XenApp 6.5 OpenGL GPU Sharing
Feature Add-on
Contents

XenApp 6.5 OpenGL GPU Sharing Feature Add-on..........................3
  To install OpenGL GPU Sharing on a XenApp 6.5 server................4
  To try experimental GPU acceleration for CUDA or OpenCL applications......5
  To uninstall the OpenGL GPU Sharing Feature Add-on..........................6
XenApp 6.5 OpenGL GPU Sharing Feature Add-on

This document is furnished “AS IS.” CITRIX DISCLAIMS ALL WARRANTIES REGARDING THE CONTENTS OF THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE. This document may contain technical or other inaccuracies or typographical errors. Citrix reserves the right to revise the information in this document at any time without notice. This document and the software described in this document constitute confidential information of Citrix and its licensors, and are furnished under a license from Citrix. This document and the software may be used and copied only as agreed upon by the Technology Preview Agreement.

This Tech Preview is a feature add-on to XenApp 6.5 to enable graphics processing unit (GPU) hardware rendering of OpenGL applications in Remote Desktop sessions. This functionality can be used on bare metal or virtual machines to increase application scalability and performance. The Tech Preview is available for download from http://www.citrix.com/downloads. Select Product > XenApp and Download Type > Betas and Tech Previews, then select the XenApp 6.5 OpenGL GPU Sharing Feature Add-on. The Support Forum for this Tech Preview is at http://forums.citrix.com/category.jspa?categoryID=355.

HDX 3D allows graphics-heavy applications running on XenApp to render on the server’s GPU. By moving OpenGL rendering to the server’s GPU, the server’s central processing unit (CPU) is not slowed by graphics rendering. In addition, the server is able to process more graphics because the workload is split between the CPU and GPU. The XenApp 6.5 OpenGL GPU Sharing Feature Add-on requires no special settings, but is available only on servers with a GPU that supports a display driver interface (DDI) version of 9ex, 10, or 11.

You can install multiple GPUs on a XenApp server, either by installing a graphics card with more than one GPU, or by installing multiple graphics cards with one or more GPUs each. Mixing heterogenous graphics cards on the server is not recommended.

**Note:** Virtual machines require direct passthrough access to a GPU, which is available with Citrix XenServer or VMware vSphere. When HDX 3D is used in conjunction with GPU passthrough, each GPU in the server supports one multi-user XenApp virtual machine.

Most users do not require the rendering performance of a dedicated GPU, so OpenGL GPU Sharing enables multiple concurrent sessions to share GPU resources. This functionality does not depend any specific graphics card. When running on a hypervisor, select a hardware platform and graphics cards that are compatible with your hypervisor’s GPU passthrough implementation. The list of hardware that has passed certification testing with XenServer GPU Passthrough is available at http://
When running on bare metal, XenApp distributes the user sessions across eligible GPUs; to guarantee that all installed GPUs are eligible, use identical GPUs.

Scalability using OpenGL GPU Sharing depends on the applications being run, the amount of video RAM they consume, and the graphics card’s processing power. For example, scalability figures in the range of 8-10 users have been reported on NVIDIA Q6000 and M2070Q cards running applications such as ESRI ArcGIS. These cards offer 6 GB of video RAM. Newer NVIDIA GRID cards offer 8 GB of video RAM and significantly higher processing power (more CUDA cores). Other applications may scale much higher, achieving 32 concurrent users on a high-end GPU.

**Note:** Some applications handle video RAM shortages better than others. If the hardware becomes extremely overloaded, this could cause instability or a crash of the graphics card driver. Limit the number of concurrent users to avoid hitting the ceiling on resource allocation.

You can confirm that GPU acceleration is occurring using a third-party tool such as GPU-Z. GPU-Z is available at [http://www.techpowerup.com/gpuz/](http://www.techpowerup.com/gpuz/).

### To install OpenGL GPU Sharing on a XenApp 6.5 server

The XenApp 6.5 OpenGL GPU Sharing Feature Add-on can be installed on any XenApp 6.5 system, regardless of which hotfixes are already installed. However, Citrix recommends that you install Hotfix Rollup Pack 1 or above before installing OpenGL GPU Sharing.

This feature add-on is packaged with Microsoft Windows Installer 3.0 as a .msp file. For more information about deploying .msp files, see Microsoft article 884016 or visit the [Microsoft Web site](http://www.microsoft.com) and search on keyword msiexec.

This installer program complies with Microsoft User Account Control (UAC). If UAC is enabled, you must run the installer program in elevated mode; that is, with administrative privileges enabled. For more information about UAC, see Microsoft TechNet or visit the [Microsoft Web site](http://www.microsoft.com) and search on keyword UAC.

To install this feature add-on successfully, servers must not have registry modification restrictions in place.

This Tech Preview uses the Hotfix Rollup Pack Installation Wizard to install the feature add-on.

1. Copy the feature add-on package to an empty folder on the hard drive of the XenApp server.
2. Close all applications.
3. Run the executable.

The following files are copied to your system:
The following Registry entries are automatically created:

- [HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\CtxHook\AppInit_Dlls\Graphics Helper]
  "Flag"=dword:00000014 "FilePathName"="C:\Program Files (x86)\Citrix\system32\CtxGraphicsHelper64.dll"

- [HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\CtxHook\AppInit_Dlls \Graphics Helper] "Flag"=dword:00000014 "FilePathName"="C:\Program Files (x86)\Citrix\system32\CtxGraphicsHelper.dll"

4. Restart the server.

To try experimental GPU acceleration for CUDA or OpenCL applications

This Tech Preview also provides experimental support for GPU acceleration of CUDA and OpenCL applications running in a user session. This support is disabled by default, but you can enable it for testing and evaluation purposes.

Caution: Editing the Registry incorrectly can cause serious problems that may require you to reinstall your operating system. Citrix cannot guarantee that problems resulting from the incorrect use of Registry Editor can be solved. Use Registry Editor at your own risk. Be sure to back up the registry before you edit it.

1. To use the experimental CUDA acceleration features, enable the following Registry settings:

- [HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\CtxHook\AppInit_Dlls\Graphics Helper]
  "CUDA"=dword:00000001

- [HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\CtxHook\AppInit_Dlls \Graphics Helper] "CUDA"=dword:00000001

2. To use the experimental OpenCL acceleration features, enable the following Registry settings:

- [HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\CtxHook\AppInit_Dlls\Graphics Helper]
  "OpenCL"=dword:00000001

- [HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\CtxHook\AppInit_Dlls \Graphics Helper] "OpenCL"=dword:00000001
To uninstall the OpenGL GPU Sharing Feature Add-on

1. From the Start menu, select Control Panel > Programs and Features.
2. Highlight the feature add-on you want to uninstall and click Uninstall.
3. Follow the directions on-screen.