

IBM Appendix

Cost of Ownership Comparisons

HP 3000 v/s AS/400 cost of ownership comparisons are available on the CSY Hotline under the subject COMPARE. Please refer to that analysis.

S800 versus RS/6000

Note that RS/6000 systems come with a one year warranty so that there are no support charges for the first 12 months.

16-user system (configured with 16MB memory and 700MB disk):

S800 system (30.4 host-based TPC-A)		IBM system (59 c/s TPC-A)		MMC
F10	\$11,250	IBM 350	\$17,900	\$213
16 MB memory	incl	32 MB memory	incl	
566 MB disk	incl	160 MB disk	incl	
tape backup	incl	tape backup	incl	
LAN	incl	LAN	incl	
700 MB disk swap	2,400	560 MB storage	3,680	55
16-user license	3,150	16-user license	4,400	-
Total	\$16,800	Total	\$25,980	\$268
3 year support	8,030	3 year support	6,432	
3 year COO	\$24,830	3 year COO	\$32,412	

128 user system (configured with 96MB memory and 2GB disk):

S800 system (88 c/s TPC-A)		IBM system (72 c/s TPC-A)		MMC
G30	\$20,000	IBM 560	\$52,500	\$425
32 MB memory	incl	64 MB memory	incl	
566 MB disk	incl	800 MB disk	incl	
tape backup	incl	tape backup	incl	
LAN	incl	LAN	incl	
64 MB memory	6,400	32 MB memory	5,900	-
2 GB disk	4,700	1 GB disk	4,800	60
128-user license	17,875	128-user license	17,850	-
Total	\$48,975	Total	\$81,050	\$485
3 year support	17,047	3 year support	11,640	
3 year COO	\$66,022	3 year COO	\$92,690	

256 user system (configured with 256MB memory and 5GB disk):

S800 system (184.5 c/s TPC-A)		IBM system (160 c/s TPC-A)		MMC
H50	\$72,000	IBM 980	\$114,500	\$833
64 MB memory	incl	64 MB memory	incl	
1 GB disk	incl	2.7 GB disk	incl	
tape backup	incl	tape backup	incl	
LAN	incl	LAN	incl	
192 MB memory	19,200	192 MB memory	35,000	-
4 GB disk	13,800	2.2 GB storage	12,330	144
256-user license	22,075	256-user license	28,100	-
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Total	\$127,075	Total	\$189,930	\$977
3 year support	38,558	3 year support	23,448	
3 year COO	\$165,633	3 year COO	\$213,378	

Alternate configuration for 256 users (158 c/s TPC-A):

IBM 580	\$62,500	\$425
64 MB memory	incl	
2 GB	incl	
192 MB memory	35,000	-
3GB storage	10,960	148
256-user license	27,450	-
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Total	\$135,910	\$573
3 year support	13,752	
3 year COO	\$149,662	

S800 versus AS/400

Note 1: that AS/400 systems come with a one year warranty so that there are no support charges for the first 12 months.

Note 2: Tape backup and LAN are not included with the base system and must be purchased separately.

16-user system (configured with 16MB memory and 700MB disk):

S800 system (30 host-based TPC-A)		IBM system (estimated 10 TPS)		MMC
F10	\$11,250	AS/400 model E06	\$16,500	\$135
16 MB memory	incl	8 MB memory	incl	
566 MB disk	incl	988 MB disk	incl	
tape backup	incl	tape backup	optional	
LAN	incl	LAN	optional	
700 MB disk swap	2,400	8 MB memory	2,036	-
16-user license	3,150	operating system	7,125	-
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Total	\$16,800	Total	\$25,661	\$135
3 year support	8,030	3 year support	3,240	
3 year COO	\$24,830	3 year COO	\$28,901	

128 user system (configured with 96MB memory and 2GB disk):

S800 system (60 host-based TPC-A)		IBM system (estimated 20 TPS)		MMC
G30	\$20,000	AS/400 model E25	\$71,070	\$288
32 MB memory	incl	16 MB memory	incl	
566 MB disk	incl	988 MB disk	incl	
tape backup	incl	tape backup	optional	
LAN	incl	LAN	optional	
64 MB memory	6,400	80 MB memory	30,500	-
2 GB disk	4,700	988 MB disk	6,000	-
128-user license	17,875	operating system	18,480	-
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Total	\$48,975	Total	\$126,050	\$288
3 year support	17,047	3 year support	6,912	
3 year COO	\$66,022	3 year COO	\$132,962	

256 user system (configured with 256MB memory and 5GB disk):

S800 system (153 host-based TPC-A)		IBM system (estimated 45 TPS)		MMC
H50	\$ 72,000	AS/400 model E60	\$ 220,000	\$ 985
64 MB memory	incl	64 MB memory	incl	
1 GB disk	incl	1.28 GB disk	incl	
tape backup	incl	tape backup	optional	
LAN	incl	LAN	optional	
192 MB memory	19,200	192 MB	166,800	-
4 GB disk	13,800	3.7 GB storage	18,000	-
256-user license	22,075	operating system	75,600	-
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Total	\$ 127,075	Total	\$ 480,400	\$ 985
3 year support	38,558	3 year support	23,640	
3 year COO	3 year COO	\$ 165,633	3 year COO	\$ 504,040

Alternate high-end:

IBM system (estimated 165 TPS)		MMC
AS/400 model E95	\$ 973,000	\$ 3,500
64 MB memory	incl	
1.28 GB disk	incl	
tape backup	optional	
LAN	optional	
192 MB memory	166,800	
3.7 GB storage	18,000	
operating system	168,000	
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Total	\$ 1,325,800	\$ 3,500
3 year support	84,000	
3 year COO	\$ 1,409,800	

RS/6000 POWERstation Configuration Summary

RS/6000 Model	220	340	350
Packaging	Desktop/Deskside	Desktop/Deskside	Desktop/Deskside
Clock Rate	33 MHz	33 MHz	42 MHz
Performance:			
LINPACK DP			
Mflops	6.5	14.8	18.6
SPECmark89	27.7	58.5	73.7
SPECfp89	37.4	93.4	118.0
SPECint89	17.7	29.0	36.4
SPECfp92	26.1	58.7	74.2
SPECint92	16.6	27.9	35.4
Graphics Performance:			
Grayscale Adapter			
(K v/s)	N/A	72	72
Color Graphics			
Adapter (K v/s)	N/A	125	125
POWER Gt1			
(K 2D v/s)	185	N/A	N/A
POWER Gt3			
(K 2D v/s)	650	650	650
POWER Gt4 (K) *	N/A	650/400/20	650/400/20
POWER Gt4x (K) *	N/A	800/800/80	800/800/80
POWER GTO (K) *	990/990/120	990/990/120	990/990/120
Expansion:			
Main Memory			
(min-max)	16-64 MB	16-256 MB	32-256 MB
Memory Type	PS/2 SIMM ECC	16 Mbit ECC	16 Mbit ECC
Memory Slots	8	2	2
Data/Instr.			
Cache (KB)	8	32/8	32/8
Bus Width	64-bit	64-bit	64-bit
Avail. Expansion			
Slots	2	4	4
Integr. SCSI/			
Ethernet	S/E	S/E	S/E
Ports (Parallel/			
Serial)	1/2	1/2	1/2
XIO slots			
(80 MB/sec)	N/A	N/A	N/A
Internal Disk			
(min-max, MB)	0-1000	160/400-2000	160/400-2000
External Disk			
(max, GB)	8.5	33.8	33.8
Max Total			
Disk (GB)	9.5	35.8	35.8
Operating System			
Entry Config.	AIX 3.2 16 MB, 200 MB, Ethernet, Inte.	AIX 3.2 16 MB, 400 MB, Ethernet, Inte.	AIX 3.2 32 MB, 400 MB, Ethernet, Inte.
	SCSI, KB, Mouse, 8507 Grayscale, AIX, GUI	SCSI, Diskette, KB, Mouse, 8508 Grayscale, AIX, GUI	SCSI, Diskette, KB, Mouse, 8508 Grayscale, AIX, GUI
Price	\$6,605	\$16,895	\$22,895

* 2D v/s / 3D v/s / Gouraud shaded triangles/s

RS/6000 POWERstation Configuration Summary

RS/6000 Model	520H	530H	560	580
Packaging	Deskside	Deskside	Deskside	Deskside
Clock Rate	25 MHz	33 MHz	50 MHz	62.5 MHz
Performance:				
LINPACK DP				
Mflops	11.5	20.2	30.5	38.1
SPECmark89	45.1	62.2	92.3	126.2
SPECfp89	72.9	102.7	151.6	204.3
SPECint89	22.0	29.3	43.9	61.2
SPECfp92	45.3	64.6	97.6	124.7
SPECint92	21.5	28.5	43.2	59.1
Graphics Performance:				
Grayscale Adapter				
(K v/s)	72	72	72	72
Color Graph. Adapter				
(K v/s)	125	125	125	125
POWER Gt1				
(K 2D v/s)	N/A	N/A	N/A	N/A
POWER Gt3				
(K 2D v/s)	650	650	650	650
POWER Gt4 (K) *	650/400/20	650/400/20	650/400/20	650/400/20
POWER Gt4x (K) *	800/800/80	800/800/80	800/800/80	800/800/80
POWER GTO (K) *	990/990/120	990/990/120	990/990/120	990/990/120
Expansion:				
Main Memory				
(min-max)	16-512	32-512	64-1024	64-1024
Memory Type	4 Mbit EEC	4 Mbit EEC	16 Mbit EEC	16 Mbit EEC
Memory Slots	8	8	8	8
Data/Instr. Cache (KB)				
	32/8	64/8	64/8	64/32
Bus Width				
	64-bit	128-bit	128-bit	128-bit
Avail. Expansion Slots				
	7	7	7	8
Integr. SCSI/Ethernet				
	N/A	N/A	N/A	S
Ports (Parallel/Serial)				
	1/2	1/2	1/2	1/2
XIO Slots				
(80 MB/sec)	N/A	N/A	N/A	8
Internal Disk				
(min-max, MB)	400-7200	400-7200	800-7200	2000-7200
External Disk				
(max, MB)	42.8	42.8	42.8	42.8
Max Total Disk (GB)				
	50	50	50	50
Operating Sys. Entry Config.				
	AIX 3.2 16 MB, 400 MB, Ethernet, SCSI, Diskette, KB, Mouse, 8508 Grayscale, AIX, GUI	AIX 3.2 32 MB, 400 MB, Ethernet, SCSI, Diskette, KB, Mouse, 8508 Grayscale, AIX, GUI	AIX 3.2 64 MB, 800 MB, Ethernet, SCSI, Diskette, KB, Mouse, 8508 Grayscale, AIX, GUI	AIX 3.2.3 64 Mb, 2 GB, Ethernet, SCSI, Diskette, KB, Mouse, 8508 Grayscale, AIX, GUI
Price	\$28,117	\$38,117	\$59,117	\$69,117

* 2D v/s / 3D v/s / Gouraud shaded triangles/s

RS/6000 Graphics Comparison

	POWER Gt1	POWER Gt3	POWER Gt4	POWER Gt4x	POWER GTO
Graphics Specifications:					
Color Planes	8	8	8/24	8/24	8/24
Overlay Planes	N/A	N/A	N/A	N/A	N/A
Double Buffer Planes	N/A	N/A	24/24	24/24	24/24
Z Buffer	N/A	N/A	Y	Y	Y
Graphics Features:					
Gouraud Shading	N/A	N/A	Y	Y	Y
Light Sources	N/A	N/A	8	8	8
Dithering	N/A	N/A	N/A	N/A	N/A
Antialiasing	N/A	N/A	Y	Y	Y
Depth Cueing	N/A	N/A	Y	Y	Y
Texture Mapping	N/A	N/A	N/A	N/A	N/A
Alpha Blending	N/A	N/A	N/A	N/A	N/A
Graphics Application Interface:					
X11 R4	Y	Y	Y	Y	Y
PHIGS	Y	Y	Y	Y	Y
PEX					

HP Series 700 Graphics Capabilities:

	Integr. Color	CRX	CRX-24	CRX-24Z	CRX-48Z
Graphics Specifications:					
Color Planes	8	8	24	24	24
Overlay Planes	N/A	N/A	8	8	8
Double Buffer Planes	N/A	8/8	12/12	12/12	24/24
Z Buffer	N/A	N/A	N/A	Y	Y
Graphics Features:					
Gouraud Shading	Y*	Y*	Y	Y	Y
Light Sources	16	16	16	16	16
Dithering	Y	Y	Y	Y	Y
Antialiasing	N/A	N/A	N/A	Y	Y
Depth Cueing	Y	Y	Y	Y	Y
Texture Mapping	N/A	N/A	N/A	Y	Y
Alpha Blending	N/A	N/A	Y*	Y	Y
Graphics Application Interface:					
X11 R5	Y	Y	Y	Y	Y
PHIGS	Y	Y	Y	Y	Y
PEX	Y	Y	Y	Y	Y

* with PowerShade

**IBM RS/6000 versus HP 9000 Series 700 System Comparison
8 Plane Color Systems Under \$15 K**

	RS/6000 220W Gt1	RS/6000 220 Gt3	HP 9000 715/33 C
Configuration:			
Monitor size	16" color	16" color	17" color
Resolution	1280x1024	1280x1024	1024x768
Opt Monitor size	19"	19"	15", 19"
Graphics Specifications:			
Color planes	8	8	8
Overlay planes	N/A	N/A	N/A
Double buffer	N/A	N/A	N/A
Z buffer	N/A	N/A	N/A
Compute Performance:			
SPECmark89	27.7	27.7	45.9
SPECfp92	26.1	26.1	45.0
SPECint92	16.6	16.6	24.2
Graphics Performance:			
X11 Perf	NP	NP	7,633
2D vec/sec (K)	185	650	610
3D vec/sec (K) sust.	N/A	N/A	610
3D Triangles/sec (K) sust.	N/A	N/A	12
3D Lighted Quads (K) sust.	N/A	N/A	10
GPC 3D Wireframe (sys_chassis)	N/A	N/A	12.8
GPC 3D Solids (cyl_head)	N/A	N/A	9.3
GPC Animation (head)	13.6	N/A	N/A
GPC Simulation (shuttle)	N/A	N/A	10.5
Typical Configuration			
	16 MB, 400 MB, Floppy, 2-user AIX, 8-bit Gt1	16 MB, 400 MB, Floppy, 2-user AIX, 8-bit Gt3	16 MB, 525 MB, Floppy, 2-user HP-UX, integr.
Price			
	\$9,985	\$13,020	\$9,315
Price/Performance (based on typical system):			
SPECmark89/\$1,000	2.8	2.1	4.9
SPECfp92/\$1,000	2.6	2.0	4.8
SPECint92/\$1,000	1.7	1.3	2.6
K 3D vectors/\$1,000 (higher is better!)	N/A	N/A	65.5

N/A = not available
NP = not published

**IBM RS/6000 versus HP 9000 700 System Comparisons
24 Plane Color Systems \$15 K - 25 K**

	RS/6000 340 Gt4	HP 9000 715/50 CRX-24	HP 9000 715/50 CRX-24
Configuration:			
Monitor size	19" color	19" color	19" color
Resolution	1280x1024	1280x1024	1280x1024
Opt Monitor size	16"	N/A	N/A
Graphics Specifications:			
Color planes	(8)/24	24	24
Overlay planes	0	8	8
Double buffer	24/24	12/12	12/12
Z buffer	N/A	N/A	N/A
Compute Performance:			
SPECmark89	58.5	69.0	69.0
SPECfp92	58.7	72.1	72.1
SPECint92	27.9	36.5	36.5
Graphics Performance:			
X11 Perf	NP	10,650	10,650
2D vec/sec (K)	650	680	680
3D vec/sec (K) sust.	400	680	680
3D Triangles/sec (K) sust.	20	18	18
3D Lighted Quads (K) sust.	NP	12	12
GPC 3D Wireframe (sys_chassis)	NP	19.0	19.0
GPC 3D Solids (cyl_head)	NP	14.7	14.7
GPC Animation (head)		NP	21.1
21.1			
GPC Simulation (shuttle)	NP	16.1	16.1
Typical Configuration	16 MB, 400 MB, Floppy, 2-user AIX, 24-bit Gt4	16 MB, 525 MB, Floppy, 2-user HP-UX, CRX-24	32 MB, 1 GB, Floppy, 2-user HP-UX, CRX-24
Price	\$25,650	\$18,415	\$24,915
Price/Performance (based on typical system):			
SPECmark89/\$1,000	2.3	3.8	2.8
SPECfp92/\$1,000	2.3	3.9	2.9
SPECint92/\$1,000	1.1	2.0	1.4
3D vectors/\$1,000 (higher is better!)	15.6	36.9	27.3

N/A = not available
NP = not published

**IBM RS/6000 versus HP 9000 700 System Comparisons
24 Plane Color Systems \$30 K - 50 K**

	RS/6000 350 Gt4x	HP 9000 725/50 CRX-24Z	HP 9000 725/50 CRX-48Z
Configuration:			
Monitor size	19" color	19" color	19" color
Resolution	1280x1024	1280x1024	1280x1024
Opt Monitor size	16"	N/A	N/A
Graphics Specifications:			
Color planes	(8)/24	24	24
Overlay planes	0	8	8
Double buffer	24/24	12/12	24/24
Z buffer	Y	Y	Y
Compute Performance:			
SPECmark89	73.7	69.0	69.0
SPECfp92	74.2	72.1	72.1
SPECint92	35.4	36.5	36.5
Graphics Performance:			
11 Perf	NP	10,650	9,890
2D vec/sec (K)	800	680	1,000
3D vec/sec (K) sust.	800	680	1,000
3D Triangles/sec (K) sust.	80	150	600
3D Lighted Quads (K) sust.	NP	70	80
GPC 3D Wireframe (sys_chassis)	NP	19.0	21.8
GPC 3D Solids (cyl_head)	NP	34.2	39.6
GPC Animation (head)		NP	40.3
66.7			
GPC Simulation (shuttle)	NP	26.3	26.3
Typical Configuration	32 MB, 1 GB, Floppy, 2-user AIX, 24-bit Gt4x	32MB, 1 GB, Floppy, 2-user HP-UX, CRX-24Z	32 MB, 1 GB, Floppy, 2-user HP-UX, CRX-48Z
Price	\$37,050	\$29,915	\$34,915
Price/Performance (based on typical system):			
SPECmark89/\$1,000	2.0	2.3	2.0
SPECfp92/\$1,000	2.0	2.4	2.1
SPECint92/\$1,000	1.0	1.2	1.0
3D vectors/\$1,000 (higher is better!)	21.6	22.7	28.6

N/A = not available
NP = not published

**IBM RS/6000 versus HP 9000 700 System Comparisons
24 Plane Color Systems \$60 K - 85 K**

	RS/6000 560 GTO	RS/6000 580 GTO	HP 9000 735 CRX-48Z	HP 9000 755 CRX-48Z
Configuration:				
Monitor size	19" color	19" color	19" color	19" color
Resolution	1280x1024	1280x1024	1280x1024	1280x1024
Opt Monitor size	16", 23"	16", 23"	N/A	N/A
Graphics Specifications:				
Color planes	(8)/24	(8)/24	24	24
Overlay planes	0	0	8	8
Double buffer	24/24	24/24	24/24	24/24
Z buffer	Y	Y	Y	Y
Compute Performance:				
SPECmark89	92.3	126.2	147.0	147.0
SPECfp92	97.6	124.7	150.0	150.0
SPECint92	43.2	59.1	80.0	80.0
Graphics Performance:				
X11 Perf	NP	NP	19,120	19,120
2D vec/sec (K)	990	990	1,900	1,900
3D vec/sec (K) sust.	990	990	1,900	1,900
3D Triangles/sec (K) sust.	120	120	600	600
3D Lighted Quads (K) sust.	NP	NP	150	150
GPC 3D Wireframe (sys_chassis)	NP	NP	40.3	40.3
GPC 3D Solids (cyl_head)	NP	NP	78.7	78.7
GPC Animation (head)	NP	NP	127.1	127.1
GPC Simulation (shuttle)	NP	NP	58.5	58.5
Typical Configuration	64 MB, 2 GB, Floppy, 2-user AIX, 24-bit GTO	64 MB, 2 GB, Floppy, 2-user AIX, 24-bit GTO	64 MB, 2 GB, Floppy, 2-user HP-UX, CRX-48Z	64 MB, 2 GB, Floppy, 2- user HP-UX, CRX-48X
Price	\$80,200	\$85,400	\$61,315	\$73,415
Price/Performance (based on typical system):				
SPECmark89/\$ 1,000	1.2	1.5	2.4	2.0
SPECfp92/\$ 1,000	1.9	1.5	2.5	2.0
SPECint92/\$ 1,000	0.6	0.7	1.3	1.1
3D vectors/ \$ 1,000 (higher is better!)	12.3	11.6	31.0	25.9

N/A = not available
NP = not published

POWERserver Specifications

POWERserver Configuration Summary

RS/6000 Model	220	340	350
Packaging	Desktop/Deskside	Desktop/Deskside	Desktop/Deskside
Clock Rate	33 MHz	33 MHz	42 MHz
LINPACK DP Mflops	6.6	15.0	18.8
SPECmark89	27.7	58.5	73.7
SPECfp89	37.4	93.4	118.0
SPECint89	17.7	29.0	36.4
SPECfp92	26.1	58.7	74.2
SPECint92	16.6	27.9	35.4
TPC-A (OLTP) local \$K/tps-A	n/a	n/a	n/a
TPC-A (OLTP) c/s \$K/tps-A	n/a	n/a	n/a
TPC-B (server) \$K/tps-B	n/a	n/a	n/a
Memory (min-max)	16-64 MB	16-256 MB	32-256 MB
Memory Type	PS/2 SIMM ECC	16 Mbit ECC	16 Mbit ECC
Memory Slots	8	2	2
Data/Instr. Cache (KB)	8	32/8	32/8
Bus Width	64-bit	64-bit	64-bit
Avail. Expansion Slots	2	4	4
Integr. SCSI/Ethernet	S/E	S/E	S/E
XIO slots (80 MB/sec)	0	0	0
Internal Disk (MB)			
min	0	160/400	160/400
max	1000	2000	2000
External Disk (GB)	8.5	33.8	33.8
Max Total Disk (GB)	9.5	35.8	35.8
Entry Configuration	16 MB, 200 MB, Int SCSI/Enet, Diskette, 1/4" Tape, AIX	16 MB, 400 MB, Int SCSI/Enet Diskette, 1/4" Tape, AIX	32 MB, 400 MB, Int SCSI/Enet Diskette, 1/4" Tape, AIX
Price	\$9,240	\$15,270	\$21,270

RS/6000 POWERserver Configuration Summary

RS/6000 Model	520H	530H	560	580
Packaging	Deskside	Deskside	Deskside	Deskside
Clock Rate	25 MHz	33 MHz	50 MHz	62.5 MHz
LINPACK DP Mflops	11.9	20.5	31.3	38.1
SPECmark89	45.1	62.2	92.3	126.2
SPECfp89	72.9	102.7	151.6	204.3
SPECint89	22.0	29.3	43.9	61.2
SPECfp92	45.3	64.6	97.6	124.7
SPECint92	21.5	28.5	43.2	59.1
TPC-A (OLTP) local	31	42	61	n/a
\$K/tps-A	13.9	14.8	14.2	--
TPC-A (OLTP) c/s	n/a	n/a	72	121/157 (Oracle/Informix)
\$K/tps-A			12.4	8/9.3
TPC-B (server)	44.7	52.6	80.1	n/a
\$K/tps-B	2.4	2.7	2.7	--
Memory (min-max)	16-512	32-512	64-1024	64-1024
Memory Type	4 Mbit EEC	4 Mbit EEC	16 Mbit EEC	16 Mbit EEC
Memory Slots	8	8	8	8
Data/Instr. Cache (KB)	32/8	64/8	64/8	64/32
Bus Width	64-bit	128-bit	128-bit	128-bit
Avail. Expansion Slots	7	7	7	7
Integr. SCSI/Ethernet	n/a	n/a	n/a	S
XIO Slots (80 MB/sec)	0	0	0	8
Internal Disk (MB)				
min	400	400	800	2000
max	7200	7200	7200	7200
External Disk (MB)	42.8	42.8	42.8	42.8
Max Total Disk (GB)	50	50	50	50
Entry Configuration	16 MB, 400 MB Enet, Diskette, SCSI, 1/4" tape, AIX	32 MB, 400 MB Enet, Diskette, SCSI, 1/4" tape, AIX	64 MB, 800 MB Enet, Diskette, SCSI, 1/4" 525MB tape AIX	64 Mb, 2 GB, Int. SCSI, Enet, Diskette, 1/4" 525MB tape, AIX
Price	\$26,242	\$36,242	\$57,587	\$67,587

RS/6000 POWERserver Configuration Summary

Model	950	970	980
Packaging	Rackmount	Rackmount	Rackmount
Clock Rate	41.6	50	62.5
LINPACK DP Mflops	25.9	31.0	38.1
SPECmark89	79.4	103.4	126.3
SPECfp89	131.9	169.6	204.3
SPECint89	37.1	49.2	61.3
SPECfp92	81.8	101.0	124.8
SPECint92	36.3	47.8	59.2
TPC-A (OLTP) local \$K/tps-A	n/a	n/a	n/a
TPC-A (OLTP) c/s \$K/tps-A	n/a	100.9	160
TPC-B (server) \$K/tps-B	n/a	110.3	n/a
		2.8	
Memory (min-max)	64 - 512	64 - 512	64 - 1024
Memory Type	4 Mbit EEC	4 Mbit EEC	16 Mbit EEC
Memory Slots	8	8	8
Data/Instr. Cache (KB)	64/8	64/32	64/32
Bus Width	128-bit	128-bit	128-bit
Avail. Expansion Slots	8	8	8
		8 add'l MCA slots opt.	8 add'l MCA slots opt.
Integr. SCSI/Ethernet XIO Slots (80 MB/sec)	S 0	S 8 (8 opt.)	S 8 (8 opt.)
Internal Disk (MB)			
min	1700	2740	2740
max	27550	28920	28920
External Disk (GB)	51.4	134.6	134.6
Max Total Disk (GB)	79	163	163
Entry Configuration	64 MB, 1.7GB Diskette, Int SCSI, SCSI drawer, 2.3GB 8mm tape, CDROM, AIX	64MB, 2.7GB, Diskette, Enet, Int SCSI, SCSI drawer, 2.3GB 8mm tape, CDROM, AIX	64MB, 2.7GB Diskette, Enet, Int SCSI, SCSI drawer, 2.3GB 8mm tape, CDROM AIX
Price	\$82,822	\$97,822	\$117,822

AS/400 Specifications

Note that on all AS/400 systems the operating system is not included with the system and must be purchased separately.

AS/400 Series 9402 Low-end Systems

Model	E02	E04	E06
# processors	1	1	1
Performance*	1.5	1.9	2.6
TPC-A	n/a	n/a	n/a
\$K/tps-A			
Memory (MB)			
min	8	8	8
max	24	24	40
Storage (MB)			
min	988	988	988
max	1976	3952	7904
Locally attached workstations			
Twinaxial	14	42	68
ASCII	12	48	66
I/O slots total:			
integrated	1	3	3
w/ expansion	n/a	n/a	7
Base price	\$10,200	\$12,500	\$16,500
OS price	\$1,800	\$3,935	\$7,715

AS/400 Series 9404 Mid-range Systems

Model	E10	E20	E25
# processors	1	1	1
Performance*	2.6	3.5	4.2
TPC-A	9.92	n/a	n/a
\$K/tps-A	\$9,949		
Memory (MB)			
min	8	8	16
max	40	72	80
Storage (MB)			
min	988	988	988
max	11,856	11,856	15,808
Locally attached workstations			
Twinaxial	160	160	240
ASCII	162	162	162
I/O slots total:			
integrated	9	9	9
w/ expansion	n/a	n/a	n/a
Base price	\$16,100	\$33,000	\$69,000
OS price	\$7,715	\$13,650	\$18,480

* Relative performance to the AS/400 model B10. To calculate estimated TPS multiply relative performance by four.

AS/400 Series 9406 High-end Systems

Model	E35	E45	E50	E60	E70	E80	E90	E95
# processors	1	1	1	1	1	2	3	4
Performance*	3.4	4.8	6.4	10.2	14.2	25.2	34.4	42.1
TPC-A	14.0	n/a	n/a	n/a	54.9	n/a	n/a	n/a
\$K/tps-A	\$13,690	--	--	--	\$17,993	--	--	--
Memory (MB):								
min	8	16	32	64	64	64	64	64
max	72	80	128	192	256	384	512	512
Storage (GB):								
min	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
max	27.4	27.4	47.9	75.4	75.4	123.4	123.4	123.4
Locally attached workstations (max):								
Twinaxial	360	480	720	1000	1400	2400	2400	2400
ASCII	162	216	324	450	630	1080	1080	1080
I/O slots total:								
integrated	11	11	18	18	18	18	18	18
w/ expansion	55	55	84	140	140	196	196	196
Base price	\$33,000	\$69,000	\$110,000	\$220,000	\$335,000	\$640,000	\$900,000	\$973,000
OS price	\$18,480	\$36,750	\$52,500	\$75,600	\$99,750	\$141,750	\$168,000	\$168,000

* Relative performance to the AS/400 model B10. To calculate estimated TPS multiply relative performance by 4.

ES/9000 Specifications

Series 9221 (Air-Cooled) Systems

Model	120	130	150	170	200
IBM MIPS	2.0	3.5	5.0	6.5	n/a
# processors	1	1	1	1	2
Upgradable to:	130	150	170,200	200	n/a
Memory capacity (MB):					
min	16	16	16	32	64
max	256	256	256	256	256
Storage capacity (MB):					
central	16-256	16-256	16-256	16-256	16-256
expanded	0-240	0-240	0-240	0-240	0-240
I/O channels (min-max):					
total	0-12	0-12	0-12	0-24	0-24
parallel	0-12	0-12	0-12	0-24	0-24
ESCON	0-12	0-12	0-12	0-24	0-24
Integrated I/O buses	4	4	6	6	6

Series 9121 (Air-Cooled) Systems

Model	180	190	210	260
IBM MIPS	n/a	8.8	12.0	16.0
# processors	1	1	1	1
Upgradable to:	190, 210	210, 260	260, 320	320, 440, 480
Memory capacity (MB):				
min	64	64	64	64
max	512	512	1024	1024
Storage capacity (MB):				
central	16-128	16-128	16-256	16-256
expanded	0-496	0-496	0-1008	0-1008
I/O channels (min-max):				
total	8-32	8-32	8-48	12-48
parallel	0-24	0-24	0-48	0-48
ESCON	0-28	0-28	0-44	0-44
Integrated I/O buses	n/a	6	0	0

Series 9121 (Air-Cooled) Systems

Model	320	440	480	490	570	610
IBM MIPS	20.0	30.0	38.0	38.0	55.0	70.0
# processors	1	2	2	2	3	4
Upgradable to:	440, 480, 490, 570	480	570, 610	570	610	n/a
Memory capacity (MB):						
min	64	128	128	128	192	256
max	1024	1024	1024	2048	2048	2048
Storage capacity (MB):						
central	16-256	16-256	16-256	32-512	32-512	32-512
expanded	0-1008	0-1008	0-1008	0-2016	0-2016	0-2016
I/O channels (min-max):						
total	12-48	12-48	12-48	24-96	24-96	24-96
parallel	0-48	0-48	0-48	0-96	0-96	0-96
ESCON	0-44	0-44	0-44	0-88	0-88	0-88
Integrated I/O buses	0	0	0	0	0	0

Series 9021 (Water-Cooled) Systems

Model	330	340	500	520
IBM MIPS	20.0	23.5	45.0	45.5
# processors	1	1	2	1
Upgradable to:	500, 520	500, 520	580, 620, 640	640, 660
Memory capacity (MB):				
min	32	32	64	128
max	640	1152	2304	2304
Storage capacity (MB):				
central	32-128	32-128	64-256	128-256
expanded	0-512	0-1024	0-2048	0-2048
I/O channels:				
total (min - max)	16-64	16-64	32-64	32-64
parallel (min - max)	16-32	16-32	32-64	0-48
ESCON (min - max)	0-32	0-32	0-32	0-64
Integrated I/O buses	0	0	0	0

Series 9021 (Water Cooled) systems:

Model	580	620	640	660	720
IBM MIPS	65.0	83.0	84.4	86.6	117.0
# processors	3	4	2	2	6
Upgradable to:	620, 720, 740	720, 820	740, 820	820	820, 860, 900
Memory capacity (MB):					
min	64	128	128	256	128
max	2304	4608	4608	4608	4608
Storage capacity (MB):					
central	64-256	128-512	128-512	256-512	128-512
expanded	0-2048	0-4096	0-4096	0-4096	0-4096
I/O channels (min-max):					
total	64-64	64-128	64-128	64-128	64-128
parallel	32-64	64-128	0-48	0-96	64-128
ESCON	0-32	0-64	16-128	0-128	0-64
Integrated I/O buses	0	0	0	0	0

Series 9021 (Water-Cooled) Systems

Model	740	820	860	900
IBM MIPS	121.0	159.0	193.0	225.0
# processors	3	4	5	6
Upgradable to:	820, 860, 900	860, 900	900	n/a
Memory capacity (MB):				
min	256	256	384	512
max	4608	9216	9216	9216
Storage capacity (MB):				
central	256-512	256-1024	384-1024	512-1024
expanded	0-4096	0-8192	0-8192	0-8192
I/O channels:				
total (min - max)	64-128	128-256	128-256	128-256
parallel (min - max)	0-48	0-96	0-96	0-96
ESCON (min - max)	16-128	32-256	32-256	32-256
Integrated I/O buses	0	0	0	0