IBM RS/6000 POWER GXT6000P and GXT4000P Graphics Accelerators Designed To Deliver Improved Performance

Overview

The GXT6000P and GXT4000P form the basis of a new family of graphics accelerators in support of RS/6000® workstations.

These two new products are based on a high-performance raster engine, which is the result of a new design implemented in state-of-the-art IBM chip technology.

**GXT6000P**

The GXT6000P, with its hardware geometry accelerator chip implemented in the new copper technology, supports the higher performance requirements of the more demanding user of advanced 3D workstations.

**GXT4000P**

The GXT4000P is designed to meet the price/performance needs of the value-oriented market for entry 3D workstations.

These new graphics accelerators, when configured in the RS/6000 Power3-II-based workstations, provide an excellent combination of function and performance for complex and demanding graphics applications in areas such as:

- Mechanical Computer Aided Design (MCAD) and Engineering (MCAE) for automotive and aerospace
- Petroleum exploration and production
- Scientific visualization
- Other technical design and visualization

The GXT6000P and GXT4000P provide native support in hardware for both the OpenGL and IBM graPHIGS application programming interfaces, resulting in unmatched flexibility of support for application software, regardless of the graphics API chosen for implementation.

The GXT4000P and GXT6000P accelerators are full-length PCI adapters that are supported for installation in a 64-bit PCI bus slot of the RS/6000 7044P Models 170 and 270 and 7043 Model 270 upgrade, but can also fit in a 32-bit slot of these systems.

Advanced functionality of both accelerators over previous RS/6000 graphics products include:

- 128 MB Unified Frame Buffer
- Advanced, highly accelerated texture mapping
- Resolutions up to 1920 x 1200 (HDTV format) at 76 Hz

The new rasterizer on both graphics subsystems:

- Manages the bus
- Draws lines, characters, and smooth shaded polygons
- Provides very advanced texture mapping for very high visual image quality
- Streams the raster information from the large frame buffer to analog displays

**Key Prerequisites**

- RS/6000 PCI System 7044 Models 170 and 270 and 7043 Model 270 upgrade
- AIX® Version 4.3.3, or later
- Either or both 3D APIs, OpenGL, or graPHIGS, included with AIX Version 4.3.3

**Planned Availability Date**

December 8, 2000

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At a Glance

The pacesetting capabilities of the GXT6000P and GXT4000P are driven by advanced electronics design throughout, resulting in some of the most advanced computer graphics ever produced for design and visualization.

**POWER GXT6000P**

- Mid-range, 3D 64-bit PCI graphics accelerator
- Attachment via a single 64-bit or 32-bit PCI bus slot
- Native support for OpenGL and graPHIGS 3D APIs
- Advanced 3D texture mapping
- High performance geometry engine on board

**POWER GXT4000P**

- Entry, 3D 64-bit PCI graphics accelerator
- Attachment via a single 64-bit or 32-bit PCI bus slot
- Native support for OpenGL and graPHIGS 3D APIs
- Advanced 3D texture mapping

For ordering, contact:
Your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL

Reference: RE001
GXT6000P

The GXT6000P, with its hardware geometry acceleration:
• Supports the higher performance requirements of the more demanding user of advanced 3D workstations.
• Provides the highest level of graphics performance available for the RS/6000 workstations.
• Delivers significant advances in performance as measured by the Graphics Performance Characterization (GPC) benchmarks and, more importantly, within MCAD and MCAE applications.

In some benchmarks, for certain environments the GXT6000P more than doubles the speed of previous IBM graphics products.

In the GXT6000P, the geometry engine performs very high precision transformations on geometric models and provides clipping and multisource lighting.

The IBM Power GXT6000P Graphics Accelerator is a 64-bit mid-range 3D PCI Graphics adapter for the RS/6000 Models 7044-170 and 7044-270 and 7043-270 upgrade. This adapter has the following base features:
• 128MB Unified Frame Buffer
  - 24-Bit Double Buffered up to 1920 x 1200
  - 24-Bit Quad Buffered Stereo up to 1280 x 1024
  - 24-Bit Z-Buffer
  - 4/8-Bit Overlay
  - 8-Bit Double Buffered Alpha
  - 8-Bit Stencil/Clip Planes
  - 8 Windows™ ID bits
• 1 Rectangular Scissor Region
• 5 HW Rectangular Clippers
• Texture Mapping:
  - Up to 108 MB Texture Memory (1280 x 1024)
  - Dual Texture
  - 3D Texture
  - Texture Color Table
• Video Support:
  - Bilinear Scaling
  - Color Space Conversion
• 4 Hardware Color Maps
• Gamma Corrected AA Lines
• Full OpenGL/graPHIGS Geometry Accelerator
• HW Occlusion Culling

API Support:
• X11
• graPHIGS
• OpenGL 1.2

Monitor Support:
• Resolutions Supported:
  - 1280 X 1024 @ 85Hz
  - 1600 X 1200 @ 85Hz
  - 1920 X 1200 @ 76Hz
• DDC2B Support
• ISO 9241-Compliant

GXT4000P

The GXT4000P:
• Is designed to meet the price/performance needs of the value-oriented market for entry 3D workstations.
• Shows significant improvement over previous IBM graphics accelerators, while providing a very attractive price point.

The IBM Power GXT4000P Graphics Accelerator is a 64-bit entry 3D PCI Graphics adapter for the RS/6000 Models 7044-170 and 7044-270 and 7043-270 upgrade. This adapter has the following base features:
• 128 MB Unified Frame Buffer
  - 24-bit Double Buffered up to 1920 x 1200
  - 24-bit Quad Buffered Stereo up to 1280 x 1024
  - 24-bit Z-Buffer
  - 4/8-bit Overlay
  - 8-bit Double Buffered Alpha
  - 8-bit Stencil/Clip Planes
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API Support:
• X11
• graPHIGS
• OpenGL 1.2

Monitor Support:
• Resolutions Supported:
  - 1280 x 1024 @ 85 Hz
  - 1600 x 1200 @ 85 Hz
  - 1920 x 1200 @ 76 Hz
• DDC2B Support
• ISO 9241-Compliant
Year 2000

These products are Year 2000 ready. When used in accordance with their associated documentation, they are capable of correctly processing, providing, or receiving date data within and between the twentieth and twenty-first centuries, provided that all products (for example, hardware, software, and firmware) used with the products properly exchange accurate date data with them.

Euro Currency

These products are not impacted by euro currency.

Product Positioning

Power GXT6000P

The Power GXT6000P is the highest performing IBM graphics accelerator available for the RS/6000. It replaces the GXT3000P on 7044 Model 170 and 270 and 7043-270 upgrade. The GXT6000P, coupled with the 7044 Model 170 450 MHz system, delivers its highest graphics workstation performance. The 7044 Model 270 2-way with the GXT6000P also provides very good CATIA performance if MCAE and other multiprocessor applications are used.

Power GXT4000P

The POWER GXT4000P is the second highest performing IBM graphics accelerator available for the RS/6000. It replaces the GXT3000P and GXT2000P on 7044 Model 170 and 270 and 7043-270 upgrade. The GXT4000P, coupled with the 7044 Model 170 450 MHz system, delivers its highest graphics workstation performance; however, GXT4000P, with Model 170 333 MHz and 400 MHz-based systems, delivers the best price/performance.

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Publications

The POWER GXT4000P and POWER GXT6000P Graphics Adapter Installation and Using Guide (SA23-1236) is shipped.

You can view or print publications from the RS/6000 Install Options section of the RS/6000 System Books Web site at:

http://www.rs6000.ibm.com/resource/hardware_docs/

The Publication Notification System (PNS) is available by order number. Customers who currently subscribe to PNS receive publication updates automatically.

The Publication Notification System (PNS) is available at:


Technical Information

Physical Specifications: Both adapters are packaged on standard single-slot PCI cards.

Operating Environment: The PCI interfaces are 64-bit, up to 66 MHz and 3.3 Volts.

Hardware Requirements

- RS/6000 PCI System 7044 Model 170 and/or Model 270

Software Requirements

- AIX® Version 4.3.3, or later
- Either or both 3D APIs, OpenGL, or graPHIGS, included with AIX Version 4.3.3

Planning Information

Cable Orders: The following chart shows the cable feature to graphics accelerator reference. Check your specific system model to determine which graphics accelerators are supported on which model.

<table>
<thead>
<tr>
<th>DISPLAYS</th>
<th>GXT150M (TM) (13W3)</th>
<th>GXT550P (13W3/DDC)</th>
<th>GXT1000 (13W3)</th>
<th>7250 (13W3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G52 (1)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>P50 (1)</td>
<td>4213 (2)</td>
<td>4213</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>P70</td>
<td>4234</td>
<td>4240</td>
<td>4234</td>
<td>4234</td>
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<td>P200</td>
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<td>P201</td>
<td>4234</td>
<td>4241</td>
<td>4234</td>
<td>4234</td>
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<tr>
<td>P72 (1)</td>
<td>4213 (2)</td>
<td>4213 (3)</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>P92 (4)</td>
<td>4243</td>
<td>4234</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>P202 (4)</td>
<td>4234</td>
<td>4213 (3)</td>
<td>4234</td>
<td>4234</td>
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<tr>
<td>P76 (1)</td>
<td>4213 (2)</td>
<td>4213 (3)</td>
<td>NS</td>
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<tr>
<td>P260 (5)</td>
<td>4213 (2)</td>
<td>4213 (3)</td>
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<tr>
<td>6091-191</td>
<td>4214</td>
<td>4219</td>
<td>3252</td>
<td>3252 (6)</td>
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<tr>
<td>POWERDP17</td>
<td>4214</td>
<td>4219</td>
<td>3253</td>
<td>3253 (6)</td>
</tr>
<tr>
<td>POWERDP20</td>
<td>4214</td>
<td>4219</td>
<td>3253</td>
<td>3253 (6)</td>
</tr>
<tr>
<td>9516-003</td>
<td>4214</td>
<td>4214</td>
<td>4214</td>
<td>4214</td>
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<td>9516-B23</td>
<td>4214</td>
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<td>4214</td>
<td>4214</td>
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<tr>
<td>9513-AW1</td>
<td>NS</td>
<td>4213</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>9513-AG1</td>
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<tr>
<td>9519-AW1</td>
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<td>NS</td>
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<tr>
<td>9497-Axx</td>
<td>NS</td>
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</table>

This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: http://www.ibm.com.
<table>
<thead>
<tr>
<th>GXT4000P Graphics Accelerator</th>
<th>GXT6000P Graphics Accelerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>6091-19I NS</td>
<td>POWERDP17 NS</td>
</tr>
<tr>
<td>POWERDP20 NS</td>
<td>9516-B03 4217</td>
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<tr>
<td>9516-B23 4217</td>
<td>9513-AW1 NS</td>
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<tr>
<td>9513-AG1 NS</td>
<td>9519-AW1 Display</td>
</tr>
<tr>
<td>9513-AW1 Display</td>
<td>9519-AW1 Display</td>
</tr>
<tr>
<td>9497-AAll Display</td>
<td>9497-Axx Display</td>
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<tr>
<td>9497-xx Display</td>
<td>9497-Dxx Display</td>
</tr>
<tr>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>NS = Not Supported — This display/adapter combination is not supported.</td>
<td></td>
</tr>
<tr>
<td>Display — The appropriate cable is included with the display.</td>
<td></td>
</tr>
<tr>
<td>(1) Captured 15-pin D-shell cable</td>
<td></td>
</tr>
<tr>
<td>(2) An ID bit adapter is required (P/N 21L4522) when attaching to the GXT150M.</td>
<td></td>
</tr>
<tr>
<td>(3) 4213 adapter connects the 15-pin D-shell cable to the 13w3 connector on the adapter.</td>
<td></td>
</tr>
<tr>
<td>(4) Dual input has a 13w3 and a 15-pin D-shell connectors on monitor.</td>
<td></td>
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<tr>
<td>(5) Dual input both 15-pin D-shell connectors on monitor.</td>
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<tr>
<td>(6) Order under machine type 7250</td>
<td></td>
</tr>
<tr>
<td>(7) FC #4239 (3 BNC cable) is recommended on GXT2000P and GXT300P. FC #4217 is a 5 BNC cable (external in H and V sync)</td>
<td></td>
</tr>
<tr>
<td>(8) Must use DVI to 15-pin D-shell converter supplied with the GXT6000P or GXT4000P.</td>
<td></td>
</tr>
<tr>
<td>* Feature number 4242 is a 6-foot extension display cable that allows a monitor with a 15-pin D-shell connector to be farther away from the graphics accelerator than its attached cable allows. Ship this cable with rack-based systems.</td>
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</tr>
<tr>
<td>** = GXT130 only</td>
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</tbody>
</table>

### Security, Auditability, and Control

These products use the security and auditability features of host software and application software.

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

### Terms and Conditions

#### Feature Section

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

IBM hardware products are manufactured from new parts and used parts. In some cases, the hardware product may have been previously installed. Regardless, IBM’s warranty terms apply.

**MES Discount Applicable:** Equal to the volume commitment discount

**Field Installable Feature:** Yes

**Warranty Period:** One year

**Customer Setup:** Yes

**Licensed Internal Code:** Same license terms and conditions as designated machine.

### Prices

<table>
<thead>
<tr>
<th>Machine Type/Model</th>
<th>Feature Number</th>
<th>Purchase Price</th>
<th>Initial/ MES/ Both/ Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER GXT4000P Graphics Accelerator</td>
<td>7043-270</td>
<td>2826</td>
<td>$2,995</td>
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<tr>
<td>POWER GXT6000P Graphics Accelerator</td>
<td>7043-270</td>
<td>2827</td>
<td>6,500</td>
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<tr>
<td>POWER GXT4000P Graphics Accelerator</td>
<td>7044-170</td>
<td>2826</td>
<td>2,995</td>
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<tr>
<td>POWER GXT6000P Graphics Accelerator</td>
<td>7044-170</td>
<td>2827</td>
<td>6,500</td>
</tr>
</tbody>
</table>

### ServiceSuite and ServiceElect Maintenance Charges:

There are no monthly maintenance charges for the features in this announcement.

### Order Now

Use Priority/Reference Code: RE001

| Phone: | 800-IBM-CALL |
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| Internet: | ibm_direct@us.ibm.com |
| Mail: IBM Atlanta Sales Center Dept. RE001 P.O. Box 2690 Atlanta, GA 30301-2690 |

You can also contact your local IBM Business Partner or IBM representative. To identify them, call 800-IBM-4YOU.

**Note:** Shipments will begin after the planned availability date.

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