




Vulkan.
Logical Devices

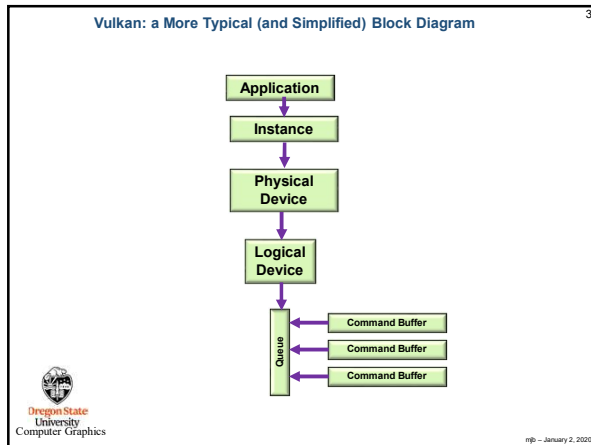
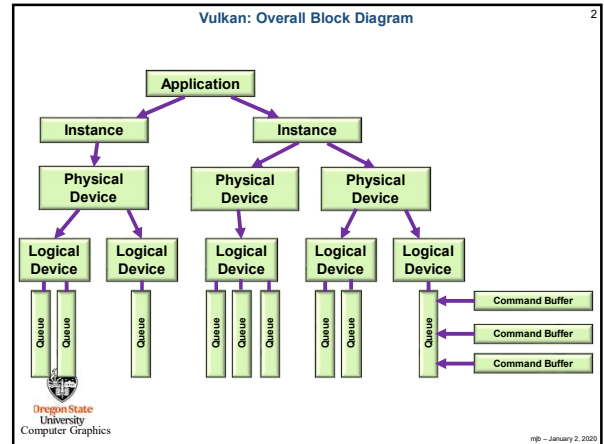


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LogicalDevices.pdf mpb - January 2, 2020




Looking to See What Device Layers are Available

```

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_NV_optimus"
};

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

// see what device layers are available:
uint32_t layerCount;
vkEnumerateDeviceLayerProperties(PhysicalDevice, &layerCount, (VkLayerProperties *)nullptr);
VkLayerProperties * deviceLayers = new VkLayerProperties[layerCount];
result = vkEnumerateDeviceLayerProperties( PhysicalDevice, &layerCount, deviceLayers);
  
```

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Looking to See What Device Extensions are Available

```

// see what device extensions are available:
uint32_t extensionCount;
vkEnumerateDeviceExtensionProperties(PhysicalDevice, deviceLayers[0].layerName,
&extensionCount, (VkExtensionProperties *)nullptr);
VkExtensionProperties * deviceExtensions = new VkExtensionProperties[extensionCount];
result = vkEnumerateDeviceExtensionProperties(PhysicalDevice, deviceLayers[0].layerName,
&extensionCount, deviceExtensions);
  
```

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What Device Layers and Extensions are Available

```


4 physical device layers enumerated:

0x004030cd 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":
  
```

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Vulkan: Creating a Logical Device

```

float queuePriorities[1] =
{
    1.
};
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;
            
```

```

VkDeviceCreateInfo vdc;
vdc.sType = VK_STRUCTURE_TYPE_DEVICE_CREATE_INFO;
vdc.pNext = nullptr;
vdc.flags = 0;
vdc.queueCreateInfoCount = 1; // # of device queues
vdc.pQueueCreateInfos = IN vdqci; // array of VkDeviceQueueCreateInfo's
vdc.enabledLayerCount = sizeof(myDeviceLayers) / sizeof(char *);
vdc.enabledLayerNames = myDeviceLayers;
vdc.enabledExtensionCount = sizeof(myDeviceExtensions) / sizeof(char *);
vdc.ppEnabledExtensionNames = myDeviceExtensions;
vdc.pEnabledFeatures = IN &PhysicalDeviceFeatures;

result = vkCreateLogicalDevice( PhysicalDevice, IN &vdc, PALLOCATOR, OUT &LogicalDevice );
            
```

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Vulkan: Creating the Logical Device's Queue

// get the queue for this logical device:

```
vkGetDeviceQueue( LogicalDevice, 0, 0, OUT &Queue ); // 0, 0 = queueFamilyIndex, queueIndex
```

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