



# GRID SOFTWARE FOR CITRIX XENSERVER VERSION 367.124/370.21

RN-06927-001 \_v4.6 Revision 04 | July 2018

## Release Notes



# TABLE OF CONTENTS

<b>Chapter 1. Release Notes.....</b>	<b>1</b>
<b>Chapter 2. Validated Platforms.....</b>	<b>2</b>
2.1. Supported NVIDIA GPUs and Validated Server Platforms.....	2
2.2. Hypervisor Software Releases.....	3
2.3. Guest OS Support.....	3
2.3.1. Windows Guest OS Support.....	3
2.3.2. Linux Guest OS Support.....	4
<b>Chapter 3. Known Product Limitations.....</b>	<b>5</b>
3.1. vGPU profiles with 512 Mbytes or less of frame buffer support only 1 virtual display head on Windows 10.....	5
3.2. NVENC requires at least 1 Gbyte of frame buffer.....	6
3.3. VM running older NVIDIA vGPU drivers fails to initialize vGPU when booted.....	6
3.4. Virtual GPU fails to start if ECC is enabled.....	7
3.5. Single vGPU benchmark scores are lower than passthrough GPU.....	8
3.6. Virtual GPU fails to start when GPUs are mapped above 4G.....	9
3.7. nvidia-smi fails to operate when all GPUs are assigned to GPU passthrough mode.....	10
3.8. GRID K1 and GRID K2 cards do not support monitoring of vGPU engine usage.....	11
3.9. Windows Aero is disabled on XenDesktop session using 3 or 4 monitors in 2560×1600 resolution.....	11
3.10. VMs configured with large memory fail to initialize vGPU when booted.....	11
3.11. vGPU host driver RPM upgrade fails.....	12
<b>Chapter 4. Resolved Issues.....</b>	<b>14</b>
<b>Chapter 5. NVIDIA Software Security Updates.....</b>	<b>15</b>
<b>Chapter 6. Known Issues.....</b>	<b>16</b>
6.1. vGPU guest VM driver not properly loaded on servers with more than 512 GB of system memory.....	16
6.2. Memory exhaustion can occur with vGPU profiles that have 512 Mbytes or less of frame buffer.....	17
6.3. VM bug checks after the guest VM driver for Windows 10 RS2 is installed.....	18
6.4. On XenServer 7.0, VMs unexpectedly reboot and XenServer crashes or freezes.....	19
6.5. With no NVIDIA driver installed, XenServer misidentifies Tesla M10 cards.....	20
6.6. GNOME Display Manager (GDM) fails to start on Red Hat Enterprise Linux 7.2 and CentOS 7.0.....	20
6.7. Video goes blank when run in loop in Windows Media Player.....	21
6.8. Local VGA console is momentarily unblanked when XenDesktop changes resolution of the VM desktop.....	21
6.9. VM bugchecks on shutdown/restart when XenDesktop is installed and NVIDIA driver is uninstalled or upgraded.....	22
6.10. Application frame rate may drop when running XenDesktop at 2560×1600 resolution.....	23
6.11. Windows VM BSOD.....	23

6.12. Windows VM BSOD when upgrading NVIDIA drivers over a XenDesktop session.....	24
6.13. XenCenter does not allow vGPUs to be selected as a GPU type for Linux VMs.....	25
6.14. If X server is killed on a RHEL7 VM running vGPU, XenCenter console may not automatically switch to text console.....	25
6.15. Multiple WebGL tabs in Microsoft Internet Explorer may trigger TDR on Windows VMs....	26
6.16. XenDesktop shows only a black screen when connected to a vGPU VM.....	26



# Chapter 1.

## RELEASE NOTES

These *Release Notes* summarize current status, information on validated platforms, and known issues with NVIDIA GRID™ software and hardware on Citrix XenServer.

This release includes the following software:

- ▶ NVIDIA GRID Virtual GPU Manager version 367.124 for the Citrix XenServer releases listed in [Hypervisor Software Releases](#)
- ▶ NVIDIA Windows drivers for vGPU version 370.21
- ▶ NVIDIA Linux drivers for vGPU version 367.124



### Caution

If you install the wrong package for the version of Citrix XenServer 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](#).

Updates in this release:

- ▶ Miscellaneous bug fixes
- ▶ Security updates - see [NVIDIA Software Security Updates](#)

# Chapter 2.

## VALIDATED PLATFORMS

This release of NVIDIA GRID software provides support for several NVIDIA GPUs on validated server hardware platforms, Citrix XenServer hypervisor software versions, and guest operating systems.

### 2.1. Supported NVIDIA GPUs and Validated Server Platforms

This release of NVIDIA GRID software provides support for the following NVIDIA GPUs on Citrix XenServer, running on validated server hardware platforms:

- ▶ GRID K1
- ▶ GRID K2
- ▶ Tesla M6
- ▶ Tesla M10
- ▶ Tesla M60

For a list of validated server platforms, refer to [NVIDIA GRID Certified Servers](#).



Tesla M60 and M6 GPUs support compute mode and graphics mode. GRID 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 GRID software releases.

## 2.2. Hypervisor Software Releases

This release supports **only** the hypervisor software releases listed in the table.



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

Software	Release Supported
Citrix XenServer 7.2	RTM build is supported only on Tesla M6, M10 and M60 GPUs.   Citrix XenServer 7.2 is <b>not</b> supported on GRID K1 and GRID K2 GPUs with any release of NVIDIA GRID Software.
Citrix XenServer 7.1	RTM build is supported.
Citrix XenServer 7.0	RTM build 125380 is supported.
Citrix XenServer 6.5	Version 6.5 with XS65ESP1. The GRID vGPU Manager included in this release will not install without XenServer 6.5 SP1.
Citrix XenDesktop	Version 7.6, 7.8, and 7.11 in HDX 3D Pro mode.

## 2.3. Guest OS Support

NVIDIA GRID software supports several Windows releases and Linux distributions as a guest OS.



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

### 2.3.1. Windows Guest OS Support

NVIDIA GRID software supports **only** the following Windows releases as a guest OS on Citrix XenServer:



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

- ▶ Windows Server 2016 1607, 1709
- ▶ Windows Server 2012 R2
- ▶ Windows Server 2008 R2

- ▶ Windows 10 RTM (1507), November Update (1511), Anniversary Update (1607) (32/64-bit)
- ▶ Windows 8.1 (32/64-bit)
- ▶ Windows 8 (32/64-bit)
- ▶ Windows 7 (32/64-bit)

## 2.3.2. Linux Guest OS Support

NVIDIA GRID software supports only the following Linux distributions as a guest OS **only** on supported Tesla GPUs on Citrix XenServer:



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

- ▶ Red Hat Enterprise Linux 7.0-7.4
- ▶ CentOS 7.0-7.4
- ▶ Ubuntu 16.04 LTS
- ▶ Ubuntu 14.04 LTS



GRID K1 and GRID K2 do not support vGPU on a Linux guest OS.



# Chapter 3.

## KNOWN PRODUCT LIMITATIONS

Known product limitations for this release of NVIDIA GRID 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
- ▶ GRID K100, K120Q
- ▶ GRID K200, K220Q

#### 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
- ▶ GRID K100, K120Q
- ▶ GRID K200, K220Q

### 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 older NVIDIA drivers, such as those from a previous vGPU release, will fail to initialize vGPU when booted on a Citrix XenServer 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 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 Citrix XenServer VM's `/var/log/messages` log file reports one of the following errors:

- ▶ An error message:

```
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 latest NVIDIA vGPU release drivers in the VM.

## 3.4. Virtual GPU fails to start if ECC is enabled

### Description

Tesla M60 and Tesla M6 GPUs 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`.

However, NVIDIA GRID vGPU does not support ECC memory. If ECC memory is enabled, NVIDIA GRID vGPU fails to start. The following error is logged in the Citrix XenServer 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.

1. Use `nvidia-smi` to list the status of all GPUs, and check for ECC noted as enabled on GPUs.
2. Change the ECC status to off on each GPU for which ECC is enabled by executing the following command:

```
nvidia-smi -i id -e 0
```

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

3. Reboot the host.

## 3.5. 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 specifying `frame_rate_limiter=0` in the VM's `platform:vgpu_extra_args` parameter:

```
[root@xenserver ~]# xe vm-param-set uuid=e71afda4-53f4-3a1b-6c92-a364a7f619c2
platform:vgpu_extra_args="frame_rate_limiter=0"
[root@xenserver ~]#
```

The setting takes effect the next time the VM 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 in one of the following ways:

- ▶ Removing the `vgpu_extra_args` key from the `platform` parameter
- ▶ Removing `frame_rate_limiter=0` from the `vgpu_extra_args` key
- ▶ Setting `frame_rate_limiter=1`. For example:

```
[root@xenserver ~]# xe vm-param-set uuid=e71afda4-53f4-3a1b-6c92-
a364a7f619c2 platform:vgpu_extra_args="frame_rate_limiter=1"
[root@xenserver ~]#
```

## 3.6. Virtual GPU fails to start when GPUs are mapped above 4G

### Version

XenServer 6.2

### Status

Fixed in XenServer 6.5

### Description

GRID vGPU on Citrix XenServer 6.2 does not support operation with GPUs mapped above the 4 gigabyte (4G) boundary in the system's physical address space.

If GPUs are mapped above 4G, the GRID vGPU Manager rpm will warn at the time of installation:

```
Warning: vGPU does not support GPUs mapped in 64-bit address space. Please
disable 64-bit MMIO from the system's BIOS. Refer to vGPU release notes for
details.
```

Also, the NVIDIA kernel driver will fail to load in XenServer's dom0, so the `nvidia` module won't appear in the module listing produced by `lsmod`. Additionally, the following warning messages will be present in the output of `dmesg`:

```
NVRM: This PCI I/O region assigned to your NVIDIA device is invalid:
NVRM: BAR1 is 128M @ 0xf800000000000000 (PCI:03ff:00:07.0)
NVRM: This is a 64-bit BAR mapped above 4GB by the system
NVRM: BIOS or the Linux kernel. The NVIDIA Linux/x86
NVRM: graphics driver and other system software components
NVRM: do not support this configuration.
```

### Resolution

Ensure that GPUs are mapped below the 4G boundary by disabling your server's SBIOS option that controls 64-bit memory-mapped I/O support. This option may be labeled **Enable4G>Decode** or **Enable 64-bit MMIO**.

## 3.7. `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@xenserver-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 Citrix XenServer dom0.

To confirm that all GPUs are operating in passthrough, use XenCenter's GPU tab to review current GPU assignment:

The screenshot displays the XenCenter interface for the GPU tab of a VM named 'xenserver-vgx-test'. The GPU is identified as 'GK104GL [GRID K2]'. The placement policy is set to 'Maximum density: put as many VMs as possible on the same GPU'. The GPU is assigned to six VMs in passthrough mode: two 'Test VM passthrough', one 'vgx-base-image-win7-64 passthrough', and three 'Test VM passthrough'. The interface also shows allowed vGPU types: Pass-through whole GPU, GRID K260Q vGPU (2 per GPU), GRID K240Q vGPU (4 per GPU), GRID K220Q vGPU (8 per GPU), and GRID K200 vGPU (8 per GPU).

## Resolution

N/A

### 3.8. GRID K1 and GRID K2 cards do not support monitoring of vGPU engine usage

#### Description

GRID K1 and GRID K2 cards do not support monitoring of vGPU engine usage. All tools and APIs for any vGPU running on GRID K1 or GRID K2 cards report 0 for the following usage statistics:

- ▶ 3D/Compute
- ▶ Memory controller bandwidth
- ▶ Video encoder
- ▶ Video decoder

### 3.9. Windows Aero is disabled on XenDesktop session using 3 or 4 monitors in 2560×1600 resolution

#### Description

Windows Aero may be disabled when XenDesktop is connected to a VM with a vGPU or passthrough GPU, with 3 or 4 monitors at 2560×1600 resolution.

This limitation is a limitation of Windows 7. For details, see the Microsoft knowledge base article [Desktop background disappears with very large extended desktop on Windows 7](#).

### 3.10. 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 GRID 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 Citrix XenServer 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
```

## 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 `enable_large_sys_mem=1` in the VM's `platform:vgpu_extra_args` parameter:

```
[root@xenserver ~]# xe vm-param-set uuid=e71afda4-53f4-3a1b-6c92-a364a7f619c2
platform:vgpu_extra_args="enable_large_sys_mem=1"
```

The setting takes effect the next time the VM 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 `extra_fb_reservation` in the VM's `platform:vgpu_extra_args` parameter, and 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:

```
platform:vgpu_extra_args="enable_large_sys_mem=1, extra_fb_reservation=128"
```

The reservation can be reverted back to its default setting in one of the following ways:

- ▶ Removing the `vgpu_extra_args` key from the `platform` parameter
- ▶ Removing `enable_large_sys_mem` from the `vgpu_extra_args` key
- ▶ Setting `enable_large_sys_mem=0`

## 3.11. vGPU host driver RPM upgrade fails

### Description

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

```
[root@xenserver ~]# rpm -U NVIDIA-vGPU-xenserver-6.5-352.46.x86_64.rpm
error: Failed dependencies:
    NVIDIA-vgx-xenserver conflicts with NVIDIA-vGPU-xenserver-6.5-352.46.x86_64
[root@xenserver ~]#
```



## Resolution

Uninstall the older vGPU RPM before installing the latest driver.

Use the following command to uninstall the older vGPU RPM:

```
[root@xenserver ~]# rpm -e NVIDIA-vgx-xenserver
```

# Chapter 4. RESOLVED ISSUES

No resolved issues are reported in this release for Citrix XenServer.

# Chapter 5.

## NVIDIA SOFTWARE SECURITY UPDATES

For more information about NVIDIA's vulnerability management, visit the [NVIDIA Product Security](#) page.

CVE ID	NVIDIA Issue Number	More Information
CVE-2017-5753	2026216	<a href="#">Security Bulletin: NVIDIA Driver Security Updates for CPU Speculative Side Channel Vulnerabilities</a>

# Chapter 6.

## KNOWN ISSUES

### 6.1. vGPU guest VM driver not properly loaded on servers with more than 512 GB of system memory

#### Description

Support for vGPU is limited to servers with a maximum of 512 GB of system memory. On servers with more than 512 GB of system memory, the guest VM driver is not properly loaded. **Device Manager** marks the vGPU with a yellow exclamation point.

#### Resolution

Disable PV IOMMU to limit the amount of system memory on the server to a maximum of 512 GB.

```
[root@xenserver ~]# /opt/xensource/libexec/xen-cmdline --set-xen iommu=dom0-passsthrough
```

#### Status

Not an NVIDIA bug

#### Ref. #

1799582

## 6.2. 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.

When memory exhaustion occurs, the NVIDIA host driver reports Xid error 31 and Xid error 43 in XenServer's `/var/log/messages` file.

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
- ▶ GRID K100, K120Q
- ▶ GRID K200, K220Q

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](#).

For more information, see also [Windows 10 Optimization for XenDesktop](#) on the Citrix blog.

## Status

Open

## Ref. #

- ▶ 200130864
- ▶ 1803861

## 6.3. VM bug checks after the guest VM driver for Windows 10 RS2 is installed

### Description

When the VM is rebooted after the guest VM driver for Windows 10 RS2 is installed, the VM bug checks. When Windows boots, it selects one of the standard supported video modes. If Windows is booted directly with a display that is driven by an NVIDIA driver, for example a vGPU on Citrix XenServer, a blue screen crash occurs.

This issue occurs when the screen resolution is switched from VGA mode to a resolution that is higher than 1920×1200.

### Fix

Download and install [Microsoft Windows Update KB4020102](#) from the Microsoft Update Catalog.

### Workaround

If you have applied the fix, ignore this workaround.

Otherwise, you can work around this issue until you are able to apply the fix by not using resolutions higher than 1920×1200.

1. Choose a GPU profile in Citrix XenCenter that does not allow resolutions higher than 1920×1200.

2. Before rebooting the VM, set the display resolution to 1920×1200 or lower.

**Status**

Not an NVIDIA bug

**Ref. #**

200310861

## 6.4. On XenServer 7.0, VMs unexpectedly reboot and XenServer crashes or freezes

**Description**

On XenServer 7.0, VMs to which a vGPU is attached unexpectedly reboot and XenServer crashes or freezes.

The event log in XenServer's `/var/log/crash/xen.log` file lists the following errors:

- ▶ A fatal bus error on a component at the slot where the GPU card is installed
- ▶ A fatal error on a component at bus 0, device 2, function 0

This issue occurs when page-modification logging (PML) is enabled on Intel Broadwell CPUs running XenServer 7.0. Citrix is aware of this issue and is working on a permanent fix.

**Workaround**

Disable page-modification logging (PML) as explained in [XenServer 7 host crash while starting multiple virtual machines](#) in the Citrix Support Knowledge Center.

**Status**

Not an NVIDIA bug

**Ref. #**

1853248

## 6.5. With no NVIDIA driver installed, XenServer misidentifies Tesla M10 cards

### Description

An erroneous entry in the `pci.ids` database causes Citrix XenServer to identify Tesla M10 cards as GRID M40 when no NVIDIA driver is installed.

### Version

Citrix XenServer 6.5 and 7.0

### Workaround

None

### Status

Not an NVIDIA bug

### Ref. #

NVIDIA-420/1792341

## 6.6. 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.

```
~]# reboot
```



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

## 6.7. Video goes blank when run in loop in Windows Media Player

**Description**

When connected to a vGPU-enabled VM using Citrix XenDesktop, a video played back in looping mode on Windows Media Player goes blank or freezes after a few iterations.

**Workaround**

None

**Status**

Not an NVIDIA bug

**Ref. #**

1306623

## 6.8. Local VGA console is momentarily unblanked when XenDesktop changes resolution of the VM desktop

**Description**

When XenDesktop establishes a remote connection to a VM using vGPU, the VM's local VGA console display in XenCenter is blanked (assuming the VM local console has not been disabled by setting `platform:vgpu_extra_args="disable_vnc=1"`). If the XenDesktop session changes resolution of the VM's desktop, the local VGA console momentarily unblanks, allowing a XenCenter user to briefly view the desktop.

### Workaround

Disable the VM's local VGA console

```
xe vm-param-set uuid=vm-uuid platform:vgpu_extra_args="disable_vnc=1"
```

### Status

Open

### Ref. #

NVIDIA-145/1375164

## 6.9. VM bugchecks on shutdown/restart when XenDesktop is installed and NVIDIA driver is uninstalled or upgraded.

### Description

If the XenDesktop agent is installed in a VM before any NVIDIA GPU driver is installed, the VM will bugcheck (bluescreen) when the NVIDIA driver is subsequently upgraded or uninstalled. The bugcheck code is 0x7E, SYSTEM\_THREAD\_EXCEPTION\_NOT\_HANDLED.

### Workaround

Use one of the following workarounds:

- ▶ Do a force shutdown of the VM and restart it.
- ▶ Install the NVIDIA driver in guest VMs before installing XenDesktop.

### Status

Open

### Ref. #

NVIDIA-295/200018125

## 6.10. Application frame rate may drop when running XenDesktop at 2560×1600 resolution.

### Description

An application's rendering frame rate may drop when running XenDesktop at 2560×1600 resolution, relative to the frame rate obtained at lower resolutions.

### Fix

Using the Windows `regedit` utility within the VM, open the `HKLM\SOFTWARE\Citrix\Graphics` registry key and create a new `DWORD` value, `EncodeSpeed`, with a value of 2. Reboot the VM. This setting may improve the delivered frame rate at the expense of a reduction in image quality.

### Status

Open

### Ref. #

NVIDIA-190/1416336

## 6.11. Windows VM BSOD

### Description

Windows VM bugchecks on XenServer when running a large number of vGPU based VMs.

XenServer's `/var/log/messages` file contains these error messages:

```
NVRM: Xid (PCI:0000:08:00): 31, Ch 0000001e, engmask 00000111, intr 10000000
NVRM: Xid (PCI:0000:08:00): 31, Ch 00000016, engmask 00000111, intr 10000000
...
vmiop_log: error: Assertion Failed at 0xb5b898d8:4184
vmiop_log: error: 8 frames returned by backtrace
vmiop_log: error: /usr/lib/libnvidia-vgx.so(_nv000793vgx+0x69d) [0xb5b8064d]
vmiop_log: error: /usr/lib/libnvidia-vgx.so(_nv000479vgx+0x118) [0xb5b898d8]
vmiop_log: error: /usr/lib/libnvidia-vgx.so(_nv000782vgx+0x59) [0xb5b85f49]
vmiop_log: error: /usr/lib/libnvidia-vgx.so(_nv000347vgx+0x3db) [0xb5b932db]
vmiop_log: error: /usr/lib/libnvidia-vgx.so [0xb5b78e4a]
vmiop_log: error: /usr/lib/xen/bin/vgpu [0x80554be]
vmiop_log: error: /lib/libpthread.so.0 [0xb7612912]
vmiop_log: error: /lib/libc.so.6(clone+0x5e) [0xb76fc5ee]
vmiop_log: error: failed to initialize guest PTE entries
vmiop_log: error: failed to fill up guest PTE entries 3
vmiop_log: error: VGPU message 27 failed, result code: 0xff000003
vmiop_log: error: 0xc1d00001, 0xff010000, 0x1a77ba000, 0x0, 0x1,
```

```
vmiop_log: error:          0x1, 0x1000, 0x10202, 0xc1d00001, 0xff010000,  
vmiop_log: error:          0xcaf00004, 0x0  
vmiop_log: error: Timeout occurred, reset initiated.
```

**Version**

XenServer 6.2

**Fix**

Ensure that you are running the latest OEM firmware for your GRID boards.

**Status**

Closed

**Ref. #**

NVIDIA-327/1632120

## 6.12. Windows VM BSOD when upgrading NVIDIA drivers over a XenDesktop session

**Description**

Windows VM bugchecks when NVIDIA guest drivers are upgraded over a XenDesktop session.

If the VM is restarted after the bugcheck, the upgraded driver loads correctly and full functionality is available.

**Fix**

Upgrade XenDesktop to 7.6 Feature Pack 3

**Status**

Closed

**Ref. #**

NVIDIA-370/200130780

## 6.13. XenCenter does not allow vGPUs to be selected as a GPU type for Linux VMs

### Description

When creating a new Linux VM or editing the properties of an existing Linux VM, XenCenter does not allow vGPUs to be selected as a GPU type.

vGPU on Linux VMs is supported as a technical preview on XenServer 6.5, and does include XenCenter integration.

### Version

Affects the XenCenter integration with XenServer 6.5 only.

Resolved in the XenCenter integration with XenServer 7.0.

### Workaround

Refer to XenServer vGPU Management in *GRID Software User Guide* for how to configure vGPU by using the `xe` CLI.

### Status

Closed

### Ref. #

NVIDIA-360

## 6.14. If X server is killed on a RHEL7 VM running vGPU, XenCenter console may not automatically switch to text console

### Description

If X server is killed on a RHEL7 VM running vGPU, XenCenter console may display a corrupted image and fail to switchover to text console.

The failure to switchover to text console is due to a bug in RHEL7, which causes X server to not start correctly under certain configurations.

**Workaround**

Use **CTRL+ALT+F1**, **F2**, or **F3** to switch between Linux terminals.

**Status**

Closed

**Ref. #**

NVIDIA-350/200123378

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

**Description**

Running intensive WebGL applications in multiple IE tabs may trigger a TDR on Windows VMs.

**Workaround**

Disable hardware acceleration in IE.

To enable software rendering in IE, refer to the Microsoft knowledge base article [How to enable or disable software rendering in Internet Explorer](#).

**Status**

Open

**Ref. #**

200148377

## 6.16. XenDesktop shows only a black screen when connected to a vGPU VM

**Description**

XenDesktop sometimes displays only a black screen when it is connected to an NVIDIA vGPU VM. The probable cause is that the display that is connected to the NVIDIA vGPU is entering a lower power state.

**Fix**

Disable all display-related power management settings.

For detailed instructions, visit [Microsoft power plans frequently asked questions](#) and from the list, select your OS version.

**Status**

Not an NVIDIA bug

**Ref. #**

1719877

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