Logical Devices

Vulkan: Overall Block Diagram

Application

Instance

Instance

Physical Device

Physical Device

Physical Device

Logical Device

Logical Device

Logical Device

Logical Device

Logical Device

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Queue

Command Buffer

Command Buffer

Command Buffer
const char * myDeviceLayers[] =
{
    // "VK_LAYER_LUNARG_api_dump",
    // "VK_LAYER_LUNARG_core_validation",
    // "VK_LAYER_LUNARG_image",
    // "VK_LAYER_LUNARG_object_tracker",
    // "VK_LAYER_LUNARG_parameter_validation",
    "VK_LAYER_LUNARG_image",
};

const char * myDeviceExtensions[] =
{
    // "VK_KHR_surface",
    "VK_KHR_win32_surface",
    "VK_EXT_debug_report",
    // "VK_KHR_swapchains"
};

// see what device layers are available:
uint32_t layerCount;
vkEnumerateDeviceLayerProperties(PhysicalDevice, &layerCount, (VkLayerProperties *)nullptr);

VkLayerProperties * deviceLayers = new VkLayerProperties[layerCount];

result = vkEnumerateDeviceLayerProperties(PhysicalDevice, &layerCount, deviceLayers);
// see what device extensions are available:
uint32_t extensionCount;
vkEnumerateDeviceExtensionProperties(PhysicalDevice, deviceLayers[i].layerName, &extensionCount, (VkExtensionProperties *)nullptr);

VkExtensionProperties * deviceExtensions = new VkExtensionProperties[extensionCount];
result = vkEnumerateDeviceExtensionProperties(PhysicalDevice, deviceLayers[i].layerName, &extensionCount, deviceExtensions);

Looking to See What Device Extensions are Available

What Device Layers and Extensions are Available

4 physical device layers enumerated:

0x0040030cd 1 'VK_LAYER_NV_optimus' 'NVIDIA Optimus layer'
160 device extensions enumerated for 'VK_LAYER_NV_optimus':

0x00400033 1 'VK_LAYER_LUNARG_core_validation' 'LunarG Validation Layer'
0 device extensions enumerated for 'VK_LAYER_LUNARG_core_validation':

0x00400033 1 'VK_LAYER_LUNARG_object_tracker' 'LunarG Validation Layer'
160 device extensions enumerated for 'VK_LAYER_LUNARG_object_tracker':

0x00400033 1 'VK_LAYER_LUNARG_parameter_validation' 'LunarG Validation Layer'
160 device extensions enumerated for 'VK_LAYER_LUNARG_parameter_validation':
float queuePriorities[1] =
{
  1.0f,
};
VkDeviceQueueCreateInfo vdqci;
  vdqci.sType = VK_STRUCTURE_TYPE_DEVICE_QUEUE_CREATE_INFO;
  vdqci.pNext = nullptr;
  vdqci.flags = 0;
  vdqci.queueFamilyIndex = 0;
  vdqci.queueCount = 1;
  vdqci.pQueueProperties = queuePriorities;
result = vkCreateLogicalDevice(PhysicalDevice, &vdci, PALLOCATOR, OUT &LogicalDevice);

Vulkan: Creating the Logical Device’s Queue

// get the queue for this logical device:
vkGetDeviceQueue(LogicalDevice, 0, 0, OUT &Queue); // 0, 0 = queueFamilyIndex, queueIndex