Hardware
Announcement

IBM United States

June 19, 1995

IBM RISC System/6000 Models 42T and 42W and POWER GXT500 Graphics Adapters

If you need advanced graphics and high levels of compute power, you need to look at these two workstations. ***Models 42T and 42W Graphics Workstations*** are the first RS/6000™ workstations to offer the PowerPC™ 604 processor. For a more affordable price, they offer a level of performance formerly the exclusive domain of high-end products. This allows you to execute your applications with better response times and to solve problems, especially the complicated ones, much faster.

The 42T/42W share the same mechanical package as the 41T/41W, with the same flexibility in features, including internal CD-ROM, tape drives, large hard drives, system memory, and Micro Channel® I/O cards.

If you already own a 41T/41W, you can easily upgrade to a 42T/42W. Models 42T, 42W, and the model upgrade require the latest release of AIX® Version 4.

IBM POWER GXT500 and POWER GXT500D Graphics Adapters provide industry leading 3D graphics performance for mid-range desktop systems and offer an exciting new level of 3D price performance. They provide native support for the OpenGL** and graPHIGS™ 3D application program interfaces (APIs). They also support the IBM GL 3.2 and PEX APIs.

IBM P50, P70, and P200 Color Monitors are available on Models 41T, 41W, 42T, and 42W. By virtue of their microprocessor-controlled, multifrequency operation, these high-quality, premium monitors support a wide range of attachment platforms and display modes and feature on-screen displays to assist with operator controls.

Purchase Price: $10,145 (42T) and $8,745 (42W)

IN BRIEF . . .

- Brings the power of the PowerPC 604™ processor to the RS/6000 Graphics Workstations family
- Introduces new GXT500 and GXT500D graphics adapters to give you industry leading mid-range 3D performance
- Offers new P50, P70, and P200 Color Monitors with the clearest, sharpest image possible, including an on-screen display of operator controls
- Provides a choice of leadership solutions for your graphics needs with 120MHz PowerPC 604 processor with 2D and 3D graphics options
- Allows Models 41W and 41T systems to upgrade to the PowerPC 604 processor
- Supports the latest release of AIX Version 4

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

800-IBM-CALL Reference: RE001

Description	Planned Availability Dates
RISC System/6000® Models 42T and 42W	July 7, 1995
IBM POWER GXT500 and GXT500D for 41T, 41W, 42T, and 42W using AIX Version 4.1.3	July 7, 1995
IBM P50, P70, and P200 Color Monitors (Northern Hemisphere)	July 7, 1995
IBM P50, P70, and P200 Color Monitor (Southern Hemisphere)	August 25, 1995
IBM POWER GXT500 and GXT500D for 41T and 41W using AIX Version 3.2.5	September 15, 1995

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Description

RISC System/6000 Models 42T and 42W

The RISC System/6000 Models 42T and 42W graphics workstations are new models of high-performance workstations. They include a 120MHz PowerPC 604 processor and standard graphics adapter for network and stand-alone graphics workstation configurations.

Standard features for Models 42T and 42W are:

- 120MHz PowerPC 604 processor
- POWER GXT150L™ Graphics Adapter (8-bit 2D)
- 1080MB SCSI-2 disk drive
- Integrated Ethernet Controller
- Integrated SCSI-2 I/O Controller for up to three internal and two external SCSI or SCSI-2 Devices (8-Bit)
- 16MB ECC Memory
- Keyboard
- Mouse

Note: Standard with Models 42T and 42W is the ability to attach the Ethernet controller to either Thick or Twisted Pair Ethernet media. For connection to Thick (10Base5) Ethernet media, the output connector is a Thick 15-pin D-shell "slide-latch" type compatible with IEEE 802.3 section 7.6. For connection to Twisted Pair (10BaseT) Ethernet media, use the additional converter that is shipped standard with Models 42T and 42W. For connection to Thin (10Base2) Ethernet media, use an optional external Transceiver (#4223).

In addition, the Model 42T includes either the new P70 Color Monitor or the POWERdisplay 17 and display cables and the option to select an Ultimedia® Audio Adapter (no charge if selected at time of workstation order).

Other standard characteristics of Models 42T and 42W are:

- Local bus graphics slot
- Expandability to add 0.5MB L2 Cache for higher performance
- Two Type3 Micro Channel Slots
- Two "short" Micro Channel Slots for multimedia and "short" adapters
- Micro Channel Bus supports peak transfer rates up to 80MB/sec
- One 2.88MB diskette drive bay
- One 25-mm (half-height) 3.5-inch disk drive bay for disk drives
- One 43-mm (full-height) universal media or disk drive bay for disk drives, tape, or CD-ROM media devices
- One 43-mm (full-height) media bay for CD-ROM or tape drives
- Eight SIMM memory slots for expansion to 256MB
- One serial port standard, expandable to two serial ports with optional serial port converter cable
- Parallel port
- Keyboard, mouse, and tablet ports
- Vertical stand

Select options allow the customer to replace a standard feature with a higher function feature. These allow the customer to order a richer configuration system than the base model on the initial order. They include:

Select one of the following graphics options:

- POWER GXT155L
- POWER GXT500 or POWER GXT500D
- POWER Gt4e™, POWER Gt4i™, POWER Gt4xi™, 7250 Attachment Adapter (for attachment to the POWER GXT1000™)

Select one of the following disk options:

- 1.1GB or 1.1GB Fast/Wide
- 2.2GB or 2.2GB Fast/Wide

Select one of the following memory options:

- 32MB, 64MB, 128MB.

  Note: Additional memory can also be added in increments of 8MB, 16MB, 32MB, 64MB, and 128MB for a maximum of 256MB memory.

- **Model 42T only:**
  - Select IBM P200 Color Monitor (maximum viewable image size of 19.1 inches/486 mm when measured diagonally), or the IBM POWERdisplay 20 (maximum viewable image size of 19.1-inch/486mm when measured diagonally).
  - Select the Ultimedia Audio Adapter (no charge at initial order).

POWER GXT500 and GXT500D Graphics Adapters: The GXT500 and GXT500D are single card adapters that attach to the RS/6000 Models 42T, 42W, 41T, and 41W via a local graphics bus. They provide industry-leading 3D graphics performance for mid-range desktop systems and offer IBM customers an exciting new level of 3D price performance.

The GXT500 and GXT500D graphics adapters provide native support for the OpenGL and graPHIGS 3D APIs and additionally support the IBM GL 3.2 and PEX APIs. PEX is supported on the GXT500 and GXT500D through IBM's software implementation and is not accelerated in hardware. The GXT500 and GXT500D provide hardware acceleration for many of the advanced functions found in these 3D APIs including hidden-line and surface removal, antialiasing, Gouraud shading, depth cueing, stenciling, and transparency. Stereo viewing is also supported on both the GXT500 and GXT500D. For the OpenGL, GL 3.2, graPHIGS and PEX APIs, the GXT500 offers support for 8-bit double-buffered color and the GXT500D offers support for 8- and 24-bit double-buffered color. For OpenGL and GL 3.2, the GXT500 additionally supports 12-bit double-buffered color and single-buffered support for 24-bit (true) color. The GXT500D additionally supports 12-bit double-buffered color for OpenGL and GL 3.2. These adapters support display resolutions of 1,280 x 1,024 and 1,024 x 768, including monitors that comply with the ISO 9241, Part 3 standard, and allow the display of 16.7-million simultaneous colors.

Business Solutions

Models 42T and 42W support customers' business objectives by providing a high-performance, desktop graphics workstation solution for compute-intensive technical applications. Both workstation models are ideally suited to 2D environments where high performance and low cost-per-seat are important. With the addition of the PEX and PHIGS Version 4.1 for AIX or the OpenGL and GL 3.2 Version 4.1 for AIX product offerings, full-function 3D graphics capability is provided on all supported graphics adapters, including the POWER GXT150L graphics adapter. This provides a cost-effective

and scalable graphics performance and consistent function for the entry 3D environments. Memory capacity of up to 256MB and internal disk capacity of up to 4.4GB, coupled with a variety of input/output devices, graphics, and communications features are available to configure the system as a powerful workstation for a wide range of graphics solutions.

Interoperability

Models 42T and 42W, with IBM AIX Version 4 offer interoperability with other IBM and other vendor systems, expanding the usefulness of those systems and maximizing the utility of the new models.

Models 42T and 42W, with their PowerPC 604 processor offer outstanding fixed-point processing and floating-point processing for the midrange workstation market.

Growth Enablement

Models 42T and 42W are designed to grow with your requirements. Memory can be increased to a maximum of 256MB. The integrated SCSI-2 controller attaches up to three internal and two external SCSI or SCSI-2 Devices. Three bays are provided which allow for the installation of two disk drives and one media device or two media devices and one disk drive. The first (25 mm) bay can accommodate 1080MB to 2.2GB disk drives. The second (43 mm) bay can accommodate 1080MB to 2.2GB disk drives disk drives or a 5.25-inch media device. The third bay can accommodate one 5.25-inch media device. Current media choices include CD-ROM, 8-mm tape, 4-mm tape, and ¼-inch tape devices.

Disk and Media Bay Configurations

BAY #1 3.5 inch diskette only	BAY #3 5.25 inch media CD–ROM or tape
BAY #2 3.5 inch disk drive (25–mm high — half high) 1080MB to 2.2GB	BAY #4 5.25 inch media or disk drive (43–mm high) 1080MB to 2.2GB CD–ROM or tape

Additional external devices may be attached, and by using the enhanced SCSI-2 Fast/Wide Differential Adapter/A (#2412) and external disk storage expansion units, up to 36.4GB of total disk storage can be configured. The integrated Ethernet controller and the local bus graphics expansion slot for graphics adapters allow the user to have a LAN attachment and graphics without using any of the Micro Channel slots.

Two Micro Channel feature card slots are available for additional features such as a Token-Ring adapter, communications processors, and high-performance 3D graphics processors. Two additional "short" Micro Channel slots are available for smaller Micro Channel cards such as multimedia and other adapters. Currently available "short" Micro Channel adapters include the SCSI-2 Fast/Wide Adapter/A (#2415), 3270 Connection Adapter (#2990, #2991), Ultimedia Audio Adapter (#6302, #6304), and Auto Token-Ring LANStreamer™ 32 MC Adapter (#2972).

Supported Devices

Some devices may require AIX Version 4 for Servers. Refer to the **Operating System Environment** section for specific support requirements.

Printers, Plotters, ASCII Terminals: These devices are all supported through standard ports. Refer to the **Operating System Environment** section for a list of supported devices.

IBM External Storage Machines

- 3514 Model 212 High Availability External Disk Array[1]
- 3514 Model 213 High Availability External Disk Array[1]
- 7137 Disk Array Subsystem[1]
- 7203 Model 001 Portable Disk Unit
- 7204 Model 320 320MB External Disk Drive
- 7204 Model 001 1.0GB External Disk Drive
- 7204 Model 215 2.0GB External Disk Drive
- 7204 Model 010 1.0GB External Disk Drive
- 7204 Model 315 2.0GB External Disk Drive
- 7206 Model 001 2.0GB External 4-mm Tape Drive
- 7206 Model 005 4.0GB External 4-mm Tape Drive
- 7207 Model 001 150MB ¼-inch Tape Drive
- 7207 Model 011 525MB External ¼-Inch Cartridge Tape Drive
- 7207 Model 012 1.2GB External ¼-Inch Cartridge Tape Drive
- 7208 Model 001 2.3GB 8-mm Tape Drive
- 7208 Model 011 5.0GB 8-mm Tape Drive
- 7209 Model 001 650MB R/W Optical Disk Drive
- 7209 Model 002 1.19GB R/W Optical Disk Drive
- 7210 Model 001 External CD-ROM Drive[2]
- 7210 Model 005 External CD-ROM Drive
- 7210 Model 010 External CD-ROM Drive
- 9334 Model 500 Deskside Expansion Unit[3]
- 9334 Model 501 Deskside Expansion Unit[3]
- 9348 Model 012 Magnetic Tape Unit (½-inch 9-Track Tape Drive)

Notes:

[1] Disk Arrays are attached using the SCSI-2 Differential High-Performance External I/O Controller (#2420), IBM SCSI-2 Fast/Wide Differential Adapter/A (#2416), or Enhanced SCSI-2 Differential Fast/Wide Adapter/A (#2412).

[2] New installations should choose the IBM 7210 Model 005 External CD-ROM Drive. For existing installations, only later units of the IBM 7210 Model 001 External CD-ROM Drive may be attached using the integrated SCSI-2 port. Earlier units of the IBM 7210 Model 001 External CD-ROM Drive should be attached using an optional SCSI-2 High-Performance External I/O Controller (#2410). These early units may be identified as having a "Type A" front bezel (as described in the 7210 External CD-ROM Drive Operator Guide) with the Eject button in the upper right corner. The later units ("Type B" front bezel) have the Eject button in the lower right corner.

[3] Requires dedicated SCSI I/O Controller

IBM Graphics Accelerators

- 7250 POWER GXT1000 Model 001
- 7250 POWER GXT1000 Model 002
- POWER GTO™ 7235 Model 01i
- POWER GTO 7235 Model 02i

3D Input Device

- IBM 6094 Spaceball Model 30

IBM X Stations

- 7010 Model 120
- 7010 Model 130

- 7010 Model 140
- 7010 Model 150
- 7010 Model 160

IBM Displays

- P50 Color Monitor (#3612)***:*** The P50 Color Monitor (featuring a Trinitron** CRT) has a maximum viewable image size of 13.6 inches/346 mm measured diagonally.
- P70 Color Monitor (#3613)

  The P70 Color Monitor (featuring a Trinitron CRT) has a maximum viewable image size of 15.9 inches/403 mm measured diagonally.
- P200 Color Monitor (#3614)

  The P200 Color Monitor (featuring a Trinitron CRT) has a maximum viewable image size of 19.1 inches/486 mm measured diagonally.
- POWERdisplay 16S (#3603)

  The POWERdisplay 16s (featuring a Trinitron CRT) has a fixed image size of 14.8 inches/375 mm measured diagonally.
- POWERdisplay 16 (#3600)

  The POWERdisplay 16 has a fixed image size of 14.8 inches/375 mm measured diagonally.
- POWERdisplay 17 (#3607)

  The POWERdisplay 17 has a maximum viewable image size of 16.1 inches/409 mm measured diagonally.
- POWERdisplay 19 (#3606)

  The POWERdisplay 19 has a maximum viewable image size of 17.3 inches/439 mm measured diagonally.
- POWERdisplay 20 (#3608)

  The POWERdisplay 20 has a maximum viewable image size of 19.1 inches/486 mm measured diagonally.
- IBM 1091-051 17-inch Color Display (1024 x 1280 72Hz NI)

  The 1091-051 display has a fixed image size of 14.8 inches/375 mm measured diagonally.
- IBM 5081 16-inch Color Display (1024 x 1280 60HZ only)[4]

  The 5081-016 display has a fixed image size of 14.9 inches/377 mm measured diagonally.

  – feature code #1280 required
- IBM 6091 Color Monitor (1280 x 1024 77HZ)

  The 6091-016 display has a fixed image size of 14.8 inches/375 mm measured diagonally.
- IBM 6091 Color Display (1280 x 1024 60HZ NI and 1280 x 1024 67Hz NI)

  The 6091-019 display has a fixed image size of 17.3 inches/439 mm measured diagonally.
- IBM 6091-19i Color Display (1280 x 1024 60Hz, 77Hz)

  The 6091-019i display has a fixed image size of 17.3 inches/439 mm measured diagonally.
- IBM 6091-023 Color Display (1280 x 1024 60Hz NI only)*

  The 6091-023 display has a fixed image size of 21.4 inches/544 mm measured diagonally.
- IBM 6314 Color Display (1024 x 768 70Hz only)
- IBM 6319 Color Display (1024 x 768 70Hz only)
- IBM 6317 Color Display (1280 x 1024 60Hz and 1024 x 768 75Hz)
- IBM 6324 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)
- IBM 6325 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)
- IBM 6327 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)
- IBM 9524 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)

  The 9524 display features a CRT with a maximum viewable image size of 13.03 inches/331 mm measured diagonally.
- IBM 9525 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)

  The 9525 display (featuring a Flatter Squarer Tube (FST) CRT) has a maximum viewable image size of 13.7 inches/348 mm measured diagonally.
- IBM 9521 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)

  The 9521 display (featuring a Diamondtron** CRT) has a maximum viewable image size of 19.1 inches/485 mm measured diagonally.
- IBM 9527 Color Display (1024 x 768 75Hz and 1280 x 1024 60Hz)

  The 9527 display (featuring a Trinitron CRT) has a maximum viewable image size of 15.4 inches/391 mm measured diagonally.
- IBM Monochrome Display 8508 (1280 x 1024 67HZ only)
- Personal System/2® 8517 Color Display (1024 x 768)

[4] RPQs for "separate sync:" RPQ 8K1700 for 5081-16 and RPQ 8K1744 for 6091-23.

Dials

- IBM 6094-010 (requires 6094 feature #4060 for attachment to a standard serial port. 6094 feature #4061 may also be required.)

Lighted Programmable Function Keyboard

- IBM 6094-020 (requires 6094 feature #4060 for attachment to a standard Serial Port. 6094 feature #4061 may also be required.)

Tablets

- IBM 6093 Tablet Model 011 (requires 6093 cable feature #4015)
- IBM 6093 Tablet Model 012 (requires 6093 cable feature #4015)

Product Positioning

The 42W/42T is positioned as the high-performance follow-on to the popular 41W/41T RS/6000 workstation. It introduces the PowerPC 604 processor with its high integer and floating-point performance into the RS/6000 workstation product line. The 42W/42T is a follow-through on an earlier statement of direction that advanced processor performance would be available for the 41W/41T. Customers can upgrade to the 42W/42T via a planar board upgrade as the two machines share the same mechanical package. The 42W/42T has the same number of bays for hard files and media as the 41W/41T and supports the same number of Micro Channel slots. The 42T is easier to order and includes a P70 Color Monitor in the configuration. The 42W is identical to the 42T but without a standard monitor, allowing customers to use existing monitors or procure their monitors from other sources, including the IBM PC line of display monitors.

The 42W/42T and the model upgrade require the latest level of AIX Version 4.1 and are not supported on AIX Version 3.

The 42W/42T supports a wide range of graphics adapters. The standard GXT150L adapter provides leadership 2D performance through a single card adapter that plugs directly into the local bus graphics slot without using one of the Micro Channel slots. This slot also supports the new GXT500 and GXT500D Graphics Adapters, which bring a new level of 3D performance to Models 41W/41T and 42W/42T. The GXT1000 and accelerator is also supported and provides the highest level of 3D graphics performance available for the 41W/41T and 42W/42T models.

The GXT500 and GXT500D provide customers with leadership 3D graphics for the RS/6000 Models 42T, 42W, 41T and 41W. Coupled with IBM′s implementation of the OpenGL, PEX, PHIGS, and IBM GL 3.2 3D APIs, they provide customers with support for a wide variety of popular 3D applications.

The GXT500 and GXT500D combine the advantages of using the PowerPC processor to drive the graphics geometry pipeline with the power of the GXT500 and GXT500D raster engine to provide customers with an exceptionally cost-effective platform for mid-range 3D graphics applications. They also support program development in the OpenGL, PEX, PHIGS and GL 3.2 APIs. The GXT500 and GXT500D further establish IBM′s leadership in providing a wide range of product offerings designed for the support of open APIs such as OpenGL. IBM continues to be an active member of the Architecture Review Board (ARB) for OpenGL and is one of the leading vendors in providing a complete family of graphics adapters designed to provide support for the OpenGL API.

The GXT500 and GXT500D provide native support for the OpenGL and graPHIGS 3D APIs and additionally support the IBM GL 3.2 and PEX APIs. PEX is supported on the GXT500 and GXT500D through IBM′s software implementation and is not accelerated in hardware. For the OpenGL, GL 3.2, graPHIGS and PEX APIs, the GXT500 offers support for 8-bit double-buffered color and the GXT500D offers support for 8- and 24-bit double-buffered color. For OpenGL and GL 3.2, the GXT500 additionally supports 12-bit double-buffered color and single-buffered support for 24-bit (true) color. The GXT500D additionally supports 12-bit double-buffered color for OpenGL and GL 3.2. Both include a 24-bit Z-buffer and overlay support. Stereo viewing is also supported on both the GXT500 and GXT500D.

The GXT500 and GXT500D are well suited for a wide variety of 3D applications including:

- Computer aided design and manufacturing
- Industrial design
- Structural analysis
- Molecular modeling
- Geophysical analysis
- Scientific visualization

The GXT500 and GXT500D additionally provide customers with four hardware color maps, a feature required by most popular 3D applications.

Publications

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

Title	Order Number
7006 Graphics Workstation Operator Guide	SA23-2718
7006 Graphics Workstation Hardware Setup Procedure	SA23-2720
Documentation Overview	SC23-2456
System Unit Safety Information	SA23-2652
Setup and User′s Guide for the IBM POWER GXT500 and POWER GXT500D	SA23-2768

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

Title	Order Number
7006 Graphics Workstation Operator Guide	SA23-2718
7006 Graphic Workstation Service Guide	SA23-2719
7006 Graphic Workstation Hardware Setup Procedure	SA23-2720
Documentation Overview	SC23-2456
System Unit Safety Information	SA23-2652
IBM RISC System/6000 Site and Hardware and Planning	SA38-0508
POWERstation™ and POWERserver™ Common Diagnostics and Information Manual	SA23-2765
IBM RISC/System/6000 Adapters, Devices and Cable Information	SA23-2764
Customer Support Information	SA23-2690
Problem Solving Guide and Reference	SC23-2204
Quick Reference	SC23-2401
Getting Started	GC23-2521

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

Technical Information

Specified Operating Environment

Physical Specifications

- Width: 447 mm (17.6 in.)
- Depth: 451 mm (17.8 in.)
- Height: 119 mm (4.7 in.)
- Weight: 12.7kg (28 lbs)
- Thermal Output:
  - 680 BTU/hour (maximum configuration)
  - 200 joules (maximum configuration)

Noise Level and Sound Power

- 5.5 Bel sound power (operating — upper limit, typical configuration)
- 5.2 Bel sound power (idle — upper limit, typical configuration)
- 39dBA sound pressure — operating (mean one-meter position)
- 38dBA sound pressure — idle (mean one-meter position)

EMC Conformance Classification

- USA: FCC Class B
- Japan: VCCI-2
- Europe: CISPR 22 Class B

Environmental: Models 42T and 42W were developed in compliance with corporate policy letter number 139 (Environmental Affairs).

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

Product Safety/Country Testing/Certification

- USA: UL
- Canada: CNL (CSA or cUL)
- Germany/Europe: GS Mark (Safety, TUV, EN60 950)

Operating Environment

- Temperature: 16° to 32°C (60° to 90°F)
- Relative Humidity: 8% to 80%
- Wet Bulb: 23°C (73°F)
- Operating Voltages:
  - 100-127 volts AC 50/60Hz
  - 200-240 volts AC 50/60Hz
- Output in Watts: 272
- Power Source Loading
  - 0.154 kVA (typical configuration)
  - 0.310 kVA (maximum configuration)

Hardware Requirements: These are the requirements for operating Models 42T and 42W:

- A RISC System/6000 display adapter and keyboard (standard).
- For stand-alone configurations, a disk drive and diskette are required. Diagnostics must be run from a diskette drive, CD-ROM, or disk drive for standalone systems.

Software Requirements: The new models 42T and 42W and the model upgrade require the latest release (4.1.3) of IBM′s AIX Version 4.1.

Customers migrating from AIX Version 3 should consult AIX Version 4 "Operating Environment" to determine migration procedures, application support, and compatibility.

AIX/6000® applications written for POWER-based RISC System/6000 workstations will run on Models 42T and 42W without recompilation. (The only exception to this statement would be applications written using kernel extensions which use certain privileged Assembler instructions. IBM is not aware of any applications using these instructions.) Additional performance can be achieved by recompiling with the latest versions of the IBM XL compilers to further exploit the PowerPC technology.

Applications compiled using compiler options to exploit either the PowerPC technology or Power2 technology may not function properly on systems that do not employ those technologies. Customers with any combination of POWER-, POWER2- and PowerPC 601®-based or 604-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 common mode options available in the new XL compilers or any other compilers that support those options.

Technical Information for POWER GXT500 and GXT500D

POWER GXT500 and GXT500D: The POWER GXT500 and GXT500D are single card graphics adapters that attach directly to the local 60x bus in the RS/6000 Models 42T, 42W, 41T, and 41W. These adapters provide leadership 3D graphics performance as well as exceptional 2D performance.

The availability of the GXT500 and GXT500D continue to implement IBM′s strategy of offering a complete family of graphics solutions for the RISC System/6000 workstation users at a variety of price and performance points.

IBM now offers three different classes of 3D graphics adapters:

Class I — does not provide unique hardware for 3D graphics operations. Provides a frame buffer and all graphics processing is done by the system CPU.

Class II — provides hardware rasterization for 3D graphics functions and relies on the system CPU for geometry processing.

Class III — performs all 3D graphics processing including hardware support for rasterization and 3D geometry.

The GXT500 and GXT500D are IBM′s first implementation of a class II graphics adapter. These class II solutions utilize IBM′s powerful PowerPC processor to drive the graphics geometry pipeline and the new GXT500 and GXT500D to perform 3D rasterization of graphics functions. The benefits derived from this design are scalability of graphics performance with CPU performance and lower cost 3D graphics hardware.

The GXT500 and GXT500D provide support for state-of-the-art graphics functions like hidden-line/surface removal, antialiasing, Gouraud shading, depth cueing, transparency, texture mapping and accumulation. They support display resolutions of 1,280 x 1,024 and 1,024 x 768, including support for monitors that comply with Part 3 of the ISO 9241 ergonomic standard. This standard provides users with improved viewing, reduced-flicker images, minimized reflections and sharper characters.

Stereo viewing is supported on both the GXT500 and GXT500D. Stereo viewing is a method used to add depth to an image rendered on the 2D surface of a monitor. The method supported is the Crystal Eyes** system by StereoGraphics Corp. A pair of LCD glasses and an IR transmitter are required and must be purchased separately. Notice: When installing or using a StereoGraphics transmitter for 3D viewing, use only a transmitter manufactured for attaching to the IBM GXT500 or GXT500D graphics adapters. It has a BNC and DB-9 connector. Other models of the transmitter have only a DB-9 connector and will not work with the GXT500 and GXT500D.

AIX Version 4.1 is required for support of the GXT500 or GXT500D on the Models 42T and 42W. On the Models 41T and 41W either AIX/6000 Version 3.2.5 or AIX Version 4.1 is required.

The GXT500 and GXT500D Support:

- The display of up to 16.7-million simultaneous colors
- 60 to 77Hz Refresh Modes (ISO 9241 Part 3 Compliant on appropriate displays)
- Stereo viewing
- Single card, 60x bus attachment
- Four hardware color maps

The GXT500 has an 80-Bit Plane Frame Buffer configured as follows:

- 8/12-Bit Double-Buffered (DB), 24-Bit Single-Buffered (SB) Color
- 24-Bit Z-Buffer
- 8-Bit Overlay
- 8-Bit Stencil
- 8-Bit Window IDs
- 8-Bit Utility

The GXT500D has a 128-Bit Plane Frame Buffer configured as follows:

- 8/12/24-Bit Double-Buffered (DB) Color
- 24-Bit Z-Buffer
- 8-Bit DB Overlay
- 8-Bit Stencil
- 8-Bit Window IDs
- 8-Bit Utility
- 8-Bit DB Alpha

A Maximum of one local bus GXT500 or GXT500D graphics adapter per system can be installed in the Models 42T, 42W, 41T, and 41W.

POWER GXT500 and GXT500D Software Requirements: Attachment of the GXT500 or GXT500D to Models 41W/41T requires AIX Version 4.1.3 or AIX/6000 Version 3.2.5 and the appropriate PTF, shipped with the graphics adapter.

Attachment of the GXT500 or GXT500D to Models 42W/42T requires AIX Version 4.1.3.

Customers requiring OpenGL or GL 3.2 should select the "OpenGL and GL 3.2 Version 4.1.3 for AIX" LPP (5696-939) and customers requiring PHIGS or PEX should select the "PEX and PHIGS Version 4.1.3 for AIX" LPP (5696-907).

Limitations

Model Conversion Adapter Support: A conversion of a Model 41W or 41W using AIX 3.2.5 to a Model 42W/41T will require purchase of an operating system upgrade to AIX 4.1 and either a migration install or complete install of AIX 4.1. In addition, the following adapter features are not currently supported by AIX 4.1 and will need to be removed when upgrading.

- Fibre Channel Adapter/266
- M-Video Capture Adapter
- TURBOWAYS™ 100 ATM Adapter
- Digital Trunk Adapter
- M-Audio Capture Playback Adapter
- Digital Trunk Dual Adapter
- IBM Realtime Interface Co-Processor: Multiport/2 Adapter
- IBM Realtime Interface Co-Processor: Portmaster® Adapter/A

Storage Limits: Storage configurations can be maximized for various combinations of storage adapters and subsystems. The following chart shows maximum disk capacity for example configurations. The **Assumptions** section defines each controller/subsystem combination. The **Limit Values** section shows the individual maximum number of each controller or subsystem supported.

Assumptions

- SCSI-2 SE or SCSI-2 Fast/Wide SE Controller: One 9334-500 4 x 2.41GB = 9.6GB
- SCSI-2 Diff or SCSI-2 Fast/Wide Diff Controller: Up to two 9334-501 9334-501: 4 x 2GB = 8GB
- SCSI-2 Diff or SCSI-2 Fast/Wide Diff Controller: Up to two 7137 Disk Array Subsystems
  - Each 7137: 33.55GB (RAID 0) or 29.35GB (RAID 5)

Description	**Limit Values**
Integrated SCSI - Internal Media and Disk Drives	2 — SCSI-2 Fast/Wide Diff Cntrl 2 — SCSI-2 Fast/Wide SE Cntrl 2 — SCSI-2 Diff Cntrl 2 — SCSI-2 SE Controllers 2 — SCSI-2 SE + SCSI-2 Diff + SCSI-2 F/W SE + SCSI-2 F/W Diff

Calculated Storage Limits

Internal SCSI	**External SCSI**	**External SCSI-DE**	**External SCSI-DE**	**Total Disk Storage**
	(9334-500)	(9334-501)	(7137)	
4.4GB	---	---	---	4.4GB
4.4GB	19.2GB	---	---	23.6GB
4.4GB		32.0GB		36.4GB
4.4GB	---	---	134.2GB	138.6GB

Memory Configurations: Models 42T and 42W achieve exceptional performance while using single in-line memory modules (SIMMs). This exceptional performance is accomplished by interleaving memory access across two banks of double-word wide memory. This means that memory is addressed in groups of four SIMMs. Because of this use of memory, Models 42T and 42W require that memory SIMMs be installed in groups of four. The same size SIMM must be used in each group of four SIMMs.

Planning Information

Cable Orders: No additional cables required with the base machine. Up to two external SCSI or SCSI-2 devices may be attached to the integrated SCSI-2 controller with a maximum total external cable length of 2.5 meters.

Cables Required for Use with Displays: The Models 41T and 42T are shipped with an appropriate display cable. Refer to the following table to determine the appropriate IBM cable feature code to order for the Model 41W and 42W.

Displays	**GXT150L GXT155L**	**GXT150M™**	**GXT500 GXT500D**	**Gt4e Gt4i Gt4xi**	**GXT1000**
P50	4213	4213	4213	NS	NS
P70 P200	4234	4234	4234	4236	4234
6091-16 6091-19i POWERdisplay 16 POWERdisplay 17 POWERdisplay 19 POWERdisplay 20	4214	4214	4219	Incl.	Order with GXT1000

Displays	GXT150L GXT155L	GXT150M™	GXT500 GXT500D	Gt4e Gt4i Gt4xi	GXT1000
5081-16 6091-19 6091-23	4214	4214	4214	Incl.	Order with GXT1000
1091-051 POWERdisplay 16S	4229	4229	4229	NS	NS
8508	4213	4213	NS	NS	NS
6314/6317/6319 6324/6325/6327 9524/9525/8517	4213	4213	4213	NS	NS
9521/9527	4213	4213	4213	NS	4213
SUN Compatible (1152 x 900)	4227	NS	NS	NS	NS

NS = This display/adapter combination is not supported.
Incl = The appropriate cable is included with the adapter.

Security, Auditability, and Control

Security and auditability features of the Models 42T and 42W include:

- Physical security provided by a key lock that helps prevent both cover removal and unauthorized IPL of operating system when locked
- Customer-orderable Security Cable accessory
- Internal SCSI jumpers to enable/disable external SCSI connector

This product also uses 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.

Terms and Conditions

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

Note: The P50, P70, and P200 Color Monitors have a three-year warranty. Copies of IBM's statement of Limited Warranty are available upon request from your dealer or IBM Representative.

Warranty Service: IBM On-Site Repair (IOR)

Note: For the P50, P70, and P200 Color Monitors

Year one — IBM On-Site Exchange (IOE). This provides on-site exchange seven days a week, 24 hours a day, with an average four-hour response. It matches the service level provided with the systems.

Year two/three — Customer Carry-In Exchange (CCE)

Maintenance Service: IOR

IBM Hourly Service Rate Classification: Two

IBM Warranty Service, Maintenance Service, or IBM Hourly Service may 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. A revised exhibit will be available at a later date.

	Discount	
	Three-Year	Five-Year
RISC System/6000 7006	12%	17 %

Corporate Service Option: The announced product is an eligible machine for the Corporate Service Option of the ICA. A revised exhibit will be available at a later date.

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

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

IBM Support Services: 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).

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 Models 42T and 42W. Customers can initially install their own machines or choose to have IBM perform this service for an additional fee. IBM continues to install and service all MES features and model conversions.

Graduated Charges: The announced product is in Processor Group D5 for software with graduated charges.

Licensed Internal Code: Yes

Educational Allowance: A 20% education 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.

Charges

Description	Machine Type/ Model	Purchase Price	Monthly MMC*	Optional Monthly Support Line
IBM RISC System/6000	7006/42T	$10,145	$100	$110
IBM RISC System/6000	7006/42W	8,745	87	110

* Minimum Maintenance Charge

Description	Model	Feature Number	Purchase Price	Monthly MMC
1080MB SCSI-2 Disk Drive	42T 42W	2397	$1,000	N/A
Enhanced SCSI-2 Differential Fast/Wide Adapter/A	42T 42W	2412	1,370	N/A
Quad Speed Tray-Loading CD-ROM	42T 42W	2616	695	N/A

Description	Model	Feature Number	Purchase Price	Monthly MMC
POWER GXT500 Graphics Adapter Select	42T 42W 41T 41W	2643	$4,100	N/A
POWER GXT500 Graphics Adapter	42T 42W 41T 41W	2644	5,795	N/A
POWER GXT500D Graphics Adapter Select	42T 42W 41T 41W	2645	6,100	N/A
POWER GXT500D Graphics Adapter	42T 42W 41T 41W	2646	7,795	N/A
Asynchronous Terminal/ Printer Cable EIA 232	42T 42W	2934	45	N/A
1.1GB SCSI-2 Disk Drive	42T 42W	3030	1,400	N/A
2.2GB SCSI-2 Disk Drive	42T 42W	3031	2,200	N/A
1.1GB SCSI-2 Fast/Wide Disk Drive	42T 42W	3032	1,400	N/A
2.2GB SCSI-2 Fast/Wide Disk Drive	42T 42W	3033	2,200	N/A
1080MB to 1.1GB SCSI-2 Disk Drive Select	42T 42W	3085	400	N/A
1080MB to 2.2GB SCSI-2 Disk Drive Select	42T 42W	3086	$1,200	N/A
1080MB to 1.1GB SCSI-2 Fast/Wide Disk Drive Select	42T 42W	3087	400	N/A
1080MB to 2.2GB SCSI-2 Fast/Wide Disk Drive Select	42T 42W	3088	1,200	N/A

Description	Model	Feature Number	Purchase Price	Monthly MMC
P70 Color Monitor to P200 Color Monitor Select	42T 41T	3610	$1,200	$ 13
P50 Color Monitor	42T 42W 41T 41W	3612	895	9
P70 Color Monitor	42T 42W 41T 41W	3613	1,650	17
P200 Color Monitor	42T 42W 41T 41W	3614	2,995	30
13W3 to 3-BNC Display Cable (ID=V110)	42T 42W	4219	0	N/A
13W3 TO 13W3 Display Cable	42T 42W 41T 41W	4234	100	N/A
13W3 TO 3W3 Display Cable	42T 42W 41T 41W	4236	100	N/A
Interposer, 16 to 8-Bit SCSI Cable Converter	42T 42W	6513	50	N/A
Southern Hemisphere Specify for P50, P70, P200 Color Monitors	42T 42W 41T 41W	9004	0	N/A
1080MB Base SCSI-2 Disk Drive	42T 42W	9397	0	N/A
Base P70 Color Monitor	42T 41T	9617	0	N/A

Model Conversion Purchase Prices

Model From	Model To	Model Conversion Purchase Price
41T	42T	$2,995[5,6]
41W	42W	2,995[5,6]

[5] A Model 41T or 41W being converted must have a minimum of 1GB of SCSI-2 disks installed or on order.

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

Call Now to Order

To order or to request more information, contact:

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

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Fax: 800-2IBM-FAX
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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.