

# OpenGL hardware matrix

Extensions exposed by OpenGL implementations

**September 2013, G-Truc Creation**

[illegible]



<u>NV multisample coverage</u>	V	V	V	V	V	X	X	X	X	X	X	X	X	X	
<u>NV explicit multisample</u>	V	V	V	V	V	V	V	V	V	V	V	X	X	X	
<u>NV copy image</u>	V	V	V	V	V	V	V	V	V	V	V	X	X	X	
<u>NV bindless texture</u>	X	X	X	X	V	X	X	X	X	X	X	X	X	X	
<u>NV bindless multi draw indirect</u>	X	X	X	V	V	X	X	X	X	X	X	X	X	X	
<u>NV blend equation advanced</u>	X	X	X	V	V	X	X	X	X	X	X	X	X	X	
<u>INTEL map texture</u>	X	X	X	X	X	X	X	X	X	X	X	V	X	X	
<u>ATI texture mirror once</u>	V	V	V	V	V	V	V	V	V	V	V	X	X	V	
<u>AMD vertex shader viewport index</u>	X	X	X	X	X	X	X	X	V	V	V	X	X	X	
<u>AMD vertex shader layer</u>	X	X	X	X	X	X	X	X	V	V	V	X	X	X	
<u>AMD transform feedback3 lines triangles</u>	X	X	X	X	X	X	X	X	V	V	V	X	X	X	
<u>AMD stencil operation extended</u>	X	X	X	X	X	X	X	X	X	V	V	X	X	X	
<u>AMD sparse texture</u>	X	X	X	X	X	X	X	X	X	V	V	X	X	X	
<u>AMD shader trinary minmax</u>	X	X	X	X	X	X	X	X	X	V	V	X	X	X	
<u>AMD seamless cubemap per texture</u>	X	X	X	X	V	X	X	V	V	V	V	X	X	X	
<u>AMD sample positions</u>	X	X	X	X	X	V	V	V	V	V	V	X	X	X	
<u>AMD query buffer object</u>	X	X	X	X	X	X	X	X	V	V	V	X	X	X	
<u>AMD pinned memory</u>	X	X	X	X	X	V	V	V	V	V	V	X	X	X	
<u>AMD blend minmax factor</u>	X	X	X	X	X	X	X	X	X	V	V	X	X	X	
Support	37%	37%	37%	61%	70%	22%	22%	24%	35%	39%	48%		7%	2%	15%

OpenGL 4.4	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
<u>ARB buffer storage</u>	X	X	X	V	V	X	X	X	X	X	X	X	X	X
<u>ARB clear texture</u>	X	X	X	V	V	X	X	X	X	X	X	X	X	X
<u>ARB enhanced layouts</u>	V	V	V	V	V	X	X	X	X	X	X	X	X	X
<u>ARB multi bind</u>	V	V	V	V	V	X	X	X	X	X	X	X	X	X
<u>ARB query buffer object</u>	X	X	X	V	V	X	X	X	X	X	X	X	X	X
<u>ARB texture mirror clamp to edge</u>	V	V	V	V	V	X	X	X	X	X	X	X	X	X
<u>ARB texture stencil8</u>	V	V	V	V	V	X	X	X	X	X	X	X	X	X
<u>ARB vertex type 10f 11f 11f rev</u>	V	V	V	V	V	X	X	X	X	X	X	X	X	X
Support	81%	81%	81%	100%	100%	0%	0%	0%	90%	90%	90%	29%	19%	0%

OpenGL 4.3	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
------------	-----	-------	-------	-------	--------	------	-------	-------	-----------	--------	------	---------	------	---------



GL_ARB_conservative_depth	V	V	V	V	V	V	V	V	V	V	V	V	V	X
GL_ARB_compressed_texture_pixel_storage	V	V	V	V	V	V	V	V	V	V	V	V	X	X
GL_ARB_base_instance	X	X	X	V	V	X	X	X	V	V	V	V	V	X
Support	58%	58%	58%	100%	100%	67%	67%	67%	100%	100%	100%	100%	58%	8%

OpenGL 4.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
<u>GL ARB viewport array</u>	V	V	V	V	V	V	V	V	V	V	V	V	X	V
<u>GL ARB vertex attrib 64bit</u>	X	X	X	V	V	X	X	X	V	V	V	V	X	V
<u>GL ARB shader precision</u>	X	X	X	V	V	V	V	V	V	V	V	V	X	V
<u>GL ARB separate shader objects</u>	V	V	V	V	V	V	V	V	V	V	V	V	X	V
<u>GL ARB get program binary</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>GL ARB ES2 compatibility</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	67%	67%	67%	100%	100%	83%	83%	83%	100%	100%	100%	100%	33%	83%

OpenGL 4.0	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
<a href="#">GL ARB transform feedback3</a>	X	X	X	V	V	V	V	V	V	V	V	V	V	V
<a href="#">GL ARB transform feedback2</a>	X	V	V	V	V	V	V	V	V	V	V	V	V	V
<a href="#">GL ARB texture query lod</a>	X	X	V	V	V	X	X	V	V	V	V	V	V	V
<a href="#">GL ARB texture gather</a>	X	X	V	V	V	X	V	V	V	V	V	V	X	V
<a href="#">GL ARB texture cube map array</a>	X	X	V	V	V	X	V	V	V	V	V	V	V	V
<a href="#">GL ARB texture buffer object rgb32</a>	X	X	X	V	V	V	V	V	V	V	V	V	V	V
<a href="#">GL ARB tessellation shader</a>	X	X	X	V	V	X	X	X	V	V	V	V	X	V
<a href="#">GL ARB shader subroutine</a>	X	X	X	V	V	X	X	X	V	V	V	V	X	V
<a href="#">GL ARB sample shading</a>	X	X	V	V	V	X	V	V	V	V	V	V	X	V
<a href="#">GL ARB gpu shader5</a>	X	X	X	V	V	X	X	X	V	V	V	V	X	V
<a href="#">GL ARB gpu shader fp64</a>	X	X	X	V	V	X	X	X	V	V	V	V	X	V
<a href="#">GL ARB draw indirect</a>	X	X	X	V	V	X	X	X	V	V	V	V	X	V
<a href="#">GL ARB draw buffers blend</a>	X	X	V	V	V	V	V	V	V	V	V	V	V	V
Support	0%	8%	46%	100%	100%	31%	54%	62%	100%	100%	100%	100%	46%	100%

[illegible]

<u>GL ARB texture swizzle</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB texture rgb10 a2ui</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB shader bit encoding</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB sampler objects</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB occlusion query2</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB instanced arrays</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB explicit attrib location</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB blend func extended</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

OpenGL 3.2	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
<u>GL ARB vertex array bgra</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB texture multisample</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB sync</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB seamless cube_map</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB provoking vertex</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB geometry shader4</u>	V	V	V	V	V	V	V	V	V	V	V	V	X	V
<u>GL ARB fragment coord conventions</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB depth clamp</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB draw elements base vertex</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	89%	100%

OpenGL 3.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
<u>GL ARB uniform buffer object</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL EXT texture snorm</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB texture rectangle</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB texture buffer object</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL NV primitive restart</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB draw instanced</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>GL ARB copy buffer</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

OpenGL 3.0	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	Cayman	S.I.	HD 4000	Mesa	MacOS X
------------	-----	-------	-------	-------	--------	------	-------	-------	-----------	--------	------	---------	------	---------

[illegible][illegible]



[illegible]