IBM RISC System/6000 Model 591 Expands Your Numeric-Intensive Opportunities

With the introduction of the RISC System/6000® Model 591, IBM continues its commitment to technical computing. The Model 591 opens the door to many new workstation and numeric-intensive opportunities and provides growth for existing applications. You can expand the standard 64MB memory up to 2GB to execute large, complex jobs entirely in memory, without disk paging.

Like the Model 590, this technical server offers exceptional floating-point performance. The 77MHz POWER2 processor incorporates a dual floating-point execution unit, quad-word memory system, a 256KB data cache, and a memory bus wide enough to move large blocks of data. For optimum performance, four or eight memory cards should be installed. The Model 591 is a quad-word system if two memory cards are installed and an eight-word system if four memory cards are installed.

The new Model 591 operates with either the latest version of AIX/6000® Version 3.2.5 or AIX Version 4.1.3. It has also been tested and approved for use in a cluster environment running HACMP/6000™ Version 3.1.1 and AIX 3.2.5.

The Service Director® provides enhanced system monitoring and service dispatch.

The RISC System/6000 Model 591 is a natural system for:

- Numeric-intensive compute servers
- Solid modeling simulation
- Graphics design
- Computational chemistry

Upgrades

Upgrades to the Model 591 are offered from Models 52H, 53E, 53H, 540, 550, 55E, 55S, 560, 56F, 57F, 58F, 570, 580, 58H, and 590.

Purchase Price: $57,500

Description	Planned Availability Date
RISC System/6000 Model 591	August 18, 1995
MES Orders and Model Upgrades	September 8, 1995
HACMP/6000 Version 3.1.1 Support PTF	August 31, 1995

® Registered trademark of International Business Machines Corporation
™ Trademark of International Business Machines Corporation

IN BRIEF . . .

The new RISC System/6000 Model 591 uses CMOS 4R POWER2 technology to significantly increase the performance of high-end deskside systems. Features include:

- 77MHz POWER2 processor (13 nanoseconds)
- SCSI-2 fast/wide adapter and integrated SCSI controller standard
- 64MB memory expandable to 2GB
- Standard 2GB SCSI-2 fast/wide 16-bit disks expandable to 27GB
- Quad-Speed CD-ROM drive standard
- Can be configured in a high-availability clustered system with AIX 3.2.5
- Upgrades for installed Model 500 series machines
- Service Director for better problem identification and service response

For ordering and information, contact:
Your IBM representative, an IBM Authorized Business Partner, or IBM Direct at

| 800-IBM-CALL | Reference: RE001 |

Description

POWER2 Technology

The POWER2 technology implemented in this machine is a next-generation, multi-chip RISC processor implementation of the POWER Architecture™. The processor chips are fabricated in .5-micron, 4-level metal/1-level polysilicon CMOS 4R and are packaged on a single, multi-chip ceramic module.

Like the POWER2 technology introduced in September 1993, the primary features of the system include:

- 32KB, two-way set associative instruction cache and a multiport 256KB, four-way set associative data cache.

- Dual, fixed-point execution units and dual floating-point multiply-add-subtract-divide units. The architecture provides a quad-word, floating-point load/store instruction, convert-to-integer instruction, square-root instruction, new address translation, and a new interrupt structure.

- Hardware performance monitors accessible by software.

- The memory interface is four-words wide when two memory cards are installed and eight-words wide when four equal memory cards are installed and supports memory up to 2GB.

- Binary-compatible with previous RISC System/6000 systems.

High-end Open System with Emphasis on Technical Compute Performance

The Model 591 uses a 77MHz CMOS processor and POWER2 technology to provide greater performance than previously announced deskside models. The standard 64MB of memory is expandable to 2GB. A 256KB data cache, coupled with seven available 80MB/sec 32-bit Micro Channel® expansion slots, integrated SCSI controller, standard SCSI-2 fast/wide adapter, 2GB of 16-bit SCSI-2 fast/wide disk storage, standard Quad-Speed CD-ROM drive, and a full range of optional features, makes the Model 591 a powerful open systems compute server. (SCSI-2 fast/wide 16-bit drive offers higher data transfer rate capability than is available as a base feature on the Model 590.)

Growth Path for Installed Deskside Systems

Most installed 500 series systems can be upgraded to the new Model 591.

Investment Protection

Customers with installed deskside systems requiring additional performance can upgrade to the new Model 591. These customers can both preserve their investment and attain the increased levels of performance they require. Upgrades to the Model 591 are available from Models 52H, 53E, 53H, 550, 55E, 55S, 560, 56F, 570, 57F, 580, 58F, 58H, and 590.

An upgraded machine must have a minimum of two memory cards totaling 64MB or more. Total memory cards in the machine can only be two, four, or eight. The first two cards (if only two installed) or first four cards (if four installed) must be of equal capacity. Also, the last four cards must be of equal capacity.

Existing RISC System/6000 500 Series memory cards are not compatible with the new Model 591. The 64MB memory requirement may be satisfied by purchasing new memory cards or exchanging 32MB, 64MB, 128MB, or 256MB memory cards separately as required.

An upgraded machine must have a SCSI-2 Fast/Wide Adapter and a minimum of 2GB of SCSI-2 disk storage (boot device) and a CD-ROM feature or equivalent (CD-ROM to tape select features). The customer must purchase and have these features installed before the upgrade.

AIX/6000 Version 3.2.5 or AIX Version 4.1.3, or later, must be installed and operational before beginning the upgrade.

Upgrades from other models to the Model 591 will be reviewed and, if approved, priced based on the history and configuration of the machine to be upgraded. The IBM representative should submit an RPQ for other requested upgrades.

AIX/6000 Version 3.2.5 or AIX Version 4.1.3, or later, must be installed before upgrading a system.

The Model 591 can be configured into a cluster of up to eight systems utilizing High Availability Cluster Multi-Processing/6000 (HACMP/6000) to provide high availability and greater throughput. Customers with a need for an environment that exceeds the capacity of a single processor can achieve their level of performance with the economy of RISC processing along with the open-system architecture of the RISC System/6000 and AIX/6000 by selecting a cluster configuration.

Mathematical Acceleration SubSystem (MASS)

MASS provides users of the RISC System/6000 family of systems with a set of programs that can be used to improve the performance of their scientific and technical applications. The programs are conceived, designed, and developed by IBM Research. The program set includes accelerated mathematical intrinsic functions (sin, cos, log, ...) that can be used in place of the corresponding functions in the AIX run-time library *libm.a* without requiring the user to make changes in application source code. Possible performance improvements using MASS intrinsic functions are indicated from the following application measurement data:

Application	POWER2 Runtime % Reduction
SPECFP92	2.6
Crystallography	6.5 to 71
Fluid Dynamics	11
Reactor Modeling	14

MASS will also include some vector functions (vlog, vexp, ...) whose use requires that source code be modified. Performance gains may be substantial if these functions are used extensively in an application that uses them on long vectors. These functions have been designed to take advantage of special features in the POWER2 systems (for example, multiple functional units).

MASS is available to all AIX users at no charge. It can be downloaded from the Austin Home Page on the Internet at the URL

    http://www.austin.ibm.com/tech/MASS

Download directions are provided there. Software vendors who want to include MASS in their programs may obtain it from the AIX DEVCON CD-ROM service.

MASS is licensed to you under the terms and conditions of your AIX license with IBM and the following additional provisions: Notwithstanding anything to the contrary contained in your AIX license, MASS is provided to you AS IS. IBM MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IBM has no obligation to defend or indemnify against any claim of infringement, including, but not limited to, patents, copyright, trade secret, or intellectual property rights of any kind.

Service Director for RISC System/6000

You can receive the Service Director for RISC System/6000 at no additional charge if your RISC System/6000 processor is covered by an IBM Warranty or IBM Maintenance Service Agreement. When installed on your RISC System/6000, the Service Director for RISC System/6000 can enhance the ability of IBM to provide you with maintenance service.

The Service Director for RISC System/6000:

- Monitors and analyzes system errors and, if needed, can automatically place a service call to IBM without customer intervention
- Can reduce the effect of business disruptions due to unplanned system outages and failures
- Performs problem analysis on a subset of hardware-related problems and can automatically report the results to IBM Service

Product Positioning

The RISC System/6000 Model 591 is the highest performing deskside technical server of the RISC System/6000 product line. Its performance is approximately 15% better than the Model 590 and priced comparable to its announced price in October 1993, giving you a much better price/performance ratio.

Statement of General Direction

IBM presently intends to make POWER2 Architecture™ 77MHz processors available for RISC System/6000 Scalable POWERparallel™ Systems computers during the fourth quarter of 1995.

Publications

The System Library Subscription Service (SLSS) is available by order number only. Customers currently subscribing to SLSS will receive publication updates automatically.

Education Support

Education to support the RISC System/6000 hardware and related software is available to support effective installation planning, programming, and efficient day-to-day operations. For a complete listing of available courses, contact your IBM representative or call IBM Education and Training at 800-IBM-TEACH (426-8322), for education catalogs, schedules, and enrollments.

Technical Information

Specified Operating Environment

Physical Specifications

- Net Weight and Physical Size

    - Width: 360 mm (14.2 in)
    - Depth: 675 mm (26.6 in)
    - Height: 610 mm (24.0 in)
    - Weight: 36.7 kg to 53.1 kg (81 lb to 117 lb)

- Gross Weight and Box Size

    - Width: 568 mm (22.36 in)
    - Depth: 803.3 mm (31.63 in)
    - Height: 755 mm (29.72 in)
    - Weight: 43.1 kg to 56.7 kg (95 lb to 125 lb)

- Voltage

    - 100 V to 125 V Nominal, Auto Ranging
    - 200 V to 240 V Nominal, Auto Ranging
    - 50Hz/60Hz

- Power Supply: 475 Watts average output (759 Watts peak)

- Thermal Output: 1,706 Btus per hour (500 Joules)

- Power Source Loading: 0.5 KVA

Operating Environment

- Temperature: 16° to 32°C (60° to 90°F)

- Relative Humidity:

    - 10% to 80% with CD-ROM installed
    - 20% to 80% with 8-mm tape drive installed

- Maximum Wet Bulb:

    - 23°C (73°F)
    - Relative humidity 8% to 80%

- Noise Emission:

    - Declared (upper limit) sound power level for a random sample of machines:
        - Operating: 6.0 bels
        - Idle: 5.5 bels
    - Mean Value of the A-Weighted Sound Pressure levels at one-meter (bystander) positions for a random sample of machines.
        - Operating: 39 dBA*
        - Idle: 38 dBA*

*   Preliminary, subject to change

EMC Conformance Classification

- U.S.: FCC Class A
- Germany: VDE Class A (IOP)
- Europe and New Zealand: CISPR 22 Class A - CEMARK A
- Japan: VCCI-1

Environmental Impact Assessment: Compliance with Corporate Standard C-S 3-0527-002 (1991-06) Control of Chemicals in IBM Facilities, Requirements, and Responsibilities.

The Model 591 was developed in compliance with corporate policy letter number 139 (Environmental Affairs).

Product Safety/Country Testing/Certification

- U.S.: UL
- Canada: CSA
- Germany: GS Mark (Safety, TUV)
- Europe: EN60-950

Telecom Environmental Testing (Safety and EMC): IBM RISC System/6000 Model 591 and applicable features meet the environmental testing requirements of the country TELECOM. The testing and approval process is ongoing.

Country	Environmental Test Safety	EMC
Canada	CSA	
Chile	Telecom	
Denmark	DEMKO	
Finland	EIF	
France	LCIE	LCIE
Hong Kong	Telecom	
Ireland	Telecom	
Italy	Telecom	
Japan	Telecom	
Korea	Telecom	
Malaysia	SIRIM	
Mexico	Telecom	
Netherlands	Telecom	
New Zealand	Telecom	Telecom
Norway	NEMKO	
Spain	Ministry of Industry	
Sweden	SEMKO	
Switzerland	SEV	
United Kingdom	BABT	

ISO 9000 Registered IBM Locations

IBM Locations	ISO 9000 Certification
Santa Palomba, Italy	
Manufacturing	9002
Havant, England	
Development	9001
Austin, Texas	
Manufacturing	9002
Development	9001
AIX Software Development	9001

Supported IBM Displays Complying to ISO 9241 Part 3

Description	Feature Number Machine Type-Model	Maximum Viewable Screen Size, Measured Diagonally
IBM P50 Color Monitor	3612	13.6 inches
IBM P70 Color Monitor	3613	15.9 inches
IBM P200 Color Monitor	3614	19.1 inches
IBM 14V Color Monitor	6324-001	13.0 inches
IBM 15V Color Monitor	6325-001	13.7 inches
IBM 17V Color Monitor	6327-001	15.8 inches
IBM 21P Color Monitor	9521-001	19.1 inches
IBM 14P Color Monitor	9524-001	13.0 inches
IBM 15P Color Monitor	9525-001	13.7 inches
IBM 17P Color Monitor	9527-011	15.4 inches
P50 UV-N MPR-II Color Monitor	6553-503	13.6 inches
P50 UV-N TCO-92 Color Monitor	6553-523	13.6 inches
P70 UV-N Color Monitor	6554-603	15.9 inches
P200 UV-N Color Monitor	6555-703	19.1 inches
P201 DV-N Color Monitor	6555-803	19.1 inches

Feature Availability Matrix

The following feature availability matrix uses the letter "A" to indicate features that are available and orderable on the specified models. "S" indicates features that are supported on the new model during a model conversion; these features will work on the new model, but additional quantities of these features cannot be ordered on the new model; they can only be removed. "N" indicates that the feature is not supported on the new model and must be removed during the model conversion. As additional features are announced, supported, or withdrawn, this list will be updated. Check with your IBM representative for additional information.

Feature Number	591	Description
		A = Available S = Supported
		N = Not Supported, Must be Removed
0986	A	CCS Customer Service Specify (U.S.)
1000	S	Order Validation Specify Code
1101	A	Non-Locking Switch Select
1110	A	Keyboard — U.S. English Soft Touch
1906	A	Fibre Channel Adapter/266
2390	S	540MB SCSI-2 Disk Drive
2391	S	400MB to 540MB SCSI-2 Disk Drive Select
2400	S	M-Video Capture Adapter (NTSC)
2402	A	IBM Network Terminal Accelerator 256 Session
2403	A	IBM Network Terminal Accelerator 2048 Session
2404	A	IBM Ultimedia Video I/O Adapter
2405	A	IBM Ultimedia Video Compression/ Decompression Card
2410	S	SCSI-2 High-Performance External I/O Controller
2412	A	Enhanced SCSI-2 Differential Fast/Wide Adapter/A
2413	S	IBM SCSI-2 Differential Fast/Wide Adapter/A Select
2414	S	IBM SCSI-2 Fast/Wide Adapter/A Select
2415	A	IBM SCSI-2 Fast/Wide Adapter/A
2416	S	IBM SCSI-2 Differential Fast/Wide Adapter/A
2417	S	IBM SCSI-2 Differential Fast/Wide Adapter/A Select
2418	S	Enhanced SCSI-2 Differential Fast/Wide Adapter/A Select
2419	S	Enhanced SCSI-2 Differential Fast/Wide Adapter/A Select
2420	S	SCSI-2 Differential High-Performance External I/O Controller
2422	A	SCSI-2 Differential Y-Cable
2423	A	SCSI-2 Differential System to System Cable
2424	A	0.6M 16-bit SCSI-2 Differential System to System Cable
2425	A	2.5M 16-bit SCSI-2 Differential System to System Cable
2426	A	16-bit Y-Cable For IBM SCSI-2 Differential Fast/Wide Adapter/A
2427	A	8-bit Y-Cable for IBM SCSI-2 Differential Fast/Wide Adapter/A
2428	S	8-bit Internal 6-Drop Cable for IBM SCSI-2 Fast/Wide Adapters Select
2429	S	16-bit Internal 6-Drop Cable for IBM SCSI-2 Fast/Wide Adapters Select
2430	A	8-bit Internal 6-Drop Cable for IBM SCSI-2 Fast/Wide Adapters
2431	A	16-bit Internal 6-Drop Cable for IBM SCSI-2 Fast/Wide Adapters
2433	S	16-bit Internal 6-Drop Cable for IBM SCSI-2 Fast/Wide Adapters Select
2435	A	16-bit IBM SCSI-2 Fast/Wide Adapter/A to Dual-Ported Device Cable
2436	A	16-bit IBM SCSI-2 Differential Fast/Wide Adapter/A to Dual-Ported Device Cable
2437	A	8-bit IBM SCSI-2 Fast/Wide Adapter/A to Dual-Ported Device Cable

Feature Number	591	Description
		A = Available S = Supported
		N = Not Supported, Must be Removed
2438	A	8–bit IBM SCSI–2 Differential Fast/Wide Adapter/A to Dual–Ported Device Cable
2439	A	8–bit IBM SCSI–2 Fast/Wide Adapter/A to Single–Ported Device Cable
2500	S	355MB SCSI Disk Drive
2510	S	670MB SCSI Disk Drive
2511	S	355MB to 670MB SCSI Disk Drive Select Feature
2529	S	400MB to 857MB SCSI Disk Drive Select
2530	S	857MB SCSI Disk Drive
2531	S	355MB to 857MB SCSI Disk Drive Select
2532	S	640MB to 857MB SCSI Disk Drive Select
2534	S	800MB to 857MB SCSI Disk Drive Select
2542	S	640MB SCSI Disk Drive Pair
2543	S	355MB to 640MB SCSI Disk Drive Pair Select
2550	S	1GB SCSI Disk Drive
2551	S	400MB to 1GB SCSI Disk Drive Select
2552	S	800MB to 2GB SCSI Disk Drive Pair Select
2555	S	1GB SCSI–2 Disk Drive
2556	S	400MB to 1GB SCSI–2 Disk Drive Select
2557	S	800MB to 2GB SCSI–2 Disk Drive Pair Select
2560	S	400MB SCSI Disk Drive
2562	S	800MB SCSI Disk Drive Pair
2567	S	2GB to 2X1GB Disk Drive Select
2570	S	1.37GB SCSI Disk Drive
2572	S	400MB to 1.37GB SCSI Disk Drive Select
2574	S	800MB to 1.37GB SCSI Disk Drive Select
2580	S	2GB SCSI–2 Disk Drive
2583	S	1GB to 2GB SCSI–2 Disk Drive Select
2585	S	800MB to 2GB SCSI–2 Disk Drive Select
2586	S	2GB SCSI–2 Fast/Wide Disk Drive
2587	S	2GB to 2GB SCSI–2 Fast/Wide Disk Drive Select
2588	S	1GB to 2GB SCSI–2 Fast/Wide Disk Drive Select
2590	S	2.4GB SCSI–2 Disk Drive
2592	S	400MB to 2.4GB SCSI–2 Disk Drive Select
2593	S	670MB to 2.4GB SCSI–2 Disk Drive Select
2594	S	2.0GB to 2.4GB SCSI–2 Disk Drive Select
2598	S	2GB to 2.4GB SCSI–2 Disk Drive Select
2600	S	Internal CD–ROM
2602	S	Internal CD–ROM to CD–ROM–2 Select
2603	S	Internal CD–ROM–2
2604	S	600MB SCSI–2 Double–Speed Tray–loading CD–ROM
2613	S	600MB SCSI–2 Double–Speed Tray–loading CD–ROM Select
2614	S	600MB SCSI–2 Double–Speed Tray–loading CD–ROM Select
2615	N	External 5 1/4–Inch Diskette Drive Attachment Cable
2616	A	Quad–Speed Tray–loading CD–ROM
2617	S	Quad–Speed Tray–loading CD–ROM Select
2630	A	Internal 1.2GB 1/4–Inch Cartridge Tape Drive
2650	A	POWER GXT150M Graphics Adapter
2700	A	4–Port Multiprotocol Communications Controller
2702	A	Multiprotocol Attachment Cable — V.35
2704	A	Multiprotocol Attachment Cable — X.21
2705	A	4–Port Multiprotocol Interface Cable
2706	A	Multiprotocol Modem Attachment Cable — EIA–232/V.24
2711	A	POWER Gt4xi 8–bit Graphics Adapter
2712	A	POWER Gt4xi 24–bit Graphics Adapter
2713	A	POWER Gt4i 24–bit Graphics Adapter
2720	S	Fiber Distributed Data Interface Single–Ring Adapter
2722	S	Fiber Distributed Data Interface Dual–Ring Upgrade Kit
2723	A	FDDI–Fiber Dual–Ring Upgrade
2724	A	FDDI–Fiber Single–Ring Adapter
2725	A	FDDI–STP Single–Ring Adapter
2726	A	FDDI–STP Dual–Ring Upgrade
2735	A	High–Performance Parallel Interface Adapter
2754	A	S/390 ESCON Channel Emulator
2755	A	Block Multiplexer Channel Adapter
2756	A	ESCON Control Unit Adapter
2757	A	Block Multiplexer Channel Adapter Cable
2758	A	Block Multiplexer Channel Cable Assembly
2759	A	System/370 Channel Emulator/A
2760	S	Grayscale Graphics Display Adapter
2768	S	POWER Gt3i
2770	S	Color Graphics Display Adapter
2776	A	POWER Gt4e
2777	S	POWER Gt3
2780	N	High–Performance 8–bit 3D Color Graphics Processor
2781	N	High–Performance 24–bit 3D Color Graphics Processor

Feature Number	591	Description
		A = Available S = Supported
		N = Not Supported, Must be Removed
2782	N	24–bit Z–Buffer Solid Rendering Option
2783	N	24–bit Color Graphics Frame Buffer Upgrade
2790	S	POWER Gt4x 8–bit Feature
2791	S	POWER Gt4x 24–bit Feature
2792	S	POWER Gt4 8–bit to 24–bit Upgrade
2794	S	POWER Gt4 Performance Upgrade
2795	S	POWER Gt4 8–bit Feature
2796	S	POWER Gt4 24–bit Feature
2800	A	System/370 Host Interface Adapter
2801	A	5086 Attachment Adapter
2802	A	5085 Attachment Adapter
2810	A	Graphics Input Device Adapter
2811	A	Graphics Input Device Cable
2820	A	IBM 7250 Attachment Adapter
2829	S	External I/O Controller — Towers
2831	S	SCSI–2 High–Performance Internal I/O Controller
2832	A	SCSI Controller Cable
2833	A	Integrated SCSI Controller Cable
2835	S	SCSI High–Performance External I/O Controller
2836	A	SCSI–2 Controller Cable
2860	N	Serial Optical Channel Converter
2866	N	6–Meter Serial Optical Channel Converter Cable
2867	N	10–Meter Serial Optical Channel Converter Cable
2868	N	20–Meter Serial Optical Channel Converter Cable
2869	N	60–Meter Serial Optical Channel Converter Cable
2870	N	100–Meter Serial Optical Channel Converter Cable
2914	S	SCSI–2 Passthrough Terminator Cable (50–Pin)
2915	S	SCSI Controller Passthrough Terminator Cable (60–Pin)
2921	A	Artic960 Coprocessor (1MB)
2922	A	Cable Option EIA 232
2923	A	Cable Option EIA 530 RS 422
2924	A	Artic960 Coprocessor (4MB)
2926	A	Cable Option ISO 4902 V.36
2927	A	Cable Option ISO 4903 X.21
2928	A	Artic960 Coprocessor (8MB)
2930	A	8–Port Asynchronous Adapter EIA–232
2934	A	Asynchronous Terminal/Printer Cable EIA–232
2936	A	Asynchronous Cable EIA–232/V.24
2937	A	Printer/Terminal Interposer — EIA–232
2940	A	8–Port Asynchronous Adapter — EIA–422A
2945	A	Terminal Cable — EIA–422A
2950	A	8–Port Asynchronous Adapter — MIL–STD 188
2955	A	16–Port Asynchronous Adapter — EIA–232
2957	A	16–Port Asynchronous Adapter — EIA–422A
2959	A	1–Port Multiprotocol Communications Adapter
2960	A	X.25 Interface Co–Processor/2
2965	A	X.25 Attachment Cable X.21 — 3–Meter (10 feet)
2966	A	X.25 Attachment Cable V.24 — 3–Meter (10 feet)
2967	A	X.25 Attachment Cable V.35 — 3–Meter (10 feet)
2970	A	Token–Ring High–Performance Network Adapter
2972	A	IBM Auto Token–Ring LANstreamer 32 MC adapter
2976	A	X.25 Attachment Cable X.21 — 6–Meter (20 feet)
2977	A	X.25 Attachment Cable V.24 — 6–Meter (20 feet)
2978	A	X.25 Attachment Cable V.35 — 6–Meter (20 feet)
2980	A	Ethernet High–Performance LAN Adapter
2984	A	Turboways 100 ATM Adapter
2990	A	3270 Connection Adapter — U.S.
2995	A	Multiport Interface Cable
2996	A	16–Port Interface Cable — EIA–232
2997	A	16–Port Interface Cable — EIA–422A
3030	A	1.1GB SCSI–2 Disk Drive
3031	A	2.2GB SCSI–2 Disk Drive
3032	A	1.1GB SCSI–2 Fast/Wide Disk Drive
3033	A	2.2GB SCSI–2 Fast/Wide Disk Drive
3034	A	4.5GB SCSI–2 Fast/Wide Disk Drive
3040	S	1.1GB SCSI–2 Fast/Wide Disk Drive Select
3041	S	1.1GB SCSI–2 Fast/Wide Disk Drive Select (Must order quantity of two)

Feature Number	5 9 1	A = Available S = Supported N = Not Supported, Must be Removed Description
3042	A	1.1GB SCSI–2 Fast/Wide Disk Drive Select (Must order quantity of two)
3043	S	2.2GB SCSI–2 Fast/Wide Disk Drive Select
3044	S	2.2GB SCSI–2 Fast/Wide Disk Drive Select
3047	S	4.5GB SCSI–2 Fast/Wide Disk Drive Select
3048	S	4.5GB SCSI–2 Fast/Wide Disk Drive Select
3049	S	4.5GB SCSI–2 Fast/Wide Disk Drive Select
3060	S	1GB SCSI–2 Initial Order (Must order quantity of two)
3061	S	1GB SCSI–2 Initial Order (Must order quantity of four)
3062	S	2GB SCSI–2 Initial Order (Must order quantity of two)
3063	S	2GB SCSI–2 Initial Order (Must order quantity of four)
3064	S	2GB SCSI–2 Fast/Wide Initial Order (Must order quantity two)
3065	S	2GB SCSI–2 Fast/Wide Initial Order (Must order quantity of four)
3100	A	PC Parallel Printer Cable
3124	A	Serial to Serial Port Cable for Drawer/Drawer
3125	A	Serial to Serial Port Cable for Rack/Rack
3130	A	SCSI Device to Device Cable
3600	S	POWERdisplay 16
3601	S	POWERdisplay 19
3607	S	POWERdisplay 17
3608	S	POWERdisplay 20
3612	A	P50 Color Monitor
3613	A	P70 Color Monitor
3614	A	P200 Color Monitor
4008	N	8MB SD1 Memory Card
4010	N	8MB to 16MB SD1 Memory Select Feature
4016	N	16MB SD1 Memory Card
4032	N	32MB HD1 Memory Card
4033	N	8MB to 32MB HD1 Memory Select
4035	N	64MB HD1 Memory Card
4036	N	8MB to 64MB HD1 Memory Select
4057	A	64MB S5 Memory Select (9076)
4058	A	128MB S5 Memory Select (9076)
4059	A	256MB S5 Memory Select (9076)
4063	N	8MB HD3 Memory Card
4065	N	32MB HD2 Memory Card
4066	N	16MB HD3 Memory Card
4067	N	32MB HD3 Memory Card
4068	N	16MB to 32MB HD3 Memory Select
4069	N	64MB HD3 Memory Card
4070	N	16MB to 64MB HD3 Memory Select
4071	N	32MB to 64MB HD3 Memory Select
4076	A	32MB S5 Memory
4077	A	64MB S5 Memory
4078	A	128MB S5 Memory
4079	A	256MB S5 Memory
4090	N	128MB Memory Card
4092	N	32MB to 128MB Memory Select
4095	N	256MB Memory Card
4096	N	32MB to 256MB Memory Select
4213	A	13W3 to 15–Pin D–Shell Converter Cable
4214	A	13W3 to 60/77Hz Display Cable
4224	A	Ethernet 10BaseT Transceiver
4227	A	Sun–Compatible Display Converter Cable
4229	S	13W3 to PowerDisplay 16S Display Cable
4234	A	13W3 to 13W3 Display Cable
4236	A	13W3 to 3W3 Display Cable
4350	S	POWERgraphics GTO Accelerator Feature
5005	A	AIX Operating System Preload (US)
5032	N	32MB Memory SIMM Kit
5064	N	64MB Memory SIMM Kit
5065	A	Memory(S5) SIMMS Upgrade 64MB
5128	A	128MB Memory SIMM Kit
6010	A	Keyboard — 101 Keys (U.S.)
6011	A	Keyboard — 102 Keys (Belgian–Dutch/French)
6012	A	Keyboard — 102 Keys (Canadian French)
6013	A	Keyboard — 102 Keys (Danish)
6014	A	Keyboard — 102 Keys (Finnish)
6015	A	Keyboard — 102 Keys (French)
6016	A	Keyboard — 102 Keys (German)
6017	A	Keyboard — 102 Keys (Italian)
6019	A	Keyboard — 102 Keys (Norwegian)
6020	A	Keyboard — 102 Keys (Portuguese)
6021	A	Keyboard — 102 Keys (Spanish)
6022	A	Keyboard — 102 Keys (Swiss)
6023	A	Keyboard — 102 Keys (United Kingdom/English)

Feature Number	5 9 1	A = Available S = Supported N = Not Supported, Must be Removed Description
6024	A	Keyboard — 102 Keys (Icelandic)
6025	A	Keyboard — 102 Keys (Turkish)
6026	A	Keyboard — 102 Keys (Greek)
6027	A	Keyboard — 102 Keys (Hebrew)
6028	A	Keyboard — 102 Keys (Arabic)
6030	A	Keyboard — 106 Keys (Japanese/Kanji)
6031	A	Keyboard — 106 Keys (Korean)
6033	A	Keyboard — 106 Keys (Chinese Traditional/ Taiwan)
6034	A	Keyboard — Dutch #143 (Netherlands)
6035	A	Keyboard — Turkish #440
6041	A	3–Button Mouse
6141	A	CD–ROM to 5GB 8–mm Tape Select
6142	A	4GB/8GB 4–mm Internal Tape Drive
6143	S	CD–ROM to 2.3GB 8–mm Internal Tape Drive Select
6144	S	CD–ROM to 5.0GB 8–mm Internal Tape Drive Select
6145	A	CD–ROM to 4GB 4–mm Tape Drive Select
6146	S	2.3GB 8–mm Internal Tape Drive
6147	A	5GB/10GB 8–mm Internal Tape Drive
6175	A	Cluster Power Controller
6176	A	Null Modem Cable: CPC to TTY
6177	A	Null Modem Cable: CPC to CPC
6178	A	Null Modem Cable: CPC to CPU
6210	S	High–Performance Disk Drive Subsystem Adapter (40MB/Sec)
6211	S	High–Performance Disk Drive Subsystem Adapter (80MB/Sec)
6212	A	High–Performance Subsystem Adapter (40/80MB/Sec)
6300	A	Digital Trunk Adapter
6301	S	M–Audio Capture Playback Adapter
6302	A	IBM Ultimedia Audio Adapter
6305	A	Digital Trunk Dual Adapter
6306	N	IBM Speech Accelerator 1
6307	N	IBM Speech Accelerator 2
6400	S	64–Port Asynchronous Controller
6401	A	16–Port Asynchronous Concentrator
6402	A	RJ–45 to DB–25 Converter Cable
6501	A	3.5–inch Disk Drive Mounting Hardware
6506	A	Incremental Cooling Fan
7002	A	IBM Realtime Interface Co–Processor: Multiport/2 Adapter (.5MB)
7004	A	IBM Realtime Interface Co–Processor: Multiport/2 Adapter (1MB)
7006	A	IBM Realtime Interface Co–Processor: Portmaster Adapter/A (1MB)
7008	A	IBM Realtime Interface Co–Processor: Portmaster Adapter/A (2MB)
7022	A	IBM Realtime Interface Co–Processor: Multiport/2 4–Port RS–232 Interface Board
7024	A	IBM Realtime Interface Co–Processor: Multiport/2 6–Port RS–232–C Synchronous Interface Board
7026	A	IBM Realtime Interface Co–Processor: Multiport/2 8–Port RS–232 Interface Board
7028	A	IBM Realtime Interface Co–Processor: Multiport/2 8–Port RS–422–A Interface Board
7030	A	IBM Realtime Interface Co–Processor: Multiport/2 RS–232/RS–422 Interface Board
7042	A	IBM Realtime Interface Co–Processor: 8–Port RS–232 Interface Board/A
7044	A	IBM Realtime Interface Co–Processor: 8–Port RS–422 Interface Board/A
7046	A	IBM Realtime Interface Co–Processor: 6–Port V.35 Interface Board/A
7102	A	IBM Realtime Interface Co–Processor: EIA RS–232–C Multiport Interface Cable
7104	A	IBM Realtime Interface Co–Processor: Synchronous Interface Cable
7106	A	IBM Realtime Interface Co–Processor: 6–Port V.35 Cable
7107	A	IBM Realtime Interface Co–Processor: V.35 Network Cable
7108	A	IBM Realtime Interface Co–Processor: 8–Port Cable
7111	A	IBM Realtime Interface Co–Processor: X.21 Network Cable
8128	A	128–Port Asynchronous Controller
8130	A	Remote Asynchronous Node 16–Port EIA–232

	5 9 1	A = Available S = Supported N = Not Supported, Must be Removed
Feature Number		Description
8131	A	128–Port Asynchronous Controller Cable, 4.5 Meter (15 feet)
8132	A	128–Port Asynchronous Controller Cable, 23 cm (9 inch)
8133	A	RJ–45 to DB–25 Converter Cable
8135	A	64–Port to 128–Port Pin–Out Converter
8A0836	S	MG24 Graphics Adapter
8A0875	S	ICL Search Accelerator
9004	A	Southern Hemisphere Specify for Monitors
9042	N	1MB L2 Cache Specify
9076	A	32MB BASE S5 Memory
9116	A	Transformer Specify, 115 to 127 V AC
9131	A	2.2GB Base STARFIRE SCSI Fast–Wide–SE
9150	N	Serial Optical Channel Converter Module Specify
9212	A	Base–Enhanced SCSI–2 Differential Fast/Wide Adapter/A
9216	S	IBM SCSI–2 Fast/Wide Adapter/A Specify
9218	S	Internal CD–ROM–2 Specify
9219	S	SCSI–2 I/O Controller Specify
9220	S	SCSI I/O Controller Specify
9221	A	3.5–inch 1.44MB Diskette Drive Specify
9223	S	Internal CD–ROM Specify
9231	N	8MB SD1 Memory Specify
9232	N	32MB HD2 Memory Specify
9234	N	16MB HD3 Memory Specify
9235	N	32MB HD3 Memory Specify
9236	N	16MB SD1 Memory Specify
9243	S	640MB SCSI Disk Drive Specify
9244	S	400MB SCSI Disk Drive Specify
9245	S	800MB SCSI Disk Drive Specify
9246	S	355MB SCSI Disk Drive Specify
9249	S	1GB SCSI–2 Disk Drive Specify
9263	S	2GB SCSI–2 Disk Drive Specify X2
9300	A	Language Group Specify — U.S. English
9430	S	SCSI–2 Fast/Wide Internal Cable Specify
9431	A	Base Cable SCSI Corvette Internal 6–DROP 16–BIT
9606	A	Base Quad–Speed Tray–loading CD–ROM
9800	A	Power Cord Specify — U.S./Canada (125 V, 15A)
9986	A	Power Cord Specify — Chicago (125 V, 15A) (1.8M)(6 feet)

Supported I/O Devices

External Storage Machines

- IBM 0840 Model 001 Exabyte EXB-10e 50GB 8-mm Tape Cartridge Handling Subsystem
- IBM 3490 Model C11 4.8GB Enhanced Capability Magnetic Tape Subsystem
- IBM 3490 Model C22 9.6GB Enhanced Capability Magnetic Tape Subsystem
- IBM 3494 Tape Library Dataserver Model L10
- IBM 3494 Tape Library Dataserver Model L12
- IBM 3590 Model B1A High Performance Tape Subsystem
- IBM 3590 Model B11 High Performance Tape Subsystem
- IBM 3995 Model A63 20GB Optical Library Dataserver
- IBM 3995 Model 063 40GB Optical Library Dataserver
- IBM 3995 Model 163 188GB Optical Library Data Server
- IBM 0562 Model 001 270GB LAGO Systems** LS/380L DataWheel** 8-mm Tape Library
- IBM 0562 Model 002 270GB LAGO Systems LS/380L DataWheel 8-mm Tape Library with Laser Bar Code Scanner
- IBM 0562 Model 004 Prestoserve for IBM AIX/6000

- IBM 7131 Model 105 MultiStorage Tower Disk Subsystem
- IBM 7133 Model 010 Serial Storage Disk Subsystem
- IBM 7133 Model 500 Serial Storage Disk Subsystem
- IBM 7134 Model 010 Disk Array Subsystem
- IBM 7135 Model 210 RAIDiant Array
- IBM 7137 Model 412 Disk Array Subsystem
- IBM 7137 Model 413 Disk Array Subsystem
- IBM 7137 Model 414 Disk Array Subsystem
- IBM 7137 Model 512 Disk Array Subsystem
- IBM 7137 Model 513 Disk Array Subsystem
- IBM 7137 Model 514 Disk Array Subsystem
- IBM 7135 Model 010 RAIDiant Array
- IBM 7135 Model 110 RAIDiant Array
- IBM 7202 Model 900 Expansion Rack
- IBM 7203 Model 001 Portable Disk Unit
- IBM 7204 Model 112 External Disk Drive
- IBM 7204 Model 215 External Disk Drive
- IBM 7204 Model 315 External Disk Drive
- IBM 7204 Model 317 External Disk Drive
- IBM 7204 Model 325 External Disk Drive
- IBM 7204 Model 001 1GB External Disk Drive
- IBM 7204 Model 010 1GB External Disk Drive
- IBM 7206 Model 001 2.0GB External 4-mm Tape Drive
- IBM 7206 Model 005 4.0GB External 4-mm Tape Drive
- IBM 7207 Model 001 150MB ¼-inch Tape Drive
- IBM 7207 Model 011 525MB External ¼-inch Cartridge Tape Drive
- IBM 7207 Model 012 1.2GB External ¼-inch Cartridge Tape Drive
- IBM 7208 Model 001 2.3GB 8-mm Tape Drive
- IBM 7208 Model 011 5.0GB 8-mm Tape Drive
- IBM 7209 Model 001 650MB R/W Optical Disk Drive
- IBM 7209 Model 002 1.19GB R/W Optical Disk Drive
- IBM 7210 Model 001 External CD-ROM Drive
- IBM 7210 Model 005 External CD-ROM Drive
- IBM 7331 8-mm Tape Library
- IBM 7332 4-mm DAT Tape Autoloader
- IBM 9291 Single Digital Trunk Processor
- IBM 9295 Multiple Digital Trunk Processor
- IBM 9333 Model 501 High-Performance Disk Drive Subsystem (for installation on 7202 Model 900 only)
- IBM 9333 Model 011 High-Performance Disk Drive Subsystem (for installation on 7202 Model 900 only)
- IBM 9334 Model 501 Deskside Expansion Unit (Requires dedicated SCSI I/O Controller)
- IBM 9334 Model 011 Deskside Expansion Unit (for installation on IBM 7202 Model 900 only)
- IBM 9348 Model 012 Magnetic Tape Unit (½-inch 9-Track Tape Drive)

ASCII Terminals: The IBM 3151, 3161, 3162, 3163, and 3164 are supported in 3161 mode. Support of the IBM 3164 includes color attributes.

- IBM 3151 Model 310/410[1]
- IBM 3161[1]
- IBM 3162[1]
- IBM 3163[1]
- IBM 3164[1]
- DEC** VT100
- DEC VT220
- DEC VT320
- DEC VT330
- WYSE** 30
- WYSE 50
- WYSE 60
- WYSE 350

[1] National language models are supported through the use of a cartridge with ISO 8859-1 and national language keyboards.

Dials

- IBM 6094-010: Requires 6094 cable #4015 for attachment to a Graphics Input Device Adapter #2810. Requires 6094 feature #4060 for attachment to standard serial port. (6094 feature #4061 may be required.)

Lighted Programmable Function Keyboard

- IBM 6094-020: Requires 6094 cable #4015 for attachment to a Graphics Input Device Adapter #2810. Requires 6094 feature #4060 for attachment to a standard serial port. (6094 feature #4061 may be required.)

3D Input Device

- IBM 6094 Spaceball Model 30

X Terminals

- IBM Xstation 120
- IBM Xstation 130
- IBM Xstation 140
- IBM Xstation 150
- IBM Xstation 160
- VISUAL 640 XDS**

Displays

- IBM 5081 16-inch Color (feature number 1280 required)
- IBM 5081 19-Color (RPQ 8K1680 required)
- IBM 6091 016 Color
- IBM 6091 019 Color
- IBM 6091 19i Color
- IBM 6091 023 Color (supported in 1,280 x 1,024 60Hz mode only)
- IBM 8508 19-inch Mono (supported in 1,280 x 1,024 67Hz mode only)
- IBM P50 Color Monitor
- IBM P70 Color Monitor
- IBM P200 Color Monitor

Graphic Processors

- IBM 5085 All Models
- IBM 5086 Model 001
- IBM 5086 Model 01i
- IBM 7235 Model 001
- IBM 7235 Model 002
- IBM 7235 Model 01i
- IBM 7235 Model 02i
- IBM 7237 Model 001
- IBM 7237 Model 002
- IBM 7237 Model 003
- IBM 7250 Model 001
- IBM 7250 Model 002

Digitizers

- IBM 5084 Model 1
- IBM 5084 Model 2
- IBM 5084 Model 3

Tablets

- IBM 5083 Model 021 (requires 5083 cable feature number 4015)
- IBM 5083 Model 022 (requires 5083 cable feature number 4015)
- IBM 6093 Tablet Model 011 (requires 6093 cable feature number 4015)
- IBM 6093 Tablet Model 012 (requires 6093 cable feature number 4015)

Plotters

- IBM 6180 Model 1 Color
- IBM 6182 Color
- IBM 6184 Color
- IBM 6185 Model 1 Color
- IBM 6185 Model 2 Color
- IBM 6186 Color
- IBM 6187
- IBM 7372

Modems: Modem support is provided to allow communication through common carrier telephone networks using dial-up or leased lines with asynchronous protocols or the synchronous half-duplexed SDLC or BSC protocols. Not all of the features supported by the listed modems are supported by AIX/6000 Version 3 for RISC System/6000.

Modems	Protocols		Standards
IBM 5822 up to 56 Kbps		SYNC	CCITT V.35
IBM 5841 1200 bps	ASYNC	SYNC	EIA-232D
IBM 5853 2400 bps	ASYNC	SYNC	EIA-232D, CCITT V.24
IBM 5865 9600 bps		SYNC	EIA-232D, CCITT V.24
IBM 7855 up to 19.2 Kbps	ASYNC		CCITT V.32 V.22 bis Bell 103, 212
IBM 7861 up to 19.2 Kbps		SYNC	EIA-232D, CCITT V.24
IBM 7868 up to 19.2 Kbps		SYNC	EIA-232D, CCITT V.24
Hayes Smartmodem 1200**	ASYNC		EIA-232D
Hayes Smartmodem 2400**	ASYNC	SDLC	EIA-232D, CCITT V.24
Hayes V-Series 9600	ASYNC	SDLC	EIA-232D, CCITT V.24
Racal-Vadic** 1200PA	ASYNC		EIA-232D
Racal-Vadic 1200VP	ASYNC		EIA-232D
Racal-Vadic VI2422	ASYNC		EIA-232D
Racal-Vadic 2400PA	ASYNC		EIA-232D
Racal-Vadic 2400VP	ASYNC		EIA-232D
Racal-Vadic VI1222VP	ASYNC		EIA-232D
Telebit Trailblazer Plus	ASYNC		EIA-232D

Printers

- IBM 2380-001 Personal Printer II
- IBM 2381-001 Personal Printer II
- IBM 2390-001 Personal Printer II
- IBM 2391-001 Personal Printer II
- IBM 2380 Plus Printer
- IBM 2381 Plus Printer
- IBM 2390 Plus Printer
- IBM 2391 Plus Printer
- IBM 3112-001 Page Printer[2]
- IBM 3116-001, -002, -003 Page Printers[2]
- IBM 3130 Page Printer with PSF/6000™

- IBM 3812-002 Page Printer
- IBM 3816-01D and 01S Page Printer
- IBM 3825 Advanced Function Printer
- IBM 3827 Advanced Function Printer
- IBM 3829 Advanced Function Printer
- IBM 3831 Page Printer
- IBM 3835-001 Advanced Function Printer
- IBM 3835-002 Advanced Function Printer
- IBM 3900 Advanced Function Printer
- IBM 3912 Page Printer
- IBM 3916 Page Printer, Models AS0, AS1, NS0, NS1
- IBM 3930-03D, -03S Page Printers
- IBM 4019-001 LaserPrinter
- IBM 4019-E01 LaserPrinter E
- IBM 4028-NS1, AS1 LaserPrinter
- IBM 4029-010 LaserPrinter 5E
- IBM 4029-020 LaserPrinter 6
- IBM 4029-022 LaserPrinter
- IBM 4029-030 LaserPrinter 10
- IBM 4029-040 LaserPrinter 10L
- IBM 4029-042 LaserPrinter
- IBM 4037 5E Page Printer
- IBM 4039-10R LaserPrinter 10R
- IBM 4039-10D LaserPrinter 10D
- IBM 4039-12L LaserPrinter 12L
- IBM 4039-12R LaserPrinter 12R Plus
- IBM 4039-16L LaserPrinter 16L
- IBM 4070 IJ Printer Model 1
- IBM 4072-001 ExecJet® Printer
- IBM 4076 ExecJet II Printer
- IBM 4079-001 Color JetPrinter
- IBM 4201-002 Proprinter® II
- IBM 4201-003 Proprinter III
- IBM 4202-002 Proprinter II XL
- IBM 4202-003 Proprinter III XL
- IBM 4207-002 Proprinter X24E
- IBM 4208-002 Proprinter XL24E
- IBM 4212-001 Proprinter 24P
- IBM 4216-031 Personal Page Printer II
- IBM 4224-301, 302, 3C2 and 3E3 Serial Printer
- IBM 4226-302 Printer
- IBM 4230 Impact Printer Models 4S3, 4I3, 5S3, 5I3
- IBM 4232-302 Impact Dot Matrix Printer
- IBM 4234-009 Line Dot Matrix Printer
- IBM 4234-13 Line Dot Matrix Printer
- IBM 5202-001 Quietwriter® III
- IBM 5204-001 Quickwriter®
- IBM 6252 AP2, AS2, AP8, AS8 Impactwriter®
- IBM 6262 A12, A14, A22
- 6408 Line Matrix Printer*
- 6412 Model CTA Line Matrix Printer*
- IBM 4208-502 Proprinter XL24E
- IBM 4216-510 Personal Page Printer II
- IBM 5327-011 Line Dot Matrix Kanji Printer
- IBM 5572 Model B02 Kanji Printer
- IBM 5573 Model H02 Kanji Printer
- IBM 5575 Model B02, F02, and H02 Serial Dot Matrix Kanji Printer
- IBM 5577 Model B02, F02, FU2, G02, H02, J02, and K02 Serial Dot
- Matrix Kanji Printer
- IBM 5579 Model H02 and K02 Kanji Printer
- IBM 5584 Model G01 and H01 Kanji Printer
- IBM 5585 Model H01 Kanji Printer
- IBM 5587 Model G01 and H01 Page Kanji Printer
- IBM 5589 Model H01 Kanji Printer
- Bull Compuprint PageMaster 1015
- Bull Compuprint PageMaster 1021
- Bull Compuprint PageMaster 1025
- Bull Compuprint PageMaster 1625
- Bull Compuprint PageMaster 200
- Bull Compuprint PageMaster 201
- Bull Compuprint PageMaster 411
- Bull Compuprint PageMaster 413
- Bull Compuprint PageMaster 422

- Bull Compuprint PageMaster 721
- Bull Compuprint PageMaster 815
- Bull Compuprint PageMaster 825
- Bull Compuprint 1070
- Bull Compuprint 4/51
- Bull Compuprint 4/54
- Bull Compuprint 914
- Bull Compuprint 914N
- Bull Compuprint 922
- Bull Compuprint 923
- Bull Compuprint 924
- Bull Compuprint 924N
- Bull Compuprint 956
- Bull Compuprint 970
- Bull PR-88
- Bull PR-88 VFU Handling
- Bull PR-90 Printer
- Canon Laser Shot LBP-A404PS/Lite
- Canon Laser Shot LBP-B406G
- Canon Laser Shot LBP-B406/S/D/E, A404/E, A304/E
- DATAPRODUCTS LZR 2665**
- DATAPRODUCTS BP 2000**
- HP** Color LaserJet
- HP LaserJet Series II**
- HP LaserJet Series III**
- HP LaserJet Series III Si
- HP LaserJet 4/4M²
- HP LaserJet 4Si/4Si MX²
- HP LaserJet 4 Plus/4M Plus²
- HP LaserJet 4V/4MV²
- Lexmark 4039-10R LaserPrinter Plus 10R²
- Lexmark 4039-12L LaserPrinter Plus 12L²
- Lexmark 4039-12R LaserPrinter Plus 12R²
- Lexmark 4039-16L LaserPrinter Plus 16L²
- Lexmark 4047 5E
- Lexmark 4047-05E ValueWriter 600²
- Lexmark 4076-02C ExecJet IIc²
- Lexmark 4079-001 Color JetPrinter Plus²
- Lexmark Optra Laser Printer Lxi, Lx, Rx, L, R²
- OKI Microline 801PS/+F
- OKI Microline 801PSII/+F
- OKI Microline 800PSIILT
- PRINTRONIX P9012**
- QMS** Colorscript 100 Model 20
- TI Omnilaser 2115**

²   AIX 4.1.3, or later releases, are required for these printers.
*   Some modes are supported in emulation mode.

Printer Peripherals

- 4033-001 IBM LAN Connection for Printers and Plotters (Token Ring)

- 4033-002 IBM LAN Connection for Printers and Plotters (Ethernet, Twisted Pair)

- 4033-003 IBM LAN Connection for Printers and Plotters (Ethernet, Thick and Thin)

- HP JetDirect Network Attachment

- MarkNet LAN Adapters for Printers and Plotters ━ Models 201, 202, 301, and 302

Hardware Requirements: IBM-supported terminal or IBM-supported display, display adapter, and keyboard. POWERservers must have a console.

Limitations

Memory must be installed in combinations of two, four, or eight cards. The first two (if only two cards installed) or first four (if four cards installed) memory cards installed must be installed in pairs and of equal capacity (for example all 32MB). The second set of four memory cards installed can be of any available supported capacity

but also must be of equal capacity to each other and installed simultaneously. An example of a useable configuration is shown below:

Memory card one	32MB
Memory card two	32MB
Memory card three	32MB
Memory card four	32MB
Memory card five	64MB
Memory card six	64MB
Memory card seven	64MB
Memory card eight	64MB

Similarly, if memory SIMM kits are installed, the memory capacity of cards 1-4 and cards 5-8 must be kept equal.

The following features if installed on a Model 570 or 580 cannot be installed on a Model 591 if an upgrade is performed.

Serial Optical Channel Converter Module	9150
Serial Optical Channel Converter	2860
6-meter optical cable	2866
10-meter optical cable	2867
20-meter optical cable	2868
60-meter optical cable	2869
100-meter optical cable	2870

If these features are removed in performing an upgrade, they remain the property of the customer and are not for return to IBM (except for the Serial Optical Channel Converter Module (feature number 9150), which is an integrated circuit on the system board, which is replaced and returned).

Graphics Limit: A maximum of two graphics adapters can be installed.

Software Requirements: Supported on AIX/6000 Version 3.2.5 with additional PTFs or on AIX Version 4.1.3, and later releases. The additional Version 3.2.5 PTFs are included on all AIX Version 3.2.5 orders shipped after May 19, 1995, labeled AIX 3.2.5 Enhancement 5 (3250-05-00). To determine if Version 3.2.5 is at the correct level, use the command "OSLEVEL -b". If a response of "3251" is received, the level is correct. The Model 591 has been tested and approved for use in a clustered environment running HACMP/6000 Version 3.1.1 and AIX Version 3.2.5. HACMP/6000 support requires a PTF that will be available August 31, 1995.

AIX/6000 applications written for POWER-based RISC System/6000s will run on the new POWER2-based models without recompilation and may run significantly faster. Additional performance can be achieved by recompiling with the latest versions of the IBM XL compilers to further exploit the POWER2 technology.

Applications compiled using a compiler option to exploit POWER2 technology may not function properly on systems that do not employ the new POWER2 technology. Customers with any combination of POWER-, PowerPC 601®,- and POWER2-based systems can continue to run their applications unmodified. New applications and recompilation of existing applications for use in a mixed processor environment should be compiled using the POWER or common mode options available in the new XL compilers or any other compilers that support those options.

Refer to Software Announcements 293-488 and 293-493, dated September 21, 1993, for more information.

Support for the RISC System/6000 High Performance Parallel Interface (HIPPI) adapter set requires Licensed Program Product 5696-658 ordered separately.

The RS/6000™ Model 591 has been tested and approved for use in a cluster environment running HACMP/6000 Version 3.1.1 and AIX 3.2.5 and a Program Temporary Fix (PTF) available August 31, 1995.

Compatibility

Model Conversions: Upgrades to the Model 591 are offered from the following models:

- 52H
- 53E
- 53H
- 540
- 550
- 55E
- 55S
- 560
- 56F
- 570
- 57F
- 580
- 58F
- 58H
- 590

An upgraded machine must have a minimum of two memory cards totaling 64MB or more. Total memory cards in the machine can only be two, four, or eight. The first two cards (if only two installed) or first four cards (if four installed) must be of equal capacity. Also, the last four cards must be of equal capacity. Existing RISC System/6000 500 Series memory cards are not compatible with the new Model 591. The 64MB memory requirement can be satisfied by purchasing new memory cards or exchanging 32MB, 64MB, 128MB, or 256MB memory cards separately as required. Refer to the Feature Availability Matrix for the memory options. A list of memory exchanges is shown at the end of this section.

An upgraded machine must have a SCSI-2 Fast/Wide adapter and a minimum of 2GB of SCSI-2 disk storage (boot device) and a CD-ROM feature or equivalent (CD-ROM-to-tape select features). The customer must purchase and have these features installed before the upgrade.

AIX/6000 Version 3.2.5 or AIX/6000 Version 4.1.3 must be installed and operational prior to beginning the upgrade.

The model conversion MESs are all chassis exchange.

The following memory feature exchange is offered on upgrades to a Model 591. IBM will exchange currently installed memory cards for equal capacity memory cards. The price for this exchange is less than the list price for a new memory card.

Memory Feature Exchange

From Quantity	Feature Number	To Quantity	Feature Number
32MB TO 32MB			
1	4032	1	4076
1	4033	1	4076
1	4065	1	4076
1	4066	1	4076
1	4067	1	4076
1	4068	1	4076
1	9232	1	4076
1	9235	1	4076

Memory Feature Exchange

From Quantity	Feature Number	To Quantity	Feature Number
64MB TO 64MB			
1	4035	1	4077
1	4036	1	4077
1	4069	1	4077
1	4070	1	4077
1	4071	1	4077
128MB TO 128MB			
1	4090	1	4078
1	4092	1	4078
256MB TO 256MB			
1	4095	1	4079
1	4096	1	4079

Parts removed or replaced become the property of IBM and must be returned.

Limitation for Disk Storage Adapters and Subsystems on Model 591: Storage configurations can be maximized for various types of storage or combination of types (for example, all SCSI, all serial-link, SCSI and serial-link in combination, ...). The following chart shows maximum disk capacity for each maximized configuration. The **Assumption** section defines each controller/subsystem combination. The **Limit Values** section shows the individual maximum number of each controller or subsystem supported. The **Configuration** sections show the type or combination of types of storage in each header followed by the quantity of each controller in the left-hand column with the quantity of each type of storage in the center and right-hand columns.

Assumptions

- SCSI-2 SE Controller ─ 9334-SE

  – 9334-SE: 1 x 2GB + 3 x 2.41GB = 9.23GB

- SCSI-2 Diff Controller ─ 9334-Diff (1st) + 9334-Diff (2nd)

  – 9334-Diff (1st): 4 x 2GB = 8GB
  – 9334-Diff (2nd): 3 x 2GB = 6GB
  – Calculate AS 7GB/9334

- SCSI-2 Diff Controller ─ 7135 + 7135

  – RAID7135: 30 x 2GB > 48GB (assume protected mode)

- Serial Controller ─ 9333

  – 9333: 4x2GB = 8GB

Description	Limit Values
Integrated Internal Media	4 - SCSI-2 Diff Controllers
SCSI-2 SE Internal Disk	6 - Serial Controllers
8 I/O Slots	7 - SCSI-2 SE Controllers
1 Slot for LAN/WAN/COMM	7 - SCSI-2 SE + SCSI-2 Diff
Supports 7202 racks	8 - RAID7135 Subsystems

Calculated Storage Limits

- Maximum without RAIDiant: 891GB*
- Maximum with RAIDiant: 475GB*

Number of Adapters	Internal and RAID7135			9333 and SCSI Drawers		
Configuration 1 ─ Base + SCSI: 101.46GB						
3 SCSI-2 SE	Internal @	27GB	2	-9334 @	9.23GB
4 SCSI-2 Diff	0 -RAID7135 @	48GB	8	-9334 @	7.00GB
0 Serial			0	-9333 @	8.00GB
Configuration 2 ─ Base + SCSI-SE: 82.38GB						
7 SCSI-2 SE	Internal @	27GB	6	-9334 @	9.23GB
0 SCSI-2 Diff	0 -RAID7135 @	48GB	0	-9334 @	7.00GB
0 Serial			0	-9333 @	8.00GB
Configuration 3 ─ Base + SCSI-Diff: 83.00GB						
1 SCSI-2 SE	Internal @	27GB	0	-9334 @	9.23GB
4 SCSI-2 Diff	0 -RAID7135 @	48GB	8	-9334 @	7.00GB
0 Serial			0	-9333 @	8.00GB
Configuration 4 ─ Base + Serial: 219.00GB						
1 SCSI-2 SE	Internal @	27GB	0	-9334 @	9.23GB
0 SCSI-2 Diff	0 -RAID7135 @	48GB	0	-9334 @	7.00GB
6 Serial			24	-9333 @	8.00GB
Configuration 5 ─ Base + RAID: 411.00GB						
1 SCSI-2 SE	Internal @	27GB	0	-9334 @	9.23GB
4 SCSI-2 Diff	8 -RAID7135 @	48GB	0	-9334 @	7.00GB
0 Serial			0	-9333 @	8.00GB
Configuration 6 ─ Base + RAID + SCSI: 429.46GB						
3 SCSI-2 SE	Internal @	27GB	2	-9334 @	9.23GB
4 SCSI-2 Diff	8 -RAID7135 @	48GB	0	-9334 @	7.00GB
0 Serial			0	-9333 @	8.00GB
Configuration 7 ─ Base + RAID + Serial: 475.00GB						
1 SCSI-2 SE	Internal @	27GB	0	-9334 @	9.23GB
4 SCSI-2 Diff	8 -RAID7135 @	48GB	0	-9334 @	7.00GB
2 Serial			8	-9333 @	8.00GB

Planning Information

Cable Orders: No cables required

Security, Auditability, and Control

Security and auditability features of this product are:

- Physical security is provided by a rear-mounted lock that helps prevent cover removal when locked.

- A three-position, key-operated mode switch helps provide logic security for the system.

This product uses the security and auditability features of host hardware, host software, and application software.

User management is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

This product is available for purchase under the terms of the IBM Customer Agreement (ICA).

Volume Orders: For information about volume orders, contact your IBM representative.

IBM Credit Corporation Financing: Term leases and installment payment plans are available for commercial and state and local government customers.

Warranty Period: One year

Warranty Service: IBM On-Site Repair (IOR)

Maintenance Service: IOR

IBM Hourly Service Rate Classification: Two

IBM Warranty Service, Maintenance Service, or IBM Hourly Service can be obtained by calling 800-IBM-SERV (426-7378). IBM Hourly Service is available at the applicable rate and terms, including element exchange price, if applicable.

Mid-Range System Option: The announced product is an eligible machine for the Mid-Range System Option* of the ICA.

Eligible Type	Three-Year	Discount Five-Year
7013	12%	17%

Corporate Service Option: The announced product is an eligible machine for the Corporate Service Option* of the ICA.

	Discount Three-Year	Five-Year
Network	15%	20%
System	12%	17%

* A revised exhibit will be available at a later date.

Direct Customer Support: Installation and technical support is provided by the AIX Systems Centers via the AIX Family of Services. These new fee services enhance customer productivity by providing voice and electronic access into IBM for answering customers' questions related to installation, usage, and suspected software defects. For more details on the AIX Family of Services, contact the AIX Support Family Project Office at 800-CALLAIX (225-5249).

Extended Maintenance Option: The announced product is an eligible machine under the Extended Maintenance Option of the ICA.

Product Availability Status: New product available

Field-Installable Features: Yes

Model Conversions: Yes

Customer Setup: No

Licensed Internal Code: Yes

Educational Allowance: A 15% educational allowance is available to qualifying institutions in accordance with the Attachment for Educational Allowance for the Model 591. The educational allowance may not be added to any other discount or allowance.

Description	Feature Number	Purchase Price	Monthly MMC
Model 591			
RISC System/6000		$57,500	$575
1.1GB SCSI-2 Fast/Wide Disk Drive Select[3]	3042	300	
4.5GB SCSI-2 Fast/Wide Disk Drive Select	3049	2,100	
64MB S5 Memory Select	4057	2,400	
128MB S5 Memory Select	4058	7,200	
256MB S5 Memory Select	4059	18,000	
32MB S5 Memory	4076	3,600	
64MB S5 Memory	4077	6,000	
128MB S5 Memory	4078	10,800	
256MB S5 Memory	4079	21,600	
64MB S5 Memory SIMM Upgrade	5065	4,400	
32MB S5 Memory Specify	9076	0	
2.2GB SCSI-2 Fast/Wide Disk Drive Specify	9131	0	
SCSI-2 16-bit Internal 6-Drop Cable Specify	9431	0	
Base Quad Speed Tray-loading CD-ROM	9606	0	
OEM Indicator	7770	0	
OEM Indicator	7773	0	

[3] Must order quantity of two.

Model Conversion Purchase Prices

Model From	To	Model Conversion Purchase Price*
52H	591	$37,500
53E	591	37,500
53H	591	37,500
540	591	37,500
550	591	37,500
55E	591	37,500
55S	591	37,500
560	591	35,000
56F	591	35,000
570	591	32,500
57F	591	32,500
580	591	27,500
58F	591	27,500
58H	591	25,000
590	591	20,000

* Parts removed or replaced become the property of IBM and must be returned.

Call Now to Order

To order or to request more information, you can contact:

IBM Direct: IBM Direct, our national direct marketing organization, can also put your name on the mailing list for catalogs of IBM products.

```
Phone:    800-IBM-CALL
Fax:      800-2IBM-FAX
Internet: ibm＿direct@vnet.ibm.com
Mail:     IBM Direct
          Dept. RE001
          P.O. Box 16848
          Atlanta, GA  30321-0848
Reference: RE001
```

To identify your local IBM Authorized Business Partner or IBM representative, call 800-IBM-4YOU.

Note: Shipments will begin after the planned availability date.

** Company, product, or service name may be a trademark or service mark of others.