At a glance

This offering features:

• Choice of three graphics adapters; from 3D-entry to high-end workstation graphics
  – ATI FirePro V3700, 256 MB Dual DVI-I graphics card
  – ATI FirePro V5700, Dual DisplayPort, DVI-I graphics card
  – ATI FirePro V7750, Dual DisplayPort, DVI-I graphics card
• Dual-Link DVI and DisplayPort output for driving ultra high 2560 x 1600 resolution widescreen monitors
• Ability to attach four monitors by installing two ATI graphics cards
• ATI FirePro 3D professional workstation graphics cards feature:
  – High Dynamic Range (HDR) rendering with 8-bit, 10-bit, and 16-bit per RGB color component support
  – Scalable ultra parallel processing architecture with 320 unified shaders
  – Hardware acceleration of DirectX 10.1 and OpenGL 2.1 advanced features
  – Optimized and certified for many CAD and DCC applications
  – PCI Express 2.0-compliant

Overview

Experience superior image quality and increased system performance by upgrading your ThinkStation® S20 or D20 workstation systems with one of the new ATI FirePro workstation graphics cards.

Professional 3D workstation users can add a separate graphics card to improve overall system performance and help to increase productivity when experiencing:

• The demands of graphic-intensive software for CAD, Digital Content Creation (DCC), and virtualization.
• The need to view multiple operations such as manufacturing, scientific modeling, simulation or financial transactions simultaneously across dual monitors.

By installing a separate graphics adapter with dedicated memory and superior graphics processor to perform all graphics functions, you can significantly offload the system CPU and main memory resources from demanding graphics tasks. This enables your latest software applications to run faster and appear better while improving overall system performance.
Key prerequisites

These graphics cards are supported on all models of the following systems:

- ThinkStation S20: Machine types 4105, 4157, and 4217
- ThinkStation D20: Machine types 4155, 4158, and 4218

**Note:** ThinkStation models offer two PCI-e x16 graphics slots allowing two graphics cards to be installed. Two installed graphics cards allow attachment of four (quad) monitors.

Planned availability date

April 3, 2009

Product positioning

The following table provides information on the various ATI FirePro graphic cards from Lenovo®:

<table>
<thead>
<tr>
<th>ATI FirePro V3700 Graphics Card</th>
<th>Part Number: 51J0509</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Environment:</td>
<td>Entry 3D-graphics</td>
</tr>
<tr>
<td>Form Factor:</td>
<td>Full-height PCI-e x16</td>
</tr>
<tr>
<td>Display Connectors:</td>
<td>Two Dual-Link DVI-I</td>
</tr>
<tr>
<td>Memory Configuration:</td>
<td>256MB 128-bit GDDR3</td>
</tr>
<tr>
<td>Memory Bandwidth:</td>
<td>15GB/sec</td>
</tr>
<tr>
<td>Max Digital Resolution:</td>
<td>2560 x 1600</td>
</tr>
<tr>
<td>Max Analog Resolution:</td>
<td>1920 x 1440 using DVI-to-VGA adapter</td>
</tr>
<tr>
<td>Thermal Solution:</td>
<td>Active Fansink</td>
</tr>
<tr>
<td>Max Power Consumption:</td>
<td>35W</td>
</tr>
<tr>
<td>Fitted Bracket:</td>
<td>Full-height</td>
</tr>
<tr>
<td>Cables/Dongles:</td>
<td>Two DVI-to-VGA Monitor Dongle</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATI FirePro V5700 Graphics Card</th>
<th>Part Number: 51J0510</th>
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</thead>
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<tr>
<td>Customer Environment:</td>
<td>midrange 3D graphics</td>
</tr>
<tr>
<td>Form Factor:</td>
<td>Full-height PCI-e x16</td>
</tr>
<tr>
<td>Display Connectors:</td>
<td>Two DisplayPort, One Dual-Link DVI-I (Only two are active at a time)</td>
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<tr>
<td>Memory Configuration:</td>
<td>512MB 128-bit GDDR3</td>
</tr>
<tr>
<td>Memory Bandwidth:</td>
<td>28.8GB/sec</td>
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<tr>
<td>Max Digital Resolution:</td>
<td>2560 x 1600</td>
</tr>
<tr>
<td>Max Analog Resolution:</td>
<td>1920 x 1440 using DVI-to-VGA adapter</td>
</tr>
<tr>
<td>Thermal Solution:</td>
<td>Active Fansink</td>
</tr>
<tr>
<td>Max Power Consumption:</td>
<td>49W</td>
</tr>
<tr>
<td>Fitted Bracket:</td>
<td>Full-height</td>
</tr>
<tr>
<td>Cables/Dongles:</td>
<td>One DVI-VGA converter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATI FirePro V7750 Graphics Card</th>
<th>Part Number: 51J0511</th>
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<tbody>
<tr>
<td>Customer Environment:</td>
<td>High-end 3D-graphics</td>
</tr>
<tr>
<td>Form Factor:</td>
<td>Full-height PCI-e x16</td>
</tr>
<tr>
<td>Display Connectors:</td>
<td>Two DisplayPort, One Dual-Link DVI-I (only two are active a time)</td>
</tr>
<tr>
<td>Memory Configuration:</td>
<td>1GB 384-bit GDDR3</td>
</tr>
<tr>
<td>Memory Bandwidth:</td>
<td>28.8 GB/sec</td>
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<tr>
<td>Max Digital Resolution:</td>
<td>1920 x 1440</td>
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<tr>
<td>Max Analog Resolution:</td>
<td>2048 x 1536</td>
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<td>Thermal Solution:</td>
<td>Active Fansink</td>
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<tr>
<td>Max Power Consumption:</td>
<td>76W</td>
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<tr>
<td>Fitted Bracket:</td>
<td>Full-height</td>
</tr>
<tr>
<td>Cables/Dongles:</td>
<td>One DVI-VGA converter</td>
</tr>
</tbody>
</table>

For more information on graphics cards and accessories, visit [http://www.lenovo.com/support/graphiccards](http://www.lenovo.com/support/graphiccards)
Additional information

All offers are subject to availability. Lenovo reserves the right to alter product offerings and specifications at any time without notice. Lenovo is not responsible for photographic or typographic errors.

Lenovo makes no representation or warranty regarding third-party products or services.

Terms and conditions

This product is available from Lenovo under the terms and conditions for purchase.

Warranty and service

• The warranty period is: Three years
• HelpWare®: Contact your Lenovo HelpWare number, your place of purchase, or your local Lenovo office

Announcement countries

All European, Middle Eastern, and African countries.

Supplemental information

ATI FirePro V3700, 256MB Dual DVI-I Graphics Card (51J0509)

Technical information

Performance specifications

• Entry-level 3D workstation graphics solution
• Powered by scaleable ATI FirePro 3D workstation graphics accelerator with parallel processing Unified Shader architecture
• AutoDetect instinctively optimizes for user's workflow
• PCI Express 2.0 x16 bus interface
• 256MB GDDR3 graphics frame buffer memory and 64-bit ring-bus memory controller
• Two Dual Link DVI-I outputs
• High Dynamic Range (HDR) rendering with 8-bit, 10-bit, and 16-bit per RGB color component support
• Full Shader Model 4.0 support for vertex and pixel shaders
• Certification for many CAD and DCC applications pending
• Microsoft® DirectX 10.1 support and OpenGL 2.1 support
• Unified Superscalar Shader Architecture
  – 40 stream processing units
    -- Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders
    -- Common instruction set and texture unit access supported for all types of shaders
    -- Dedicated branch execution units and texture address processors
Anti-aliasing features
-- Multi-sample, anti-aliasing: 2 or 4 samples per pixel
-- Custom Filter Anti-Aliasing (CFAA) for improved quality
-- Adaptive super-sampling and multi-sampling

Monitor resolution support:
-- Two dual-link DVI-I monitor connectors:
  -- 2560 x 1600 maximum digital resolution
  -- 1920 x 1440 maximum analog resolution with the attached DVI-to-VGA monitor adapter

Physical specifications
• Approximate height: 111.2 mm (4.4 in)
• Approximate depth: 168 mm (6.6 in)
• Approximate width: 19 mm (0.75 in)
• Approximate weight: 0.19 kg (0.41 lb)

Operating environment
• Temperature: 10° to 35°C (50° to 95°F)
• Relative humidity: 8% to 80%
• Maximum power consumption: 35 watts

Agency approvals
• FCC (United States)
• CE (Europe)
• C-Tick (Australia/New Zealand)
• VCCI (Japan)
• UL
• BSMI (Taiwan)
• MIC (Korea)
• MIC (Korea)

ENERGY STAR-Compliant
No

Hardware requirements
This graphics card is supported on the following systems:

<table>
<thead>
<tr>
<th>System name</th>
<th>Machine types</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThinkStation S20</td>
<td>4105, 4157, 4217</td>
<td>All</td>
</tr>
<tr>
<td>ThinkStation D20</td>
<td>4155, 4158, 4218</td>
<td>All</td>
</tr>
</tbody>
</table>

Note: ThinkStation models offer two PCI-e x16 graphics slots allowing two graphics cards to be installed. Two installed graphics cards allow attachment of four (quad) monitors.

Planning information

Cable orders required
No

Installation time
30 minutes

Packaging
One box (plain brown box -- not packaged for consumer)

**Shipment group**

- ATI FirePro V3700, 256MB Dual DVI-I Graphics Card
- Two DVI-to-VGA monitor adapters
- Publication
- CD

Customers can order extra, or replacement dongles via: Options Continuation Program (OCP). For more information, visit [http://www.lenovo.com/ocp](http://www.lenovo.com/ocp)

**Security, auditability, and control**

This product uses the security and auditability features of the system on which it is installed.

**Terms and conditions**

<table>
<thead>
<tr>
<th>Field-installable</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer setup</td>
<td>Yes</td>
</tr>
<tr>
<td>Warranty period*</td>
<td>1 year</td>
</tr>
<tr>
<td>Service type</td>
<td>CRU</td>
</tr>
<tr>
<td>Maintenance agreement</td>
<td>No</td>
</tr>
<tr>
<td>Optional upgrade</td>
<td>No</td>
</tr>
<tr>
<td>Licensed programs</td>
<td>No</td>
</tr>
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* To obtain copies of the Lenovo Statement of Limited Warranty, contact your reseller or call Lenovo.

**Help and service information -- Features and options**

During the warranty period, support for a warranty related issue can be obtained by accessing Lenovo's online services (requires Internet access account, not included) or calling the Support Center, 8:00 a.m. until 6:00 p.m. business hours, to answer any questions regarding your new Lenovo option. Response time will vary depending on the number and nature of calls received. If you need warranty service, return or exchange is available. In addition, if your Lenovo option is installed in an Lenovo computer, you may be entitled to service at your location. For general questions related to the use of your options, fee-based support is available. Your technical support representative can help you determine the best alternative.

**Accessing Lenovo online services**

[http://www.lenovo.com/support](http://www.lenovo.com/support)

**Placing the call to Lenovo**

For technical support contact your HelpWare number, your place of purchase, or your local sales office.

**Supplemental information**

**ATI FirePro V5700, 512MB Dual DisplayPort, DVI-I Graphics Card (51J0510)**

**Technical information**

**Performance specifications**
• Mid-range 3D workstation graphics solution
• Powered by scalable ATI FirePro 3D workstation graphics accelerator with parallel processing Unified Shader architecture
• AutoDetect instinctively optimizes for user’s workflow
• PCI Express 2.0 x16 bus interface
• 512MB GDDR3 graphics frame buffer memory and 128-bit ring-bus memory controller
• Two DisplayPort and one Dual-Link DVI-I outputs
• High Dynamic Range (HDR) rendering with 8-bit, 10-bit, and 16-bit per RGB color component support
• Full Shader Model 4.0 support for vertex and pixel shaders
• Certification for many CAD and DCC applications pending
• Microsoft DirectX 10.1 support and OpenGL 2.1 support
• Unified Superscalar Shader Architecture
  – 320 stream processing units
    -- Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders
    -- Common instruction set and texture unit access supported for all types of shaders
    -- Dedicated branch execution units and texture address processors
  – Anti-aliasing features
    -- Multi-sample, anti-aliasing: 2 or 4 samples per pixel
    -- Up to 24x Custom Filter Anti-Aliasing (CFAA) for improved quality
    -- Adaptive super-sampling and multi-sampling
• Monitor resolution support:
  – Two DisplayPort and one Dual-Link DVI-I
    -- Only two of the three connectors are active at a time
    -- 2560 x 1600 maximum digital resolution for DisplayPort and Dual-Link DVI-I connectors
    -- 1920 x 1440 maximum analog resolution with the attached DVI-to-VGA monitor adapter to the Dual-Link DVI-I connector
    -- 1920 x 1200 maximum digital resolution with an attached DisplayPort to Single-Link DVI-I Monitor cable
  **Note:** A DisplayPort to Single-Link DVI-I Monitor cable (45J7915) is available as an option. For more information, visit
  [http://www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

**Physical specifications**
• Approximate height: 111.2 mm (4.4 in)
• Approximate depth: 168 mm (6.6 in)
• Approximate width: 19 mm (0.75 in)
• Approximate weight: 0.19 kg (0.41 lb)

**Operating environment**
• Temperature: 10° to 35°C (50° to 95°F)
• Relative humidity: 8% to 80%
• Maximum power consumption: 40W

**Agency approvals**
• FCC (United States)
• CE (Europe)
• C-Tick (Australia/New Zealand)
• VCCI (Japan)
• UL
• BSMI (Taiwan)
• MIC (Korea)

**ENERGY STAR-Compliant**
No

**Hardware requirements**
This graphics card is supported on the following systems:

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**Note:** ThinkStation models offer two PCI-e x16 graphic slots allowing two graphics cards to be installed. Two installed graphics cards allow attachment of four (quad) monitors.

**Planning information**

**Cable orders required**
No

**Installation time**
30 minutes

**Packaging**
One box (plain brown box -- not packaged for consumer)

**Shipment group**
• ATI FirePro V5700, 512MB Dual DisplayPort, DVI-I Graphics Card
• One DVI-VGA dongles
• Publication
• CD

Customers can order extra, or replacement dongles via: Options Continuation Program (OCP). For more information, visit

[http://www.lenovo.com/ocp](http://www.lenovo.com/ocp)

**Security, auditability, and control**
This product uses the security and auditability features of the system on which it is installed.

**Terms and conditions**

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<td>Yes</td>
</tr>
<tr>
<td>Warranty period*</td>
<td>1 Year</td>
</tr>
<tr>
<td>Service type</td>
<td>CRU</td>
</tr>
<tr>
<td>Maintenance agreement</td>
<td>No</td>
</tr>
<tr>
<td>Optional upgrade</td>
<td>No</td>
</tr>
</tbody>
</table>

**Licensed Programs**
No

Note. Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the feature or option. All other terms and conditions are the same as those applicable to the Lenovo machine type in which the feature is installed.
Help and service information -- Features and options

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Accessing Lenovo online services

http://www.lenovo.com/support

Placing the call to Lenovo

For technical support contact your HelpWare number, your place of purchase, or your local sales office.

Supplemental information

ATI FirePro V7750, 1GB Dual DisplayPort, DVI-I Graphics Card (51J0511)

Technical information

Performance specifications

• High-end 3D workstation graphics solution
• Powered by scalable ATI FirePro 3D workstation graphics accelerator with parallel processing Unified Shader architecture
• AutoDetect instinctively optimizes for user's workflow
• PCI Express 2.0 x16 bus interface
• 1 GB GDDR3 graphics frame buffer memory and 128-bit memory hub controller
• Two DisplayPort and one Dual-Link DVI-I outputs
• High Dynamic Range (HDR) rendering with 8-bit, 10-bit, and 16-bit per RGB color component support
• Full Shader Model 4.0 support for vertex and pixel shaders
• Certification for many CAD and DCC applications pending
• Microsoft DirectX 10.1 support and OpenGL 2.1 support
• Unified Superscalar Shader Architecture
  – 320 Stream Processing Units
    -- Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders
    -- Common instruction set and texture unit access supported for all types of shaders
    -- Dedicated branch execution units and texture address processors
  – Anti-aliasing features
    -- Multi-sample, anti-aliasing: 2 or 4 samples per pixel
    -- Up to 24x Custom Filter Anti-Aliasing (CFAA) for improved quality
    -- Adaptive super-sampling and multi-sampling
• Monitor resolution support:
  – Two DisplayPort and one Dual-Link DVI-I
    -- Only two of the three connectors are active at a time
    -- 2560 x 1600 maximum digital resolution for DisplayPort and Dual-Link DVI-I connectors
-- 1920 x 1440 maximum analog resolution with the attached DVI-to-VGA monitor adapter to the Dual-Link DVI-I connector
-- 1920 x 1200 maximum digital resolution with an attached DisplayPort to Single-Link DVI-I Monitor cable. Note. A DisplayPort to Single-Link DVI-I Monitor cable (45J7915) is available as an option. For more information, visit http://www.lenovo.com/support/displayportcables

Physical specifications
- Approximate height: 111.2 mm (4.4 in)
- Approximate depth: 234 mm (9.2 in)
- Approximate width: 38 mm (1.5 in)
- Approximate weight: 0.78 kg (1.7 lbs)

Operating environment
- Temperature: 10° to 35°C (50° to 95°F)
- Relative humidity: 8% to 80%
- Maximum power consumption: 151 watts - requires 2 x 3 auxiliary power connector

Agency approvals
- FCC (United States)
- CE (Europe)
- C-Tick (Australia/New Zealand)
- VCCI (Japan)
- UL
- BSMI (Taiwan)
- MIC (Korea)

ENERGY STAR-Compliant
No

Hardware requirements
This graphics card is supported on the following systems:

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<td>ThinkStation D20</td>
<td>4155, 4158, 4218</td>
<td>All</td>
</tr>
</tbody>
</table>

Note: ThinkStation models offer two PCI-e x16 graphic slots allowing two graphic cards to be installed. Two installed graphic cards allow attachment of four (quad) monitors.

Planning information

Cable orders required
No

Installation time
30 minutes

Packaging
One box (plain brown box -- not packaged for consumer)

Shipment group
- ATI FirePro V7750, 1 GB Dual DisplayPort, DVI-I Graphics Card
• One DVI-to-VGA Monitor adapter
• Publication
• CD

Customers can order extra, or replacement dongles via: Options Continuation Program (OCP). For more information, visit

http://www.lenovo.com/ocp

Security, auditability, and control

This product uses the security and auditability features of the system on which it is installed.

Terms and conditions

<table>
<thead>
<tr>
<th>Field-installable</th>
<th>Yes</th>
</tr>
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<tbody>
<tr>
<td>Customer setup</td>
<td>Yes</td>
</tr>
<tr>
<td>Warranty period*</td>
<td>3 years</td>
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<td>Service type</td>
<td>CRU</td>
</tr>
<tr>
<td>Maintenance agreement</td>
<td>No</td>
</tr>
<tr>
<td>Optional upgrade</td>
<td>No</td>
</tr>
<tr>
<td>Licensed programs</td>
<td>No</td>
</tr>
</tbody>
</table>

All other terms and conditions are the same as those applicable to the Lenovo machine type in which the feature is installed.

* To obtain copies of the Lenovo Statement of Limited Warranty, contact your reseller or call Lenovo.

Help and service information -- Features and options

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Accessing Lenovo online services

http://www.lenovo.com/support

Placing the call to Lenovo

For technical support contact your HelpWare number, your place of purchase, or your local sales office.

Prices

For all local charges, contact your sales representative.

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