



# **Cg Toolkit Release Notes**

***Release 3.1.0010***

**NVIDIA Corporation**

February 08, 2012

## 1.1 NAME

**cg\_3\_1\_0010** - Cg Toolkit 3.1 February 2012

## 1.2 SUMMARY

The Cg Toolkit allows developers to write and run Cg programs using a wide variety of hardware and OS platforms and graphics APIs. Originally released in December 2002, the Toolkit now supports over 30 different DirectX and OpenGL profile targets. It provides a compiler for the Cg language, runtime libraries to use with the OpenGL and DirectX graphics APIs, support for CgFX effect files, example applications, and extensive documentation.

## 1.3 CONTENTS

### 1.3.1 Cg Runtime libraries

The Cg core runtime library for managing parameters and loading programs.

The CgGL runtime library for OpenGL based applications.

The CgD3D9 runtime library for DirectX 9 based applications.

The CgD3D10 runtime library for DirectX 10 based applications.

The CgD3D11 runtime library for DirectX 11 based applications.

### 1.3.2 Supported Profiles

OpenGL

*gp5tcp* NV\_tessellation\_program5 control program.

*gp5tep* NV\_tessellation\_program5 evaluation program.

*gp5gp* NV\_geomemtry\_program5.

*gp5vp* NV\_vertex\_program5.

*gp5fp* NV\_fragment\_program5.

*gp4gp* NV\_geomemtry\_program4.

*gp4vp* NV\_vertex\_program4.

*gp4fp* NV\_fragment\_program4.

*glslg* OpenGL Shading Language (GLSL) for OpenGL 2.0 geometry shader.

*glslv* OpenGL Shading Language (GLSL) for OpenGL 2.0 vertex shader.

*glslf* OpenGL Shading Language (GLSL) for OpenGL 2.0 fragment shader.

*arbvp1* ARB\_vertex\_program 1.0.

*arbfvp1* ARB\_fragment\_program 1.0.

*vp40* ARB\_vertex\_program + NV\_vertex\_program2 option.

*fp40* ARB\_fragment\_program + NV\_fragment\_program2 option.

*vp30* NV\_vertex\_program 2.0.  
*fp30* NV\_fragment\_program 1.0.  
*vp20* NV\_vertex\_program 1.0.  
*fp20* NV\_register\_combiners and NV\_texture\_shader.

#### DirectX 11.0

*ds\_5\_0* HLSL11 Domain Shader.  
*hs\_5\_0* HLSL11 Hull Shader.  
*gs\_5\_0* HLSL11 Geometry Shader.  
*vs\_5\_0* HLSL11 Vertex Shader.  
*ps\_5\_0* HLSL11 Fragment Shader.

#### DirectX 10.0

*gs\_4\_0* HLSL10 Geometry Shader.  
*vs\_4\_0* HLSL10 Vertex Shader.  
*ps\_4\_0* HLSL10 Fragment Shader.

#### DirectX 9.0c

*hlslv* HLSL9 Vertex Shader.  
*hlslf* HLSL9 Fragment Shader.  
*vs\_3\_0* Vertex Shader 3.0.  
*ps\_3\_0* Pixel Shader 3.0.

#### DirectX 9

*vs\_2\_x* Extended Vertex Shader 2.0.  
*ps\_2\_x* Extended Pixel Shader 2.0.  
*vs\_2\_0* Vertex Shader 2.0.  
*ps\_2\_0* Pixel Shader 2.0.  
*vs\_1\_1* Vertex Shader 1.1.  
*ps\_1\_3* Pixel Shader 1.3.  
*ps\_1\_2* Pixel Shader 1.2.  
*ps\_1\_1* Pixel Shader 1.1.

## 1.4 Improvements & Bug Fixes

### 1.4.1 Improvements

Added Cg language support for uniform buffers.  
Added OpenGL Unified Buffer Object (UBO) support for buffers.  
Added OpenGL GLSL version 110 and 120 translation support.  
New tessellation examples added.

New uniform buffer examples added.

VC10 projects added for examples.

## 1.4.2 Documentation

**Note:** The Cg Users Manual has **not** been updated for this release.

Updated reference manual for new entry points.

Updated Cg standard library documentation.

Release history documentation added.

## 1.4.3 Bug Fixes

Fixed buffer emulation in DX9, *arbvp1* and *arbfp1* profiles.

Fixed f3dtex2D standard library issue.

Added samplerRBUF to standard library.

Fixed issues with implicit cast of int to uint.

Fixed cgc compiler issue for **\$COL0**.

Fixed *cgGetParameterResourceIndex* to return the proper resource index.

Fixed var bindings info in *GLSL* and *fp20* profiles.

Improved the DX10 and DX11 examples.

Added support for non-uniform matrix argument in the *glslf* profile.

Increased *GLSL* output color array to 8.

Added **CENTROID**, **FLAT** and **NOPERSPECTIVE** semantic support to *gp4* and *gp5* profiles.

Fixed an issue for int and uint in *GLSL* profile versions before 130.

Fixed unsigned integer uniform usage in *GLSL* profiles.

Fixed SAMPLEPOS usage in the *gp5fp* profile.

Fixed the tex2dbias usage in the *arbfp1* profile.

## 1.4.4 New API

Below is the complete list of the new entry points in Cg 3.1. See the Cg Reference Manual for further details.

*cgGetFirstUniformBufferParameter*

*cgGetNamedEffectUniformBuffer*

*cgGetNamedProgramUniformBuffer*

*cgGetNamedUniformBufferParameter*

*cgGetProfileSibling*

*cgGetProgramOutputVertices*

*cgGetUniformBufferBlockName*

*cgGetUniformBufferParameter*  
*cgIsBuffer*  
*cgSetProgramOutputVertices*  
*cgSetUniformBufferParameter*  
*cgGLCreateBufferFromObject*  
*cgGLDetectGLSLVersion*  
*cgGLGetContextGLSLVersion*  
*cgGLGetContextOptimalOptions*  
*cgGLGetGLSLVersion*  
*cgGLGetGLSLVersionString*  
*cgGLSetContextGLSLVersion*  
*cgGLSetContextOptimalOptions*  
*cgD3D10CreateBufferFromObject*  
*cgD3D10CreateBuffer*  
*cgD3D10GetBufferObject*  
*cgD3D11CreateBufferFromObject*  
*cgD3D11CreateBuffer*  
*cgD3D11GetBufferObject*

## 1.5 COMPATIBILITY NOTES

Although the 3.1 release of Cg is generally compatible with previous releases, several improvements and other changes may affect existing applications. This section details these potential compatibility issues.

Cg 3.1 supports defining constant blocks with the uniform keyword. Use of a BUFFER semantic on simple variables and structs has been deprecated. By default cgc will now issue a warning when the BUFFER semantic is used (and an error when BUFFER is used on a struct with a GLSL profile). The `-no_uniform_blocks` compiler flag can be used to disable these warnings and errors, but it also removes support for the new uniform keyword method of defining constant blocks.

There aren't any other known compatibility issues with programs written against Cg 3.0. For programs written against Cg 2.2 or earlier, refer to the Compatibility Notes section of the release notes for Cg 3.0.

### 1.5.1 Deprecated

Manual pages have been removed.

D3D8 support has been removed.

Mac OS X 10.4 support has been removed.

## 1.6 KNOWN ISSUES

### 1.6.1 Runtime

None.

### 1.6.2 Compiler

None.

## 1.7 DOWNLOAD

Windows x86/x86-64 [installer](#) for Windows XP, Vista and Win7.

Mac OS X ppc/i386/x86\_64 [dmg](#) for Leopard, Snow Leopard and Lion.

Linux x86 [tgz](#) tarball, [rpm](#) for RedHat and [deb](#) for Debian and Ubuntu.

Linux x86-64 [tgz](#) tarball, [rpm](#) for RedHat and [deb](#) for Debian and Ubuntu.

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## 1.9 SEE ALSO

*2.1.0009, 2.1.0012, 2.1.0016, 2.1.0017*

*2.2.0004, 2.2.0006, 2.2.0010, 2.2.0017*

*3.0.0007, 3.0.0015, 3.0.0016*

*3.1.0010*