NVIDIA workstation 3D graphics card upgrade options deliver productivity improvements and superior image quality

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At a glance

This offering features:

• Choice of four graphics adapters; from 3D-entry to high-end workstation graphics
  – NVIDIA Quadro FX 380 16-core CUDA parallel computing processor, 256MB Dual-DVI-I graphics card
  – NVIDIA Quadro FX 580 32-core CUDA parallel computing processor, 512MB Dual-DisplayPort, DVI-I graphics card
  – NVIDIA Quadro FX 1800 64-core CUDA parallel computing processor, 768MB Dual-DisplayPort, DVI-I graphics card
  – NVIDIA Quadro FX 4800 192-core CUDA parallel computing processor, 1.5GB Dual DisplayPort, Dual-Link DVI-I, Stereo Graphics Card
• Ability to attach two monitors using the DVI-I or DisplayPort graphics card monitor connectors
• Ability to attach four monitors by installing two NVIDIA graphics cards
• Dual-Link DVI-I and DisplayPort; allows attachment of large size digital flat-panel monitors with 2560 x 1600 screen resolution
• FX Quadro workstation graphics adapters feature:
  – Unified architecture: Designed to dynamically scale graphics performance and enhance image quality
  – Full 128-bit floating point precision pipeline: Enables sophisticated mathematical computations to maintain high accuracy
  – 12-bit subpixel precision: Delivers high geometric accuracy, eliminating speckles, cracks, and other rasterization anomalies

Overview

Experience superior image quality and increased system performance by upgrading your ThinkStation® S20 and D20 workstation systems with one of the new NVIDIA 3D 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, 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

Refer to the Hardware requirements section for a list of supported systems.

Planned availability dates

- April 3, 2009: NVIDIA Quadro FX Graphics Cards
- April 24, 2009: NVIDIA SLI Connector

Product positioning

These adapters are part of a set of PCI Express x16 adapters. The following table provides information on the various PCI Express x16 adapters from Lenovo®:

<table>
<thead>
<tr>
<th>NVIDIA Quadro FX 380 Graphics Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number: 45K1670</td>
</tr>
<tr>
<td>Customer Environment: Entry 3D-graphics</td>
</tr>
<tr>
<td>Customer Applications: Volume Digital Content Creation, Volume Computer Aided Design, Software development, financial analysis</td>
</tr>
<tr>
<td>Form Factor: Full-height PCI-e x16</td>
</tr>
<tr>
<td>Display Connectors: Two Dual-Link DVI-I</td>
</tr>
<tr>
<td>Memory Configuration: 256MB 128-bit GDDR3</td>
</tr>
<tr>
<td>Max Digital Resolution: 2560 x 1600</td>
</tr>
<tr>
<td>Max Analog Resolution: 2048 x 1536</td>
</tr>
<tr>
<td>Thermal Solution: Active Fansink</td>
</tr>
<tr>
<td>Max Power Consumption: 33.91W (ASPM off)</td>
</tr>
<tr>
<td>Fitted Bracket: Full-height (designed for towers)</td>
</tr>
<tr>
<td>Extra Brackets: None, not applicable</td>
</tr>
<tr>
<td>Cables/Dongles: Two DVI-to-VGA monitor adapters</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>NVIDIA Quadro FX 580 Graphics Adapter</th>
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<tr>
<td>Part Number: 45K1671</td>
</tr>
<tr>
<td>Customer Environment: Entry 3D-graphics</td>
</tr>
<tr>
<td>Customer Applications: Volume Digital Content Creation, Volume Computer Aided Design, Software development, financial analysis, Electronic Design Automation</td>
</tr>
<tr>
<td>Form Factor: Full-height PCI-e x16</td>
</tr>
<tr>
<td>Display Connectors: Two DisplayPort, One Dual-Link DVI-I</td>
</tr>
<tr>
<td>Only two are active at a time</td>
</tr>
<tr>
<td>Memory Configuration: 512MB 128-bits GDDR3</td>
</tr>
<tr>
<td>Max Digital Resolution: 2560 x 1600</td>
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<tr>
<td>Max Analog Resolution: 2048 x 1536</td>
</tr>
<tr>
<td>Thermal Solution: Active Fansink</td>
</tr>
<tr>
<td>Max Power Consumption: 40W (ASPM off)</td>
</tr>
<tr>
<td>Fitted Bracket: Full-height (designed for towers)</td>
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<tr>
<td>Extra Brackets: None, not applicable</td>
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<tr>
<td>Cables/Dongles: One DVI-VGA converter</td>
</tr>
<tr>
<td>Supports optional DisplayPort monitor cables</td>
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</tbody>
</table>

<table>
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<tr>
<th>NVIDIA Quadro FX 1800 Graphics Adapter</th>
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<tr>
<td>Part Number: 45K1672</td>
</tr>
<tr>
<td>Customer Environment: Mid-range 3D-graphics</td>
</tr>
<tr>
<td>Customer Applications: Volume Digital Content Creation, Volume Computer Aided Design, Software development, financial analysis, Electronic Design Automation, Computer Aided Engineering,</td>
</tr>
</tbody>
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Lenovo Europe, Middle East, and Africa
Hardware Announcement ZG09-0170
Manufacturing Computer Aided Design
Form Factor: Full-height PCI-e x16
Display Connectors: Two DisplayPort, One Dual-Link DVI-I
Only two are active at a time
Memory Configuration: 768MB 192-bits GDDR3
Max Digital Resolution: 2560 x 1600
Max Analog Resolution: 2048 x 1536
Thermal Solution: Active Fansink
Max Power Consumption: 59W
Fitted Bracket: Full-height (designed for towers)
Extra Brackets: None, Not applicable
Cables/Dongles: One DVI-to-VGA monitor adapter
Supports optional DisplayPort monitor cables
NVIDIA Quadro FX 4800 Graphics Adapter
Part Number: 45K1674
Customer Environment: High-end 3D-graphics
Customer Applications: High-end Digital Content Creation,
3D animation and video,
scientific and research imaging,
oil and gas exploration,
Computer Aided Engineering,
Manufacturing Computer Aided Design
Form Factor: Full-height PCI-e x16
Display Connectors: Two DisplayPort, One Dual-Link DVI-I
Only two are active at a time
Memory Configuration: 1.5GB 384-bit GDDR3
Max Digital Resolution: 2560 x 1600
Max Analog Resolution: 2048 x 1536
Thermal Solution: Active Fansink
Max Power Consumption: 120.1 W (ASPM off)
Fitted Bracket: Full-height (designed for towers)
Extra Brackets: None, Not applicable
Cables/Dongles: One DVI-VGA converter (attach 1 VGA monitors)
Supports optional NVIDIA SLI Connector
Supports optional DisplayPort monitor cables

For more information on graphic cards and accessories, visit
http://www.lenovo.com/support/graphics
http://www.lenovo.com/accessoriesguide
http://www.lenovo.com/support/monitoraccessories
http://www.nvidia.com/object/builtforprofessionals.html
http://www.nvidia.com/object/builtforadobepros.html

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.

Product number

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<th>Description</th>
<th>Part Number</th>
<th>EAN Code</th>
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<tr>
<td>NVIDIA Quadro FX 380 Graphics Card</td>
<td>45K1670</td>
<td>0884343-81541-1</td>
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<tr>
<td>NVIDIA Quadro FX 580 Graphics Card</td>
<td>45K1671</td>
<td>0884343-81542-8</td>
</tr>
<tr>
<td>NVIDIA Quadro FX 1800 Graphics Card</td>
<td>45K1672</td>
<td>0884343-81543-5</td>
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<tr>
<td>NVIDIA Quadro FX 4800 Graphics Card</td>
<td>45K1674</td>
<td>0884343-81544-2</td>
</tr>
<tr>
<td>NVIDIA SLI Connector</td>
<td>55Y8963</td>
<td>0884343-93533-1</td>
</tr>
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</table>

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

#### NVIDIA Quadro FX 380 Graphics Card (45K1670)

### Technical information

#### Performance specifications

- PCI-e x16 full-height graphics adapter
- 256 MB 128-bit GDDR3 memory configuration
- Two Dual-Link DVI-I connectors
- Architecture
  - 128-bit color precision
  - Unlimited fragment instruction
  - Unlimited vertex instruction
  - 3D volumetric texture support
  - 12 pixels per clock rendering engine
  - Third-generation occlusion culling
  - 16 textures per pixel in fragment programs
  - Window ID clipping functionality
  - Hardware accelerated line stippling
- Shading architecture
  - Full Shader Model 4.0 (OpenGL 3.0/DirectX 10 class)
  - Long fragment programs (unlimited instructions)
  - Long vertex programs (unlimited instructions)
  - Looping and subroutines (up to 256 loops per vertex program)
  - Dynamic flow control
  - Conditional execution
- High-level shader languages
  - Optimized compiler for Cg and Microsoft® HLSL
  - OpenGL 3.0 and DirectX 10 support instructions)
  - Open source compiler unlimited instructions
- High-resolution antialiasing
  - Rotated Grid Full-Scene Antialiasing (RG FSAA)
  - 16x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolution up to 1920 x 1200
- Monitor resolution support
  - Two dual-link DVI-I Monitor Connectors:
    - 2560 x 1600 maximum digital resolution
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 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
- NVIDIA Quadro FX 380 graphics card fitted full-height bracket
- 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

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>3 years</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>
</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

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

Placing the call to Lenovo

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

Supplemental information

NVIDIA Quadro FX 580 Graphics Card (45K1671)

Technical information

Performance specifications

- PCI-e x16 full-height graphics adapter
- 512 MB 128-bit GDDR3 memory configuration
- Two DisplayPort, One Dual-Link DVI-I connectors
- Architecture
  - 128-bit color precision
  - Unlimited fragment instruction
  - Unlimited vertex instruction
  - 3D volumetric texture support
– 12 pixels per clock rendering engine
– Hardware accelerated antialiased points and lines
– Hardware OpenGL overlay planes
– Hardware accelerated two-sided lighting
– Hardware accelerated clipping planes
– Third-generation occlusion culling
– 16 textures per pixel in fragment programs
– Window ID clipping functionality
– Hardware accelerated line stippling

• Shading architecture
  – Full Shader Model 4.0 (OpenGL 2.1/DirectX 10 class)
  – Long fragment programs (unlimited instructions)
  – Long vertex programs (unlimited instructions)
  – Looping and subroutines (up to 256 loops per vertex program)
  – Dynamic flow control
  – Conditional execution
• High-level shader languages (HLSL)
  – Optimized compiler for Cg and Microsoft HLSL
  – OpenGL 2.1 and DirectX 10 support
  – Open source compiler
• High-resolution antialiasing
  – Rotated grid full-scene antialiasing (RG FSAA)
  – 16x FSAA dramatically reduces visual aliasing artifacts or jaggies, resulting in highly realistic scenes
• 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
    -- 2048 x 1536 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

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**

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<td>ThinkStation D20</td>
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<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**
• NVIDIA Quadro FX 580 graphics card fitted full-height bracket
• 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>3 years</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>
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<td>Licensed programs</td>
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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

NVIDIA Quadro FX 1800 Graphics Card (45K1672)

Technical information

Performance specifications
- PCI-e x16 full-height graphics adapter
- 768 MB 128-bit GDDR3 memory configuration
- Two DisplayPort, One Dual-Link DVI-I connectors
- Architecture
  - 128-bit color precision
  - 10-bit color display pipeline
  - Unlimited fragment instruction
  - Unlimited vertex instruction
  - 3D volumetric texture support
  - 12 pixels per clock rendering engine
  - Hardware accelerated antialiased points and lines
  - Hardware OpenGL overlay planes
  - Hardware accelerated two-sided lighting
  - Hardware accelerated clipping planes
  - Third-generation occlusion culling
  - 16 textures per pixel in fragment programs
  - Window ID clipping functionality
  - Hardware accelerated line stippling
- Shading architecture
  - Full Shader Model 4.0 (OpenGL 2.1/DirectX 10 class)
  - Long fragment programs (unlimited instructions)
  - Long vertex programs (unlimited instructions)
  - Looping and subroutines (up to 256 loops per vertex program)
- Dynamic flow control
- Conditional execution

- High-level shader languages (HLSL)
  - Optimized compiler for Cg and Microsoft HLSL
  - OpenGL 2.1 and DirectX 10 support
  - Open source compiler

- High-resolution antialiasing
  - Rotated grid full-scene antialiasing (RG FSAA)
  - 32x FSAA dramatically reduces visual aliasing artifacts or jaggies, resulting in highly realistic scenes

- 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
    - 2048 x 1536 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 mm (4.4 in)
- Approximate depth: 198 mm (7.8 in)
- Approximate width: 19 mm (0.75 in)
- Approximate weight: 0.19 kg (0.42 lb)

**Operating environment**

- Temperature: 10° to 35°C (50° to 95°F)
- Relative humidity: 8% to 80%
- Maximum power consumption: 59 watts

**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**

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ThinkStation D20 4155, 4158, 4218 All

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**
- NVIDIA Quadro FX 1800 graphics card fitted full-height bracket
- 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](http://www.lenovo.com/ocp)

**Security, auditability, and control**

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

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**Accessing Lenovo online services**
Placing the call to Lenovo
For technical support, contact your HelpWare number, your place of purchase, or your local sales office.

Supplemental information

NVIDIA Quadro FX 4800 Graphics Card (45K1674)

Technical information -- NVIDIA SLI Connector

Performance specifications
• Split frame rendering enhances visuals simulation, broadcast, and video applications
• Combine power of two NVIDIA Quadro FX 4800 for scalable application performance

Physical specifications
• Approximate height: 20 mm (0.5 in)
• Approximate depth: 50 mm (2.0 in)
• Approximate width: 20 mm (0.5 in)
• Approximate weight: 0.20 kg (0.1 lb)

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

Compatibility
Quadro FX 4800 Graphics Card

Technical information -- Quadro FX 4800 Graphics Card

Performance specifications
• PCI-e x16 full-height graphics adapter requiring two x16 slots
• 1.5 GB 384-bit, GDDR3 memory configuration
• Two DisplayPort, One Dual-Link DVI-I and 3-pin stereo connectors
• Supported platforms
  – Microsoft Windows® Vista (64-bit and 32-bit)
  – Microsoft Windows XP (64-bit and 32-bit)
  – Linux® RedHat 5 - Full OpenGL implementation, complete with NVIDIA and ARB extensions (64-bit)
• Architecture
  – 128-bit color precision
  – Unlimited fragment instruction
  – Unlimited vertex instruction
  – 3D volumetric texture support
  – Single-system powerwall
  – 12 pixels per clock rendering engine
  – Hardware accelerated antialiased points and lines
  – Hardware OpenGL overlay planes
  – Hardware accelerated two-sided lighting
  – Hardware accelerated clipping planes
- Third-generation occlusion culling
- 16 textures per pixel in fragment programs
- Window ID clipping functionality
- Hardware accelerated line stippling

• Shading architecture
  - Full Shader Model 4.0 (OpenGL 2.1/DirectX 10 class)
  - Long fragment programs (unlimited instructions)
  - Long vertex programs (unlimited instructions)
  - Looping and subroutines (up to 256 loops per vertex program)
  - Dynamic flow control
  - Conditional execution

• High-level shader languages (HLSL)
  - Optimized compiler for Cg and Microsoft HLSL
  - OpenGL 2.1 and DirectX 10 support
  - Open source compiler

• High-resolution antialiasing
  - Rotated grid full-scene antialiasing (RG FSAA)
  - 32x FSAA dramatically reduces visual aliasing artifacts or jaggies at resolution up to 1920 x 1200

• 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
    -- 2048 x 1536 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: 266.7 mm (10.5 in)
- Approximate width: 38 mm (1.5 in)
- Approximate weight: 0.78 kg (1.7 lb)

**Operating environment**

- Temperature: 10° to 35°C (50° to 95°F)
- Relative humidity: 8% to 80%
- Maximum power consumption: 120.1 watts - requires 2x3 auxiliary power connector

**Agency approvals**

- FCC (United States)
- CE (Europe)
- C-Tick (Australia/New Zealand)
- VCCI (Japan)
- UL
- BSMI (Taiwan)
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 S10</td>
<td>6423, 6483</td>
<td>All</td>
</tr>
<tr>
<td>ThinkStation D10</td>
<td>6427, 6493</td>
<td>All</td>
</tr>
<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

SLI Connector

• NVIDIA SLI Connector
• Setup Poster

FX 4800 Graphics Card

• NVIDIA Quadro FX 4800 adapter fitted full-height bracket
• 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>
</thead>
<tbody>
<tr>
<td>Customer setup</td>
<td>Yes</td>
</tr>
<tr>
<td>Warranty period*</td>
<td>3 years</td>
</tr>
<tr>
<td>Service type</td>
<td>CRU</td>
</tr>
<tr>
<td>Maintenance agreement</td>
<td>No</td>
</tr>
</tbody>
</table>
Optional upgrade: No
Licensed programs: No

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

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

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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