

Mesa

Mesa 13 Release Notes



Mesa 13.0.x implements the OpenGL 4.4 API, but the version reported by `glGetString(GL_VERSION)` or `glGetIntegerv(GL_MAJOR_VERSION)` / `glGetIntegerv(GL_MINOR_VERSION)` depends on the particular driver being used. Some drivers don't support all the features required in OpenGL 4.4. OpenGL 4.4 is **only** available if requested at context creation because compatibility contexts are not supported.

The current release added basic Intel Gemini Lake processor support, fixes crashes in GLX, EGL and Wayland-EGL, resolves a number of memory leaks in the video decoding drivers, makes the Intel Vulkan driver more robust by exporting only the required symbols (previously we would get symbol collisions leading to strange behaviour or even crashes).

Not to mention the steady amount of driver fixes in i965, nouveau, radeonsi, freedreno and vc4.

URL: <https://cgit.freedesktop.org/mesa/mesa/>

Test programs:

- [Blender 2.78c](#) - extensive 3D modelling and animation program
- [Freecad](#) - Draw 3D models
- [Shader Maker](#) - Draw 3D Shader elements
- [SuperTuxKart 0.9.2](#) - 3D go-kart Racing Simulator
- [FlightGear 2017.1.2](#) - 3D Flight Simulator
- [OpenScad](#) - 3D construction without drawing skills
- [Slic3r](#) - G-Code printing preparation for 3D models

Test platform:

- SunOS mypixel 5.11 illumos-dd99db6 i86pc i386 i86pc Solaris

New features

Note: some of the new features are only available with certain drivers.

- OpenGL ES 3.1 on i965/hsw
- OpenGL ES 3.2 on i965/gen9+ (Skylake and later)

- GL_ARB_ES3_1_compatibility on i965
- GL_ARB_ES3_2_compatibility on i965/gen8+
- GL_ARB_clear_texture on r600, radeonsi
- GL_ARB_compute_variable_group_size on nvc0, radeonsi
- GL_ARB_cull_distance on radeonsi
- GL_ARB_enhanced_layouts on i965, nv50, nvc0, radeonsi, llvmpipe, softpipe
- GL_ARB_indirect_parameters on radeonsi
- GL_ARB_query_buffer_object on radeonsi
- GL_ARB_shader_draw_parameters on radeonsi
- GL_ARB_shader_group_vote on nvc0
- GL_ARB_shader_viewport_layer_array on i965/gen6+
- GL_ARB_stencil_texturing on i965/hsw
- GL_ARB_texture_stencil8 on i965/hsw
- GL_EXT_window_rectangles on nv50, nvc0
- GL_KHR_blend_equation_advanced on i965
- GL_KHR_robustness on nvc0, radeonsi
- GL_KHR_texture_compression_astc_sliced_3d on i965
- GL_OES_copy_image on nv50, nvc0, r600, radeonsi, softpipe, llvmpipe
- GL_OES_geometry_shader on i965/gen8+, nvc0, radeonsi
- GL_OES_primitive_bounding_box on i965/gen7+, nvc0, radeonsi
- GL_OES_texture_cube_map_array on i965/gen8+, nvc0, radeonsi
- GL_OES_tessellation_shader on i965/gen7+, nvc0, radeonsi
- GL_OES_viewport_array on nvc0, radeonsi
- GL_ANDROID_extension_pack_es31a on i965/gen9+

Bug fixes

- [Bug 68504](#) - 9.2-rc1 workaround for clover build failure on ppc/altivec: cannot convert 'bool' to '__vector(4) __bool int' in return
- [Bug 97102](#) - [dri][swr] stack overflow / infinite loop with GALLIUM_DRIVER=swr
- [Bug 98869](#) - Electronic Super Joy graphic artefacts (regression,bisected)
- [Bug 99401](#) - [g33] regression: piglit.spec.lopengl 1_0.gl-1_0-beginend-coverage
- [Bug 99456](#) - Firefox crashing when opening [about:support](#) with WebGL2 enabled
- [Bug 99677](#) - heap-use-after-free in glsl
- [Bug 99715](#) - Don't print: "Note: Buggy applications may crash, if they do please report to vendor"
- [Bug 99850](#) - Tessellation bug on Carrizo
- [Bug 100049](#) - "ralloc: Make sure ralloc() allocations match malloc()'s alignment." causes seg fault in 32bit build
- [Bug 98329](#) - [dEQP, EGL, SKL, BDW, BSW] dEQP-EGL.functional.image.render_multiple_contexts.gles2_renderbuffer_depth16_depth_buffer
- [Bug 98421](#) - src/loader/loader.c:111:40: error: unknown type name 'drmDevicePtr'
- [Bug 98526](#) - glsl/tests/general-ir-test regression
- [Bug 99532](#) - Compute shader doesn't give right result under some circumstances
- [Bug 99631](#) - segfault with OSVRTrackerView and openscenegraph git master
- [Bug 99633](#) - rasterizer/core/clip.h:279:49: error: 'const struct API_STATE' has no member named 'linkageCount'
- [Bug 99692](#) - [radv] Mostly broken on Hawaii PRO/CIK ASICs
- [Bug 92634](#) - gallium's vl_mpeg12_decoder does not work with st/va
- [Bug 94512](#) - X segfaults with glx-tls enabled in a x32 environment
- [Bug 94900](#) - HD6950 GPU lockup loop with various steam games (octodad[always], saints row 4[always], dead island[always], grid autosport [sometimes])
- [Bug 98263](#) - [radv] The Talos Principle fails to launch with "Fatal error: Cannot set display mode."
- [Bug 98914](#) - mesa-udpau-drivers: breaks vdpau for mpeg2video
- [Bug 98975](#) - Wasteland 2 Directors Cut: Hangs. GPU fault
- [Bug 99030](#) - [HSW, regression] transform feedback fails on Linux 4.8
- [Bug 99085](#) - [EGL] dEQP-EGL.functional.sharing.gles2_multithread intermittent
- [Bug 99097](#) - [vulkancts] dEQP-VK.image.store regression
- [Bug 99100](#) - [SKL,BDW,BSW,KBL] dEQP-VK.glsl.return.return_in_dynamic_loop_dynamic_vertex regression
- [Bug 99144](#) - Incorrect rendering using glDrawArraysInstancedBaseInstance and first != 0 on Skylake
- [Bug 99154](#) - Link time error when using multiple builtin functions
- [Bug 99158](#) - vdpau segfaults and gpu locks with kodi on R9285
- [Bug 99185](#) - dEQP-EGL.functional.image.modify.tex_rgb5_a1_tex_subimage_rgba8
- [Bug 99188](#) - dEQP-EGL.functional.create_context_ext.robust_gl_30.rgb565_no_depth_no_stencil
- [Bug 99210](#) - ES3-CTS.functional.texture.mipmap.cube.generate.rgb565_*
- [Bug 99354](#) - [G71] "Assertion 'bkref' failed" reproducible with glmark2
- [Bug 99450](#) - [amdgpu] Payday 2 visual glitches on some models
- [Bug 99451](#) - polygon offset use after free
- [Bug 77662](#) - Fail to render to different faces of depth-stencil cube map
- [Bug 92234](#) - [BDW] GPU hang in Shogun2
- [Bug 98329](#) - [dEQP, EGL, SKL, BDW, BSW] dEQP-EGL.functional.image.render_multiple_contexts.gles2_renderbuffer_depth16_depth_buffer
- [Bug 99038](#) - [dEQP, EGL, SKL, BDW, BSW] dEQP-EGL.functional.negative_api.create_pixmap_surface crashes
- [Bug 97321](#) - Query INFO_LOG_LENGTH for empty info log should return 0
- [Bug 97420](#) - "#version 0" crashes glsl_compiler
- [Bug 98632](#) - Fix build on Hurd without PATH_MAX
- [Bug 97715](#) - [ILK,G45,G965] piglit.spec.arb_separate_shader_objects.misc api error checks
- [Bug 98012](#) - [IVB] Segfault when running Dolphin twice with Vulkan
- [Bug 98512](#) - radeon r600 vdpau: Invalid command stream: texture bo too small
- [Bug 61907](#) - Indirect rendering of multi-texture vertex arrays broken
- [Bug 69622](#) - eglTerminate then eglMakeCurrent crashes
- [Bug 71759](#) - Intel driver fails with "intel_do_flush_locked failed: No such file or directory" if buffer imported with EGL_NATIVE_PIXMAP_KHR
- [Bug 83036](#) - [ILK]Piglit spec_ARB_copy_image_arb_copy_image-formats fails
- [Bug 89599](#) - symbol 'x86_64_entry_start' is already defined when building with LLVM/clang

- Bug 90513 - Odd gray and red flicker in The Talos Principle on GK104
- Bug 91342 - Very dark textures on some objects in indoors environments in Postal 2
- Bug 92306 - GL Excess demo renders incorrectly on nv43
- Bug 94148 - Framebuffer considered invalid when a draw call is done before glCheckFramebufferStatus
- Bug 94354 - R9285 Unigine Valley perf regression since radeonsi: use re-Z
- Bug 94561 - [llvmpipe] PIPE_CAP_VIDEO_MEMORY reports negative value on 32 bits (with 16GB ram)
- Bug 94627 - Game Risen on wine black grass
- Bug 94681 - dEQP-GLES31.functional.ssbo.layout.random.all_shared_buffer.23 takes 25 minutes to compile
- Bug 95000 - deqp: assert in dEQP-GLES3.functional.vertex_arrays.single_attribute.strides.fixed.user_ptr_stride17_components2_quads1
- Bug 95130 - Derivatives of gl_Color wrong when helper pixels used
- Bug 95246 - Segfault in glBindFramebuffer()
- Bug 95419 - [HSW][regression][bisect] RPG Maker game gives "invalid floating point operation" at startup
- Bug 95462 - [BXT,BSW] arb_gpu_shader_fp64 causes gpu hang
- Bug 95529 - [regression, bisected] Image corruption in Chrome
- Bug 96235 - st_nir.h:34: error: redefinition of typedef 'nir_shader'
- Bug 96274 - [NVC0] Failure when compiling compute shader: Assertion 'bb->getFirst()->serial <= bb->getExit()->serial' failed
- Bug 96285 - Mesa build broken
- Bug 96299 - [vulkan] 64 regressions due to mesa d5f2f32
- Bug 96343 - oom since st/mesa: implement PBO downloads for ReadPixels
- Bug 96346 - [SNB,CTS] es2-cts.gtf.gl.atan regression
- Bug 96349 - [CTS,SKL,BSW,BDW,KBL,BXT] es31-cts.arrays_of_arrays.interactionuniformbuffers3
- Bug 96351 - [CTS,SKL,KBL,BXT] es2-cts.gtf.gl2extensiontests.egl_image.egl_image
- Bug 96358 - SSO: wrong interface validation between GS and VS (regression due to latest gles 3.1)
- Bug 96425 - [bisected] occasional dark render in The Talos Principle
- Bug 96484 - [vulkan] deqp-vk.gsl.builtin.precision.sin / cos regression
- Bug 96504 - [vulkancts] compute tests crash
- Bug 96516 - [bisected: 482526] "clover: Update OpenCL version string to match OpenGL": clover's build fails because of missing git_sha1.h
- Bug 96528 - Location qualifier segfaults during shader compilation
- Bug 96541 - Tonga Unreal elemental bad rendering since radeonsi: Decompress DCC textures in a render feedback loop
- Bug 96565 - Clive Barker's Jericho displays strange, vivid colors when motion blur enabled
- Bug 96607 - [bisected] texture misrender / flicker in The Talos Principle on SKL
- Bug 96617 - gl_SecondaryFragDataEXT doesn't work for extended blend func
- Bug 96629 - dEQP-GLES2.functional.texture.completeness.cube.not_positive_level_0: Assertion 'width >= 1' failed.
- Bug 96639 - st/mesa: transfer_map with too-high level with dEQP-GLES2.functional.texture.completeness.cube.extra_level
- Bug 96674 - [SNB, ILK] spec.ext_image_dma_buf_import.ext_image_dma_buf_import-sample_nv1
- Bug 96729 - Wrong shader compilation error message
- Bug 96762 - [radeonsi,apitrace] Firewatch: nothing rendered in scrollable (text) areas
- Bug 96765 - BindFragDataLocationIndexed on array fragment shader output.
- Bug 96770 - [include/GL/mesa_glinterop.h:62: error: redefinition of typedef 'GLXContext'
- Bug 96782 - [regression bisected] R600 fp64 and glsl-4.00 piglit failures
- Bug 96791 - Cannot use image from swapchains for sampling
- Bug 96825 - anv_device.c:31:27: fatal error: anv_timestamp.h: No such file or directory
- Bug 96835 - "gallium: Force blend color to 16-byte alignment" crash with "-march=native -O3" causes some 32bit games to crash
- Bug 96850 - Crucible tests fail for 32bit mesa
- Bug 96878 - [Bisected: cc2d0e6][HSW] "GPU HANG" msg after autologin to gnome-session
- Bug 96908 - [radeonsi] MSAA causes graphical artifacts
- Bug 96911 - webgl2 conformance2/textures/misc/tex-mipmap-levels.html crashes 12.1 Intel driver
- Bug 96949 - [regression] Piglit numSamples assertion failures with 9a23a177b90
- Bug 96950 - Another regression from bc4e0c486: vbo: Use a bitmask to track the active arrays in vbo_exec*.
- Bug 96971 - invariant qualifier is not valid for shader inputs
- Bug 97019 - [clover] build failure in llvm/codegen/native.cpp:129:52
- Bug 97032 - [BDW,SKL] piglit.spec.arb_gpu_shader5.arb_gpu_shader5-interpolateatcentroid-flat
- Bug 97033 - [BDW,SKL] piglit.spec.arb_gpu_shader_fp64.varying-packing.simple regressions
- Bug 97039 - The Talos Principle and Serious Sam 3 GPU faults
- Bug 97083 - [IVB,BYT] GPU hang on deqp-gles31.functional.separate.shader.random
- Bug 97140 - dd_draw.c:949:11: error: implicit declaration of function 'fmemopen' is invalid in C99 [-Werror,-Wimplicit-function-declaration]
- Bug 97207 - [IVY BRIDGE] Fragment shader discard writing to depth
- Bug 97214 - X not running with error "Failed to make EGL context current"
- Bug 97225 - [i965 on HD4600 Haswell] xcom switch to ingame cinematics cause segmentation fault
- Bug 97231 - GL_DEPTH_CLAMP doesn't clamp to the far plane
- Bug 97233 - vkQuake VkSpecializationMapEntry related bug
- Bug 97260 - R9 290 low performance in Linux 4.7
- Bug 97267 - [BDW] GL45-CTS.texture_cube_map_array.sampling asserts inside brw_fs.cpp
- Bug 97278 - [vulkancts,HSW] all vulkancts tests assert on HSW
- Bug 97285 - Darkness in Dota 2 after Patch "Make Gallium's BlitFramebuffer follow the GL 4.4 sRGB rules"
- Bug 97286 - `make check` fails uniform-initializer-test
- Bug 97305 - Gallium: TBOs and images set the offset in elements, not bytes
- Bug 97307 - glsl/glcpp/tests/glcpp-test regression
- Bug 97309 - piglit.spec.gsl-1_30.compiler.switch-statement.switch-case-duplicated.vert regression
- Bug 97322 - GenerateMipmap creates wrong mipmap for sRGB texture
- Bug 97331 - glDrawElementsBaseVertex doesn't work in display list on i915
- Bug 97351 - DrawElementsBaseVertex with VBO ignores base vertex on Intel GMA 9xx in some cases
- Bug 97413 - BioShock Infinite crashes on startup with Mesa Git version, R7 370
- Bug 97426 - glScissor gives vertically inverted result
- Bug 97448 - [HSW] deqp-vk.api._copy_and_blit.image_to_image_stencil regression
- Bug 97476 - Shader binaries should not be stored in the PipelineCache
- Bug 97477 - i915g: gl_FragCoord is always (0.0, max_y)
- Bug 97513 - clover reports wrong device pointer size
- Bug 97549 - [SNB, BXT] up to 40% perf drop from "loader/dri3: Overhaul dri3_update_num_back" commit

- [Bug 97587](#) - make check nir/tests/control_flow_tests regression
- [Bug 97761](#) - es2-cts.gtf.gl2extensiontests.egl_image_external.testsimpleunassociated crashes
- [Bug 97773](#) - New Mesa master now results in warnings in glrender (and subsurfaces and simple-egl), black screen
- [Bug 97779](#) - [regression, bisected][BDW, GPU hang] stuck on render ring, always reproducible
- [Bug 97790](#) - Vulkan cts regressions due to 24be63066
- [Bug 97804](#) - Later precision statement isn't overriding earlier one
- [Bug 97808](#) - "tgsi/scan: don't set interp flags for inputs only used by INTERP instructions" causes glitches in wine with gallium nine
- [Bug 97887](#) - llvm segfault in janusvr -render vive
- [Bug 97894](#) - Crash in u_transfer_unmap_vtbl when unmapping a buffer mapped in different context
- [Bug 97952](#) - /usr/include/string.h:518:12: error: exception specification in declaration does not match previous declaration
- [Bug 97969](#) - [radeonsi, bisected: fb827c0] Video decoding shows green artifacts
- [Bug 97976](#) - VCE regression BO to small for addr since winsys/amdgpu: enable buffer allocation from slabs
- [Bug 98005](#) - VCE dual instance encoding inconsistent since st/va: enable dual instances encode by sync surface
- [Bug 98025](#) - [radeonsi] incorrect primitive restart index used
- [Bug 98128](#) - nir/tests/control_flow_tests.cpp:79:73: error: 'nir_loop_first_cf_node' was not declared in this scope
- [Bug 98131](#) - Compiler should reject lowp/mediump qualifiers on atomic_uints
- [Bug 98133](#) - GetSynciv should raise an error if bufSize < 0
- [Bug 98134](#) - dEQP-GLES31.functional.debug.negative_coverage.get_error.buffer.draw_buffers wants a different GL error code
- [Bug 98135](#) - dEQP-GLES31.functional.debug.negative_coverage.get_error.shader.transform_feedback_varyings wants a different GL error code
- [Bug 98167](#) - [vulkan, radv] missing libgcrypt and openssl devel results in linker error in libvulkan_common
- [Bug 98172](#) - Concurrent call to glClientWaitSync results in segfault in one of the waiters.
- [Bug 98244](#) - dEQP: textureOffset(sampler2DArrayShadow, ...) should not exist.
- [Bug 98264](#) - Build broken for i965 due to multiple definitions of intelFenceExtension
- [Bug 98307](#) - "st/gsl_to_tgsi: explicitly track all input and output declaration" broke flightgear colors on rs780
- [Bug 98326](#) - [dEQP, EGL] pBuffer depth/stencil tests fail
- [Bug 98415](#) - Vulkan Driver JSON file contains incorrect field
- [Bug 98431](#) - UnrealEngine v4 demos startup fails to blorp blit assert

Changes

Radeon drivers (r600 and radeonsi) now require LLVM 3.6 as a minimum.