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These Release Notes summarize current status, information on validated platforms, and known issues with NVIDIA GRID Virtual GPU software and hardware on Huawei UVP.

The following software is included in this release:

- NVIDIA GRID Virtual GPU Manager version 361.45.09 for Huawei UVP version RC520
- NVIDIA Windows drivers for vGPU, version 362.56

![Note:](Note: If you install the wrong package for the version of UVP you are using, GRID vGPU Manager will fail to load.

The GRID vGPU Manager and Windows guest VM drivers must be installed together. Older VM drivers will not function correctly with this release of GRID vGPU Manager. Similarly, older GRID vGPU Managers will not function correctly with this release of Windows guest drivers. See “VM running older NVIDIA vGPU drivers fails to initialize vGPU when booted,” on page 3.

Updates in this release:

- Miscellaneous bug fixes
This release of virtual GPU provides support for NVIDIA GRID K1 and K2 GPUs on Huawei UVP.

SOFTWARE VERSIONS

This release has been tested with the following software versions:

<table>
<thead>
<tr>
<th>Software</th>
<th>Version tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huawei UVP</td>
<td>Version RC520</td>
</tr>
</tbody>
</table>
Known product limitations for this release of NVIDIA GRID are described in the following sections:

- “VM running older NVIDIA vGPU drivers fails to initialize vGPU when booted” on page 3
- “Virtual GPU fails to start if ECC is enabled on GRID K2 card” on page 4
- “Single vGPU benchmark scores are lower than passthrough GPU” on page 4
- “nvidia-smi fails to operate when all GPUs are assigned to GPU passthrough mode” on page 5
- “VMs configured with large memory fail to initialize vGPU when booted” on page 6
- “vGPU host driver RPM upgrade fails” on page 7

VM RUNNING OLDER NVIDIA VGPU DRIVERS FAILS TO INITIALIZE VGPU WHEN BOOTED

Description

A VM running older NVIDIA drivers, such as those from a previous vGPU release, will fail to initialize vGPU when booted on a UVP platform running the current release of GRID Virtual GPU Manager.

In this scenario, the VM boots in standard VGA mode with reduced resolution and color depth. The NVIDIA GRID GPU is present in Windows Device Manager but displays a warning sign, and a device status of “Windows has stopped this device because it has reported problems. (Code 43)”.

Depending on the versions of drivers in use, UVP’s /var/log/messages file may contain the following information about the error:
Known Product Limitations

- An error message:
  
  `vmiop_log: error: Unable to fetch Guest NVIDIA driver information`

- A report of a version mismatch between guest and host drivers:
  
  `vmiop_log: error: Guest VGX version(1.1) and Host VGX version(1.2) do not match`

- A report of a signature mismatch:
  
  `vmiop_log: error: VGPU message signature mismatch.

Resolution

Install the latest NVIDIA vGPU release drivers in the VM.

VIRTUAL GPU FAILS TO START IF ECC IS ENABLED ON GRID K2 CARD

Description

If the ECC (error correcting code) feature is enabled on a GRID K2 card, virtual GPU fails to start. The following error is logged in `/var/log/messages`:

`vmiop_log: error: Initialization: VGX not supported with ECC Enabled.`

Virtual GPU is not currently supported with ECC active. GRID K2 cards ship with ECC disabled by default, but ECC may subsequently be enabled using `nvidia-smi`.

Resolution

Use `nvidia-smi` to list the status of all GPUs, and check for ECC noted as enabled on GRID K2 GPUs. Change the ECC status to off on a specific GPU by executing the following command:

`nvidia-smi -i id -e 0`

`id` is the index of the GPU as reported by `nvidia-smi`.

SINGLE VGPU BENCHMARK SCORES ARE LOWER THAN PASSTHROUGH GPU

Description

A single vGPU configured on a physical GPU produces lower benchmark scores than the physical GPU run in passthrough mode.

Aside from performance differences that may be attributed to a vGPU’s smaller framebuffer size, vGPU incorporates a performance balancing feature known as Frame
Rate Limiter (FRL), which is enabled on all vGPUs. FRL is used to ensure balanced performance across multiple vGPUs that are resident on the same physical GPU. The FRL setting is designed to give good interactive remote graphics experience but may reduce scores in benchmarks that depend on measuring frame rendering rates, as compared to the same benchmarks running on a passthrough GPU.

Resolution

FRL is controlled by an internal vGPU setting. NVIDIA does not validate vGPU with FRL disabled, but for validation of benchmark performance, FRL can be temporarily disabled by setting `plugin0.frame_rate_limiter=0` in the vGPU configuration file. vGPU configuration files are stored in `/usr/share/nvidia/vgx` and are named for the vGPU types they define, for example, `grid_k100.conf`.

The setting takes effect the next time any VM using the given vGPU type is started or rebooted.

With this setting in place, the VM’s vGPU will run without any frame rate limit. The FRL can be reverted back to its default setting by setting `plugin0.frame_rate_limiter=1` in the vGPU configuration file.

NVIDIA-SMI FAILS TO OPERATE WHEN ALL GPUS ARE ASSIGNED TO GPU PASSTHROUGH MODE

Description

If all GPUs in the platform are assigned to VMs in passthrough mode, `nvidia-smi` will return an error:

```
[root@vgx-test ~]# nvidia-smi
Failed to initialize NVML: Unknown Error
```

This is because GPUs operating in passthrough mode are not visible to `nvidia-smi` and the NVIDIA kernel driver operating in UVP’s dom0.

Resolution

N/A
**VMS CONFIGURED WITH LARGE MEMORY FAIL TO INITIALIZE VGPU WHEN BOOTTED**

**Description**

When starting multiple VMs configured with large amounts of RAM (typically more than 32GB per VM), a VM may fail to initialize vGPU. In this scenario, the VM boots in standard VGA mode with reduced resolution and color depth. The NVIDIA GRID GPU is present in Windows Device Manager but displays a warning sign, and a device status of “Windows has stopped this device because it has reported problems. (Code 43)”.

UVP’s /var/log/messages file contains these error messages:

```
vmiop_log: error: NVOS status 0x29
vmiop_log: error: Assertion Failed at 0x7620fd4b:179
vmiop_log: error: 8 frames returned by backtrace
...  
vmiop_log: error: VGPU message 12 failed, result code: 0x29
...  
vmiop_log: error: NVOS status 0x8
vmiop_log: error: Assertion Failed at 0x7620c8df:280
vmiop_log: error: 8 frames returned by backtrace
...  
vmiop_log: error: VGPU message 26 failed, result code: 0x8
```

**Resolution**

vGPU reserves a portion of the VM’s framebuffer for use in GPU mapping of VM system memory. The reservation is sufficient to support up to 32GB of system memory, and may be increased to accommodate up to 64GB by specifying `plugin0.enable_large_sys_mem=1` in the vGPU configuration file.

vGPU configuration files are stored in `/usr/share/nvidia/vgx` and are named for the vGPU types they define, for example, `grid_k100.conf`.

The setting takes effect the next time any VM using the given vGPU type is started or rebooted.

With this setting in place, less GPU FB is available to applications running in the VM. To accommodate system memory larger than 64GB, the reservation can be further increased by specifying `plugin0.extra_fb_reservation` in the vGPU configuration file, setting its value to the desired reservation size in megabytes. The default value of 64M is sufficient to support 64GB of RAM. We recommend adding 2M of reservation for each additional 1GB of system memory. For example, to support 96GB of RAM, set `extra_fb_reservation` to 128:

```
plugin0.extra_fb_reservation=128
```
The reservation can be reverted back to its default setting by removing enable_large_sys_mem from the vGPU configuration file, or by setting enable_large_sys_mem=0.

**VGPU HOST DRIVER RPM UPGRADE FAILS**

**Description**

Upgrading vGPU host driver RPM fails with the following message on the console:

```
[root@uvp ~]# rpm -U NVIDIA-vGPU-kepler-uvp-210.0-352.70.x86_64
error: Failed dependencies:
   NVIDIA-vgx-uvp conflicts with NVIDIA-vGPU-kepler-uvp-210.0-352.70.x86_64
[root@uvp ~]#
```

**Resolution**

Uninstall the older vGPU RPM before installing the latest driver.

Use the following command to uninstall the older vGPU RPM:

```
[root@uvp ~]# rpm -e NVIDIA-vgx-uvp
```
## RESOLVED ISSUES

<table>
<thead>
<tr>
<th>Bug ID</th>
<th>Summary and Description</th>
</tr>
</thead>
</table>
| 200184005 | **Driver upgrade from 352.83 to 361.40 fails on bare metal**  
Driver upgrade fails on a bare metal setup with this error message:  
An NVIDIA kernel module 'nvidia' appears to already be loaded in your kernel. This may be because it is in use  
.....  
The upgrade fails because it does not stop the nvidia-gridd service. |
| 1721555  | **The screen is not updated in full-screen mode with pop-up media player controls automatically hidden**  
If the Xbox app is used to stream video from an Xbox 360 device, the screen is correctly updated in windowed mode. But in full-screen mode, the screen freezes until the mouse is moved. |
## Known Issues

### Multiple WebGL tabs in Microsoft Internet Explorer may trigger TDR on Windows VMs

<table>
<thead>
<tr>
<th>Description</th>
<th>Running intensive WebGL applications in multiple IE tabs may trigger a TDR on Windows VMs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td></td>
</tr>
<tr>
<td>Workaround</td>
<td>Disable hardware acceleration in IE.</td>
</tr>
<tr>
<td></td>
<td>To enable software rendering in IE, refer Microsoft’s knowledge base article at <a href="https://support.microsoft.com/en-us/kb/2528233">https://support.microsoft.com/en-us/kb/2528233</a>.</td>
</tr>
<tr>
<td>Status</td>
<td>Open</td>
</tr>
<tr>
<td>Ref. #</td>
<td>200148377</td>
</tr>
</tbody>
</table>
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