# How to install the NVIDIA Grid (vGPU) driver on a virtual machine?

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***Lösung (öffentlich)***

Overview

In the Enterprise cloud, virtual machines (VMs) can be provided with vGPU profiles. In order for these GPUs to be used within the guest operating system (e.g., for 3D acceleration, CAD, AI workloads, or graphics-intensive applications), the appropriate NVIDIA Grid (vGPU) driver must be installed in the operating system.

The driver is part of the NVIDIA vGPU software and establishes the connection between the virtual GPU hardware and the operating system.

In addition, licensing is required for productive operation. This is done via the NVIDIA License System (NLS). A so-called client configuration token is required for this. The token is a configuration file (.tok) generated by NVIDIA that:
- contains the license server information
- assigns the VM to a license pool
- enables automatic license activation at startup

Without a valid token, the driver will only run in a limited manner (e.g., with performance limitations or time restrictions).

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Linux

On Linux VMs that have already been assigned one or more vGPU profiles during provisioning, the NVIDIA Grid (vGPU) driver is usually preinstalled. However, if vGPU profiles are added later, manual installation of the driver is required.

For this purpose, the preinstalled software package “zih-avd-vm-script” provides the following installation script, which automates both the setup of the NVIDIA Grid (vGPU) driver and the configuration of the license service:

/usr/local/ZIH/zih-avd-vm-scripts/share/nvidia/nvidia-install.sh

The script performs all necessary installation and configuration steps automatically and must be executed with root privileges (e.g., sudo).
After completing the installation, it is recommended to restart the VM so that the kernel module is loaded and activated correctly.
You can check the status of the license service and whether a valid license could be obtained from the NLS instances with the following command:

```
# systemctl status nvidia-gridd.service
systemd[1]: Started nvidia-gridd.service - NVIDIA Grid Daemon.
nvidia-gridd[3633478]: vGPU Software package (0)
nvidia-gridd[3633478]: Ignore service provider and node-locked licensing
nvidia-gridd[3633478]: NLS initialized
nvidia-gridd[3633478]: Acquiring license. (Info:
nls-enterprise-lzr-1.zih.tu-dresden.de; NVIDIA RTX Virtual Workstation)
nvidia-gridd[3633478]: License acquired successfully. (Info:
nls-enterprise-lzr-1.zih.tu-dresden.de, NVIDIA RTX Virtual Workstation;
Expiry: YYYY-M-D H:M:SS GMT)
```

Windows

For technical reasons, Windows VMs are provided without pre-installed NVIDIA Grid (vGPU) drivers. To use the assigned vGPU profiles, the driver must be installed manually. The steps required for this are described below.
- Download driver and client token
The ZIH provides the installation program (*.exe) for the NVIDIA Grid (vGPU) driver in the version of the vGPU driver currently installed on the hosts, as well as the associated client token (*.tok) in the[1]Datashare.
- Run the installation program
Start the downloaded *.exe file by right-clicking -> Run as administrator.

- Specify the directory for unpacking the installation files and confirm by clicking OK.

- Accept license terms

- Select installation type
The express installation is usually sufficient. Optionally, you can select a custom installation.

- Complete installation / Install client configuration token
Once the driver installation is complete, save the downloaded client configuration token (*.tok) in the following directory: C:\Program Files\NVIDIA Corporation\vGPU Licensing\ClientConfigToken

- Restart the license service (NVDisplay.ContainerLocalSystem) using Task Manager

After completing the driver installation, configuring the client configuration token, and restarting the license service, the VM should automatically obtain a license from the NLS instances. You can check the current license status in the NVIDIA Control Panel (NVIDIA icon in the taskbar) under Licensing -> Manage License.

[1] https://datashare.tu-dresden.de/s/mNiC5em7Q3jWQSJ