynamic Processor Deallocation	-	X
Hot-plug slots	-	-
Redundant hot-plug power	-	X
Redundant hot-plug cooling	-	X
NEBS3	-	X
Capacity		
PCI slots available	2 (32-bit)	5 (1 32-bit, 4 64-bit)
PCI bus speed (MHz)	33	33 / 50
Disk/media bays	2 ^h / 2	5
Minimum/maximum internal disk storage	9.1GB / 72.8GB	9.1GB / 145.6GB
Storage interfaces		
Ultra SCSI SE and Ultra SCSI Differential	X	X
PCI 2-channel Ultra3 SCSI	X	X
PCI 4-channel Ultra3 SCSI RAID	X	X
SSA Advanced SerialRAID Plus	X	X
Gigabit Fibre Channel	-	X
Communications and connectivity		
EIA RS232D	X	X
Token-Ring 4/16 Mbps	X	X
4-port 10/100 Mbps Ethernet	X	X
10/100 Mbps Ethernet PCI II	-	X
Gigabit Ethernet (Fibre / UTP)	-	X / X
FDDI 100 Mbps (Fibre)	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X
ATM 622 Mbps (Fibre)	X	X
SP System Attachment	-	-
ESCON Control Unit (host attach) ^k	-	-
ESCON Emulation (tape attach) ^k	-	-
HIPPI ^k	-	-
Digital Trunk Quad / Resource Adapter ^k	- / -	X / X
X.25 ^k	X	X
SDLC	X	X
BSC	X	X
eBusiness Cryptographic Accelerator	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X
Graphics accelerators	GXT130P	GXT130P, 4000P ^s , 6000P ^s
Benchmarks		(1, 2, 3, 4-way)
SPECweb99	-	3,060 (4-way) ^{p*}
SPECint_base2000	-	318 ^{p*}
SPECfp_base2000	-	426 ^p
SPECint_base_rate2000	-	-, 7.32, -, 14.4 ^{p*}
SPECfp_base_rate2000	-	-, 8.91, -, 14.0 ^{p*}
SPECjbb2000	-	25,145 (4-way) ^{p*}
TPC-C: tpmC; \$/tpmC	-	-
TPC-H: QphH (@ 300GB)	-	-
TPC-H: \$/QphH (@ 300GB)	-	-
rPerf	0.26	1.00, 1.92, 2.55, 3.47 ^o -, 2.27, -, 4.01 ^p

* Submitted to SPEC, awaiting approval

Product Line	IBM @server p660	IBM @server p660
Machine type	7026-6H0	7026-6H1
System packaging	rack drawer (5U - processor / 5U - I/O)	rack drawer (5U - processor / 5U - I/O)
Microprocessor type	64-bit RS64 III / RS64 IV	64-bit RS64 III / RS64 IV
# of processors/system	1, 2 or 4	1, 2, 4 or 6
Clock rates available	450 MHz / 600 MHz	450 MHz (1, 2, 4-way) / 600 MHz (1, 2, 4-way), 668 MHz (6-way)
System memory (standard/maximum)	512MB / 32GB ^{a,n}	512MB / 32GB ^{a,n}
Data/instruction (L1) cache	128KB / 128KB ^b	128KB / 128KB ^b
Level 2 (L2) cache	2MB (1-way) / 4MB (2, 4-way) ^b	2MB (1-way) / 4MB (2, 4-way) / 8MB (6-way) ^b
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	External only	External only
Dynamic Processor Deallocation	X	X
Hot-plug slots	X	X
Redundant hot-plug power	O	O
Redundant hot-plug cooling	X	X
NEBS3	X	X
Capacity		
PCI slots available	28 (8 32-bit, 20 64-bit)	28 (8 32-bit, 20 64-bit)
PCI bus speed (MHz)	33 / 66	33 / 66
Disk/media bays	2 / 4	2 / 4
Minimum/maximum internal disk storage	0 / 36.4GB	0 / 36.4GB
Storage interfaces		
Ultra SCSI SE and Ultra SCSI Differential	X	X
PCI 2-channel Ultra3 SCSI	X	X
PCI 4-channel Ultra3 SCSI RAID	X	X
SSA Advanced SerialRAID Plus	X	X
Gigabit Fibre Channel	X	X
Communications and connectivity		
EIA RS232D	X	X
Token-Ring 4/16 Mbps	X	X
4-port 10/100 Mbps Ethernet	X	X
10/100 Mbps Ethernet PCI II	X	X
Gigabit Ethernet (Fibre / UTP)	X / X	X / X
FDDI 100 Mbps (Fibre)	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X
ATM 622 Mbps (Fibre)	X	X
SP System Attachment	X	X
ESCON Control Unit (host attach) ^k	X	X
ESCON Emulation (tape attach) ^k	X	X
HIPPI ^k	-	-
Digital Trunk Quad / Resource Adapter ^k	X / X	X / X
X.25 ^k	X	X
SDLC	X	X
BSC	X	X
eBusiness Cryptographic Accelerator	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X
Graphics accelerators	GXT130P	GXT130P
Benchmarks	(1, 2, 4-way - 600 MHz)	(1, 2, 4, 6-way - 600 / 668 MHz)
SPECweb99	3,279 (4-way)	4,522 (6-way)
SPECint_base2000	295	295
SPECfp_base2000	245	245
SPECint_base_rate2000	-, -, 14.1	-, -, 14.1, 24.9
SPECfp_base_rate2000	-, -, 10.9	-, -, 10.9, 16.9
SPECjbb2000	25,158 (4-way)	41,640 (6-way)
TPC-C: tpmC; \$/tpmC	-	57,346.93, 32.59 (6-way)
TPC-H: QphH (@ 300GB)	-	-
TPC-H: \$/QphH (@ 300GB)	-	-
rPerf	1.26, 2.69, 4.57	1.26, 2.69, 4.57, 7.46

Product Line	IBM RS/6000	IBM @server p660
Machine type	7026-M80	7026-6M1
System packaging	rack drawer (8U - processor / 5U - I/O)	rack drawer (8U - processor / 5U - I/O)
Microprocessor type	64-bit RS64 III / RS64 IV	64-bit RS64 III / RS64 IV
# of processors/system	2, 4, 6 or 8	2, 4, 6, or 8
Clock rates available	500 MHz / 750 MHz ^c	500 MHz (2, 4-way) / 750 MHz (2, 4, 6, 8-way)
System memory (standard/maximum)	1GB / 64GB ^a	2GB / 64GB ^a
Data/instruction (L1) cache	128KB / 128KB ^b	128KB / 128KB ^b
Level 2 (L2) cache	4MB / 8MB ^b	4 MB / 8MB ^b
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	External only	External only
Dynamic Processor Deallocation	X	X
Hot-plug slots	X	X
Redundant hot-plug power	X	X
Redundant hot-plug cooling	X	X
NEBS3	X	X
Capacity		
PCI slots available	56 (16 32-bit, 40 64-bit)	56 (16 32-bit, 40 64-bit)
PCI bus speed (MHz)	33 / 66	33 / 66
Disk/media bays	2 / 8	2 / 8
Minimum/maximum internal disk storage	0 / 36.4GB	0 / 36.4GB
Storage interfaces		
Ultra SCSI SE and Ultra SCSI Differential	X	X
PCI 2-channel Ultra3 SCSI	X	X
PCI 4-channel Ultra3 SCSI RAID	X	X
SSA Advanced SerialRAID Plus	X	X
Gigabit Fibre Channel	X	X
Communications and connectivity		
EIA RS232D	X	X
Token-Ring 4/16 Mbps	X	X
4-port 10/100 Mbps Ethernet	X	X
10/100 Mbps Ethernet PCI II	X	X
Gigabit Ethernet (Fibre / UTP)	X / X	X / X
FDDI 100 Mbps (Fibre)	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X
ATM 622 Mbps (Fibre)	X	X
SP System Attachment	X	X
ESCON Control Unit (host attach) ^k	X	X
ESCON Emulation (tape attach) ^k	X	X
HIPPI ^k	X	X
Digital Trunk Quad / Resource Adapter ^k	X / -	X / -
X.25 ^k	X	X
SDLC	X	X
BSC	X	X
eBusiness Cryptographic Accelerator	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X
Graphics accelerators	GXT130P	GXT135P
Benchmarks	(2, 4, 6, 8-way - 500 MHz)	(2, 4, 6, 8-way - 750 MHz)
SPECweb99	5,509 (8-way)	8,145 (8-way)
SPECint_base2000	264	409
SPECfp_base2000	243	359
SPECint_base_rate2000	-, -, -, 24.0	-, 18.7, -, 36.9
SPECfp_base_rate2000	-, -, -, 20.6	-, 15.7, -, 28.8
SPECjbb2000	36,806 (8-way)	72,437 (8-way)
TPC-C: tpmC; \$/tpmC	66,750.27, 39.24 (8-way)	105,025.02, 25.33 (8-way)
TPC-H: QphH (@ 300GB)	-	-
TPC-H: \$/QphH (@ 300GB)	-	-
rPerf	2.49, 4.42, 6.49, 8.53	3.71, 6.68, 10.14, 13.28

Product Line	IBM @server p680	IBM @server p690
Machine type	7017-S85	7040-681
System packaging	frame (+ I/O rack)	system rack
Microprocessor type	64-bit RS64 III / RS64 IV	64-bit POWER4
# of processors/system	4, 6, 12, 18 or 24 ^u	8, 16, 24 or 32
Clock rates available	450 MHz / 600 MHz	1.1 GHz / 1.3 GHz
System memory (standard/maximum)	2GB / 96GB ^a	8GB / 256GB ^a
Data/instruction (L1) cache	128KB / 128KB ^b	32KB / 64KB ^b
Level 2 (L2) cache	8MB / 16MB ^b	5.6MB ^w
Level 3 (L3) cache	-	128MB ^w
Reliability, availability, serviceability		
Chipkill memory	X	X
Service processor	X	X
Hot-swappable disks (internal and external)	X	X
Dynamic Processor Deallocation	X	X
Hot-plug slots	-	X
Redundant hot-plug power	X	X
Redundant hot-plug cooling	X	X
NEBS3	-	-
Capacity		
PCI slots available	53 (33 32-bit, 20 64-bit)	160 (64-bit)
PCI bus speed (MHz)	33	33 / 66
Disk/media bays	48 / 8	128 / 4
Minimum/maximum internal disk storage	9.1GB / 873.6GB	36.4GB / 4.66TB
Storage interfaces		
Ultra SCSI SE and Ultra SCSI Differential	X	X
PCI 2-channel Ultra3 SCSI	X	X
PCI 4-channel Ultra3 SCSI RAID	-	-
SSA Advanced SerialRAID Plus	X	X
Gigabit Fibre Channel	X	X
Communications and connectivity		
EIA RS232D	X	X
Token-Ring 4/16 Mbps	X	X
4-port 10/100 Mbps Ethernet	X ^v	-
10/100 Mbps Ethernet PCI II	X	X
Gigabit Ethernet (Fibre / UTP)	X / X	X / X
FDDI 100 Mbps (Fibre)	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X
ATM 622 Mbps (Fibre)	X	X
SP System Attachment	X	X ^{**}
ESCON Control Unit (host attach) ^k	X	X
ESCON Emulation (tape attach) ^k	X	X
HIPPI ^k	-	X
Digital Trunk Quad / Resource Adapter ^k	- / -	- / -
X.25 ^k	X	X
SDLC	X	X
BSC	X	X
eBusiness Cryptographic Accelerator	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X ^v	X
Graphics accelerators	GXT130P	GXT135P
Benchmarks	(4, 6, 12, 18, 24-way)	(8, 16, 24, 32-way)
SPECweb99	9,106 (12-way) ^q	-
SPECint_base2000	-	783 ^{z*}
SPECfp_base2000	-	1098 ^{z*}
SPECint_base_rate2000	-	-
SPECfp_base_rate2000	-	-
SPECjbb2000	157,754 (24-way) ^q	169,794 (16-way) ^{x*}
TPC-C: tpmC; \$/tpmC	220,807.27, 34.18 (24-way) ^q	-
TPC-H: QphH (@ 300GB)	-	-
TPC-H: \$/QphH (@ 300GB)	-	-
rPerf	5.60, 8.23, 15.63, 21.91, 27.65 ^q	12.72, 24.46, 33.94, 42.80 ^{y/} -, 28.96, 39.95, 50.56 ^z

* Submitted to SPEC, awaiting approval

** Available in 2002

Product Line	IBM RS/6000 SP™	IBM RS/6000 SP	IBM RS/6000 SP
Machine type	9076	9076	9076
Node type	375MHz POWER3 SMP Thin ^e	375MHz POWER3 SMP Wide ^e	375MHz POWER3 SMP High ^e
System packaging	frame	frame	frame
Microprocessor type	64-bit POWER3-II	64-bit POWER3-II	64-bit POWER3-II
Minimum/maximum of each node type / system	1/128 ^f	1/128 ^f	1/128 ^f
# of processors/system	2 or 4	2 or 4	4, 8, 12 or 16
Clock rates available	375 MHz	375 MHz	375 MHz
System memory (standard/maximum)	256MB / 16GB ^a	256MB / 16GB ^a	1GB / 64GB ^a
Data/instruction (L1) cache	64KB / 32KB ^b	64KB / 32KB ^b	64KB / 32KB ^b
Level 2 (L2) cache	8MB ^b	8MB ^b	8MB ^b
Reliability, availability, serviceability			
Chipkill memory	-	-	-
Service processor	X ^d	X ^d	X ^d
Hot-swappable disks (internal and external)	External only	External only	X ^g
Dynamic Processor Deallocation	X	X	X
Hot-plug slots	-	-	X ^g
Redundant hot-plug power	-	-	-
Redundant hot-plug cooling	-	-	-
NEBS3	-	-	-
Capacity			
PCI slots available	2 (32-bit)	10 (2 32-bit, 8 64-bit)	53 (1 32-bit, 52 64-bit)
PCI bus speed (MHz)	33	33	33
Disk/media bays	2	4	2 (26 ^g)
Minimum/maximum internal disk storage	0 / 36.4GB	0 / 109.2GB	0 / 946.4GB ^g
Storage interfaces			
Ultra SCSI SE and Ultra SCSI Differential	X	X	X
PCI 2-channel Ultra3 SCSI	X	X	X
PCI 4-channel Ultra3 SCSI RAID	-	-	-
SSA Advanced SerialRAID Plus	X	X	X
Gigabit Fibre Channel	X	X	X
Communications and connectivity			
EIA RS232D	X	X	X
Token-Ring 4/16 Mbps	X	X	X
4-port 10/100 Mbps Ethernet	X	X	X
10/100 Mbps Ethernet PCI II	X	X	X
Gigabit Ethernet (Fibre / UTP)	X / X	X / X	X / X
FDDI 100 Mbps (Fibre)	X	X	X
64-bit ATM 155 Mbps (Fibre / UTP)	X / X	X / X	X / X
ATM 622 Mbps (Fibre)	X	X	X
SP System Attachment	N/A	N/A	N/A
ESCON Control Unit (host attach) ^k	X	X	X
ESCON Emulation (tape attach) ^k	X	X	X
HIPPI ^k	X	X	X
Digital Trunk Quad / Resource Adapter ^k	X / X	X / X	X / X
X.25 ^k	X	X	X
SDLC	X	X	X
BSC	X	X	X
eBusiness Cryptographic Accelerator	X	X	X
PCI Cryptographic Coprocessor (FIPS-4)	X	X	X
Graphics accelerators	-	-	-
Benchmarks	(2, 4-way)	(2, 4-way)	(4, 8, 12, 16-way)
SPECweb99	-	-	-
SPECint_base2000	248	248	229
SPECfp_base2000	330	330	322
SPECint_base_rate2000	-	-	10.6, 21.0, 31.4, 41.7
SPECfp_base_rate2000	-	-	14.1, 27.0, 39.0, 49.7
SPECjbb2000	-	-	-
TPC-C: tpmC; \$/tpmC	-	-	-
TPC-H: QphH (@ 1TB)	-	12,866.8 (32 nodes)	-
TPC-H: \$/QphH (@ 1TB)	-	649.00 (32 nodes)	-
rPerf	1.99, 2.64	1.99, 3.59	3.07, 6.03, 9.11, 12.01

Footnotes

X = Supported

O = Optionally Available

N/A = Not Applicable

§ = Statement of Direction

a Shared memory

b Per processor

c Faster processor speed available with upgrades only

d Via control workstation and PSSP software

e Node types can be intermixed on system

f Up to 512 available via special order

g With SP Expansion I/O units

h Third disk bay available via RPQ

k Requires additional software; check on availability

n 256MB/16GB on 1-way system

o Using 375 MHz processors and 4MB of L2 cache

p Using 450 MHz processors and 8MB of L2 cache

q Using 600 MHz processors

r Using 450 MHz processors

s Supported via RPQ and PRPQ

t Using 600 MHz and 668 MHz processors

u 4-way option available with 600 MHz processors

v Supported via RPQ

w Per multichip module

x Using 1.3 GHz HPC processors

y Using 1.1 GHz processors

z Using 1.3 GHz Turbo processors

I/O device options	RS/6000 150	RS/6000 170/270	RS/6000 B50	p610	p640	p620-6Fx p660-6Hx	RS/6000 M80 p660-6M1	p680 / p690	RS/6000 SP
Disk drives and subsystems									
7203-001 Portable Disk Drive	X	X	X	X	-	X ¹	X ¹	X ¹	-
7204-409/419 External Disk Drive	X	X	-	X	X	X ¹	X ¹	X ¹	-
7133-D40/T40 Serial Disk System	X	X	X	X	X	X	X	X	X
7140-160 TotalStorage SAN Controller 160	-	X	-	-	X	-	X ¹	X ^{1,2}	-
2104-DU3/TU3 Expandable Storage Plus	X	X	X	X	X	X	X	X	X
2105-F10/F20 TotalStorage Enterprise Storage Server™	-	X	-	X	X	X	X	X	X
Fibre Channel directors, switches and hubs									
2031-016 McDATA ES-3016 Fabric Switch	-	X	-	X	X	X	X	X	X
2031-032 McDATA ES-3032 Fabric Switch	-	X	-	X	X	X	X	X	X
2032-064 McDATA ED-6064 Ent. Fibre Chan. Director	-	X	-	X	X	X	X	X	X
2042-001 INRANGE FC/9000-64 Port Director	-	X	-	X	X	X	X	X	X
2042-128 INRANGE FC/9000-128 Port Director	-	X	-	X	X	X	X	X	X
2103-H07 Fibre Channel Storage Hub	-	X	X	-	X	X	X	X	X
2109-S08/S16 SAN Fibre Channel Switch	-	X	-	X	X	X	X	X	X
Optical drives and libraries									
3995-Cxx Optical Library	X	X	-	X	X	X	X	X	X
7210-020 CD-ROM Drive	X	X	-	X	X	X	X	X ²	X
4.7GB DVD-RAM Drive (internal)	X	X	X	X	X	X	X	X	-
Tape drives and libraries									
7205-311 DLT Tape Drive	X	X	X	X	X	X ¹	X ¹	X ¹	-
7206-005 4 mm Tape Drive	X	X	-	X	X	X ¹	X ¹	X ¹	-
7206-110 4 mm Tape Drive	X	X	X	X	X	X	X	X	X
7207-122 4GB 1/4-inch Tape Drive	X	X	X	X	X	X	X	X	X
7208-341/345 8 mm Tape Drive	X	X	X	X	X	X ¹	X ¹	X ¹	-
3490E-Fxx 1/2-inch Tape Subsystem (18/36-track)	X	X	X	X	X	X	X	X	X
3494-L12/L10/D12/D10 Magstar® Tape Library	X	X	-	X	X	X	X	X	X
3494-B18 Magstar Virtual Tape Server	-	-	-	-	-	X	X	X	X
3570-Cxx Magstar MP Tape Subsystem	X	X	X	X	X	X	X	X	X
3575 Magstar MP Tape Library Dataserver	X	X	X	X	X	X	X	X	X
3580-H11/L11 Ultrium Tape Drive	X	X	X	X	X	X	X	X	X
3581-H17/L17 Ultrium Tape Autoloader	X	X	X	X	X	X	X	X	X
3583-L18/L36/L72 Ultrium Scalable Tape Library	X	X	X	X	X	X	X	X	X
3584-D32/L32 UltraScalable Tape Library	X	X	X	X	X	X	X	X	X
3590-E11/B11/C12 Magstar Tape Drive	X	X	X	X	X	X	X	X	X
7331-305 8 mm Tape Library	X	X	X	X	X	X	X	X	X
7332-110 4 mm DDS-3 Tape Autoloader	X	X	-	X	X	X ¹	X ¹	X ¹	-
7337-305/306 DLT Tape Library	X	X	X	X	X	X	X	X	X
7337-360 DLT Tape Library	X	X	X	X	X	X	X	X	X
20GB/40GB 4 mm Tape Drive (internal)	-	X	-	X	X	X	X	X	X
20GB/40GB 8 mm Tape Drive (internal)	X	X	-	X	X	X	X ²	X	X

X = Available

¹ Not supported when a pSeries 660-6H0, pSeries 660-6H1, pSeries 660-6M1, pSeries 680, pSeries 690 or RS/6000 M80 is attached to the RS/6000 SP

² Supported on pSeries 680 only

Note: For the devices listed, not all models are supported on all systems. For more information, contact your IBM marketing representative or IBM Business Partner.

Graphics accelerators	150	170	270	p640
POWER GXT130P - 2D	X	X	X	X
POWER GXT4000P - 2D/3D	-	X	X	X (RPQ)
POWER GXT6000P - 2D/3D	-	X	X	X (RPQ)

Workstation performance (with AIX 4.3.3)	150 (375 MHz)	170 (333 MHz)		170 (400 MHz)		170 (450 MHz)		270 (450 MHz; 2-way; 4MB L2)		270 (450 MHz; 4-way; 4MB L2)	
Graphics accelerators	GXT2000P	GXT4000P/ GXT6000P		GXT4000P/ GXT6000P		GXT4000P/ GXT6000P		GXT4000P/ GXT6000P		GXT4000P/ GXT6000P	
Xmark93	42.2	71.0	70.6	79.1	79.4	84.2	84.2	77.4	77.1	77.4	77.1
PLBwire93	253	583	943	726	1120	821	1190	1120	1270	1370	1180
PLBsurf93	458	887	1290	1050	1490	1180	1640	1440	1790	1830	1900
ProCDRS-03	6.6	14.9	31.6	17.8	33.1	19.5	33.2	17.0	32.8	17.0	32.8
DX-06	3.68	6.87	14.6	8.30	17.0	9.34	17.9	7.91	15.9	7.91	15.9
DRV-07	2.13	3.18	13.3	3.67	15.1	4.23	15.3	3.60	14.6	3.60	14.6
Light-04	1.16	1.73	3.22	2.13	3.80	2.35	4.05	1.97	3.61	1.97	3.61
AWadv-04	15.0	24.1	59.0	28.9	67.0	32.5	71.4	27.6	65.0	27.6	65.0

System software	150	270	B50	p610	p620
Operating system support					
AIX® 4.3 (5765-C34) ¹	4.3.2+	4.3.3	4.3.3	4.3.3	4.3.3
AIX 5.1 (5765-E61) ¹	X	X	X	X	X
Linux® 32-bit distribution	X	X	X	-	-
Linux 64-bit distribution	-	-	-	- ²	-
HACMP 4.4.1 (5765-E54)	X	X	-	X	X
PSSP 3.2 (5765-D51)	-	-	-	-	-

	p640	p660	M80	p680	p690
Operating system support					
AIX 4.3 ¹	4.3.3	4.3.3	4.3.3	4.3.3	-
AIX 5.1 ¹	X	X	X	X	X
Linux 32-bit distribution	X	-	-	-	-
Linux 64-bit distribution	-	-	-	-	- ²
HACMP 4.4.1	X	X	X	X	X
PSSP 3.2	-	X	X	X	X

	SP 375 MHz POWER3 SMP Thin	SP 375 MHz POWER3 SMP Wide	SP 375 MHz POWER3 SMP High
Operating system support			
AIX 4.3 ¹	4.3.3	4.3.3	4.3.3
AIX 5.1 ¹	-	-	-
Linux 32-bit distribution	-	-	-
Linux 64-bit distribution	-	-	-
HACMP 4.4.1	X	X	X
PSSP 3.2	X	X	X

X = Available or standard feature

SOD = Statement of General Direction announced

¹ AIX – unlimited user license

² Planned



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 IBM *e*server pSeries and IBM RS/6000 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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Project support services

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

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 - 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:

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 updated system benchmarks were conducted using AIX Version 4.3. All TPC-C benchmark results are 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 twenty 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 1TB.

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 1TB.

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

\$/QphH: Price-performance metric for the TPC-H benchmark where QphH 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. It is derived from an IBM analytical model which uses characteristics from internal workloads, TPC and SPEC benchmarks. rPerf is not intended to represent any specific public benchmark results and should not reasonably be used in that way. The model simulates some of the system's operations such as CPU, cache, and memory. However, the model does not simulate disk or network I/O operations. Although the model uses general database and operating system parameters, it does not reflect specific databases or AIX version or releases. Unless otherwise indicated, the model assumes the use of 32-bit applications.

Unless otherwise indicated, rPerf is estimated only at the time a system is introduced. The IBM *e*server pSeries 640 Model B80 (375 MHz - 4MB L2 cache) 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, operating system release and configuration.

More information

- Contact your IBM marketing representative or IBM Business Partner.
- Access ibm.com/eserver/pseries on the Internet to get to the IBM Web Servers Products and Services page¹ on IBM's World Wide Web server, and then select the appropriate hardware or software option.
- Product announcement letters containing more details on hardware and software offerings are available at ibm.com/ibmlink.
- More detailed benchmark and performance information is available at:
ibm.com/eserver/pseries/hardware/system_perf.html
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¹ The IBM home page on the Internet can be found at www.ibm.com

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