VIRTUAL GPU SOFTWARE R384 FOR NUTANIX AHV

RN-08659-001 _v5.0 through 5.4 Revision 03 | April 2019

Release Notes
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Chapter 1. RELEASE NOTES

These Release Notes summarize current status, information on validated platforms, and known issues with NVIDIA vGPU software and associated hardware on Nutanix AHV.

The releases in this release family of NVIDIA vGPU software include the software listed in the following table:

<table>
<thead>
<tr>
<th>Software</th>
<th>5.0</th>
<th>5.1</th>
<th>5.2</th>
<th>5.3</th>
<th>5.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Virtual GPU Manager for the Nutanix AHV releases listed in Hypervisor Software Releases</td>
<td>Not supported</td>
<td>384.99</td>
<td>384.111</td>
<td>384.137</td>
<td>384.155</td>
</tr>
<tr>
<td>NVIDIA Windows driver</td>
<td>Not supported</td>
<td>385.90</td>
<td>386.09</td>
<td>386.37</td>
<td>386.57</td>
</tr>
<tr>
<td>NVIDIA Linux driver version</td>
<td>Not supported</td>
<td>384.99</td>
<td>384.111</td>
<td>384.137</td>
<td>384.155</td>
</tr>
</tbody>
</table>

This requirement does not apply to the NVIDIA vGPU software license sever. All releases of NVIDIA vGPU software are compatible with all releases of the license server.

1.1. Updates in Release 5.1

New Features in Release 5.1

- Miscellaneous bug fixes

1.2. Updates in Release 5.2

New Features in Release 5.2

- New default values for the license borrow time and license linger time:
  - The default license borrow time is reduced from 7 days to 1 day.
  - The default license linger time is reduced from 10 minutes to 0 minutes.
- New setting `LingerInterval` for overriding the default license linger time
- Miscellaneous bug fixes

### 1.3. Updates in Release 5.3

**New Features in Release 5.3**
- Plain-text logging on Windows of significant licensing events
- New setting `EnableLogging` for disabling or enabling logging of significant licensing events
- Miscellaneous bug fixes

### 1.4. Updates in Release 5.4

**New Features in Release 5.4**
- Miscellaneous bug fixes

**Hardware and Software Support Introduced in Release 5.4**
- Support for Red Hat Enterprise Linux 7.5 and CentOS 7.5 as a guest OS
This release family of NVIDIA vGPU software provides support for several NVIDIA GPUs on validated server hardware platforms, Nutanix AHV hypervisor software versions, and guest operating systems. It also supports the version of NVIDIA CUDA Toolkit that is compatible with R384 drivers.

2.1. Supported NVIDIA GPUs and Validated Server Platforms

This release of NVIDIA vGPU software provides support for the following NVIDIA GPUs on Nutanix AHV, running on validated Nutanix NX series server hardware platforms:

- Tesla M10
- Tesla M60
- Tesla P40

For a list of validated server platforms, refer to NVIDIA GRID Certified Nutanix Servers.

Tesla M60 and M6 GPUs support compute mode and graphics mode. NVIDIA vGPU requires GPUs that support both modes to operate in graphics mode.

Recent Tesla M60 GPUs and M6 GPUs are supplied in graphics mode. However, your GPU might be in compute mode if it is an older Tesla M60 GPU or M6 GPU, or if its mode has previously been changed.

To configure the mode of Tesla M60 and M6 GPUs, use the `gpumodeswitch` tool provided with NVIDIA vGPU software releases.
2.2. Hypervisor Software Releases

This release is supported on the Nutanix AHV releases listed in the table.

Updates to a base release of Nutanix AHV are compatible with the base release and can also be used with this version of NVIDIA vGPU software unless expressly stated otherwise.

<table>
<thead>
<tr>
<th>Software</th>
<th>Releases Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutanix AOS Hypervisor (AHV) 5.5</td>
<td>5.5 RTM and compatible 5.5.x updates</td>
</tr>
</tbody>
</table>

2.3. Guest OS Support

NVIDIA vGPU software supports several Windows releases and Linux distributions as a guest OS. The supported guest operating systems depend on the hypervisor software version.

Use only a guest OS release that is listed as supported by NVIDIA vGPU software with your virtualization software. To be listed as supported, a guest OS release must be supported not only by NVIDIA vGPU software, but also by your virtualization software. NVIDIA cannot support guest OS releases that your virtualization software does not support.

In pass-through mode, GPUs based on the Pascal architecture support only 64-bit guest operating systems. No 32-bit guest operating systems are supported in pass-through mode for these GPUs.

2.3.1. Windows Guest OS Support

NVIDIA vGPU software supports only the Windows releases listed in the table as a guest OS on Nutanix AHV. The releases of Nutanix AHV for which a Windows release is supported depend on whether NVIDIA vGPU or pass-through GPU is used.

If a specific release, even an update release, is not listed, it’s not supported.

<table>
<thead>
<tr>
<th>Guest OS</th>
<th>NVIDIA vGPU - Nutanix AHV Releases</th>
<th>Pass-Through GPU - Nutanix AHV Releases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Server 2016 1607, 1709</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows Server 2012 R2</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows Server 2008 R2</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Validated Platforms

<table>
<thead>
<tr>
<th>Guest OS</th>
<th>NVIDIA vGPU - Nutanix AHV Releases</th>
<th>Pass-Through GPU - Nutanix AHV Releases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 10 RTM (1507), November Update (1511), Anniversary Update (1607), Creators Update (1703) (64-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 10 RTM (1507), November Update (1511), Anniversary Update (1607), Creators Update (1703) (32-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 8.1 Update (64-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 8.1 Update (32-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 8.1 (64-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 8.1 (32-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 8 (32/64-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Windows 7 (32/64-bit)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>

2.3.2. Linux Guest OS Support

NVIDIA vGPU software supports only the Linux distributions listed in the table as a guest OS on Nutanix AHV. The releases of Nutanix AHV for which a Linux release is supported depend on whether NVIDIA vGPU or pass-through GPU is used.

If a specific release, even an update release, is not listed, it’s not supported.

<table>
<thead>
<tr>
<th>Guest OS</th>
<th>NVIDIA vGPU - Nutanix AHV Releases</th>
<th>Pass-Through GPU - Nutanix AHV Releases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since 5.4: Red Hat Enterprise Linux 7.5</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 7.0-7.4</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Since 5.4: CentOS 7.5</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>CentOS 7.0-7.4</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Ubuntu 16.04 LTS</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Ubuntu 14.04 LTS</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>

2.4. NVIDIA CUDA Toolkit Version Support

The releases in this release family of NVIDIA vGPU software support NVIDIA CUDA Toolkit 9.0.
For more information about NVIDIA CUDA Toolkit, see CUDA Toolkit 9.0 Documentation.
Chapter 3.
KNOWN PRODUCT LIMITATIONS

Known product limitations for this release of NVIDIA vGPU software are described in the following sections.

3.1. vGPU profiles with 512 Mbytes or less of frame buffer support only 1 virtual display head on Windows 10

Description
To reduce the possibility of memory exhaustion, vGPU profiles with 512 Mbytes or less of frame buffer support only 1 virtual display head on a Windows 10 guest OS.

The following vGPU profiles have 512 Mbytes or less of frame buffer:

- Tesla M6-0B, M6-0Q
- Tesla M10-0B, M10-0Q
- Tesla M60-0B, M60-0Q

Workaround
Use a profile that supports more than 1 virtual display head and has at least 1 Gbyte of frame buffer.
3.2. NVENC requires at least 1 Gbyte of frame buffer

**Description**

Using the frame buffer for the NVIDIA hardware-based H.264/HEVC video encoder (NVENC) may cause memory exhaustion with vGPU profiles that have 512 Mbytes or less of frame buffer. To reduce the possibility of memory exhaustion, NVENC is disabled on profiles that have 512 Mbytes or less of frame buffer. Application GPU acceleration remains fully supported and available for all profiles, including profiles with 512 MBytes or less of frame buffer. NVENC support from both Citrix and VMware is a recent feature and, if you are using an older version, you should experience no change in functionality.

The following vGPU profiles have 512 Mbytes or less of frame buffer:

- Tesla M6-0B, M6-0Q
- Tesla M10-0B, M10-0Q
- Tesla M60-0B, M60-0Q

**Workaround**

If you require NVENC to be enabled, use a profile that has at least 1 Gbyte of frame buffer.

3.3. VM running older NVIDIA vGPU drivers fails to initialize vGPU when booted

**Description**

A VM running a version of the NVIDIA guest VM drivers from a previous main release branch, for example release 4.4, will fail to initialize vGPU when booted on a Nutanix AHV platform running the current release of Virtual GPU Manager.

In this scenario, the VM boots in standard VGA mode with reduced resolution and color depth. The NVIDIA virtual GPU is present in **Windows Device Manager** but displays a warning sign, and the following device status:

Windows has stopped this device because it has reported problems. (Code 43)

Depending on the versions of drivers in use, the Nutanix AHV VM's `/var/log/messages` log file reports one of the following errors:

- An error message:
Known Product Limitations

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vmiop_log: error: Unable to fetch Guest NVIDIA driver information

- 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 signature mismatch:
  vmiop_log: error: VGPU message signature mismatch.

Resolution

Install the current NVIDIA guest VM driver in the VM.

3.4. Virtual GPU fails to start if ECC is enabled

Description

Tesla M60, Tesla M6, and GPUs based on the Pascal GPU architecture, for example Tesla P100 or Tesla P4, support error correcting code (ECC) memory for improved data integrity. Tesla M60 and M6 GPUs in graphics mode are supplied with ECC memory disabled by default, but it may subsequently be enabled using nvidia-smi. GPUs based on the Pascal GPU architecture are supplied with ECC memory enabled.

However, NVIDIA vGPU does not support ECC memory. If ECC memory is enabled, NVIDIA vGPU fails to start.

The following error is logged in the Nutanix AHV VM's /var/log/messages log file:

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

Resolution

Ensure that ECC is disabled on all GPUs.

Before you begin, ensure that NVIDIA Virtual GPU Manager is installed on your hypervisor.

1. Use nvidia-smi to list the status of all GPUs, and check for ECC noted as enabled on GPUs.

   # nvidia-smi -q

   ===========NVSMI LOG=============
   Timestamp : Tue Dec 19 18:36:45 2017
   Driver Version : 384.99
   Attached GPUs : 1
   GPU 0000:02:00.0
   [...]
Known Product Limitations

<table>
<thead>
<tr>
<th>Ecc Mode</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Pending</td>
<td>Enabled</td>
<td></td>
</tr>
</tbody>
</table>

2. Change the ECC status to off on each GPU for which ECC is enabled.
   - If you want to change the ECC status to off for all GPUs on your host machine, run this command:
     ```bash
     # nvidia-smi -e 0
     ```
   - If you want to change the ECC status to off for a specific GPU, run this command:
     ```bash
     # nvidia-smi -i id -e 0
     ```
     *id* is the index of the GPU as reported by `nvidia-smi`. This example disables ECC for the GPU with index 0000:02:00.0.

3. Reboot the host.
4. Confirm that ECC is now disabled for the GPU:
   ```bash
   # nvidia-smi -q
   ```

If you later need to enable ECC on your GPUs, run one of the following commands:
   - If you want to change the ECC status to on for all GPUs on your host machine, run this command:
     ```bash
     # nvidia-smi -e 1
     ```
   - If you want to change the ECC status to on for a specific GPU, run this command:
     ```bash
     # nvidia-smi -i id -e 1
     ```
     *id* is the index of the GPU as reported by `nvidia-smi`. This example enables ECC for the GPU with index 0000:02:00.0.

After changing the ECC status to on, reboot the host.
3.5. Single vGPU benchmark scores are lower than pass-through GPU

**Description**

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

Aside from performance differences that may be attributed to a vGPU’s smaller frame buffer size, vGPU incorporates a performance balancing feature known as Frame Rate Limiter (FRL). On vGPUs that use the best-effort scheduler, FRL is enabled. On vGPUs that use the fixed share or equal share scheduler, FRL is disabled.

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 pass-through GPU.

3.6. `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 the Nutanix AHV dom0.

**Resolution**

N/A
3.7. VMs configured with large memory fail to initialize vGPU when booted

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 vGPU software GPU is present in Windows Device Manager but displays a warning sign, and the following device status:

Windows has stopped this device because it has reported problems. (Code 43)

The Nutanix AHV VM's /var/log/messages log 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
```
Chapter 4.
RESOLVED ISSUES

Only resolved issues that have been previously noted as known issues or had a noticeable user impact are listed. The summary and description for each resolved issue indicate the effect of the issue on NVIDIA vGPU software before the issue was resolved.

Issues Resolved in Release 5.1
No resolved issues are reported in this release for Nutanix AHV.

Issues Resolved in Release 5.2

<table>
<thead>
<tr>
<th>Bug ID</th>
<th>Summary and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200359618</td>
<td>On GPUs based on the Pascal architecture, Ubuntu 16.04 VMs run slowly after acquiring a license. On GPUs based on the Pascal architecture, Ubuntu VMs to which an NVIDIA vGPU or pass-through GPU is assigned run slowly after acquiring a license. Ubuntu VMs that have not been assigned an NVIDIA vGPU or pass-through GPU run noticeably faster.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bug ID</th>
<th>Summary and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200359624</td>
<td>The Apply button is disabled after change to unlicensed mode. After the mode is changed from licensed Quadro Virtual Datacenter Workstation Edition mode to Unlicensed Tesla mode, the Apply button on the Manage GRID License page is disabled. As a result, NVIDIA X Server Settings cannot be used to switch to Tesla (Unlicensed) mode on a licensed system.</td>
</tr>
</tbody>
</table>

Issues Resolved in Release 5.3

<table>
<thead>
<tr>
<th>Bug ID</th>
<th>Summary and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200334648</td>
<td>Multiple display heads are not detected by Ubuntu 14.04 guest VMs</td>
</tr>
<tr>
<td>Bug ID</td>
<td>Summary and Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>After an Ubuntu 14.04 guest VM has acquired a license, multiple display heads connected to the VM are not detected.</td>
</tr>
<tr>
<td>2075467</td>
<td>The displays flicker each time a license is requested or renewed in Linux guest VMs</td>
</tr>
<tr>
<td></td>
<td>Whenever a license is requested or renewed in Linux guest VMs, the displays are reconfigured and rescanned. Rescanning the displays causes the remoting solution to momentarily drop the connection and, as a result, the displays flicker.</td>
</tr>
<tr>
<td>200376678</td>
<td>The license expires prematurely in Linux guest VMs</td>
</tr>
<tr>
<td></td>
<td>In Linux guest VMs, the license expires before the default borrow period has elapsed. In normal operation, the license is renewed periodically at an interval that depends on the license borrow period. As a result, a failure to renew the license may cause the license to expire before the default borrow period has elapsed.</td>
</tr>
<tr>
<td>200391532</td>
<td>Issues in remote desktop sessions if a license is acquired after a session is started</td>
</tr>
<tr>
<td></td>
<td>A VM might acquire a license for NVIDIA vGPU software after a remote desktop session has connected to the VM. In this situation, some licensed features and capabilities are not available to a properly licensed vGPU or pass-through GPU in the session. For example, the updated maximum resolution supported is not available.</td>
</tr>
</tbody>
</table>

**Issues Resolved in Release 5.4**

No resolved issues are reported in this release for Nutanix AHV.
Chapter 5. 
NVIDIA SOFTWARE SECURITY UPDATES

For more information about NVIDIA’s vulnerability management, visit the NVIDIA Product Security page.

NVIDIA Software Security Updates in Release 5.2

<table>
<thead>
<tr>
<th>CVE ID</th>
<th>NVIDIA Issue Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2017-5753</td>
<td>CVE-2017-5753</td>
<td>Computer systems with microprocessors utilizing speculative execution and branch prediction may allow unauthorized disclosure of information to an attacker with local user access via a side-channel analysis.</td>
</tr>
</tbody>
</table>

NVIDIA Software Security Updates in Release 5.3

No NVIDIA software security updates are reported in this release for Nutanix AHV.

NVIDIA Software Security Updates in Release 5.4

No NVIDIA software security updates are reported in this release for Nutanix AHV.
Chapter 6.
KNOWN ISSUES

6.1. Cloned VMs configured with a vGPU type different than the type in the master image fail to start

Description
Cloned VMs configured with a vGPU type different than the type in the master image fail to start.

When a Windows 10 VM is booted, the VM becomes stuck in a loop and alternately displays **Getting devices ready: 50%** and **Preparation in progress**.

Workaround
Create one master image for each vGPU type that you want to use. Do not attempt to configure a cloned VM with a vGPU type different than the type in the master image.

Status
Open

Ref. #
2285306
6.2. 5.1, 5.2 Only: Issues in remote desktop sessions if a license is acquired after a session is started

Description
A VM might acquire a license for NVIDIA vGPU software after a remote desktop session has connected to the VM. In this situation, some licensed features and capabilities are not available to a properly licensed vGPU or pass-through GPU in the session. For example, the updated maximum resolution supported is not available.

Workaround
Before attempting this workaround, confirm that the VM has obtained the correct license for NVIDIA vGPU software.

1. After installing the guest VM driver package and configuring required license settings on the VM (or on the master image used for VM deployment), set the IgnoreSP property to 1.
   - On Windows, add the following registry setting:
     ```plaintext
     [HKEY_LOCAL_MACHINE\SOFTWARE\NVIDIA Corporation\Global\GridLicensing]
     "IgnoreSP"=dword:00000001
     ```
   - On Linux, add the following setting to the file `/etc/nvidia/gridd.conf`:
     ```plaintext
     IgnoreSP=1
     ```

2. Restart the VM.

Status
Resolved in NVIDIA vGPU software release 5.3.

Ref. #
200391532

6.3. License settings configured through a GPO are ignored

Description
License settings configured through a Windows Group Policy Object (GPO) are ignored. Windows Registry settings applied through a GPO are set after the NVIDIA vGPU
software graphics driver service is started. Therefore, NVIDIA vGPU software cannot be configured through a GPO.

**Workaround**

Use the Registry Editor to set the Windows Registry keys for license settings individually.

**Status**

Open

**Ref. #**

2010398

### 6.4. Licensing pop-up windows contain the text `microsoft.explorer.notification`

**Description**

On Windows 10 Creators Update (1703), licensing pop-up windows contain the text `microsoft.explorer.notification`.

**Version**

Windows 10 Creators Update (1703)

**Status**

Open

**Ref. #**

200346607

### 6.5. 5.2 Only: The license expires prematurely in Linux guest VMs

**Description**

In Linux guest VMs, the license expires before the default borrow period has elapsed. In normal operation, the license is renewed periodically at an interval that depends on the
license borrow period. As a result, a failure to renew the license may cause the license to expire before the default borrow period has elapsed.

**Workaround**

To reduce the possibility of license-renewal failures caused by transient network issues, increase the license borrow period to a value of about 7 days.

**Status**

Resolved in NVIDIA vGPU software release 5.3.

**Ref. #**

200376678

6.6. Multiple display heads are not detected by Ubuntu 14.04 guest VMs

**Description**

After an Ubuntu 14.04 guest VM has acquired a license, multiple display heads connected to the VM are not detected.

**Version**

Ubuntu 14.04

**Workaround**

To see all the connected display heads after the VM has acquired a license, open the Displays settings window and click **Detect displays**.

**Status**

Resolved in NVIDIA vGPU software release 5.3.

**Ref. #**

200334648
6.7. Since 5.1: On GPUs based on the Pascal architecture, Ubuntu 16.04 VMs run slowly after acquiring a license

Description
On GPUs based on the Pascal architecture, Ubuntu VMs to which an NVIDIA vGPU or pass-through GPU is assigned run slowly after acquiring a license. Ubuntu VMs that have not been assigned an NVIDIA vGPU or pass-through GPU run noticeably faster.

Workaround
After the VM has acquired a license, restart the `lightdm` service.

Status
Resolved in NVIDIA vGPU software release 5.2.

Ref. #
200359618

6.8. Resolution is not updated after a VM acquires a license and is restarted

Description
In a Red Enterprise Linux 7.3 guest VM, an increase in resolution from 1024×768 to 2560×1600 is not applied after a license is acquired and the `gridd` service is restarted. This issue occurs if the multimonitor parameter is added to the `xorg.conf` file.

Version
Red Enterprise Linux 7.3

Status
Open

Ref. #
200275925
6.9. A segmentation fault in DBus code causes **nvidia-gridd** to exit on Red Hat Enterprise Linux and CentOS

**Description**

On Red Hat Enterprise Linux 6.8 and 6.9, and CentOS 6.8 and 6.9, a segmentation fault in DBus code causes the **nvidia-gridd** service to exit.

The **nvidia-gridd** service uses DBus for communication with NVIDIA X Server **Settings** to display licensing information through the **Manage License** page. Disabling the GUI for licensing resolves this issue.

**Since 5.1:** The GUI for licensing is disabled by default.

**Version**

- Red Hat Enterprise Linux 6.8 and 6.9
- CentOS 6.8 and 6.9
- NVIDIA vGPU software 5.0

**5.0 Only: Workaround**

This workaround requires **sudo** privileges.

1. As root, edit the `/etc/nvidia/gridd.conf` file to set the `EnableUI` option to `FALSE`.
2. Start the **nvidia-gridd** service.
   
   ```
   # sudo service nvidia-gridd start
   ```
3. Confirm that the **nvidia-gridd** service has obtained a license by examining the log messages written to `/var/log/messages`.
   
   ```
   # sudo grep gridd /var/log/messages
   Aug  5 15:40:06 localhost nvidia-gridd: Started (4293)
   ```

**Status**

Open

**Ref. #**

- 200358191
6.10. Since 5.1: No Manage License option available in NVIDIA X Server Settings by default

Description
By default, the Manage License option is not available in NVIDIA X Server Settings. This option is missing because the GUI for licensing on Linux is disabled by default to work around the issue that is described in A segmentation fault in DBus code causes nvidia-gridd to exit on Red Hat Enterprise Linux and CentOS.

Version
NVIDIA vGPU software 5.1

Workaround
This workaround requires sudo privileges.

Do not use this workaround with Red Hat Enterprise Linux 6.8 and 6.9 or CentOS 6.8 and 6.9. To prevent a segmentation fault in DBus code from causing the nvidia-gridd service from exiting, the GUI for licensing must be disabled with these OS versions.

1. If NVIDIA X Server Settings is running, shut it down.
2. If the /etc/nvidia/gridd.conf file does not already exist, create it by copying the supplied template file /etc/nvidia/gridd.conf.template.
3. As root, edit the /etc/nvidia/gridd.conf file to set the EnableUI option to TRUE.
4. Start the nvidia-gridd service.

# sudo service nvidia-gridd start

When NVIDIA X Server Settings is restarted, the Manage License option is now available.

Status
Open
6.11. Since 5.1: The **nvidia-gridd service** fails because the required configuration is not provided

**Description**

The **nvidia-gridd service** exits with an error because the required configuration is not provided.

The known issue described in *A segmentation fault in DBus code causes nvidia-gridd to exit on Red Hat Enterprise Linux and CentOS* causes the **NVIDIA X Server Settings** page for managing licensing settings through a GUI to be disabled by default. As a result, if the required license configuration is not provided through the configuration file, the service exits with an error.

Details of the error can be obtained by checking the status of the **nvidia-gridd service**.

```
# service nvidia-gridd status
nvidia-gridd.service - NVIDIA Grid Daemon
Loaded: loaded (/usr/lib/systemd/system/nvidia-gridd.service; enabled; vendor preset: disabled)
    Active: failed (Result: exit-code) since Wed 2017-11-01 19:25:07 IST; 27s ago
      Process: 11990 ExecStopPost=/bin/rm -rf /var/run/nvidia-gridd (code=exited, status=0/SUCCESS)
      Process: 11905 ExecStart=/usr/bin/nvidia-gridd (code=exited, status=0/SUCCESS)
          Main PID: 11906 (code=exited, status=1/FAILURE)
    Nov 01 19:24:35 localhost.localdomain systemd[1]: Starting NVIDIA Grid Daemon...
    Nov 01 19:24:35 localhost.localdomain nvidia-gridd[11906]: Started (11906)
    Nov 01 19:24:35 localhost.localdomain systemd[1]: Starting NVIDIA Grid Daemon.
    Nov 01 19:24:36 localhost.localdomain nvidia-gridd[11906]: Failed to open config file: /etc/nvidia/gridd.conf error: No such file or directory
    Nov 01 19:25:07 localhost.localdomain nvidia-gridd[11906]: Shutdown (11906)
    Nov 01 19:25:07 localhost.localdomain systemd[1]: nvidia-gridd.service: main process exited, code=exited, status=1/FAILURE
    Nov 01 19:25:07 localhost.localdomain systemd[1]: Unit nvidia-gridd.service entered failed state.
```

**Workaround**

Use a configuration file to license NVIDIA vGPU software on Linux as explained in *Virtual GPU Client Licensing User Guide*.

**Status**

Open
6.12. Since 5.1: The **Apply** button is disabled after change to unlicensed mode

**Description**

After the mode is changed from licensed **Quadro Virtual Datacenter Workstation Edition** mode to **Unlicensed Tesla** mode, the **Apply** button on the **Manage GRID License** page is disabled. As a result, **NVIDIA X Server Settings** cannot be used to switch to **Tesla (Unlicensed)** mode on a licensed system.

**Workaround**

1. Start **NVIDIA X Server Settings** by using the method for launching applications provided by your Linux distribution.
2. In the **NVIDIA X Server Settings** window that opens, click **Manage GRID License**.
3. Clear the **Primary Server** field.
4. Select the **Tesla (unlicensed)** option.
5. Click **Apply**.

**Status**

Resolved in NVIDIA vGPU software release 5.2.

Ref. #

200359624

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6.13. Licenses remain checked out when VMs are forcibly powered off

**Description**

NVIDIA vGPU software licenses remain checked out on the license server when non-persistent VMs are forcibly powered off.

The NVIDIA service running in a VM returns checked out licenses when the VM is shut down. In environments where non-persistent licensed VMs are not cleanly shut down, licenses on the license server can become exhausted. For example, this issue can occur in automated test environments where VMs are frequently changing and are not
guaranteed to be cleanly shut down. The licenses from such VMs remain checked out against their MAC address for seven days before they time out and become available to other VMs.

Resolution

If VMs are routinely being powered off without clean shutdown in your environment, you can avoid this issue by shortening the license borrow period. To shorten the license borrow period, set the LicenseInterval configuration setting in your VM image. For details, refer to Virtual GPU Client Licensing User Guide.

Status

Closed

Ref. #

1694975

6.14. Memory exhaustion can occur with vGPU profiles that have 512 Mbytes or less of frame buffer

Description

Memory exhaustion can occur with vGPU profiles that have 512 Mbytes or less of frame buffer.

This issue typically occurs in the following situations:

- Full screen 1080p video content is playing in a browser. In this situation, the session hangs and session reconnection fails.
- Multiple display heads are used with Citrix XenDesktop or VMware Horizon on a Windows 10 guest VM.
- Higher resolution monitors are used.
- Applications that are frame-buffer intensive are used.
- NVENC is in use.

To reduce the possibility of memory exhaustion, NVENC is disabled on profiles that have 512 Mbytes or less of frame buffer.

The following vGPU profiles have 512 Mbytes or less of frame buffer:

- Tesla M6-0B, M6-0Q
- Tesla M10-0B, M10-0Q
Tesla M60-0B, M60-0Q

The root cause is a known issue associated with changes to the way that recent Microsoft operating systems handle and allow access to overprovisioning messages and errors. If your systems are provisioned with enough frame buffer to support your use cases, you should not encounter these issues.

**Workaround**

- Use an appropriately sized vGPU to ensure that the frame buffer supplied to a VM through the vGPU is adequate for your workloads.
- Monitor your frame buffer usage.
- If you are using Windows 10, consider these workarounds and solutions:
  - Use a profile that has 1 Gbyte of frame buffer.
  - Optimize your Windows 10 resource usage.

To obtain information about best practices for improved user experience using Windows 10 in virtual environments, complete the NVIDIA GRID vGPU Profile Sizing Guide for Windows 10 download request form.

**Status**

Open

**Ref. #**

- 200130864
- 1803861

6.15. GNOME Display Manager (GDM) fails to start on Red Hat Enterprise Linux 7.2 and CentOS 7.0

**Description**

GDM fails to start on Red Hat Enterprise Linux 7.2 and CentOS 7.0 with the following error:

Oh no! Something has gone wrong!

**Workaround**

Permanently enable permissive mode for Security Enhanced Linux (SELinux).

1. As root, edit the `/etc/selinux/config` file to set SELINUX to permissive.
   ```
   SELINUX=permissive
   ```
2. Reboot the system.
For more information, see Permissive Mode in Red Hat Enterprise Linux 7 SELinux User’s and Administrator’s Guide.

**Status**

Not an NVIDIA bug

**Ref. #**

200167868
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