

Vulkanised 2026

The 8th Vulkan Developer Conference
San Diego, USA | February 9-11, 2026

The Vulkan SDK - An Ecosystem Update

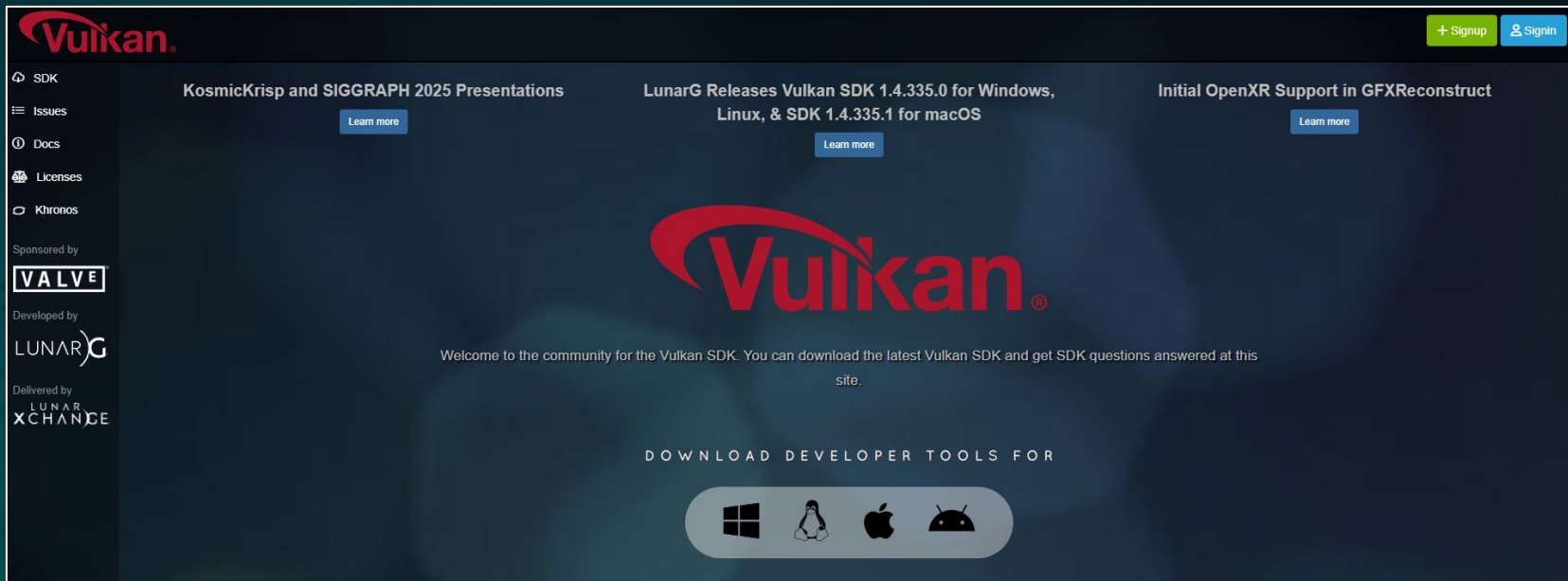
Karen Ghavam, LunarG



Some quick information about me

- CEO and Engineering Director – LunarG
 - An Independent, private company with Khronos membership
 - Specializing in 3D graphics software solutions for our clients
 - Developing Vulkan Ecosystem components since 2015
 - Generous sponsorship from Valve and Google
- I have been in the computing industry for 45 years
 - 35 years at Hewlett Packard before taking ownership of LunarG in 2015
 - The last 10 years at LunarG have been awesome!
 - I love working on the Vulkan ecosystem to help move the Vulkan API forward!

The Vulkan SDK (vulkan.lunarg.com)



The screenshot shows the homepage of the Vulkan SDK website. At the top left is the Vulkan logo. In the top right corner, there are buttons for '+ Signup' and 'Signin'. A left sidebar contains navigation links: SDK, Issues, Docs, Licenses, Khronos, and logos for 'Sponsored by VALVE', 'Developed by LUNAR)G', and 'Delivered by LUNAR XCHANGE'. The main content area features three news items: 'KosmicKrisp and SIGGRAPH 2025 Presentations', 'LunarG Releases Vulkan SDK 1.4.335.0 for Windows, Linux, & SDK 1.4.335.1 for macOS', and 'Initial OpenXR Support in GFXReconstruct'. Below these is a large Vulkan logo and a welcome message: 'Welcome to the community for the Vulkan SDK. You can download the latest Vulkan SDK and get SDK questions answered at this site.' At the bottom, there is a section titled 'DOWNLOAD DEVELOPER TOOLS FOR' with icons for Windows, Linux, macOS, and Android.

Delivered by LunarG in close coordination with the Khronos Vulkan working group

Vulkan SDK Download Page

Vulkan + Signup | Signin

SDK

Issues

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Khronos

Sponsored by **VALVE**

Developed by **LUNARXCHANGE**

Delivered by **LUNARXCHANGE**

DOWNLOAD DEVELOPER TOOLS FOR

Windows Linux Mac

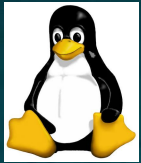
SDK version query and download API


Version Released	File
1.4.335.0 09-Dec-2025	SDK - SDK Installer vulkansdk-windows-x64-1.4.335.0.exe (290MB) 15099ba1c1488177b094fe55c8070e8cb5331c8959905ebbaa44a75cfa310c
	SDK Config - Config json config.json (0MB) 00038b797ad1068f2b8a155747dbab532b41a8767ad29bb1ed0a1dee5be4538d22
	Runtime - Runtime Installer VulkanRT-x64-1.4.335.0-Installer.exe (24MB) c057b842cc19b2d171800005a923dcd324892b531cd31e00118e8908bb7d79
	Runtime zip - Zip file of the runtime components. VulkanRT-x64-1.4.335.0-Components.zip (18MB) #8636a2399fb1c16b4c792ca8709e697989e9d82b2c132bbd7131cb97f62
1.4.328.1 08-Oct-2025	SDK - SDK Installer vulkansdk-windows-x64-1.4.328.1.exe (240MB) a8075dbd538079c2a719a9373994948001db785b48f142e02425a76348d10c

Version Released	File
1.4.335.0 09-Dec-2025	SDK - SDK Installer vulkansdk-linux-x86_64-1.4.335.0.tar.xz (265MB) ccab8047f33e645e302b76d19087b35da3085ad20178473acc230fa3c5f2
	SDK Config - Config json config.json (0MB) 00388b737ad1068f2b8a155747dbab532b41a8767ad29bb1ed0a1dee5be4538d22
1.4.328.1 08-Oct-2025	SDK - SDK Installer vulkansdk-linux-x86_64-1.4.328.1.tar.xz (312MB) 241e70b50c91c0d21ded07a7c0338ec05a3e5b0e4c6bba90ba01f02d823adbf
	SDK Config - Config json config.json (0MB) #82049e98f7aa337130b21d3cc82106d30b6c57e172e253ed55a338d202ea8
1.4.321.1 18-Jul-2025	SDK - SDK Installer vulkansdk-linux-x86_64-1.4.321.1.tar.xz (291MB) f22a3825bd4d7a32e7a0a920a16d5277b149e938dad03cecc0053762dcbf73

Version Released	File
1.4.335.1 17-Dec-2025	SDK - SDK Installer vulkansdk-macos-1.4.335.1.zip (316MB) 002407527149eb41041a700303902b054da10d23d48102a3e6f852e802aa104
	SDK Config - Config json config.json (0MB) a4500bae405de30da5535baa3f13bed437d71c47011e9fa4b0fcf59a5e5eb
1.4.335.0 09-Dec-2025	SDK - SDK Installer vulkansdk-macos-1.4.335.0.zip (317MB) 082119079560141123b8403340f8ee322ae72e50cac36810aab33499f5077
	SDK Config - Config json config.json (0MB) 00099b737ad1068f2b8a155747dbab532b41a8767ad29bb1ed0a1dee5be4538d22
1.4.328.1 08-Oct-2025	SDK - SDK Installer vulkansdk-macos-1.4.328.1.zip (307MB) 571d8a0788738e402f6b14f29f17b339495d019f3b2af0ba23a3050475023f
	SDK Config - Config json


Vulkan SDK – Enhancements since Vulkanised 2025



	Vulkan Loader	Vulkan Configurator	Validation Layer	
SPiR-V Optimizer	SPiR-V Tools	Crash Diagnostic Layer	vulkaninfo	Extension Layers
shaderc	SPiR-V Validator	Profiles Toolset	GPUInfo	VOLK
DXC	SPiR-V Reflect	glslang	SLANG	SPiR-V Cross
vkVIA	apidump	Vulkan-HPP	Screenshot	VMA
MoltenVK	SPiR-V Visualizer	SDL & GLM	Monitor	GFX Reconstruct
	X64/ARM Cross Compile	Ubuntu Packages		

Validation Layer – Improved Errors


SDK 1.4.309.0, March 2025

	Vulkan Loader	Vulkan Configurator	Validation Layer	
SPIR-V Optimizer	SPIR-V Tools	Crash Diagnostic Layer	vulkaninfo	Extension Layers
shaderc	SPIR-V Validator	Profiles Toolset	GPUInfo	VOLK
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- The clunky list of Objects at the top of the message is now more dense and easier to read.
- The format of all errors will be:
 - First line: VUID, object list, other metadata
 - Second line: "real message"
 - Third line: spec text and URL
- Output option: JSON format
 - VkDebugUtilsMessengerCallbackDataEXT::pMessage callback is a JSON string
 - Enables parsing.
 - Schema for stability
- Warnings are now on by default.
 - Helps more people to have things such as Undefined Values turned on.


Validation Layer – Legacy Detection

SDK 1.4.335.1, December 2025

	Vulkan Loader	Vulkan Configurator	Validation Layer	
SPIR-V Optimizer	SPIR-V Tools	Crash Diagnostic Layer	vulkaninfo	Extension Layers
shaderc	SPIR-V Validator	Profiles Toolset	GPUInfo	VOLK
DXC	SPIR-V Reflect	glslang	SLANG	SPIR-V Cross
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- Report warnings when using superseded functionality of the API in Vulkan.
- Not to be removed from the API
 - Newer/better methods exist
- See SDK documentation
 - How to enable
 - Link to current list of Legacy features


Validation Layer – GPU-AV Validation

	Vulkan Loader	Vulkan Configurator	Validation Layer	
SPIR-V Optimizer	SPIR-V Tools	Crash Diagnostic Layer	vulkaninfo	Extension Layers
shaderc	SPIR-V Validator	Profiles Toolset	GPUInfo	VOLK
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- Continued progress on filling out GPU-AV validation
 - Example:
VK_KHR_cooperative_matrix, accelerated matrix multiplication; heavy use in AI and ML
- Current focus on mesh shading and ray tracing

Validation Layer – VK_EXT_descriptor_heap


SDK 1.4.341.0, February 2026

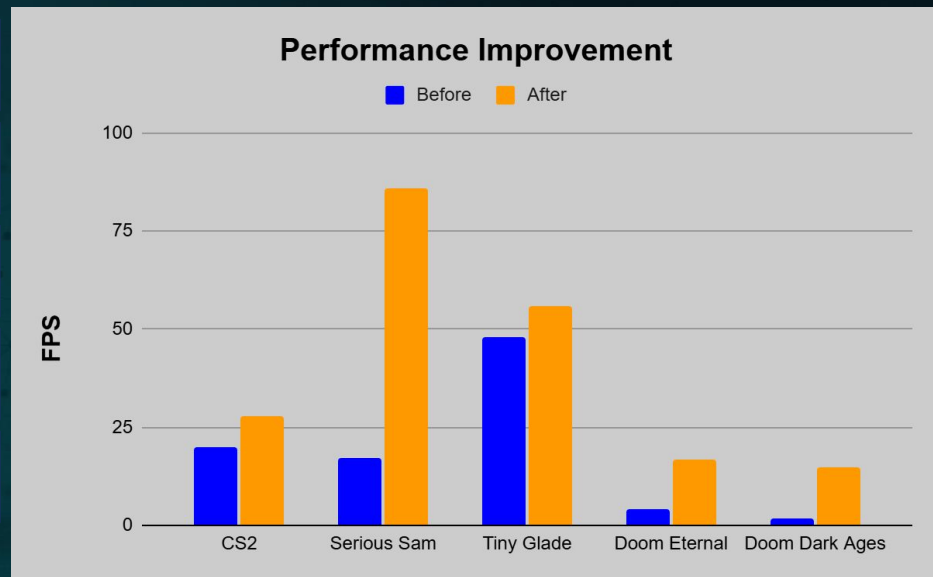
	Vulkan Loader	Vulkan Configurator	Validation Layer	
SPIR-V Optimizer	SPIR-V Tools	Crash Diagnostic Layer	vulkaninfo	Extension Layers
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- CPU based validation included
- 16K lines of code!
 - 12K for tests
 - 4K for validation checks
- GPU based validation coming in next SDK

Validation Layer – Sync Val Perf Improvements


SDK 1.4.341.0, February 2026

	Vulkan Loader	Vulkan Configurator	Validation Layer	
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shaderc	SPIR-V Validator	Profiles Toolset	GPUInfo	VOLK
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Vulkan Configurator (vkconfig3)

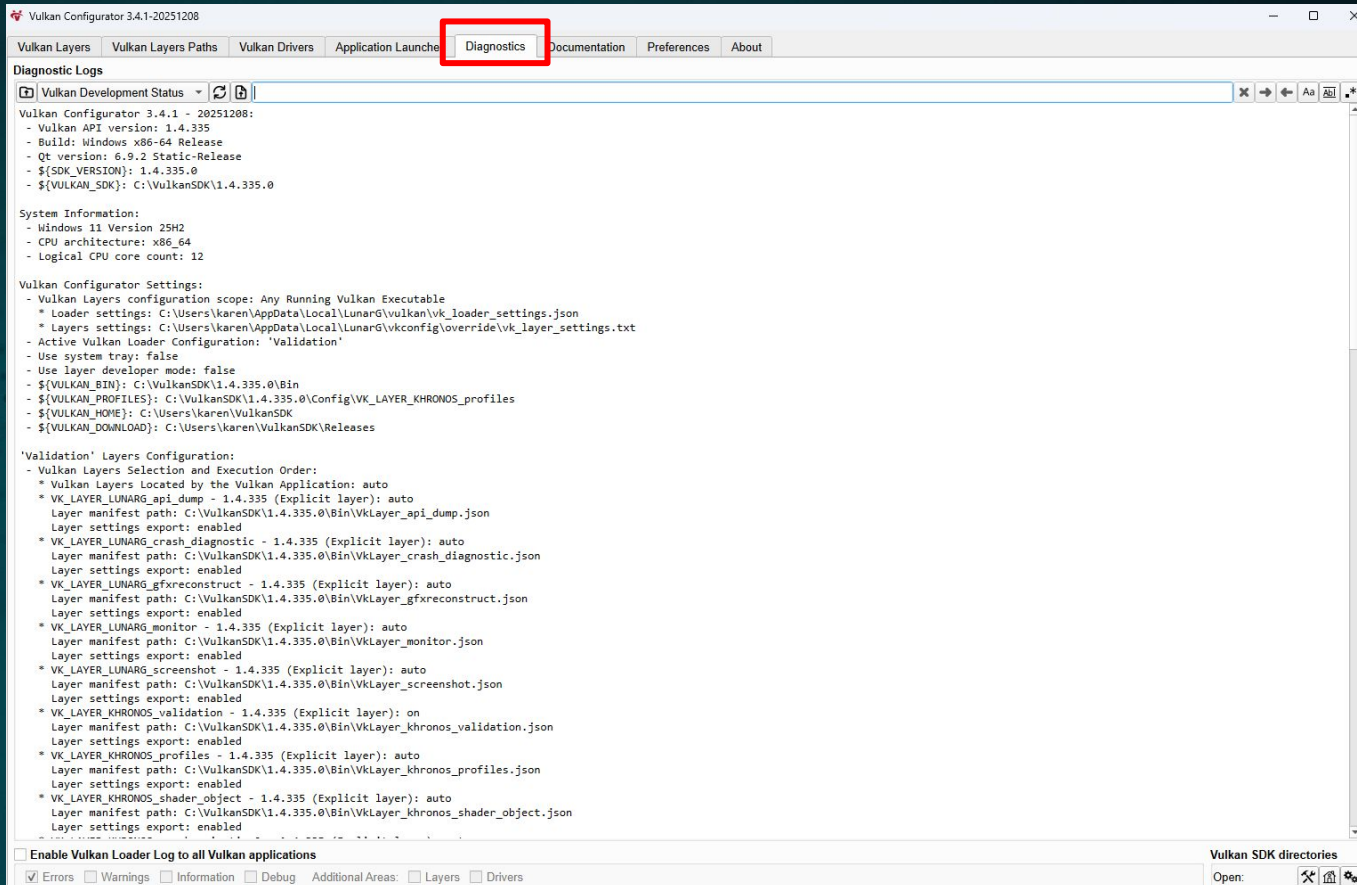
SDK 1.4.304.1, February 2025

	Vulkan Loader	Vulkan Configurator	Validation Layer	
SPIR-V Optimizer	SPIR-V Tools	Crash Diagnostic Layer	vulkaninfo	Extension Layers
shaderc	SPIR-V Validator	Profiles Toolset	GPUInfo	VOLK
DXC	SPIR-V Reflect	glslang	SLANG	SPIR-V Cross
VIA	apidump	Vulkan-HPP	Screenshot	VMA
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- Tab based GUI for ease of use.
Tabs for
 - Vulkan Layers configuration
 - Vulkan Layers Paths
 - Vulkan Drivers
 - Vulkan Application Launching
 - Vulkan Diagnostics
 - Vulkan Documentation

Vulkan Configurator – Diagnostics Tab

SDK 1.4.3130, May 2025

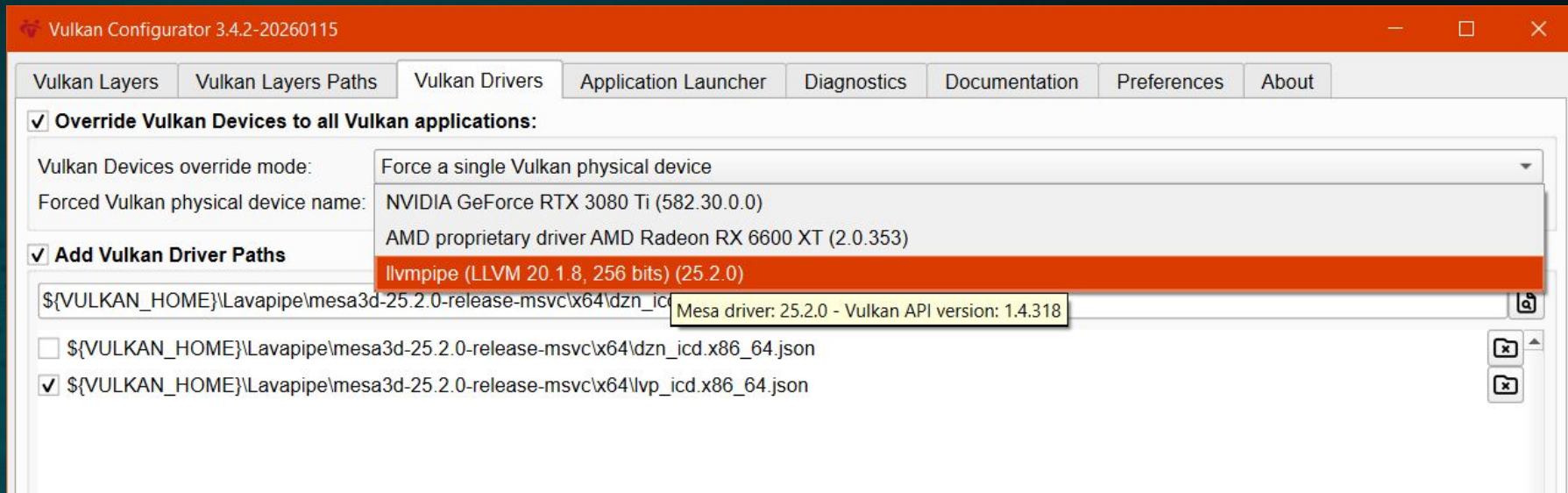


The screenshot shows the Vulkan Configurator application window with the 'Diagnostics' tab selected. The window title is 'Vulkan Configurator 3.4.1-20251208'. The 'Diagnostics' tab is highlighted with a red box. The main content area displays diagnostic logs for 'Vulkan Development Status' and 'System Information'. The 'Vulkan Development Status' section includes details about the Vulkan API version (1.4.335), build (Windows x86-64 Release), Qt version (6.9.2 Static-Release), SDK version (1.4.335.0), and the Vulkan SDK path (C:\VulkanSDK\1.4.335.0). The 'System Information' section shows the operating system (Windows 11 Version 25H2), CPU architecture (x86_64), and logical CPU core count (12). The 'Vulkan Configurator Settings' section lists various configuration options, including the Vulkan Layers configuration scope (Any Running Vulkan Executable), loader settings, layers settings, and active Vulkan Loader Configuration ('Validation'). The 'Validation' Layers Configuration section details the Vulkan Layers Selection and Execution Order, listing several layers such as VK_LAYER_LUNARG_api_dump, VK_LAYER_LUNARG_crash_diagnostic, VK_LAYER_LUNARG_gfxreconstruct, VK_LAYER_LUNARG_monitor, VK_LAYER_LUNARG_screenshot, VK_LAYER_KHRONOS_validation, VK_LAYER_KHRONOS_profiles, and VK_LAYER_KHRONOS_shader_object, each with its manifest path and layer settings export status. At the bottom, there are checkboxes for 'Enable Vulkan Loader Log to all Vulkan applications' and 'Additional Areas' (Errors, Warnings, Information, Debug, Layers, Drivers).

- Removal of vkVIA
- All diagnostic information on Diagnostics tab

Vulkan Configurator – Vulkan Driver Selection

SDK 1.4.335.0, December 2025

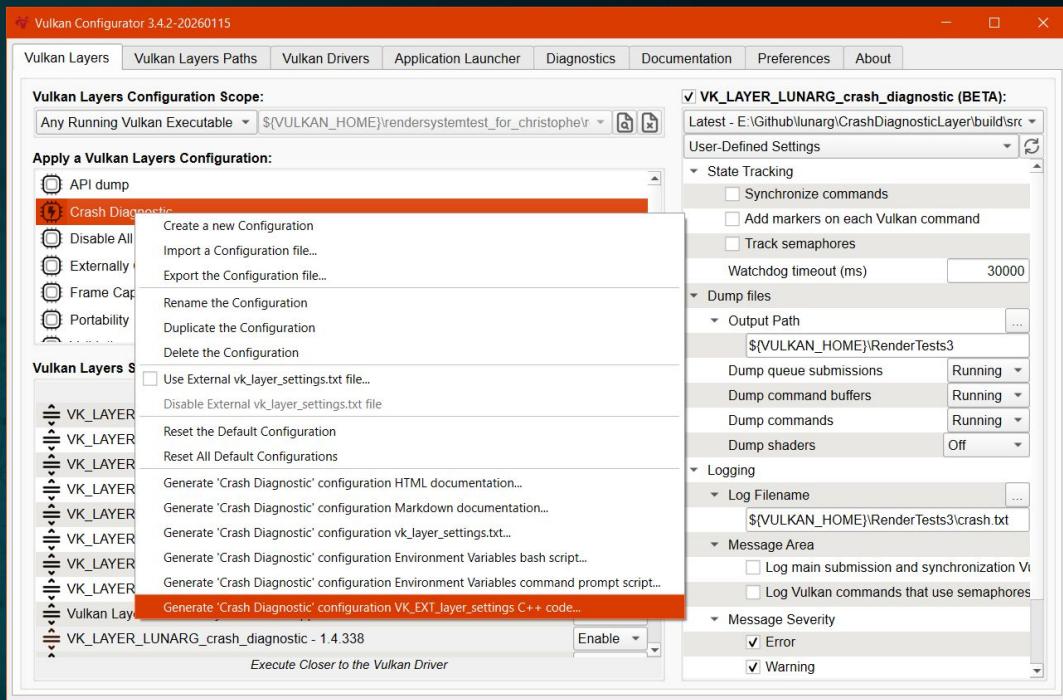


- Add additional Vulkan drivers (e.g. lavapipeline)
- Force selection of a Vulkan physical device
- Order the list of Vulkan physical devices

Vulkan Configurator-Generate Layer Settings Files


SDK 1.4.341.0 December 2025

- vk_layer_settings.txt
- Environment variables scripts
- VK_EXT_layer_settings C++ helper library



X64/ARM Cross Compiling


SDK 1.4.313.0 May 2025

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- To enable Windows X64 and Windows ARM application development on each platform
 - Include Windows ARM libraries with Windows X64 SDK
 - Include Windows X64 libraries with Windows ARM SDK

Canonicalize-ids

SDK 1.4.321.0 July 2025


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- glslang spirv-remap utility moved to the SPIRV-Tools repository

- Optimization pass called canonicalize-ids.
- This is where it should have been originally
 - When this optimization pass was created, spirv-opt didn't yet exist

SDL3


SDK 1.4.328.0, October 2025

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- SDL3 now included


No More Ubuntu Packages

SDK 1.4.321.0 July 2025

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- Due to resource challenges and limited usage of the packages
- Packages older than two years removed with each SDK release

GFXReconstruct


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- Focus on Android quality for capture and replay
 - Android HW Buffer
 - Window orientations
 - Pageguard improvements
- CI enhancements to remove regressions:
 - 60 Real World workloads for Android

KosmicKrisp

SDK 1.4.335.0 December 2025



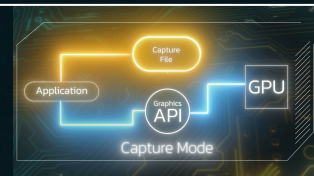
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- A Vulkan® on Metal® Mesa 3D Graphics driver
 - Leverage the Mesa Vulkan driver framework!
- Vulkan 1.3 conformant (1.4 coming)
 - Eliminates need for Vulkan® Portability™
- As of SDK 1.4.335.0, included in the macOS SDK
- WIP: MoltenVK functionality parity
 - Most apps are usable today (e.g. Blender)
- Performance tuning: next priority

- Richard's talk on Wednesday
 - "KosmicKrisp" – Conformant Vulkan for Apple Hardware"



Come to the LunarG Table!
See KosmicKrisp & GFXReconstruct



Take the 2026 Vulkan
Ecosystem Survey!



LunarG Presentations
Vulkanised 2026



LunarG Presentations
**Shading Languages
Symposium 2026**



