

## IBM RISC System/6000 Model 3CT

The RISC System/6000® Model 3CT is a new POWER2-based high-performance graphics workstation that can be used for interactive 2D and 3D graphical applications.

The Model 3CT is offered in an easy-to-order system package that includes a POWERdisplay 17, with a Trinitron\*\* CRT and a maximum viewable image size of 409 mm (16.1 inches) measured diagonally, a POWER GXT150M™ Graphics Adapter, keyboard, mouse, 64MB of memory, 1GB SCSI-2 fixed disk, and a 1.44MB, 3.5-inch diskette drive. Two 5.25-inch half-high media bays are available for optional media devices. Customers may select an optional POWER Gt3i™, POWER Gt4i™, POWER Gt4xi™ 8-bit, POWER Gt4xi 24-bit, POWER Gt4e™ Adapter, or IBM 7250 Attachment Adapter in place of the standard POWER GXT150M Graphics Adapter. Customers may also select the POWERdisplay 20, with a Trinitron CRT and a maximum viewable image size of 486 mm (19.1 inches) measured diagonally, in place of the POWERdisplay 17.

The Model 3CT has a maximum memory capacity of 512MB and internal disk capacity of 18GB. Four Micro Channel® expansion slots (three available) and a wide range of optional workstation features allow these systems to be configured as powerful technical workstations. Customers will be able to order an optional internal tape, CD-ROM-2 drive, or disk drive at an additional charge, to occupy the 5.25-inch, half-high media bays. With the use of a disk mounting kit to install a third or fourth internal disk drive in the available media bay, storage for the 3CT is increased up to 18GB. An optional 1MB or 2MB L2 cache is also available for increased performance.

Also being announced is an increase to the internal storage capacity of the 7030 Models 3AT and 3BT. With the use of a disk drive mounting kit to install a third or fourth internal disk in the available media bay, storage for the Models 3AT and 3BT is increased to 18GB.

AIX/6000® 1 to 2 user and AIXwindows® are required. Both must be ordered when selecting AIX® Version 3.2. AIX Version 4 for clients must be ordered when selecting AIX Version 4. These products are ordered and priced separately.

**Purchase Price:** \$29,995 (Model 3CT)

### Planned Availability Dates:

- February 17, 1995, for Model 3CT
- March 17, 1995, for MES and Model Conversion

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### IN BRIEF . . .

- ◆ IBM POWER2 Technology
- ◆ New graphics workstation packages
- ◆ 67MHz processor
- ◆ Standard POWER GXT150M Graphics Adapter
- ◆ Optional selects to 2D and 3D graphics adapters
- ◆ POWERdisplay 17
- ◆ Optional select to POWERdisplay 20
- ◆ 1.44MB, 3.5-inch diskette drive
- ◆ Keyboard
- ◆ Mouse
- ◆ Internal disk capacity up to 18GB, 1GB standard
- ◆ Memory capacity of up to 512MB, 64MB standard
- ◆ Optional 1MB or 2MB L2 cache
- ◆ Two serial and one parallel ports
- ◆ Instruction cache size of 32KB
- ◆ Data cache size of 128KB
- ◆ Integrated dual-ported SCSI-2 fast/wide controller
- ◆ Integrated Ethernet interface
- ◆ Two 5.25-inch half-high removable media bays
- ◆ Four Micro Channel expansion slots, three available
- ◆ Model conversion capability
- ◆ Optional non-locking switch

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## Description

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The Model 3CT is a powerful technical workstation used for interactive graphical applications. It has a processor clock speed of 66.7MHz and uses POWER2 Architecture™.

The Model 3CT is packaged for easy configuration and ordering and has been designed to grow with the customer's needs. The standard memory of 64MB can be increased to 512MB with 256MB of CPU memory and a 256MB memory card (available as optional features).

One internal 1GB, SCSI-2, 8-bit disk is standard. Four disk drives can be installed in the system for up to 18GB of internal disk. Additionally, you can select SCSI-2 fast/wide disk drives.

The Model 3CT includes an integrated dual-ported SCSI-2 fast/wide controller (one for internal and one for external devices) and one integrated Ethernet interface as standard features. These features are integrated into the I/O board and do not use Micro Channel slots. In the standard configuration, three Micro Channel slots are available for additional features such as additional SCSI adapters, expanded graphics capability, or communications. In addition, two 5.25-inch, half-high media bays are standard and available for expansion.

Two different POWERdisplays are available, offering 1,280 x 1,024 color capability. The POWERdisplay 17 is standard. The POWERdisplay 20 is optional. These displays are high-resolution color displays that support the International Organization for Standardization (ISO) Part 3 recommendations for video display terminal (VDT) ergonomics, about screen flicker and character appearance when used with the appropriate display adapter at 77Hz (such as the standard POWER GXT150M). Customers may select an optional POWER Gt3i, Gt4i, POWER Gt4xi 8-bit, POWER Gt4xi 24-bit, POWER Gt4e Adapter, IBM 7235 GTO Accelerator Adapter, or IBM 7250 Attachment Adapter instead of the standard POWER GXT150M graphics adapter. Customers may also select a POWERdisplay 20 instead of the POWERdisplay 17.

### Level 2 (L2) Cache

The optional 1MB or 2MB L2 cache, in addition to the already resident L1 cache, provides significant performance improvements to many applications. L2 cache, being much larger than the L1 cache, accommodates large programs and increases the probability that the next instruction or data can be found in the cache thus avoiding the access of main memory. The L2 cache, with the L1 cache and main memory, provides a three-level hierarchy of memory that provides the best balance of cost and performance efficiency for most commercial and technical customers.

### Standard Features

- System Unit
- 64MB of memory (32MB CPU Memory; 32MB memory card)
- 32KB two-way set associative instruction cache
- 128KB four-way set associative data cache
- One 1.44MB, 3.5-inch diskette drive
- Two 5.25-inch, half-high media bays
- 1GB, 3.5-inch, SCSI-2 8-bit disk drive
- One integrated SCSI-2 fast/wide controller, support of up to eight devices, four internal and four external
- One integrated Ethernet interface
- Four Micro Channel slots (three available for optional features)

- Keyboard/speaker
- Mouse
- POWER GXT150M Graphics Adapter
- Two serial ports
- Parallel printer port
- POWERdisplay 17 Color Display

**Note:** MB is 1,048,576 bytes (two to the twentieth power) when referring to memory; in all other cases it is 1,000,000 (ten to the sixth power).

GB is 1,073,741,824 bytes (two to the thirtieth power) when referring to memory; in all other cases it is 1,000,000,000 (ten to the ninth power).

### Interoperability

The Model 3CT and the AIX for RISC System/6000 operating system offer interoperability with other IBM and other vendor's systems, protecting the customer's data processing investment.

The Model 3CT is binary compatible with previously announced RISC System/6000 systems to help protect the customer's investment in software and hardware.

A system installation and management facility is provided as part of the operating system. The System Management Interface Tool (SMIT) facilitates the performance of system management tasks, such as software installation and configuration, device configuration and management, problem determination, and storage management.

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## Devices Supported

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### External I/O

- IBM 3490E Models E01
- IBM 7135 Model 010 RAIDiant Array
- IBM 7203 External Portable Disk Drive Model 001
- IBM 7204 External Disk Drive Models 001, 002, 010, 215, and 315
- IBM 7204 Model 112 1.1GB External Disk Drive
- IBM 7204 Model 317 2.2GB External Disk Drive
- IBM 7204 Model 325 4.5GB External Disk Drive
- IBM 7206 4 mm External Tape Drive Models 001 and 005 (refer to the **Limitations** section)
- IBM 7207 External ¼-inch Cartridge Tape Drive Models 011 and 012
- IBM 7208 External 8 mm Tape Drive Models 001 and 011
- IBM 7209 Optical Disk Drive Models 001 and 002
- IBM 7210 External CD-ROM Drive Models 001 and 005 (refer to the **Limitations** section)
- IBM 9348 Model 012 Magnetic Tape Unit (½-inch 9-Track) (Requires 9348 Specify Code 9994)
- IBM 9334 Model 500 Deskside Expansion Unit (Maximum of two. One may be attached to the integrated SCSI.)
- IBM 9334 Model 501 Deskside Expansion Unit (Maximum of two per #2420 adapter.)

## **ASCII Displays**

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<sup>1</sup>
- IBM 3161<sup>1</sup>
- IBM 3162<sup>1</sup>
- IBM 3163<sup>1</sup>
- IBM 3164<sup>1</sup>
- DEC\*\* VT100
- DEC VT220
- DEC VT320
- DEC VT330
- WYSE\*\* 30
- WYSE 50
- WYSE 60
- WYSE 350

<sup>1</sup> National Language Support is provided by a cartridge with ISO 8859-1 and national language keyboards.

## **X Stations**

- IBM 7010 Model 120
- IBM 7010 Model 130
- IBM 7010 Model 150

## **Displays**

- IBM 5081 16-inch Color Display<sup>2</sup> (#1280 is required)
- IBM 5081 19-inch Color Display<sup>3</sup> (RPQ 8K1680 is required)
- IBM 6091 16-inch Color Monitor<sup>4</sup>
- IBM 6091 19-inch Color Display<sup>5</sup> (1280 x 1024 60Hz only)
- IBM 6091 19i 19-inch Color Display<sup>6</sup>
- IBM 6091 23-inch Color Display (1280 x 1024 60Hz only)
- IBM 8508 19-inch Mono Display (1280 x 1024 67Hz only)

<sup>2</sup> Features a Trinitron\*\* CRT that has a fixed image size of 14.8 inches/375 mm measured diagonally

<sup>3</sup> Features a Trinitron CRT that has a fixed image size of 17.3 inches/439 mm measured diagonally

<sup>4</sup> Features a Trinitron CRT that has a fixed image size of 14.8 inches/375 mm measured diagonally

<sup>5</sup> Features a Trinitron CRT that has a fixed image size of 17.3 inches/439 mm measured diagonally

<sup>6</sup> Features a Trinitron CRT that has a fixed image size of 17.3 inches/439 mm measured diagonally

Supported IBM Monitors Complying to ISO 9241 Part 3.

- POWERdisplay 16<sup>7</sup>
- POWERdisplay 17<sup>8</sup>
- POWERdisplay 19<sup>9</sup>
- POWERdisplay 20<sup>10</sup>

<sup>7</sup> Features a Trinitron CRT that has a fixed image size of 14.8 inches/375 mm measured diagonally

<sup>8</sup> Features a Trinitron CRT that has a maximum viewable image size of 16.1 inches/409 mm measured diagonally

<sup>9</sup> Features a Trinitron CRT that has a maximum viewable image size of 17.3 inches/439 mm measured diagonally

<sup>10</sup> Features a Trinitron CRT that has a fixed image size of 19.1 inches/486 mm measured diagonally

## **Trunk Processors**

- IBM 9291 Model 010 Single Digital Trunk Processor
- IBM 9295 Models 010 and 020 Multiple Digital Trunk Processor

## **Graphic Processors**

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

## **Dials**

- IBM 6094-010
  - Requires 6094 cable #4015 for attachment to a Graphics Input Device Adapter #2810
  - Requires 6094 feature number 4060 for attachment to a standard serial port
  - The 6094 feature number 4061 may also be required
- IBM 6094 Model 30 Spaceball

## **Digitizers**

- IBM 5084-M1
- IBM 5084-M2
- IBM 5084-M3

## **Lighted Program Function Keyboard**

- IBM 6094-020
  - Requires 6094 cable #4015
  - Requires 6094 feature number 4060 for attachment to a standard serial port
  - The 6094 feature number 4061 may also be required

**Note:** If either standard serial port is configured for attachment of dials or a lighted programmable function keyboard, the remaining standard serial port is unavailable for use by devices other than dials or lighted programmable function keyboard.

## **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 M1 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 allows communication through common carrier telephone networks using dial-up or leased lines with asynchronous protocols or the synchronous half-duplexed SDLC protocols. Not all of the features supported by the listed modems are supported by AIX/6000 Version 3.2 for RISC System/6000.

| Modems                       | Protocols | Standards                                   |
|------------------------------|-----------|---|
| IBM 5822 DSU<br>up to 56Kbps |           | CCITT V.35                                  |
| IBM 5841 1200bps             | ASYNC     | SYNC EIA-232D                               |
| IBM 5853 2400bps             | ASYNC     | SYNC EIA-232D, CCITT V.24                   |
| IBM 5865 9600bps             |           | SYNC EIA-232D, CCITT V.24                   |
| IBM 7855<br>up to 19.2 Kbps  | ASYNC     | CCITT V.32,<br>V.22 bis<br>Bell 103,<br>212 |
| IBM 7861<br>up to 19.2KBps   | ASYNC     | SYNC EIA-232D, CCITT V.24                   |
| IBM 7868<br>up to 19.2KBps   | ASYNC     | SYNC EIA-232D, CCITT V.24                   |
| Hayes<br>Smartmodem 1200**   | ASYNC     | EIA-232D                                    |
| Hayes<br>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 VI2222VP         | ASYNC     | EIA-232D                                    |
| Teletbit<br>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, emulating the 2380 Personal Printer for PPDS (IBM ASCII) (Note 6)
- IBM 2381 Plus Printer, emulating the 2381 Personal Printer for PPDS (Note 6)
- IBM 2390 Plus Printer, emulating the 2390 Personal Printer for PPDS (Note 6)
- IBM 2391 Plus Printer, emulating the 2391 Personal Printer for PPDS (Note 6)
- IBM 3812-002 Page Printer (Note 1)
- IBM 3816-01D and 01S Page Printer (Note 2)
- IBM 3930-03D and 03S Page Printer, emulating the HP LaserJet III Si
- IBM 4019-001 LaserPrinter (Note 3)
- IBM 4019-E01 LaserPrinter E (Note 3)
- IBM 4029-010 LaserPrinter 5E
- IBM 4029-020 LaserPrinter 6
- IBM 4029-022 LaserPrinter (Note 6)
- IBM 4029-030 LaserPrinter 10
- IBM 4029-042 LaserPrinter
- IBM 4029-040 LaserPrinter 10L

- IBM 4037 5E Page Printer, emulating the 4029 LaserPrinter for PCL emulation and for PPDS (IBM ASCII) (Note 6)
- IBM 4039-10R LaserPrinter 10R (Note 8)
- IBM 4039-10D LaserPrinter 10D (Note 8)
- IBM 4039-12L LaserPrinter 12L (Note 8)
- IBM 4039-12R LaserPrinter 12R (Note 8)
- IBM 4039-16L LaserPrinter 16L (Note 8)
- IBM LaserPrinter 4039-12R, -12L, and -16L Plus, emulating the IBM 4039 LaserPrinter
- Lexmark 4047 5E, emulating the IBM 4039 LaserPrinter
- IBM 4070 IJ Printer Model 1
- IBM 4072-001 ExecJet® Printer
- IBM 4076 ExecJet II Printer (Notes 6 and 7)
- 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, and 5I3, emulating the Proprinter III XL
- IBM 4232-302 Impact Dot Matrix Printer, emulating the Proprinter II XL
- IBM 4232-302 Dot Matrix Printer, emulating the IBM 4202
- IBM 4234-009 Line Dot Matrix Printer
- IBM 4234-13 Line Dot Matrix Printer
- IBM 5202-001 Quietwriter® III (Note 4)
- IBM 5204-001 Quickwriter (Note 4)
- IBM 6252 Impactwriter® AP2 (7012: #2936, #2937, or #3100 required)
- IBM 6252 AS2 (7012: #2936, #2937, or #3100 required)
- IBM 6252 AP8 Impactwriter (Note 5)
- IBM 6252 AS8 Impactwriter (Note 5)
- IBM 6262 A12, A14, and A22
- IBM 6408 Line Matrix Printer, emulating the IBM 4234
- IBM 6412 Model CTA Line Matrix Printer, emulating the IBM 4234 Line Dot Matrix Printer

The following non-IBM printers are also supported:

- HP LaserJet Series II\*\* (Note 9)
- HP LaserJet Series III\*\* (Note 9)
- HP LaserJet Series III Si\*\* (Note 9)
- Hewlett Packard LaserJet 4 (Note 9)
- TI Omnilaser 2115\*\*
- DATAPRODUCTS LZR 2665\*\*
- PRINTRONIX P9012\*\*
- DATAPRODUCTS BP 2000\*\*
- QMS\*\* Colorscript 100 Model 20

Printer notes:

1. Feature number 3155 for the IBM 3812 printer is required for attachment to the RISC System/6000 system.
2. Feature number 7652 for the IBM 3816 printer is required for attachment to the RISC System/6000 system.
3. When using the serial ports, the IBM 4019 requires feature number 9143 (System serial interface adapter) for attachment to the RISC System/6000 system.

4. The IBM RISC System/6000 system supports Code Page 850. The Code Page 850 cartridge must be installed on the IBM 5202 printer to fully use the full character sets of the system. For details on available cartridges, refer to the IBM 5202 Sales Manual. Other IBM printers have Code Page 850 resident.
5. Impactwriter A models emulate the IBM 4202-3 printer for traditional line printing of simple text and numbers. Graphics, all points addressable, and large characters cannot be printed.
6. For assistance with these printers and for the latest AIX virtual printer files (colon files), call Lexmark Customer Support. Virtual printer files (colon files) for the 4037 and 4076 printers are available from Lexmark. Colon files for these printers are distributed via:
  - Lexmark Customer support line: (606) 232-3000
  - Dial-in BBS: (606) 232-5238
  - VM request machine DRIVERS at LEXCJN1 (for IBM customers, marketing representatives, and SEs)
  - Lexmark Internet file server: ftp.lexmark.com
  - Reader response card for the IBM 4037 and 4076
7. Use the virtual printer files available from Lexmark for the PCL emulation mode of the IBM 4076 printer. For PPDS (IBM ASCII), select emulation of the IBM 2390 Personal Printer.
8. AIX support software for the LaserPrinter Integrated Network Option has the Network Option cards (feature numbers 5495, 5496, and 5497 on the IBM 4039 LaserPrinter).
9. AIX support software for the HP JetDirect Ethernet Card.

**Note:** For optimum system performance, high-speed serial printers should be attached to the native ports or the 128-Port Async Controller.

The parallel printer port is provided for the convenience character printer. High-speed printers or applications requiring a large amount of data transfer per page (for example, high-density graphics) should use the serial interface for optimum system performance.

### ***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)

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## **Product Positioning**

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The RISC System/6000 Model 3CT is the most powerful RS/6000 desktop workstation. It is positioned above the Models 3AT and 3BT and shares the same physical package. It features the POWER2 processor, which is the industry's most advanced generation of super scalar design, capable of executing up to six instructions (or eight operations) in a single CPU cycle. This yields not only increases in integer performance with respect to clock frequency, but also, even more dramatic, increases in floating-point performance.

The Model 3CT should be positioned for users with a high-compute requirement in addition to strong graphics support. It should compete especially well in applications that require the highest possible levels of floating-point performance.

The maximum memory of the Model 3CT is 512MB, positioning it for the high-end applications that require memory structures larger than available on other RS/6000 workstations. The memory starts at 64MB, indicative of this class of power user.

The Model 3CT can provide incremental performance capability to existing Model 3AT and 3BT customers who need even more performance.

The optional Level 2 (L2) cache cards are 1MB and 2MB, offering even larger L2 cache sizes than are available on other workstations. These tend to provide enhanced performance on complex applications or environments where multiple concurrent applications cause excessive cache misses.

The Model 3CT comes standard with Fast/Wide SCSI-2 adapters, which would position it well in workstation applications that require large amounts of file access, especially of very large data files.

Although POWER2 architecture is not part of the PowerPC family, it should be stressed that the processor architectures are compatible and that applications compiled in common mode will execute unchanged on both architectures.

### ***Workstation Positioning***

IBM's introduction of new workstations provides customers with one of the industry's most extensive lineup of compatible product offerings. The family of workstations is as follows:

- **3AT/3BT/3CT:** Highest performance workstations with POWER2 architecture featuring leadership floating-point performance, large real memory structures, and internal files to 18GB.
- **41W/41T:** Full function workstation featuring PowerPC technology, leadership 2D and packaging flexibility to include internal 3D adapters, more media options, integrated business audio, and optional L2 cache.
- **25W/25T:** Compact entry workstation featuring PowerPC technology and very fast 2D graphics.
- **Model 40P:** Lowest priced PowerPC based workstation suited for entry technical and commercial workstation applications.
- **N40:** Workstation function and graphics in a notebook size allowing the user to take their AIX application with them.
- **Xstation 140, 150, and 160:** For high-performance access to applications on the network without the requirement for a full workstation.

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## Publications

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The following publications are shipped with the product. Additional copies are available for a fee.

| Title                                  | Order Number |
|--|--------------|
| 7030 Models 3AT/3BT/3CT Operator Guide | SA23-2733    |
| 7030 Models 3AT/3BT/3CT Service Guide  | SA23-2734    |
| Common Diagnostics and Service Guide   | SA23-2687    |
| Documentation Overview                 | SC23-2456    |
| 7030 Hardware Setup Procedures         | SA23-2732    |
| Safety Guide                           | SA23-2652    |

The following publications have been updated and are available for a fee. To order, contact your IBM representative.

| Title   | Order Number |
|---|--------------|
| 7030 Models 3AT/3BT/3CT Operator Guide                              | SA23-2733    |
| 7030 Models 3AT/3BT/3CT Service Guide                               | SA23-2734    |
| 7030 Models 3AT/3BT/3CT Hardware Setup Guide                        | SA23-2732    |
| Documentation Overview  | SC23-2456    |
| System Unit Safety Information                                      | SA23-2652    |
| IBM RISC System/6000 System Overview                                | GC23-2406    |
| IBM RISC System/6000 Planning for Your System Installation          | GC23-2407    |
| POWERstation™ and POWERserver™ Common Diagnostics and Service Guide | SA23-2687    |
| Customer Support Information  | SA23-2690    |
| CD-ROM Hypertext Information Base Library for AIX Version 3.2       | SC23-2163    |
| Problem Solving Guide and Reference                                 | SC23-2204    |
| Quick Reference   | SC23-2401    |
| AIX Version 3.2 Diskless Workstation Management Guide               | SC23-2433    |
| Getting Started   | GC23-2521    |
| IBM POWERdisplay 17 and 20 Setup and Operator Guide                 | GA23-2076    |
| IBM POWERdisplay 17 and 20 Service Guide                            | SY66-0225    |
| AIX and Related Products Documentation Overview                     | SC23-2456    |

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

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## Education Support

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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.

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## Technical Information

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### *Specified Operating Environment*

#### *Physical Specifications:*

|                       | Horizontal  | Vertical                           |
|-----------------------|---|------------------------------------|
| Width:                | 442 mm (17.4 in.)   | 280 mm (11 in.)<br>at pedestal     |
| Depth:                | 478 mm (18.8 in.)   | 478 mm (18.8 in.)                  |
| Height:               | 162 mm (6.4 in.)  | 452 mm (17.8 in.)<br>with pedestal |
| Weight:               | 18.1-21.8 kg<br>(40-48 lbs.)  |                                    |
| Voltage:              | 100 to 125 V AC, 200 to 240 V AC<br>Nominal; Auto Ranging; 50/60 Hz |                                    |
| Power Supply:         | 275 Watts output (peak)   |                                    |
| Thermal output:       | 220 joules/sec (750 Btu per hour)                                   |                                    |
| Power Source loading: | 0.34 KVA  |                                    |

#### *POWERdisplay 17:*

- Maximum viewable image size: 409 mm (16.1 in.)
- Width: 406 mm (17.0 in.)
- Depth: 451 mm (17.8 in.)
- Height: 417 mm (17.4 in.)
- Weight: 29.5 kg (65.0 lbs.)
- Voltage: 100/120 V AC, 220/240 V AC, 50/60 Hz
- Power Source loading: 0.29 KVA

#### *POWERdisplay 20:*

- Maximum viewable image size: 486 mm (19.1 in.)
- Width: 480 mm (18.9 in.)
- Depth: 506 mm (20.92 in.)
- Height: 485 mm (20.09 in.)
- Weight: 34.0 kg (74.8 lbs.)
- Voltage: 100/120 V AC, 220/240 V AC, 50/60 Hz
- Power Source loading: 0.48 KVA
- Temperature: 17° to 32° C (60° to 90° F)
- Relative Humidity: 8% to 80%
- Maximum Wet Bulb: 23° C (73° F)
- Noise level (average at one meter position — typical machine):
- Desktop position: 41 dBa operating, 41 dBa idle
- Floor-standing position: 38 dBa operating, 38 dBa idle

#### *EMC Conformance Classification:*

- U.S.A. — FCC Class A
- Germany — IOP
- Europe — CISPR 22
- Japan — VCCI-1

**General Requirements:** The product complies with IBM Corporate Bulletin C-B 0-2594-000, Statement of Conformity of IBM Product to External Standard (Suppliers Declaration).

**EMC Conformance Classification:** This equipment is subject to FCC rules and it will comply with the appropriate FCC rules before final delivery to the buyer or centers of distribution.

The Environmental Impact Assessment Number is 617P-3.

The RISC System/6000 processors were developed in compliance with IBM corporate policy letter number 139 (Environmental Affairs). The product also complies with IBM Corporate Standard C-S 3-0527-002 (2091-06), Control of Chemicals in IBM Facilities, Requirements, and Responsibilities.

**Product Safety/Country Testing/Certification:**

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

**Telecom Environmental Testing (Safety and EMC):** IBM RISC System/6000 models 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              |         |
| 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 |
| Spain       | Ministry of Industry |         |
| Switzerland | SEV                  |         |
| U.K.        | BABT                 |         |

**ISO 9000 Certification, IBM Locations:**

- Santa Palomba, Italy
- Havant, England
- Austin, Texas, U.S.A.

The supported IBM monitors that comply to ISO 9241 Part 3 are:

- **6091 Model 016** (fixed image size of 377 mm (14.9 in.) for the 1280 x 1024 resolution, measured diagonally)
- **6091 Model 19i** (fixed image size of 439 mm (17.3 in.) for the 1280 x 1024 resolution, measured diagonally)
- **POWERdisplay 16** (fixed image size of 375 mm (14.8 in.) for the 1280 x 1024 resolution, measured diagonally)
- **POWERdisplay 17** (maximum viewable image size of 409 mm (16.1 in.) measured diagonally)
- **POWERdisplay 19** (fixed image size of 439 mm (17.3 in.) for the 1280 x 1024 resolution, measured diagonally)
- **POWERdisplay 20** (maximum viewable image size of 486 mm (19.1 in.) measured diagonally)

**Hardware Requirements:** IBM supported ASCII terminal or IBM supported display, display adapter, and keyboard.

**Software Requirements:** AIX Version 3.2.5 or 4.1 for RISC System/6000.

AIX/6000® applications written for POWER-based RISC System/6000 models will run on the new POWER2-based models without recompilation, and will run significantly faster. Additional performance improvements 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 that exploits POWER2 technology may not function properly

on systems that do not use the new POWER2 technology. Customers with any combination of POWER-, PowerPC 601™ - and POWER2-based systems may 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 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.

Concurrent diagnostics for AIX Version 3.2.5 will be shipped with Version 3.2.5 Enhancement 5 and will be available on March 31, 1995.

Customers with machines shipped between February 17, and March 31, 1995, must order the service APAR (IX48611) for concurrent diagnostics.

**Model Conversions:** Model conversions will be available to upgrade to the Model 3CT as follows:

| From     | To       | RPQ Number |
|----------|----------|------------|
| 7030-3AT | 7030-3CT | 8A0930     |
| 7030-3BT | 7030-3CT | 8A0931     |
|          |          | 8A0932     |
|          |          | 8A0933     |
|          |          | 8A0934     |

**Model Upgrade Descriptive/Ordering Information:** RPQ upgrades to a Model 3CT will be shipped using a "chassis exchange" process with an RPQ. When ordering this model conversion, you must specify both the model conversion and RPQ number on the MES order. RPQs are not supported in the configuration aid CFRS6000.

The upgrade from Model 3AT or 3BT to a Model 3CT is not an RPQ and is a processor upgrade.

The RPQ provides a model conversion for customers with installed Model 355, 365, 375, 36T, or 37T systems who want the Model 3CT model capability. This field installed model conversion will help provide increased system performance and contribute to the protection of a customers' initial investment in a Model 355, 365, 375, 36T, or 37T system. The resulting model conversion will retain the serial number of the system before the upgrade.

Model conversion offers a high degree of flexibility in increasing the performance level of the system and helping the customers with computation-intensive applications to take advantage of the performance of the new processor while protecting their investments in disks and features.

**Model Upgrade Compatibility:** Models 3AT, 3BT, and 3CT use a new SCSI-2 fast/wide interface. All other external interfaces are the same as on the Models 355, 365, 375, 36T, and 37T. The following SCSI cables will be required for externally attached devices after the model conversion:

| Feature | Description  |
|---------|--|
| 2439    | 8-bit IBM SCSI-2 Fast/Wide Adapter/A to Single Ported Device |
| 2437    | 8-bit IBM SCSI-2 Fast/Wide Adapter/A to Dual Ported Device   |
| 2435    | 16-bit IBM SCSI-2 Fast/Wide Adapter/A to Dual Ported Device  |

All Micro Channel cards, external and internal devices currently supported by the Model 3CT and announced later as supported by the Model 3CT, will also be supported by the newly converted 3CT.

The SCSI-2 fast/wide interface does not support the following devices:

- 7206-001 External 4 mm Tape Drive
- 7210-001 External CD-ROM Drive
- 160MB Disk Drive
- Feature numbers 2120, 2121, 2123, 9240, 9241, and 9242

**Note:** Features displaced remain with the customer.

A minimum of 64MB of memory in pairs is required before the upgrade. Customers who do not meet the memory minimum must order additional memory features or SIMM kits. This is not included in the price of the model conversion. Memory must be installed in equal pairs. CPU memory and the memory card must be of equal capacity. Refer to **Limitations** section.

For upgraded machines, it may be necessary for 8MB or 16MB memory to be replaced or for SIMM kits to be installed to meet the above requirements.

A machine being upgraded must have a minimum of 1GB of SCSI-2 disks installed or on order. These can be any one or a combination of the following:

| Feature | Description                               |
|---------|---|
| 2555    | 1GB SCSI-2 Drive                          |
| 2556    | 400MB to 1GB SCSI-2 Drive Select          |
| 2580    | 2GB SCSI-2 Drive                          |
| 2582    | 400MB to 2GB SCSI-2 Drive Select          |
| 2586    | 2GB SCSI-2 Fast/Wide Disk Drive           |
| 2587    | 2GB SCSI-2 Fast/Wide Disk Drive Select    |
| 3033    | 2.2 GB SCSI-2 Fast/Wide Disk Drive        |
| 3034    | 4.5 GB SCSI-2 Fast/Wide Disk Drive        |
| 3044    | 2.2 GB SCSI-2 Fast/Wide Disk Drive Select |
| 3048    | 4.5 GB SCSI-2 Fast/Wide Disk Drive Select |
| 9249    | 1GB SCSI-2 Disk Drive Specify             |

Current machine configuration (product topology information) will be requested by the plant before scheduling the shipment of this upgrade.

**Model Upgrade Kit Parts:** Models 355, 365, 375, 36T, and 37T to 3CT upgrade kit will contain some or all of the following:

- Base Model 3CT chassis and covers with original serial number
- New memory card without SIMMS
- Maintenance documentation
- As-required engineering changes

This upgrade is accomplished by transferring the customer's existing media, disks, adapters, and memory SIMMS to the new chassis. The chassis will contain the same serial number as the customer's existing machine.

**Note:** Base display adapter features and POWERdisplay features on Models 355, 365, 375, 36T, and 37T will be supported on the model conversion. New POWERdisplays or display adapters (which are base features on a new

Model 3CT), will not be shipped as part of the upgrade kit.

**For Models 3AT and 3BT to Model 3CT:** All 3AT and 3BT (MES) model conversions will be processor upgrades.

The model conversion MESs contain some or all of the following items and are ordered through the HONE configurator:

- Processor replacement
- As-required engineering changes
- Installation instructions
- New publications.

**Note:** Parts removed become the property of IBM.

**Model Upgrade Ordering Information:** When ordering this model conversion, you must specify the model conversion and the RPQ on the MES order.

**Model Upgrade Supported Features Information:** All features announced as supported on the Model 3CT are also available on this model conversion.

The following features now supported on Models 355, 365, 375, 36T, 37T, 3AT, and 3BT will not be supported on the newly-converted system:

| Feature | Description   |
|---------|---|
| 2121    | 160MB SCSI Disk Drive                               |
| 2780    | High-Performance 8-bit 3D Color Graphics Processor  |
| 2781    | High-Performance 24-bit 3D Color Graphics Processor |
| 2782    | 24-bit Z-Buffer Solid Rendering Option              |
| 2783    | 24-bit Color Graphics Frame Buffer Upgrade          |
| 4040    | .5MB L2 Cache Memory                                |
| 4041    | 1MB L2 Cache Memory                                 |
| 4063    | 8MB HD3 Memory Card                                 |
| 4066    | 16MB HD3 Memory Card                                |
| 9234    | 16MB Base HD3 Memory Card                           |
| 9241    | Base 160MB SCSI Disk Drive                          |

There are several features on the existing 300 series models that are not supported on the Model 3CT. Refer to the **Feature Availability Matrix** in the Sales Manual for a listing of supported and non-supported features.

Before IBM accepts the order, the customer will be advised of all features that will not be supported because of upgrading their machine. Non-supported features remain the property of the customer and are not returned to IBM.

**Model Upgrade Supported but Not Orderable Features:** The following features now supported on Models 355, 365, 375, 36T, 37T, 3AT, and 3BT are supported but cannot be ordered on the newly-converted system.

| Feature | Description   |
|---------|---|
| 2390    | 540MB SCSI-2 Disk Drive                               |
| 2391    | 400MB to 540MB SCSI-2 Disk Drive Select               |
| 2400    | M-Video Capture Adapter (NTSC)                        |
| 2556    | 400MB to 1GB SCSI-2 Disk Drive Select                 |
| 2560    | 400MB SCSI Disk Drive                                 |
| 2582    | 400MB to 2GB SCSI-2 Disk Drive Select                 |
| 2651    | POWER GTX150M to 7235<br>POWER GTO Accelerator Select |



| Feature | Description  |
|---------|--|
| 2714    | POWER Gt3i to POWER Gt4xi<br>8-bit Select                  |
| 2715    | POWER Gt4e to POWER Gt4xi<br>24-bit Select                 |
| 2716    | POWER Gt4e to POWER Gt4xi<br>8-bit Select                  |
| 2717    | POWER Gt4e to POWER Gt4i<br>24-bit Select                  |
| 2718    | POWER Gt3i to POWER Gt4i<br>24-bit Select                  |
| 2719    | POWER Gt3i to POWER Gt4xi<br>24-bit Select                 |
| 2760    | Grayscale Graphics<br>Display Adapter                      |
| 2770    | Color Graphics Display Adapter                             |
| 2790    | POWER Gt4x™ 8-bit Feature                                  |
| 2792    | POWER Gt4™ 8-bit to<br>24-bit Upgrade                      |
| 2794    | POWER Gt4 Performance Upgrade                              |
| 2795    | POWER Gt4 8-bit Feature                                    |
| 2801    | 5086 Attachment Adapter                                    |
| 2802    | 5085 Attachment Adapter                                    |
| 2805    | POWER Gt3i to POWER Gt4e<br>Graphics Adapter Select        |
| 2806    | POWER Gt3i to POWER Gt4<br>8-bit Feature Select            |
| 2807    | POWER Gt3i to POWER Gt4x<br>8-bit Feature Select           |
| 2808    | POWER Gt3i to 7235 POWER<br>GTO Accelerator Feature Select |
| 2815    | POWER Gt4e to POWER Gt4<br>24-bit Adapter Select           |
| 2816    | POWER Gt4e to POWER Gt4x<br>8-bit Adapter Select           |
| 2817    | POWER Gt4e to POWER Gt4x<br>24-bit Adapter Select          |
| 2833    | Integrated SCSI Controller Cable                           |
| 2914    | SCSI-2 Passthrough<br>Terminator Cable (50-Pin)            |
| 2915    | SCSI Controller Passthrough<br>Terminator Cable (60-Pin)   |
| 3600    | POWERdisplay 16  |
| 3601    | POWERdisplay 19  |
| 3602    | POWERdisplay 16 to POWERdisplay<br>19 Select               |
| 3606    | POWERdisplay 17 to POWERdisplay<br>19 Select               |
| 4066    | 16MB Memory Card   |
| 4068    | 16MB to 32MB Memory Select                                 |
| 4074    | 16MB to 64MB Memory Select                                 |
| 4091    | 16MB to 128MB Memory Select                                |
| 4099    | 16MB to 256MB Memory Select                                |
| 4350    | POWERgraphics GTO Accelerator                              |
| 6301    | M-Audio Capture Playback Adapter                           |
| 6306    | IBM Speech Accelerator 1                                   |
| 6307    | IBM Speech Accelerator 2                                   |
| 9234    | 16MB Memory Specify  |
| 9244    | 400MB SCSI Disk Drive Specify                              |
| 9610    | POWERdisplay 16 Specify                                    |
| 9988    | POWER Gt3i Specify   |
| 9990    | POWER Gt4e Specify   |

**Note:** The displaced chassis and all associated parts removed become the property of IBM.

All other previously announced features, if installed on the Models 355, 365, 375, 36T, 37T, 3AT, and 3BT can be included in the upgrade to the Model 3CT. However, after the upgrade, only those features that can be ordered on the Model 3CT will be available.

**Note:** Base display adapter features and POWERdisplay features on the Models 355, 365, 375, 36T, 37T, 3AT, and 3BT will be supported on the model conversion. New POWERdisplays or display adapters (which are base features on a new Model 3CT) will not be shipped as part of the upgrade kit.

#### Model Upgrade Hardware Prerequisites:

- Model 355, 365, 375, 36T, 37T, 3AT, or 3BT
- Minimum of 64MB memory (in pairs)
- Minimum of 1GB, SCSI-2 disk installed

**Model Upgrade Warranty Period:** The warranty for the original machine (Models 355, 365, 375, 36T, 37T, 3AT, and 3BT) controls the warranty period of the converted machine (Model 3CT), so that any time remaining from the original one year warranty on the original machine is applied to the Model 3CT conversion.

Replacement parts assume the remaining warranty of the parts they replaced. Additional new parts, if any, have a one-year warranty.

**Limitations:** Models 3AT, 3BT, and 3CT use a new SCSI-2 integrated fast/wide interface. All other external interfaces are the same as on the Model 355, 365, 375, 36T, or 37T.

- "Target mode" is not supported by the SCSI-2 integrated fast/wide interface.
- The SCSI-2 integrated fast/wide interface does **not** support the following devices:
  - 7206-001 External 4 mm Tape Drive
  - 7210-001 External CD-ROM Drive
  - 160MB Disk Drive feature numbers 2120, 2121, 2123, 9240, 9241, and 9242.
  - 200MB Disk Drive feature numbers 2490, 2491, 2492, 2495, and 2496.

Cables used for attaching existing SCSI devices are not compatible with the new SCSI-2 integrated interface. The following cables are required with the integrated SCSI-2 fast/wide interface:

| Feature | Description   |
|---------|---|
| 2439    | 8-bit IBM SCSI-2 Fast/Wide<br>Adapter/A to Single Ported Device |
| 2437    | 8-bit IBM SCSI-2 Fast/Wide<br>Adapter/A to Dual Ported Device   |
| 2435    | 16-bit IBM SCSI-2 Fast/Wide<br>Adapter/A to Dual Ported Device  |

Memory must be installed in pairs. CPU memory and the memory card must be of equal capacity.

Because the Model 3CT is a POWER2 model with a multichip ceramic module (MCM), the memory must be installed in pairs. This is unlike any other 300 series model.

Because of space limitations caused by the regulator card and a large MCM on the new processor card, there is only one memory card slot.

Provision has been made to add memory SIMMs on the processor card. The memory MBs on the processor card must equal the memory MBs on the memory card. There are eight SIMM positions on both cards.

The standard 64MB memory is composed of a 32MB Processor Card SIMM Memory and a 32MB Memory card. It can be increased to 512MB by using a 256MB Processor Card SIMM memory and a 256MB Memory card.

A number of new feature codes have been created to handle memory granularity.

The only way to increase (upgrade) the system memory will be to remove the installed SIMMs and replace them with SIMMs of a greater capacity.

Concurrent diagnostics for AIX Version 3.2.5 will be shipped with Version 3.2.5 Enhancement 5 and will be available on March 31, 1995. Customers with machines shipped between February 17, 1995, and March 31, 1995, must order the service APAR (IX48611) for concurrent diagnostics.

Machines, which use the Media Bay Disk Drive Mounting Kit (for installing 3.5-inch disk drives in the 5.25-inch media bays), supports any valid 1GB, 1.1GB, 2GB, 2.2GB, or 4.5GB disk drive. This feature is configured automatically when required with an associated disk drive. It is not available as an independently ordered feature. The maximum number of disk drives supported in each media bay is one (system total of two).

L2 Cache Memory (4045 and 4046) must be installed in pairs.

### Planning Information

**Cable Orders:** No cables required

**Problem Determination:** For problem analysis, the Model 3CT diagnostic programs, with installed AIX/6000 programs, provide console routines that lead a user through problem determination and provides direction to resolve problems.

**Packaging:** Shipment Group

- Model 3CT System Unit
- POWERdisplay
- Graphics Display Adapter and cable
- Keyboard
- Mouse
- Language Group — Specified on the order, includes the following publications:
  - Quick Reference
  - System User's Guide
  - Customer Support Information
  - Documentation Overview
  - 7030 POWERstation and POWERserver Operator Guide
  - POWERstation and POWERserver Common Diagnostics and Service Guide
  - 7030 POWERstation and POWERserver Installation and Service Guide
  - POWERdisplay Publications
  - System Unit Safety Information
- Power cords
- Diagnostic diskettes

**Accessories and/or Supplies:** Supplies can be purchased from LEXMARK International Supplies Dealers.

### Security, Auditability, and Control

Security and auditability features of the systems include:

- Physical security provided by a key lock that helps prevent cover removal when locked, unless used with the optional non-locking switch
- A three-position MODE switch that helps provide logic security for the system
- An optional Security Tie-down Cable Accessory

Otherwise, these products use the security and auditability features of host hardware, software and/or 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.

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## Terms and Conditions

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

**Volume Orders:** For information regarding 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 Types | Discount   |           |
|----------------|------------|-----------|
|                | Three-Year | Five-Year |
| Machine Type — |            |           |
| 7030           | 012%       | 17%       |

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

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

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

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

**Product Availability Status:** New product available

**Field Installable Features:** Yes

**Model Conversions:** Yes

**Customer Setup:** Yes

IBM provides customers an installation option on the RISC System/6000 300 series models. Customers can initially install their own machines or choose to have IBM perform this service for an additional fee. IBM will continue to install and service all MES features and model conversions.

**Graduated Charges:** The announced product is in Processor Group E5 for software with graduated charges.

**Licensed Internal Code:** Yes

**Educational Allowance:** A 20% educational allowance is available to qualifying institutions in accordance with the Attachment for Educational Allowance. The educational allowance may not be added to any other discount or allowance.

**Model Conversion Purchase Prices**

| From     | Model | To        | Model Conversion Purchase Price+ |
|----------|-------|-----------|----------------------------------|
| 7030-3AT |       | 7030-3CT  | \$ 17,000                        |
| 7030-3BT |       | 7030-3CT  | 13,000                           |
| 7012-355 |       | 7030-3CT* |                                  |
| 7012-365 |       | 7030-3CT* |                                  |
| 7012-375 |       | 7030-3CT* |                                  |
| 7012-36T |       | 7030-3CT* |                                  |
| 7012-37T |       | 7012-3CT* |                                  |

<sup>11</sup> Model 3CT

<sup>12</sup> Models 3AT, 3BT, and 3CT

MMC = Minimum Maintenance Charge

N/A = Not Applicable

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

\* Refer to RPQs for pricing

**Charges**

**Product Charges**

| Description  | Feature Number | Purchase Price | MMC Monthly | Removal Charge |
|--|----------------|----------------|-------------|----------------|
| IBM RISC System/6000 Model 7030-3CT                      |                | \$29,995       | \$300       | N/A            |
| 0.5 MB L2 Cache Memory <sup>11</sup><br>(Pairs required) | 4045           | 2,000          | N/A         | \$116          |
| 1.0 MB L2 Cache Memory <sup>11</sup><br>(Pairs required) | 4046           | 4,000          | N/A         | 116            |
| 64MB Processor Card SIMM Memory Select <sup>11</sup>     | 4050           | 2,400          | N/A         | 116            |
| 128MB Processor Card SIMM Memory Select <sup>11</sup>    | 4051           | 11,000         | N/A         | 116            |
| 256MB Processor Card SIMM Memory Select <sup>11</sup>    | 4052           | 28,000         | N/A         | 116            |
| 32MB Processor Card SIMM Memory <sup>11</sup>            | 4053           | 2,900          | N/A         | 116            |
| 64MB Processor Card SIMM Memory <sup>11</sup>            | 4054           | 5,300          | N/A         | 116            |
| 128MB Processor Card SIMM Memory <sup>11</sup>           | 4055           | 13,900         | N/A         | 116            |
| 256MB Processor Card SIMM Memory <sup>11</sup> +         | 4056           | 30,900         | N/A         | 116            |
| 6091 Attachment Cable <sup>12</sup>                      | 4217           | 105            | N/A         | 116            |
| Media Bay Disk Drive Mounting Kit <sup>12</sup>          | 6509           | 20             | N/A         | 116            |
| 32MB Processor Card SIMM Memory Specify <sup>7</sup>     | 9239           | 0              | N/A         | 116            |
| Keyboard 102 Keys <sup>12</sup><br>(Hebrew)              | 6027           | 360            | N/A         | 0              |
| Keyboard 102 Keys <sup>12</sup><br>(Arabic)              | 6028           | 360            | N/A         | 0              |
| Keyboard Specify 102 Keys <sup>12</sup> (Hebrew)         | 9027           | 0              | N/A         | 0              |
| Keyboard Specify 102 Keys <sup>12</sup> (Arabic)         | 9028           | 0              | N/A         | 0              |

**Note:** Select features are plant installed and can only be ordered with the initial system order.