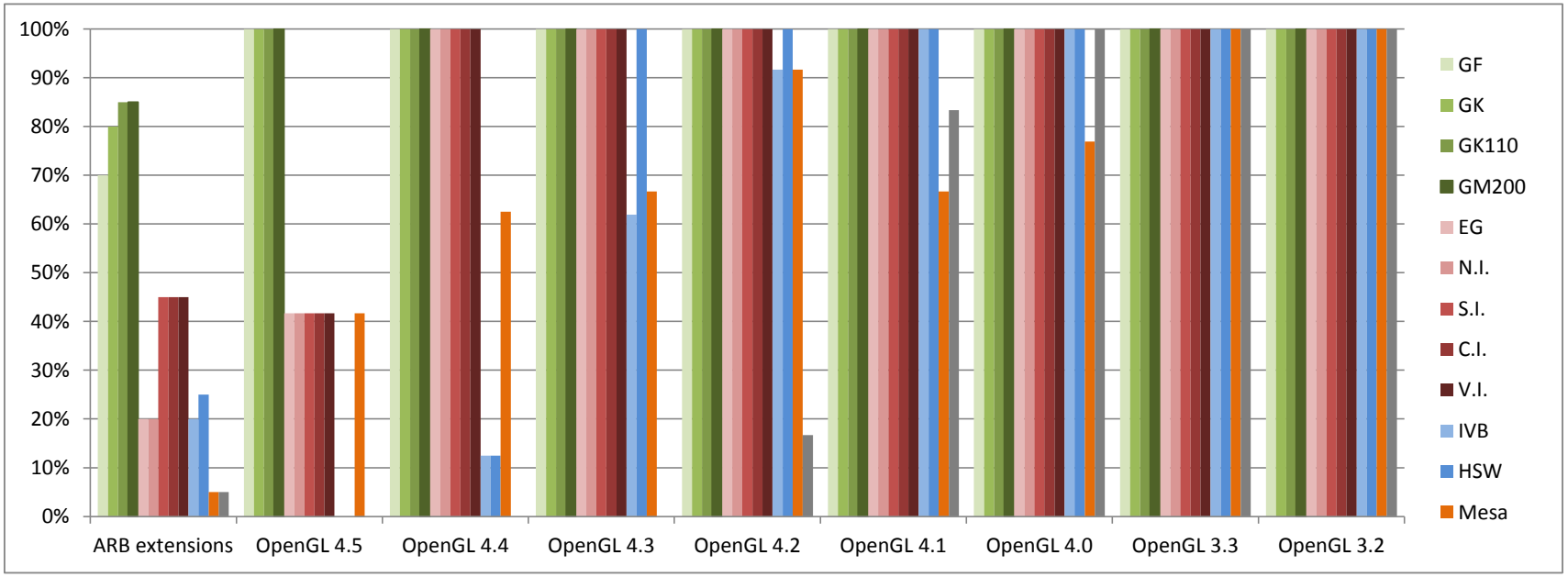
OpenGL hardware matrix

Extensions exposed by OpenGL implementations

January 2015, G-Truc Creation

GF / Fermi: GeForce 400 series, GeForce 500 series
GK / Kepler: GeForce 600 series, GeForce 700 series
GK110 / Kepler 110: GeForce 780
GM200 / Maxwell: GeForce 900 series
EG / Evergreen: Radeon HD 5000 series, Radeon HD 6000 series
N.I. / Northern Islands: Radeon HD 6900 series
S.I. / Southern Islands: Radeon HD 7000 series, Radeon R7 250X, Radeon R7 265, Radeon R9 280
C.I. / Sea Islands: Radeon HD 7790, Radeon R7 240, Radeon R7 250, Radeon R7 260, Radeon R9 270
V.I. / Volcanic Islands: Radeon R9 290
IVB / Ivy Bridge: HD4000, HD2500
HSW / Haswell: Iris 5000 series, HD 4X00 series

Vendor	NVIDIA					AMD					Intel		Mesa	Apple
Drivers version	347.09					14.12					3958	3977	git	10.10.1
Release date	18/12/2014					12/09/2014					26/10/2014		04/01/2015	17/11/2014
Platforms	**GF**	**GK**	**GK110**	**GM200**	**EG**	**N.I.**	**S.I.**	**C.I.**	**V.I.**	**IVB**	**HSW**		**Mesa**	**MacOS X**
ARB extensions	70%	80%	85%	85%	20%	20%	45%	45%	45%	20%	25%		5%	5%
OpenGL 4.5	100%	100%	100%	100%	42%	42%	42%	42%	42%	0%	0%		42%	0%
OpenGL 4.4	100%	100%	100%	100%	100%	100%	100%	100%	100%	13%	13%		63%	0%
OpenGL 4.3	100%	100%	100%	100%	100%	100%	100%	100%	100%	62%	100%		67%	0%
OpenGL 4.2	100%	100%	100%	100%	100%	100%	100%	100%	100%	92%	100%		92%	17%
OpenGL 4.1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		67%	83%
OpenGL 4.0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		77%	100%
OpenGL 3.3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		100%	100%
OpenGL 3.2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		100%	100%



Nomenclature:

Supported

Not supported

Support added from previous report

OpenGL Extensions	GF	GK	GK110	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
KHR_blend_equation_advanced_coherent	X	X	V	V	X	X	X	X	X	X	X	X	X
KHR_blend_equation_advanced	V	V	V	V	X	X	X	X	X	X	V	X	X
KHR_texture_compression_astc_ldr	X	X	X	X	X	X	X	X	X	X	X	X	X
ARB_transform_feedback_overflow_query	V	V	V	V	X	X	X	X	X	V	V	X	X
ARB_robustness	V	V	V	V	X	X	X	X	X	V	V	X	X
ARB_sparse_texture	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_sparse_buffer	V	V	V	V	X	X	V	V	V	X	X	X	X
ARB_shading_language_include	V	V	V	V	X	X	X	X	X	X	X	X	V
ARB_shader_stencil_export	X	X	X	X	V	V	V	V	V	X	X	X	X
ARB_shader_group_vote	V	V	V	V	X	X	V	V	V	X	X	X	X
ARB_shader_draw_parameters	V	V	V	V	X	X	V	V	V	X	X	X	X
ARB_seamless_cubemap_per_texture	X	V	V	V	V	V	V	V	V	X	X	X	X
ARB_robustness_isolation	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_pipeline_statistics_query	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_debug_output	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_indirect_parameters	V	V	V	V	X	X	V	V	V	X	X	X	X
ARB_compute_variable_group_size	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_compatibility	V	V	V	V	V	V	V	V	V	V	V	X	X
ARB_cl_event	X	X	X	X	X	X	X	X	X	X	X	X	X
ARB_bindless_texture	X	V	V	V	X	X	V	V	V	X	X	X	X
Support	72%	83%	83%	83%	22%	22%	50%	50%	50%	22%	22%	6%	6%

OpenGL Extensions	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
EXT_texture_compression_dxt1	V	V	V	V	X	X	X	X	X	X	X	V	V
EXT_texture_compression_s3tc	V	V	V	V	V	V	V	V	V	V	V	X	V
EXT_texture_sRGB_decode	V	V	V	V	V	V	V	V	V	V	V	V	V

EXT_texture_mirror_clamp	V	V	V	V	V	V	V	V	V	X	X	X	V
EXT_texture_filter_minmax	X	X	X	V	X	X	X	X	X	X	X	X	X
EXT_shader_integer_mix	V	V	V	V	V	V	V	V	V	V	V	V	X
EXT_shader_image_load_formatted	X	X	X	V	X	X	X	X	X	X	X	X	X
EXT_sparse_texture2	X	X	X	V	X	X	X	X	X	X	X	X	X
EXT_raster_multisample	X	X	X	V	X	X	X	X	X	X	X	X	X
EXT_post_depth_coverage	X	X	X	V	X	X	X	X	X	X	X	X	X
EXT_polygon_offset_clamp	V	V	V	V	V	V	V	V	V	X	V	X	X
EXT_framebuffer_multisample_blit_scaled	V	V	V	V	X	X	X	X	X	X	X	V	V
EXT_direct_state_access	V	V	V	V	V	V	V	V	V	X	V	X	X
EXT_depth_bounds_test	V	V	V	V	X	X	V	V	V	X	X	X	V
EXT clip_control	X	X	X	X	X	X	X	X	X	V	V	X	X
NV_viewport_array2	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_vertex_buffer_unified_memory	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_uniform_buffer_unified_memory	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_texture_multisample	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_texture_barrier	V	V	V	V	V	V	V	V	V	X	X	X	V
NV_shader_thread_shuffle	X	V	V	V	X	X	X	X	X	X	X	X	X
NV_shader_thread_group	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_shader_buffer_store	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_shader_buffer_load	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_shader_atomic_fp16_vector	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_shader_atomic_float	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_shader_atomic_int64	X	X	V	V	X	X	X	X	X	X	X	X	X
NV_sample_mask_override_coverage	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_sample_locations	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_path_rendering_shared_edge	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_path_rendering	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_multisample_coverage	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_internalformat_sample_query	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_geometry_shader_passthrough	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_framebuffer_mixed_samples	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_fragment_shader_interlock	X	X	X	V	X	X	X	X	X	X	X	X	X

NV_fragment_coverage_to_color	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_fill_rectangle	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_explicit_multisample	V	V	V	V	V	V	V	V	V	X	X	X	X
NV_depth_buffer_float	V	V	V	V	V	V	V	V	V	X	X	X	X
NV_copy_image	V	V	V	V	V	V	V	V	V	X	X	X	X
NV_conservative_raster	X	X	X	V	X	X	X	X	X	X	X	X	X
NV_bindless_texture	X	V	V	V	X	X	X	X	X	X	X	X	X
NV_bindless_multi_draw_indirect_count	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_bindless_multi_draw_indirect	V	V	V	V	X	X	X	X	X	X	X	X	X
NV_blend_equation_advanced	V	V	V	V	X	X	X	X	X	X	X	X	X
INTEL_map_texture	X	X	X	X	X	X	X	X	X	X	V	X	X
INTEL_fragment_shader_ordering	X	X	X	X	X	X	V	V	V	V	V	X	X
INTEL_conservative_rasterization	X	X	X	X	X	X	X	X	X	X	V	X	X
ANGLE_texture_compression_dxt5	X	X	X	X	X	X	X	X	X	X	X	V	X
ANGLE_texture_compression_dxt3	X	X	X	X	X	X	X	X	X	X	X	V	X
AMD_vertex_shader_viewport_index	X	X	X	X	V	V	V	V	V	X	V	X	X
AMD_vertex_shader_layer	X	X	X	X	V	V	V	V	V	X	V	V	X
AMD_transform_feedback4	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_transform_feedback3_lines_triangles	X	X	X	X	X	V	V	V	V	X	X	X	X
AMD_stencil_operation_extended	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_sparse_texture_pool	X	X	X	X	X	X	X	V	V	X	X	X	X
AMD_sparse_texture	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_shader_trinary_minmax	X	X	X	X	X	X	V	V	V	X	X	V	X
AMD_shader_stencil_value_export	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_shader_stencil_export	X	X	X	X	V	V	V	V	V	X	X	X	X
AMD_seamless_cubemap_per_texture	X	V	V	V	V	V	V	V	V	X	X	V	X
AMD_sample_positions	X	X	X	X	V	V	V	V	V	X	X	X	X
AMD_query_buffer_object	X	X	X	X	V	V	V	V	V	X	X	X	X
AMD_pinned_memory	X	X	X	X	V	V	V	V	V	X	X	X	X
AMD_performance_monitor	X	X	X	X	V	V	V	V	V	X	X	V	X
AMD_occlusion_query_event	X	X	X	X	X	X	X	V	V	X	X	X	X
AMD_interleaved_elements	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_gpu_shader_int64	X	X	X	X	X	X	V	V	V	X	X	X	X

AMD_gcn_shader	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_framebuffer_sample_positions	X	X	X	X	X	X	V	V	V	X	X	X	X
AMD_blend_minmax_factor	X	X	X	X	X	V	V	V	V	X	X	X	X
ATI_texture_mirror_once	V	V	V	V	V	V	V	V	V	X	X	X	V
Support	43%	49%	50%	69%	25%	27%	45%	47%	47%	10%	17%	12%	10%

OpenGL 4.5	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
KHR_context_flush_control	V	V	V	V	X	X	X	X	X	X	X	X	X
KHR_robust_buffer_access_behavior	V	V	V	V	X	X	X	X	X	X	X	V	X
KHR_robustness	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_ES3_1_compatibility	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_clip_control	V	V	V	V	V	V	V	V	V	X	X	V	X
ARB_conditional_render_inverted	V	V	V	V	V	V	V	V	V	X	X	V	X
ARB_cull_distance	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_derivative_control	V	V	V	V	V	V	V	V	V	X	X	V	X
ARB_direct_state_access	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_get_texture_sub_image	V	V	V	V	V	V	V	V	V	X	X	X	X
ARB_shader_texture_image_samples	V	V	V	V	X	X	X	X	X	X	X	X	X
ARB_texture_barrier	V	V	V	V	V	V	V	V	V	X	X	V	X
Support	100%	100%	100%	100%	42%	42%	42%	42%	42%	0%	0%	42%	0%

OpenGL 4.4	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
ARB_buffer_storage	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_clear_texture	V	V	V	V	V	V	V	V	V	X	X	V	X
ARB_enhanced_layouts	V	V	V	V	V	V	V	V	V	X	X	X	X
ARB_multi_bind	V	V	V	V	V	V	V	V	V	X	X	V	X
ARB_query_buffer_object	V	V	V	V	V	V	V	V	V	X	X	X	X
ARB_texture_mirror_clamp_to_edge	V	V	V	V	V	V	V	V	V	X	X	V	X
ARB_texture_stencil8	V	V	V	V	V	V	V	V	V	X	X	X	X
ARB_vertex_type_10f_11f_11f_rev	V	V	V	V	V	V	V	V	V	X	X	V	X
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	13%	13%	63%	0%

OpenGL 4.3	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X

ARB_vertex_attrib_binding	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_texture_view	V	V	V	V	V	V	V	V	V	X	V	V	X
ARB_texture_storage_multisample	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_texture_query_levels	V	V	V	V	V	V	V	V	V	X	V	V	X
ARB_texture_buffer_range	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_stencil_texturing	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_shader_storage_buffer_object	V	V	V	V	V	V	V	V	V	X	V	X	X
ARB_shader_image_size	V	V	V	V	V	V	V	V	V	V	V	X	X
ARB_program_interface_query	V	V	V	V	V	V	V	V	V	V	V	X	X
ARB_multi_draw_indirect	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_invalidate_subdata	V	V	V	V	V	V	V	V	V	X	V	V	X
ARB_internalformat_query2	V	V	V	V	V	V	V	V	V	V	V	X	X
ARB_framebuffer_no_attachments	V	V	V	V	V	V	V	V	V	V	V	X	X
ARB_fragment_layer_viewport	V	V	V	V	V	V	V	V	V	X	V	V	X
ARB_explicit_uniform_location	V	V	V	V	V	V	V	V	V	X	V	V	X
ARB_ES3_compatibility	V	V	V	V	V	V	V	V	V	V	V	V	X
KHR_debug	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_copy_image	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_compute_shader	V	V	V	V	V	V	V	V	V	X	V	X	X
ARB_clear_buffer_object	V	V	V	V	V	V	V	V	V	X	V	V	X
ARB_arrays_of_arrays	V	V	V	V	V	V	V	V	V	V	V	X	X
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	62%	100%	67%	0%

OpenGL 4.2	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
ARB_transform_feedback_instanced	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_texture_compression_bptc	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_texture_storage	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_shading_language_packing	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_shading_language_420pack	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_shader_image_load_store	V	V	V	V	V	V	V	V	V	X	V	X	X
ARB_shader_atomic_counters	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_map_buffer_alignment	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_internalformat_query	V	V	V	V	V	V	V	V	V	V	V	V	V

ARB_conservative_depth	V	V	V	V	V	V	V	V	V	V	V	V	X	
ARB_compressed_texture_pixel_storage	V	V	V	V	V	V	V	V	V	V	V	V	X	
ARB_base_instance	V	V	V	V	V	V	V	V	V	V	V	V	X	
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	92%	100%	92%	17%	

OpenGL 4.1	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
ARB_viewport_array	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_vertex_attrib_64bit	V	V	V	V	V	V	V	V	V	V	V	X	V
ARB_shader_precision	V	V	V	V	V	V	V	V	V	V	V	X	V
ARB_separate_shader_objects	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_get_program_binary	V	V	V	V	V	V	V	V	V	V	V	V	X
ARB_ES2_compatibility	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%	67%	83%

OpenGL 4.0	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
ARB_transform_feedback3	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_transform_feedback2	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_texture_query_lod	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_texture_gather	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_texture_cube_map_array	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_texture_buffer_object_rgb32	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_tessellation_shader	V	V	V	V	V	V	V	V	V	V	V	X	V
ARB_shader_subroutine	V	V	V	V	V	V	V	V	V	V	V	X	V
ARB_sample_shading	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_gpu_shader5	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_gpu_shader_fp64	V	V	V	V	V	V	V	V	V	V	V	X	V
ARB_draw_indirect	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_draw_buffers_blend	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%	77%	100%

OpenGL 3.3	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
ARB_vertex_type_2_10_10_10_rev	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_timer_query	V	V	V	V	V	V	V	V	V	V	V	V	V

ARB_texture_swizzle	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_texture_rgb10_a2ui	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_shader_bit_encoding	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_sampler_objects	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_occlusion_query2	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_instanced_arrays	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_explicit_attrib_location	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_blend_func_extended	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%

OpenGL 3.2	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	Mesa	MacOS X
ARB_vertex_array_bgra	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_texture_multisample	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_sync	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_seamless_cube_map	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_provoking_vertex	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_geometry_shader4	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_fragment_coord_conventions	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_depth_clamp	V	V	V	V	V	V	V	V	V	V	V	V	V
ARB_draw_elements_base_vertex	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%