NVIDIA AutoCAD 2010 Performance Driver
Release Notes

OpenGL Software Version 18.0.1
Direct3D Software Version 18.0.0

For Windows XP 32/64 bit and Windows Vista 32/64-bit

NVIDIA Corporation
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OVERVIEW AND SYSTEM REQUIREMENTS

The NVIDIA® AutoCAD® Performance Driver is an NVIDIA® Quadro® workstation feature. The NVIDIA AutoCAD Performance Driver (software) is seamlessly integrated into the AutoCAD environment and contains significant improvements over existing driver technology.

The AutoCAD Performance Driver supports the Autodesk AutoCAD software, including the most recent releases of 2007, 2008, 2009, and 2010. Developed in close collaboration with Autodesk®, the AutoCAD Performance Driver is a free, downloadable software driver capable of delivering dramatic performance improvements of up to 10 X on some tests, when coupled with NVIDIA Quadro FX professional graphics solutions.

Note: The AutoCAD Performance Driver 2009 and 2010 delivers accelerated performance on *both* OpenGL and Direct3D.

Driver Release History and System Requirements

- For AutoCAD 2010, the NVIDIA AutoCAD Performance Driver supports both OpenGL® and Direct 3D® APIs on Windows XP - 32/64 bit, and Direct 3D® on Windows Vista - 32/64 bit.

- For AutoCAD 2009, the NVIDIA AutoCAD Performance Driver supports both OpenGL® and Direct 3D® APIs on Windows XP - 32/64 bit, and Direct 3D® on Windows Vista - 32/64 bit.

- For AutoCAD 2008, the NVIDIA AutoCAD Performance Driver supports OpenGL on Windows XP-32 bit but does not support Direct3D.

Table 1.1 provides detailed driver release history and supported operating systems.

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Table 1.1   NVIDIA AutoCAD Performance Driver Release History

AutoCAD Version	Windows Operating System	Performance Driver Version	API	Release Date	File Size
AutoCAD 2010	XP 32bit	18.0.1	OpenGL	2009-05-11	3.4 MB
AutoCAD 2010	XP 32/64 bit Vista 32/64 bit	18.0.0	Direct3D	2009-05-11	3.4 MB
AutoCAD 2009	XP 32 bit	17.2.2	OpenGL	2009-02-20	2.75 MB
AutoCAD 2009	XP 32 bit	17.2.1	OpenGL	2008-04-28	3.36 MB
AutoCAD 2009	XP 32/64 bit Vista 32/64 bit	17.2.0	Direct3D	2008-04-28	3.36 MB
AutoCAD 2008	XP 32 bit	15.09.08	OpenGL	2008-04-23	1.87 MB
AutoCAD 2007	XP 32 bit	15.08.06	OpenGL	2007-02-01	1.43 MB
AutoCAD 2005-2006	XP 32 bit	15.07.03	OpenGL	2006-02-13	2.6 MB
AutoCAD 2004	XP 32 bit	15.07.01	OpenGL	2006-02-03	1.6 MB
AutoCAD 2000 - 2002	XP 32 bit	15.06.06	OpenGL	2003-01-11	3.9 MB
	XP 32 bit	15.05.13	OpenGL	2002-08-07	10.2 MB

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INSTALLING THE NVIDIA AUTOCAD PERFORMANCE DRIVER

The NVIDIA AutoCAD Performance Driver is designed to deliver the maximum performance benefit within AutoCAD. NVIDIA provides two ways to install the AutoCAD Performance Driver: stand-alone and integrated with the NVIDIA graphics driver:

- "Stand-Alone Installation" on page 5 or

- "Integrated Installation" on page 6

Stand-Alone Installation

You can download the standalone AutoCAD Performance Driver from the NVIDIA Web site:

http://www.nvidia.com/object/AutoCAD_PD_perf_drivers.html

1 Select the AutoCAD Performance Driver that is supported by the AutoCAD version that is installed and running on your system.

Note: You can install more than one version of the NVIDIA AutoCAD Performance Driver, have multiple versions of AutoCAD running (for example both 2008 and 2009 versions), and then choose to run the matching driver to AutoCAD version based on the information provided in Table 1.1, "NVIDIA AutoCAD Performance Driver Release History" in Chapter 1.

2 Exit AutoCAD before installing the AutoCAD Performance driver.

The package is a self extracting executable.

3 Run **setup.exe** and go through the prompts.

**4** Restart AutoCAD to see an immediate performance advantage.

Integrated Installation

Note: This integrated installation is supported under AutoCAD 2007, AutoCAD 2008, AutoCAD 2009, and AutoCAD 2010 installation.

The NVIDIA AutoCAD Performance Driver is included with the release of the NVIDIA graphics driver 185.xx that is publicly available from the NVIDIA.com driver download page.

When you install the NVIDIA graphics driver 185.xx, the AutoCAD Performance Driver is placed on your computer and auto-detection is set to recognize an initialization of AutoCAD.
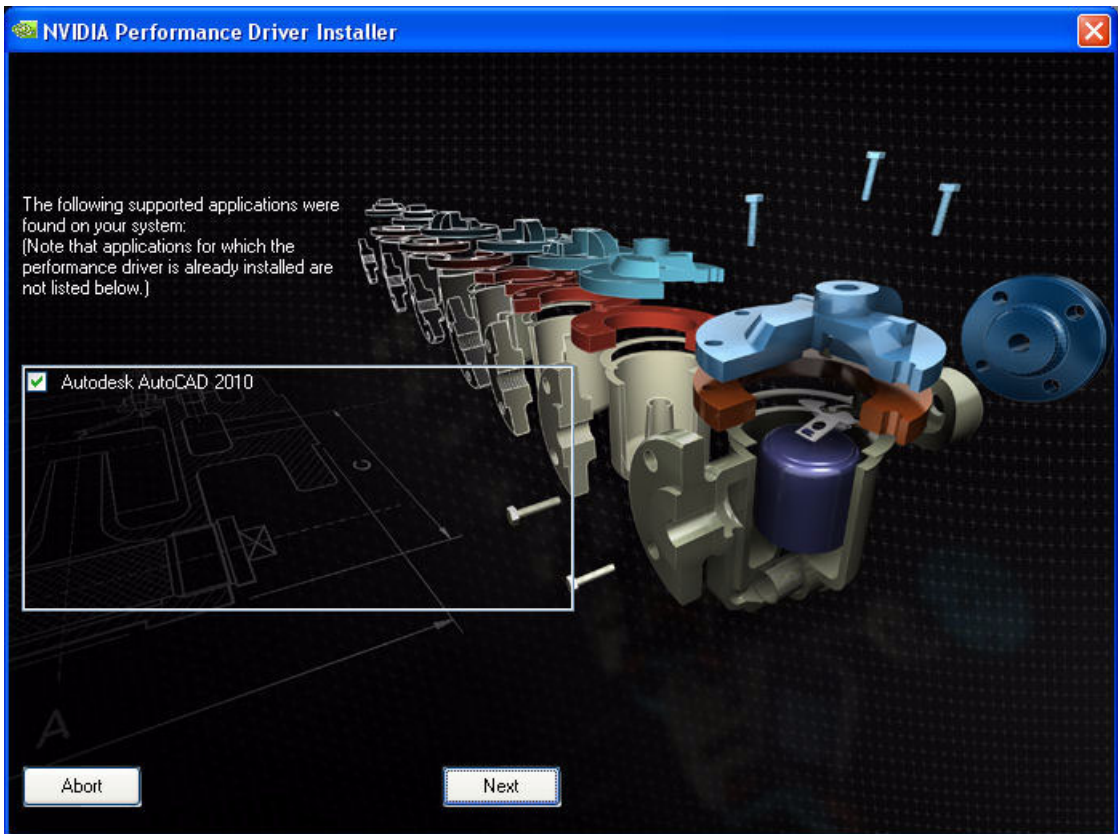
Note: The NVIDIA AutoCAD Performance Driver is NOT installed during the installation of the NVIDIA graphics driver. When you launch AutoCAD for the first-time after the installation of the NVIDIA graphics driver, you are prompted to install the AutoCAD Performance Driver (Figure 2.1).
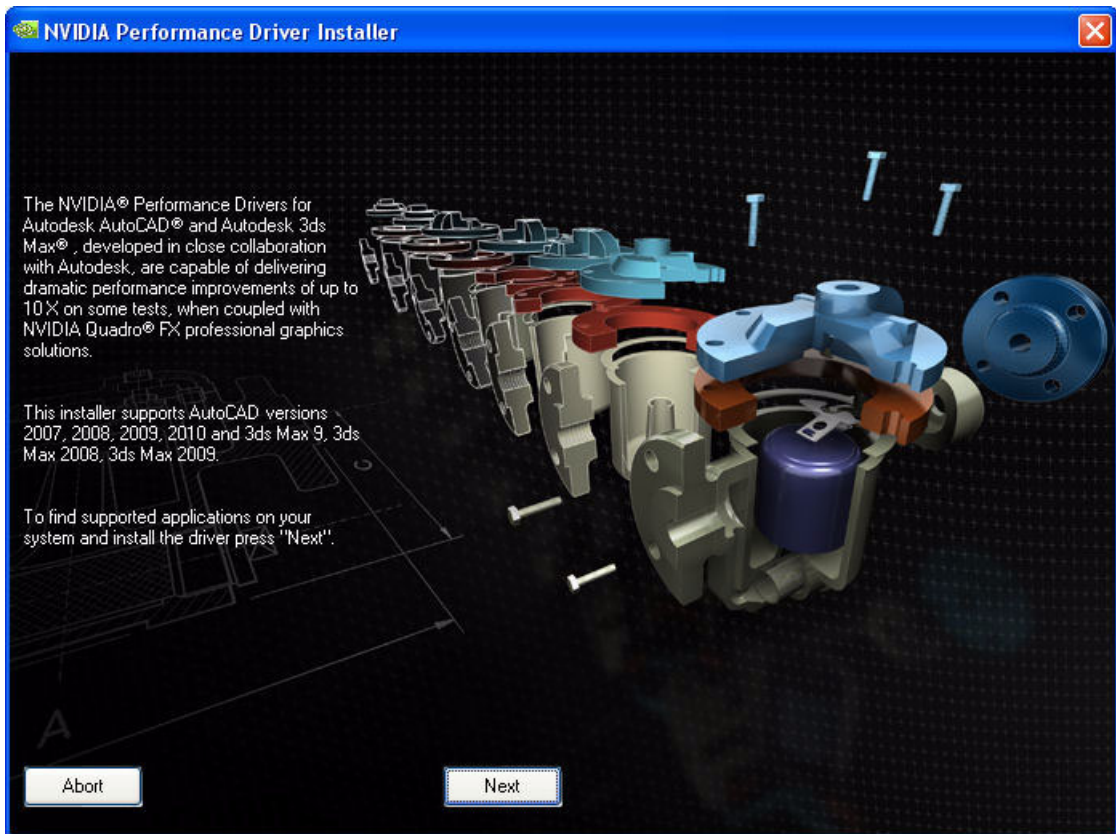
Figure 2.1   First Screen of the AutoCAD Performance Driver Integrated Driver Installation

1 To continue and install the AutoCAD Performance Driver, select **Next** (otherwise select **Abort**).

**Figure 2.2**   Selecting the AutoCAD Version(s) Installed

2 Select the version(s) of AutoCAD for which you want to install the NVIDIA AutoCAD Performance Driver (Figure 2.2).

Only those AutoCAD versions that are detected as installed on your system appear on the page. You can check one or more of the options.

3 Select **Next** to install the selected AutoCAD versions of the Performance Driver.

Note: You must close AutoCAD before installing the Performance Driver.

The final status window for the installation shows the drivers that have been installed.
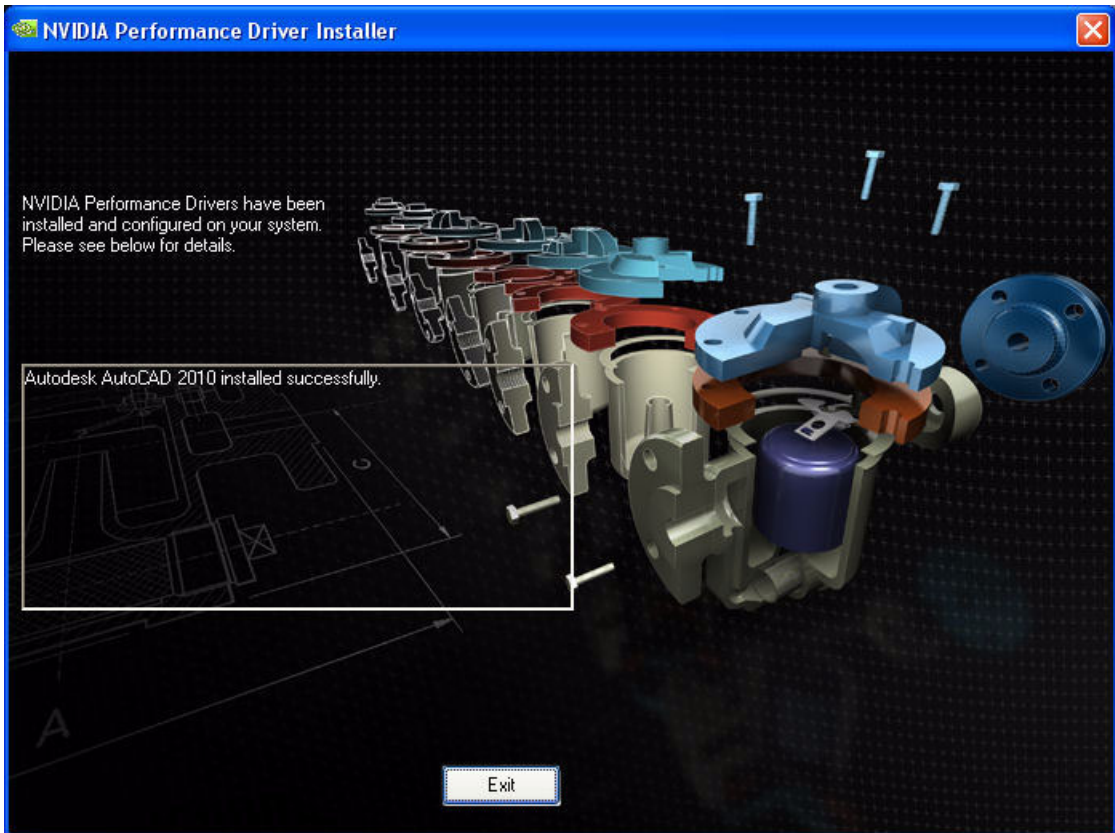
Figure 2.3   Last Screen with Status of the Installation

4 Select **Exit** to close the window (Figure 2.3).

5 Restart AutoCAD.

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AUTOCAD CONFIGURATION

This chapter covers the following main topics:

- Configuring Features
- Key Features

Configuring Features

Once you have completed the NVIDIA AutoCAD Performance Driver installation, the AutoCAD application selects the AutoCAD Performance Driver as the default.

At this point, you will notice the performance benefits. If you do not experience improved performance, you can manually check and select the correct settings using the steps below.

1 After starting the AutoCAD application, verify that the NVIDIA performance driver is active.

2 To bring up the Manual Performance Tuning dialog box, from the command line, type **3DCONFIG** and in the dialog box, select **Manual Tune**.

3 In the **Driver Name** list, verify that the performance driver is selected.

- In AutoCAD 2008, the driver name is `nvgl9.hdi`

- In AutoCAD 2009, the driver name will be `nvgl9.hdi` or `nvd3d9.hdi` for Windows XP, and only `nvd3d9.hdi` for Windows Vista.

- In AutoCAD 2010, the driver name will be `nvgl10.hdi` or `nvd3d10.hdi` for Windows XP, and only `nvd3d10.hdi` for Windows Vista.
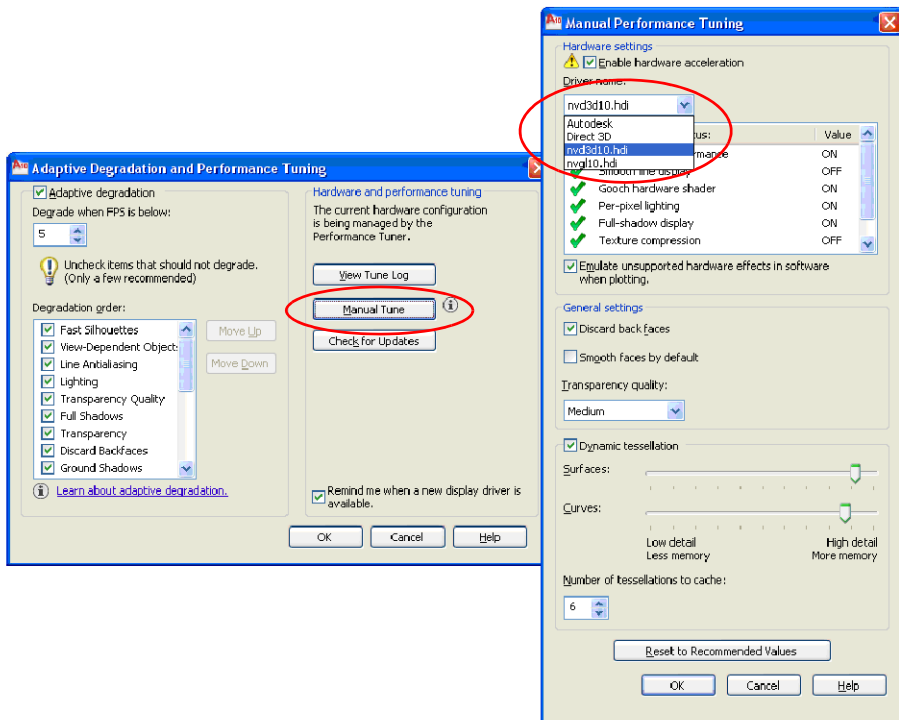
**Figure 3.1**   Manual Performance Tuning

Key Features

Accelerated Performance

With the AutoCAD Performance Driver, Quadro graphics boards deliver up to five times the performance, compared to consumer graphics, when using AutoCAD's 3D Hidden visual style and enables faster manipulation of models in the Conceptual and Realistic visual styles.

The 3D Hidden visual style essentially draws objects in a way that allows depth cues to be retained with minimal lighting effects.

Figure 3.2, "3D Hidden Visual Style" shows a model displayed in 3D Hidden style and it is easy to get an instant perception of the shape and layout of the model.

In architectural workflows, frequently, there are large flat surfaces for which the lack of lighting effects yields clarity in the visual representation, which facilitates very quick and intuitive understanding of shape and position.
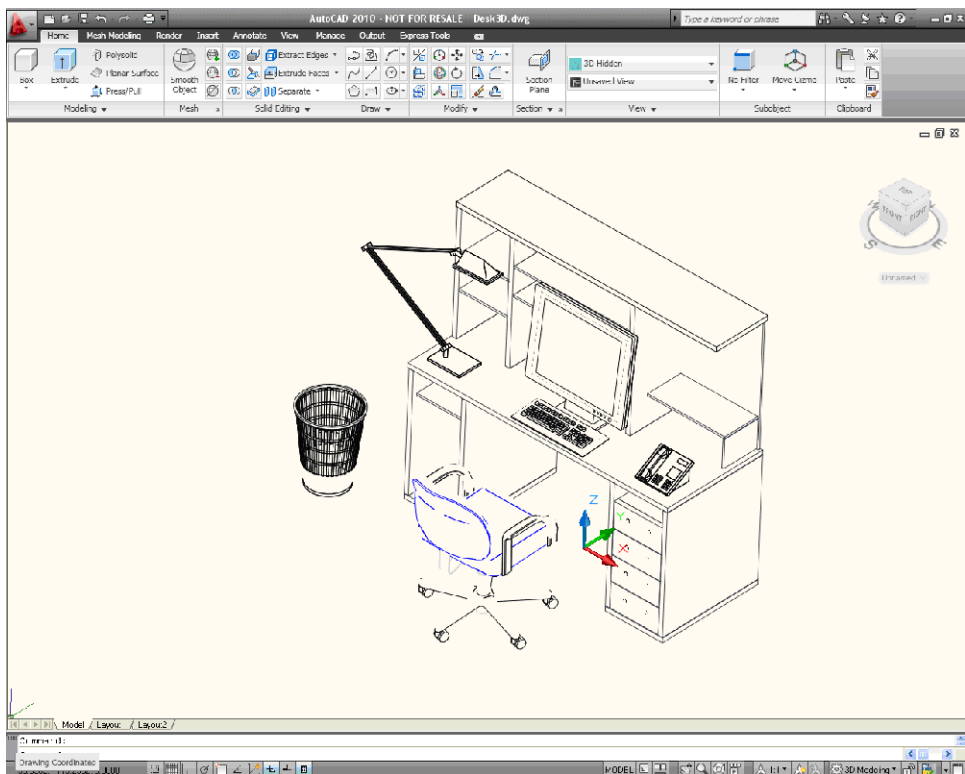
Figure 3.2   3D Hidden Visual Style

For components and assemblies comprising curved surfaces, minimal lighting effects is unable to allow the eye to pickup on the subtleties of shape. In these instances being able to perceive gradients and angles allows shape to be recognized significantly quicker. The conceptual visual style (Figure 3.3, "Conceptual Visual Style") employs a Gooch shader for just these kinds of visual cues. The Gooch shader is a non-photorealistic shader that changes the hue (i.e. the perceived color versus lightness or contrast) dependent on light and viewing angle. Because it is non-photo-realistic, it essentially simplifies the appearance of an object so shape is more instantly recognizable.
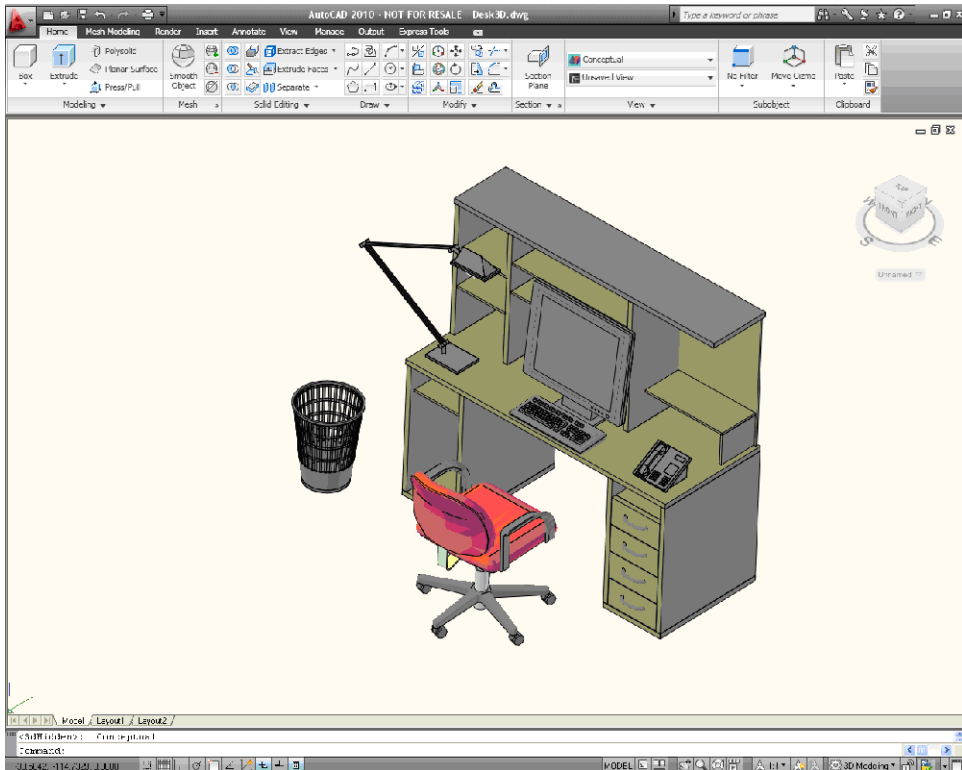

Figure 3.3   Conceptual Visual Style

Both of these visual styles are accelerated with the use of the AutoCAD Performance Driver.

Figure 3.4, "AutoCAD 2010 Performance of Professional Quadro FX Solutions" highlights the comparative differences between similarly priced consumer graphics cards and NVIDIA Quadro graphics cards with the AutoCAD Performance Driver. At

comparable prices, AutoCAD performance of professional Quadro FX solutions are far superior to consumer-class hardware, e.g., 3D Hidden style rendering.
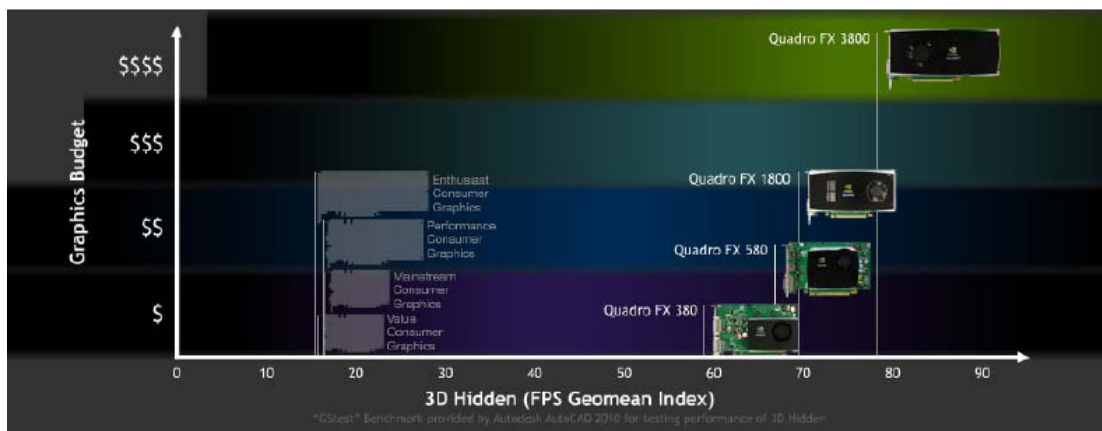
Figure 3.4   AutoCAD 2010 Performance of Professional Quadro FX Solutions

Smooth Lines Acceleration

Quadro provides significantly higher visual quality in all visual styles with "smooth lines" enabled. You can easily manipulate and orient the fully shaded model without compromising on performance.
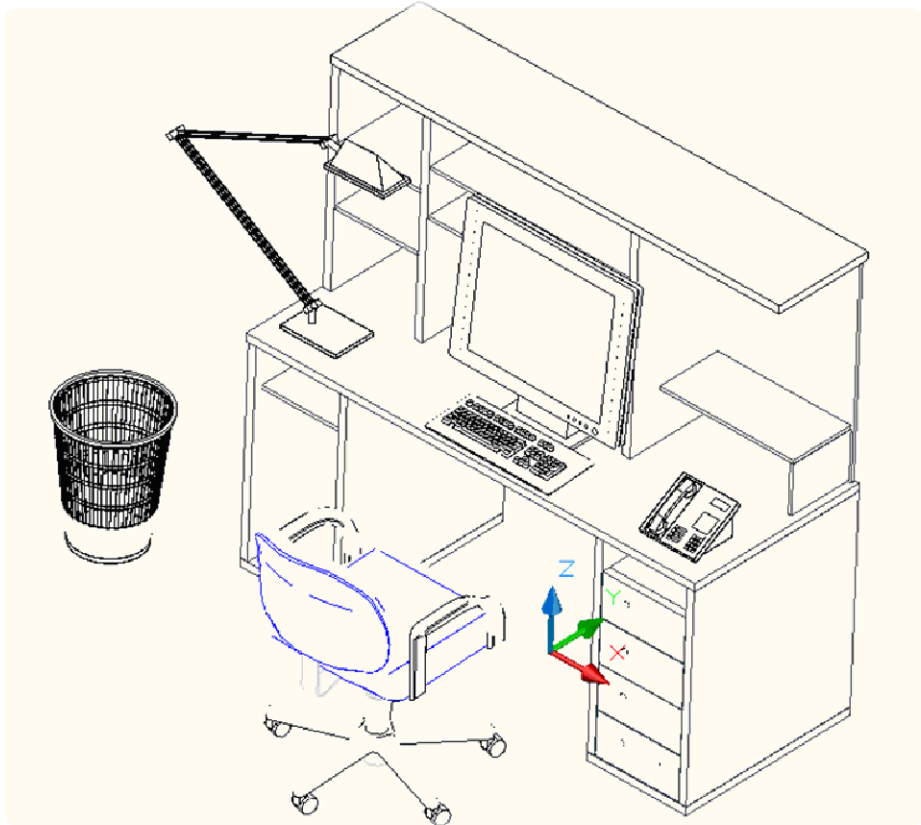
Figure 3.5   AutoCAD Rendering with Smooth Lines Turned Off

With professional-class graphics cards such as NVIDIA Quadro FX, you have a fast hardware engine specifically designed to draw AutoCAD-style smooth lines, which results in aesthetic lines without the performance penalty.
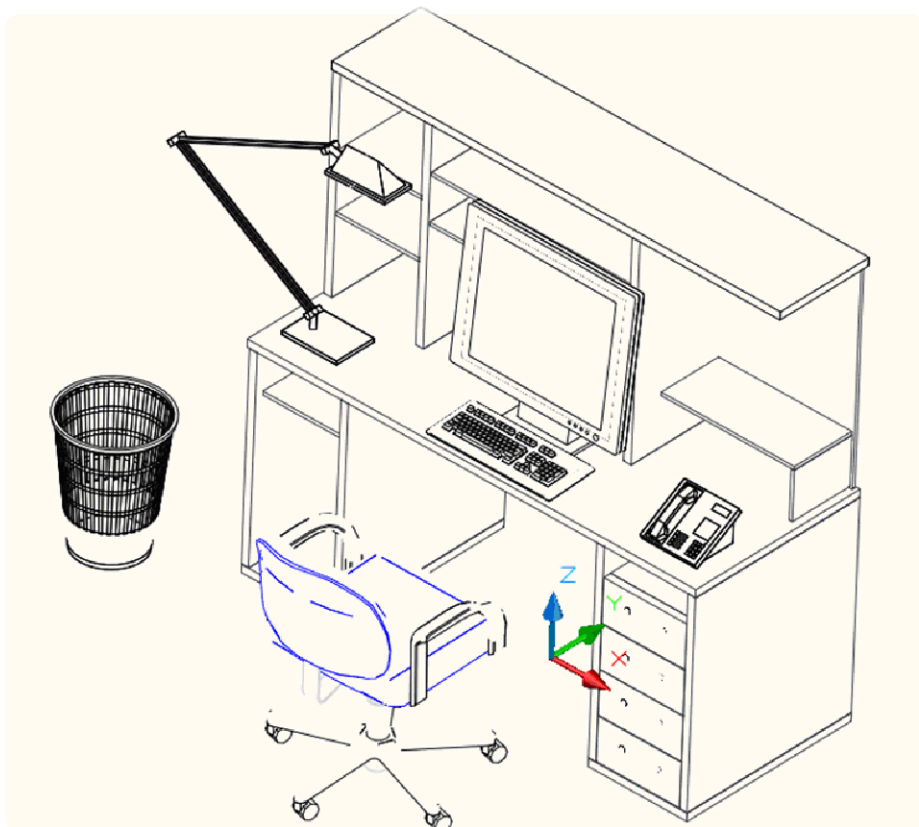
Figure 3.6   AutoCAD Smooth Lines Rendered on a Professional Quadro FX Graphics Card

To enable smooth lines display, follow these steps (Turning Smooth Line Display On):

Note: Enabling **Smooth lines display** works only on Windows XP with the NVIDIA AutoCAD Performance Driver.

1   From the AutoCAD command line, type **3DCONFIG** and click **Manual Tune**.

2   Select nvgl0.hdi for the driver name (for AutoCAD 2010).

**3** Select the **Smooth lines display** option and set to **On**.
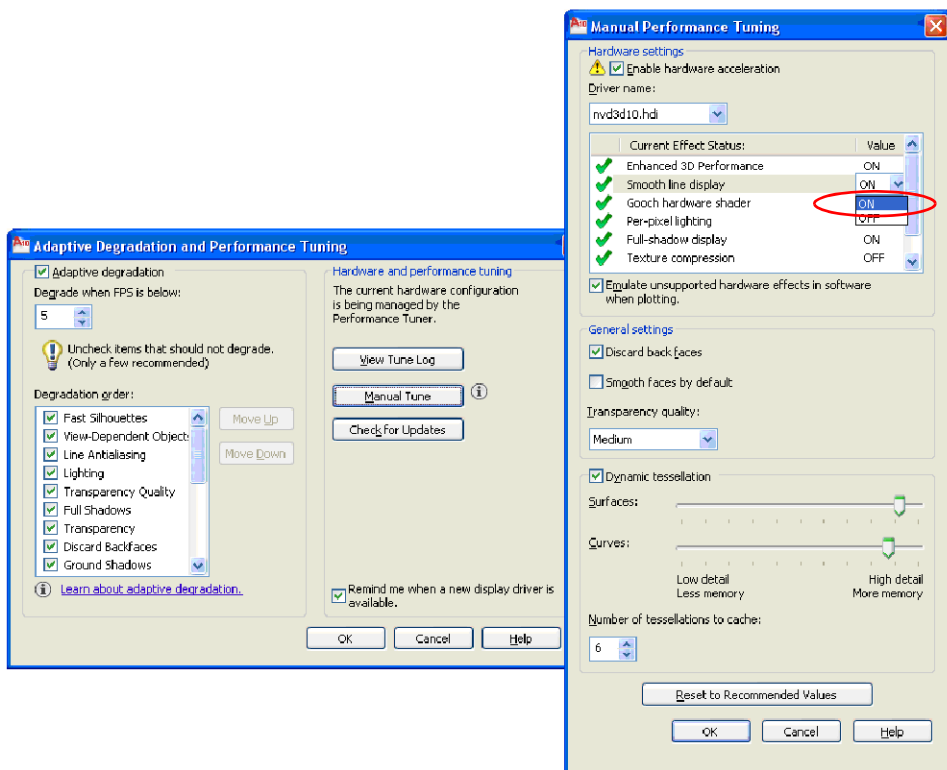
Figure 3.7   Turning Smooth Line Display On

Turning Adaptive Degradation Off

With the addition of the added performance, you can turn off **Adaptive Degradation**, which is on by default. This option works to maintain a certain FPS (frames per second) by simplifying models, either dropping the visual style to Wire Frame or simplifying the geometry.

To turn this feature off, in the Adaptive Degradation and Performance Tuning dialog box, uncheck **Adaptive Degradation** if it is currently checked (Turning Adaptive Degradation Off).

1 From the AutoCAD command line, type **3DCONFIG**.

2 Click to uncheck **Adaptive Degradation**.
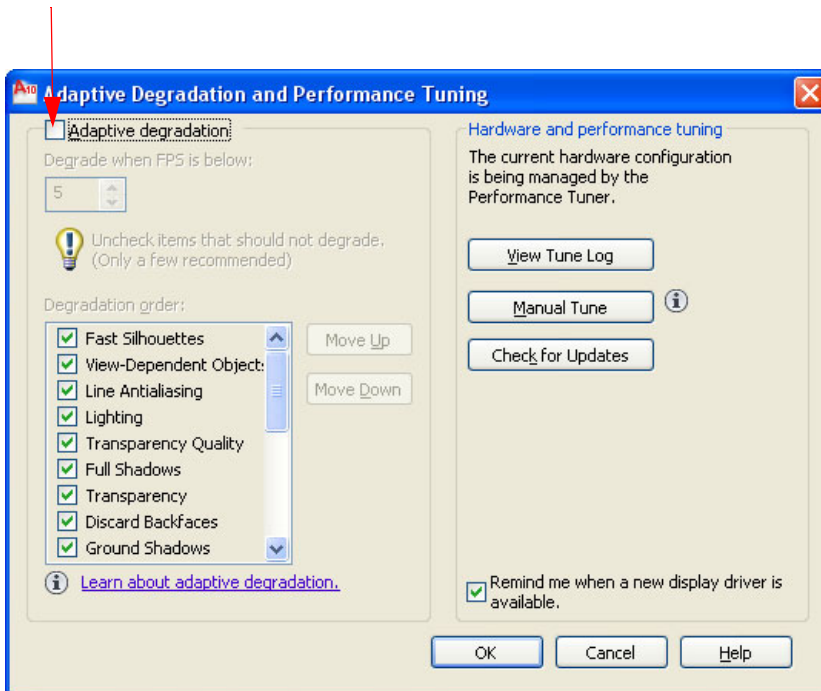
Figure 3.8   Turning Adaptive Degradation Off

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RESOLVED AUTOCAD PERFORMANCE DRIVER ISSUES

This section contains lists of known and resolved issues categorized by the NVDIA AutoCAD Performance Driver version number.

Issues Resolved for AutoCAD Performance Driver 2010

Changes and Issues Resolved in Version 18.0.0 & 18.0.1

- Fixed shadow map issues with the new shadow map shader.
- Fixed missing texture issues with the phong shader.
- Fixed an issue with the smooth line option not being shown.
- Fixed incorrectly evaluated face renditions.
- Introduced a new caching structure to handle multiple tri-strips on one mesh.

Issues Resolved for AutoCAD Performance Driver 2009

Changes and Issues Resolved in Version 17.2.2

- Fixed a corruption issue with the conceptual visual style where edges were rendered with the Gooch shader active, thereby overruling the color to be used for rendering edges.

- Fixed occasional crashes or display corruptions that occurred in paper space and multi-viewport mode.

Changes and Issues Resolved in Version 17.2.0 & 17.2.1

- Direct3D (nvd3d9.hdi) is now supported for AutoCAD 2009 on Windows Vista or Windows XP.

- Windows Vista 32/64-bit and Windows XP 64-bit are now supported with AutoCAD Performance Driver 2009

- Smooth lines are not exposed with the certified drivers from Autodesk. This is a bug with the Autodesk XML database. Note that smooth lines are only supported on Windows XP. To workaround this do the following:

  1 Locate `AdskHwCertificationDatabase.xml` in the following location:

     Example:

     ```
     <Documents and Settings\All Users\Application Data\
     Autodesk\AutoCAD 2009\R17.2\enu\PTSML\
     AdskHwCertificationDatabase.xml
     ```

  2 Make sure that you have an updated version from Autodesk.

  3 Open the file in a Web browser and view the Source

  4 Search for the NVIDIA Quadro-based graphics card that you are using. For example, it can be NVIDIA Quadro FX 370 or any other supported NVIDIA Quadro-based graphics card.

  5 Under the section for the graphics card you located in step 4, locate the NVIDIA AutoCAD Driver 17.2 release and make the following change.

     Change:

     § `<effect name="AALines" status="1" driver="OGL" />`

     to:

     § `<effect name="AALines" status="1" driver="ALL" />`

Issues Resolved for AutoCAD Performance Driver 2008

Changes and Issues Resolved in Version 15.09.08

- After installation, the AutoCAD Performance Driver "`nvgl9.hdi`" is now the selected driver under **Tools** > **Options**> **System** (tab) > **Performance Settings** > **Manual Tune** by default.

  Note: When switching to Direct3D or OpenGL and then back to nvgl9.hdi, this default setting is active when returning to the Manual Tune menu.

- Hues are the same regardless of whether you are using the NVIDIA AutoCAD Performance Driver with OpenGL or Direct 3D.

- Smooth lines are not exposed with the certified drivers from Autodesk. This is a bug with the Autodesk XML database. To workaround this problem, do the following:

  1 Locate AdskHwCertificationDatabase.xml in the following location:

     <*Autodesk application installation folder*>\Drv\AdskHwCertificationDatabase.xml

     Example:

     ```
     C:\Program Files\AutoCAD 2008\Drv\AdskHwCertificationDatabase.xml"
     ```

  2 Make sure that you have an updated version from Autodesk.

  3 Open the file in a Web browser and view the source.

  4 Search for the NVIDIA Quadro-based graphics card that you are using. For example, it can be NVIDIA Quadro FX 370 or any other supported NVIDIA Quadro-based graphics card.

  5 Under the section for the graphics card you located in step 4., locate the NVIDIA AutoCAD Driver 17.1 release and make the following change:

     Change:

     ```
     §  <effect name="AALines" status="1" driver="OGL" />
     ```

        to

     ```
     §  <effect name="AALines" status="1" driver="ALL" />
     ```

Not NVIDIA Issues

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  Example:

  ```
  <Documents and Settings\All Users\Application Data\
  Autodesk\AutoCAD 2009\R17.2\enu\PTSML\
  AdskHwCertificationDatabase.xml
  ```

  2 Make sure that you have an updated version from Autodesk.

  3 Open the file in a Web browser and view the Source

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  Change:

  § `<effect name="AALines" status="1" driver="OGL" />`

     to:

  § `<effect name="AALines" status="1" driver="ALL" />`