A Few Words About the Vulkan SDK for Windows 11 ARM64 Architectures

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Windows 11 on ARM64 machines are gaining market share and interest. Combined with new GPU hardware for these ARM systems, there is a growing interest in tools for creating native games and applications for this platform. In response to this, on July 22, 2024 LunarG released a Vulkan SDK for Windows 11 ARM64 architectures as a public Beta (see vulkan.lunarg.com). This SDK release contains native ARM64 and ARM64X components for Windows Vulkan developers.

Installing this SDK is identical to installing the Vulkan SDK for Windows, with only two missing components, the DXC library and executable, and the GFXReconstruct layer. These items are planned to be available with a future release of the SDK. In addition, the Vulkan Hardware Caps viewer remains an x86_64 build as it does not need to be a native application to report the system's Vulkan hardware's capabilities. A native build of this tool will likely be in a future release of this SDK as well.

Creating ARM64 Native Applications

This SDK provides native ARM64 libraries for the shader toolchain, and other 3rd party libraries, such as SDL. No changes to any file names or libraries have been made, which makes porting projects to the ARM64 development environment more or less trivial. Visual Studio 2022 version 17.10.4 was used for SDK creation, and is required for building native ARM64 binaries on ARM systems.

Working with x86_64 Applications

In addition to native ARM64 libraries, the Vulkan Validation Layers are provided as ARM64x binaries, as is the native Vulkan Loader on Windows 11 ARM64. ARM64x binaries are native ARM64 libraries that support an x86_64 calling convention. This means existing x86_64 Vulkan binaries can use the ARM64x loader and validation layers transparently. Both native ARM64 and emulated x86_64 programs are loading and using the exact same Vulkan loader and validation layers and accessing the same native ARM Vulkan hardware driver. All of this also works with Microsoft's Vulkan on DX12 initiative on Windows 11.