## Table of Contents

### Chapter 1. Introduction to the NVIDIA vGPU Software License Server

1.1. Overview of NVIDIA vGPU software Licensing ...................................................... 1

1.2. NVIDIA vGPU Software License Server High Availability ................................. 2

1.3. Overview of the NVIDIA vGPU Software Licensing Process ............................ 3

### Chapter 2. Installing the NVIDIA vGPU Software License Server

2.1. Platform Requirements .................................................................................. 4

2.1.1. Hardware and Software Requirements ........................................................ 4

2.1.2. Platform Configuration Requirements ....................................................... 5

2.1.3. Network Ports and Management Interface ............................................... 5

2.1.4. High Availability Requirements ................................................................ 5

2.2. Installing the NVIDIA vGPU Software License Server on Windows ................. 6

2.2.1. Installing the Java Runtime Environment on Windows .............................. 6

2.2.2. Setting the JRE and JVM locations for New Installations with OpenJDK ....... 7

2.2.3. Installing the License Server Software on Windows ................................... 9

2.2.4. Migrating an Existing Installation of NVIDIA vGPU Software License Server to

OpenJDK on Windows .................................................................................. 12

2.3. Installing the NVIDIA vGPU Software License Server on Linux ................... 14

2.3.1. Installing the Java Runtime Environment on Linux ................................. 14

2.3.2. Installing and Running the Apache Tomcat Server on Linux ....................... 15

2.3.3. Installing the License Server Software on Linux ...................................... 16

2.3.4. Migrating an Existing Installation of NVIDIA vGPU Software License Server to

OpenJDK on Linux ...................................................................................... 21

### Chapter 3. Managing Licenses on the NVIDIA vGPU Software License Server

3.1. Accessing the License Server Management Interface ...................................... 24

3.2. Obtaining the License Server’s MAC Address ............................................... 25

3.3. Enabling Failover Support on the Primary and Secondary License Servers ........ 26

3.4. Registering Your License Server and Getting License Files ............................ 28

3.5. Installing a License .................................................................................. 30

3.6. Verifying High Availability Setup of the License Server .................................. 32

3.7. Viewing Information About Installed Licenses .............................................. 32

3.7.1. Viewing the Properties of All Installed Licensed Features ......................... 33

3.7.2. Viewing the Details of a Single Licensed Feature ....................................... 34

3.7.3. Viewing Information About All Borrowed Licenses .................................. 34

3.7.4. Viewing the Details of a Single Licensed Client ........................................ 35

3.7.5. About the License Borrow Period .......................................................... 35

3.8. Reserving Licenses .................................................................................. 36

3.8.1. Creating License Reservations ................................................................. 36

3.8.2. Deleting License Reservations ................................................................. 38

3.8.3. Exporting and Importing License Reservations ......................................... 39

3.9. Removing Licenses from a License Server .................................................... 40
3.10. Converting an Evaluation License Server to a Permanent License Server.....................41

Chapter 4. Troubleshooting the NVIDIA vGPU Software License Server..........................42
4.1. Obtaining Diagnositic Information from the License Server Log files.............................42
  4.1.1. Log File Locations and Types........................................................................42
  4.1.2. Changing the License Server Log Level.........................................................43
4.2. Management Interface Connection Errors............................................................44
4.3. License Server Connection Errors..................................................................45
4.4. License Upload Failures.................................................................................46
  4.4.1. License Response Fails Trust Criteria.............................................................46
  4.4.2. Capability Response Rejected - Response Time Too Old.................................46
  4.4.3. Capability Response Rejected - Update Time Invalid.......................................46
  4.4.4. Capability Response Rejected - Response Enterprise ID Does Not Match the Server 46
4.5. Trusted Storage Database Errors.......................................................................47
  4.5.1. Deleting the Trusted Storage Database...........................................................47
    4.5.1.1. Deleting the Trusted Storage Database on Windows....................................47
    4.5.1.2. Deleting the Trusted Storage Database on Linux........................................47

Chapter 5. Uninstalling the NVIDIA vGPU Software License Server...............................49
5.1. Uninstalling the NVIDIA vGPU Software License Server on Windows.......................49
5.2. Uninstalling the NVIDIA vGPU Software License Server on Linux..........................51
LIST OF FIGURES

Figure 1 NVIDIA vGPU Software Licensing Architecture .......................................................... 1
Figure 2 Oracle Java SE 32-Bit Runtime Environment Installation on Windows ............................. 7
Figure 3 License Agreements on Windows .............................................................................. 9
Figure 4 Destination Folder Selection on Windows .................................................................. 10
Figure 5 Firewall Settings on Windows .................................................................................. 11
Figure 6 Completed License Server Installation on Windows .................................................... 12
Figure 7 Verifying the Apache Tomcat Installation .................................................................. 16
Figure 8 License Agreements on Linux ................................................................................... 17
Figure 9 Destination Folder Selection on Linux ......................................................................... 18
Figure 10 Apache Tomcat Server Path on Linux ..................................................................... 19
Figure 11 Firewall Settings on Linux ....................................................................................... 20
Figure 12 Completed License Server Installation on Linux ...................................................... 21
Figure 13 License Server Management Interface ..................................................................... 25
Figure 14 Obtaining the License Server’s MAC Address .......................................................... 26
Figure 15 License Server Settings for Enabling Failover Support ............................................ 27
Figure 16 Selecting a License File ......................................................................................... 31
Figure 17 Successful Upload of a License File .......................................................................... 31
Figure 18 Viewing Licensed Feature Properties ..................................................................... 33
Figure 19 Licensed Feature Usage Details ............................................................................. 34
Figure 20 Viewing License Usage ......................................................................................... 35
Figure 21 Licensed Client Details ............................................................................................ 35
Figure 22 Adding a License Reservation ................................................................................ 36
Figure 23 Submitting a Pending Reservation .......................................................................... 37
Figure 24 Listing Reservations ............................................................................................... 38
Figure 25  Deleting a Reservation ................................................................. 39
Figure 26  Exporting and Importing License Reservations .................................. 40
Figure 27  Changing the License Server Log Level ............................................. 44
Figure 28  Apache Tomcat Status in the Windows Services Application .................. 44
Figure 29  License Server Connection Error ..................................................... 45
Figure 30  License Server Status in the Windows Services Application ................. 45
Figure 31  Starting the Uninstaller from Windows Control Panel .......................... 49
Figure 32  Starting the Uninstaller in Windows Explorer from the License Server Installation Directory ................................................................. 50
Figure 33  Running the License Server Uninstaller on Windows ............................ 51
Figure 34  Running the License Server Uninstaller on Linux ............................... 52
LIST OF TABLES

Table 1  Licensed Feature Properties ................................................................. 33
Table 2  Log File Locations ............................................................................. 42
Chapter 1. INTRODUCTION TO THE NVIDIA VGPU SOFTWARE LICENSE SERVER

The NVIDIA vGPU software License Server is used to serve a pool of floating licenses to NVIDIA vGPU software licensed products. The License Server is designed to be installed locally within a customer’s network, and be configured with licenses obtained from the NVIDIA Software Licensing Center.

1.1. Overview of NVIDIA vGPU software Licensing

NVIDIA vGPU software is a licensed product. Licensed vGPU functionalities are activated during guest OS boot by the acquisition of a software license served over the network from an NVIDIA vGPU software license server. The license is returned to the license server when the guest OS shuts down.

Figure 1 NVIDIA vGPU Software Licensing Architecture
The licenses served by the NVIDIA vGPU software license server are obtained from the NVIDIA Software Licensing Center as downloadable license files, and installed into the license server through its management interface.

1.2. NVIDIA vGPU Software License Server High Availability

To provide NVIDIA vGPU software clients with continued access to NVIDIA vGPU software features if a single license server fails, you can configure the license server for high availability. High availability requires two license servers in a failover configuration:

- A primary license server, which is actively serving licenses to NVIDIA vGPU software clients
- A secondary license server, which acts as a backup for the primary license server

Configuring two servers in a failover configuration increases availability because simultaneous failure of two servers is rare. The primary and secondary license servers work together to ensure that licenses in the enterprise remain continually available to NVIDIA vGPU software clients.

If the primary license server fails, failover occurs and the secondary server can continue to serve licenses for up to the license server maintenance interval, which is three days.

To ensure that licenses in the enterprise remain continually available after failure of the primary license server, return the primary server to service within three days of the failure. Furthermore, the remaining server becomes a single point of failure. Therefore, you should return the failed server to service as quickly as possible to restore high availability support for the license server.

During normal operation, the primary license server periodically updates the secondary server with information about the licenses that are being served to clients. However, when the primary server is returned to service after a failure, it is not updated with information from the secondary server about licenses that were served while the primary server was out of service.

For more information about configuring the license server for high availability, see High Availability Requirements.
1.3. Overview of the NVIDIA vGPU Software Licensing Process

The following table lists the major tasks in the process of licensing NVIDIA vGPU software and provides a cross-reference to instructions for performing each task.

<table>
<thead>
<tr>
<th>Task</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get your NVIDIA vGPU software and NVIDIA vGPU software License Server software.</td>
<td>Virtual GPU Software Quick Start Guide</td>
</tr>
<tr>
<td>Install the NVIDIA vGPU software License Server software.</td>
<td>Installing the NVIDIA vGPU Software License Server</td>
</tr>
<tr>
<td>Access the management interface of the license server.</td>
<td>Accessing the License Server Management Interface</td>
</tr>
<tr>
<td>Get the MAC address of the license server.</td>
<td>Obtaining the License Server’s MAC Address</td>
</tr>
<tr>
<td><strong>HA license servers only:</strong> Enable failover support.</td>
<td>Enabling Failover Support on the Primary and Secondary License Servers</td>
</tr>
<tr>
<td>Register your license server, generate licenses, and download license files.</td>
<td>Registering Your License Server and Getting License Files</td>
</tr>
<tr>
<td>Install a license.</td>
<td>Installing a License</td>
</tr>
<tr>
<td>View available licenses.</td>
<td>Viewing Information About Installed Licenses</td>
</tr>
<tr>
<td>Reserve and release licenses.</td>
<td>Reserving Licenses</td>
</tr>
<tr>
<td>Move a license to a new server.</td>
<td>1. Removing Licenses from a License Server&lt;br&gt;2. Registering Your License Server and Getting License Files</td>
</tr>
<tr>
<td>Convert a trial license server to a permanent license server.</td>
<td>Converting an Evaluation License Server to a Permanent License Server</td>
</tr>
<tr>
<td>Configure licensed NVIDIA vGPU software products for use with license server.</td>
<td>Virtual GPU Client Licensing User Guide</td>
</tr>
<tr>
<td>Troubleshoot the license server.</td>
<td>Troubleshooting the NVIDIA vGPU Software License Server</td>
</tr>
<tr>
<td>Uninstall the license server software.</td>
<td>Uninstalling the NVIDIA vGPU Software License Server</td>
</tr>
</tbody>
</table>

If you are configuring the license server for high availability, you must perform some tasks for both the primary license server and the secondary license server. For more information, see High Availability Requirements.
You can install the NVIDIA vGPU software license server on Windows and Linux systems that meet the license server’s platform requirements. If you require high availability for the license server, you must install the license server both on the system that you will use as the primary license server and on the system that you will use as the secondary license server.

The license server requires a Java runtime environment and an Apache Tomcat server. Before you install the license server software, ensure that the required software is already installed on each license server host machine that you are using:

- On Windows, you need ensure only that the Java runtime environment is installed. The Apache Tomcat server is included in the license server installer for Windows.
- On Linux, you must ensure that both the Java runtime environment and the Apache Tomcat server are installed.

Also ensure that you have obtained your NVIDIA vGPU software and NVIDIA vGPU software License Server software. For more information, refer to Virtual GPU Software Quick Start Guide.

2.1. Platform Requirements

Before proceeding, ensure that you have a platform suitable for hosting the license server.

2.1.1. Hardware and Software Requirements

- The hosting platform may be a physical or virtual machine (VM). NVIDIA recommends using a host that is dedicated solely to running the license server.
- The recommended minimum configuration is 2 CPU cores and 4 Gbytes of RAM. A high-end configuration of 4 or more CPU cores with 16 Gbytes of RAM is suitable for handling up to 150,000 licensed clients.
- The hosting platform must run a supported operating system.
Since 5.1.0.23376826: On Window platforms, .NET Framework 4.5 or later is required.

Before proceeding with the installation, refer to Virtual GPU License Server Release Notes for details of supported operating systems and known issues.

2.1.2. Platform Configuration Requirements

- The platform must have a fixed (unchanging) IP address. The IP address may be assigned dynamically by DHCP or statically configured, but must be constant.
- The platform must have at least one unchanging Ethernet MAC address, to be used as a unique identifier when registering the server and generating licenses in the NVIDIA Software Licensing Center.
- The platform’s date and time must be set accurately. NTP is recommended.

2.1.3. Network Ports and Management Interface

The license server requires TCP port 7070 to be open in the platform’s firewall, to serve licenses to clients. By default, the installer will automatically open this port.

The license server’s management interface is web-based, and uses TCP port 8080. The management interface itself does not implement access control; instead, the installer does not open port 8080 by default, so that the management interface is only available to web browsers running locally on the license server host. Access to the management interface is therefore controlled by limiting remote access (via VNC, RDP, etc.) to the license server platform.

If you choose to open port 8080 during license server installation, or at any time afterwards, the license server’s management interface is unprotected.

2.1.4. High Availability Requirements

If you plan to configure high availability for the license server by configuring a primary server and a secondary server, these requirements must be met:

- Both servers must run the same version of the NVIDIA vGPU Software License Server software.
- The clocks on both servers must be accurate and synchronized. NTP is recommended.
- The same license configuration file must be installed on both servers. This file is configured to include the Ethernet MAC addresses of both servers.

If you are configuring the license server for high availability, you must perform the following tasks for both the primary license server and the secondary license server:

- Installing the license server:
  - Installing the NVIDIA vGPU Software License Server on Windows
  - Installing the NVIDIA vGPU Software License Server on Linux
2.2. Installing the NVIDIA vGPU Software License Server on Windows

The license server requires a Java runtime environment, which must be installed separately before you install the license server.

If you require high availability for the license server, you must install the license server both on the system that you will use as the primary license server and on the system that you will use as the secondary license server.

2.2.1. Installing the Java Runtime Environment on Windows

If a suitable 32-bit Java runtime environment (JRE) version is not already installed on your system, download a supported 32-bit Oracle Java SE JRE or OpenJDK JRE and install it before running the NVIDIA license server installer.

- Oracle Java SE JRE downloads are available from the java.com: Java + You website.
- OpenJDK JRE downloads are available from the Community builds using source code from OpenJDK project on GitHub.

If you are installing OpenJDK to migrate from Oracle Java SE JRE, see Migrating an Existing Installation of NVIDIA vGPU Software License Server to OpenJDK on Windows.

Install the 32-bit Java runtime, regardless of whether your platform is 32-bit Windows or 64-bit Windows. If a 64-bit Java runtime is already installed, remove it before installing the 32-bit version to ensure that future updates to the Java software can be applied correctly.
If you are using OpenJDK and have not yet installed the license server software, you must set `JAVA_HOME` before installing the license server software. For instructions see Setting the JRE and JVM locations for New Installations with OpenJDK.

### 2.2.2. Setting the JRE and JVM locations for New Installations with OpenJDK

The license server installer obtains the JRE and JVM locations that Apache Tomcat requires from a registry key. This registry key specifies the correct locations for the Oracle Java SE JRE. If you are using OpenJDK, you must update this registry key to specify the correct locations for the OpenJDK JRE before installing the license server software.

1. Open the Windows **Registry Editor** and navigate to `Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\JavaSoft\Java Runtime Environment`. 
2. Add the registry key for Open JDK JRE version 1.8 and add the JavaHome and RuntimeLib string values to this key.
   a) If it does not exist already, add the key 1.8 as a subkey of Java Runtime Environment.
   b) To the key 1.8, add new string values named JavaHome and RuntimeLib, and set their Data values as described in the following table.

<table>
<thead>
<tr>
<th>Name</th>
<th>Data Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>JavaHome</td>
<td>The full path to the jre folder of your OpenJDK installation, for example, C:\Program Files (x86)\ojdkbuild\java-1.8.0-openjdk-1.8.0.201-1\jre.</td>
</tr>
<tr>
<td></td>
<td>Ensure that the path does not include any trailing characters, such as a slash or a space. If the JavaHome string value already exits, edit its Data value to remove any trailing characters.</td>
</tr>
<tr>
<td>RuntimeLib</td>
<td>The full path to the JVM DLL file jvm.dll of your OpenJDK installation, for example, C:\Program Files (x86)\ojdkbuild\java-1.8.0-openjdk-1.8.0.201-1\jre\bin\server\jvm.dll.</td>
</tr>
</tbody>
</table>

3. To the key Java Runtime Environment, add a new string value named CurrentVersion and set its Data value to 1.8.

4. From the View menu, choose Refresh to confirm that the registry keys were added and updated as required.

Install the license server software as explained in Installing the License Server Software on Windows.
2.2.3. Installing the License Server Software on Windows

1. Unzip the license server installer and run setup.exe.
2. Accept the EULA for the license server software and the Apache Tomcat software used to support the license server’s management interface.

![Figure 3 License Agreements on Windows](image)

3. Choose the destination folder where you want the license server software to be installed.
4. In the **Choose Firewall Options** dialog box, select the ports to be opened in the firewall.

To enable remote clients to access licenses from the server and prevent remote access to the management interface, use the default setting, which sets ports as follows:

- Port 7070 is open to enable remote clients to access licenses from the server.
- Port 8080 is closed to ensure that the management interface is available only through a web browser running locally on the license server host.
Figure 5  Firewall Settings on Windows

5. After installation has completed successfully, click **Done** to exit the installer.
Installing the NVIDIA vGPU Software License Server

After quitting the installer, verify the installation by accessing the License Server management interface as explained in Accessing the License Server Management Interface.

2.2.4. Migrating an Existing Installation of NVIDIA vGPU Software License Server to OpenJDK on Windows

If you no longer want to use Oracle Java SE JRE with your existing installation of NVIDIA vGPU software license server, you can replace the Oracle Java SE JRE with the OpenJDK JRE.

1. Use the Services application to confirm that the Apache Tomcat 8.5 Tomcat8 service is running.
2. Use the Services application to confirm that the FlexNet License Server - nvidia service is running.

![Services application](image1.png)

3. In the Services application, context-click the FlexNet License Server - nvidia service and choose Stop.

4. In the Services application, context-click the Apache Tomcat 8.5 Tomcat8 service and choose Stop.

5. Uninstall Oracle Java SE JRE.
   a) Open Windows Control Panel. and under Programs, follow the Uninstall a program link.
   b) Context-click the installed Oracle Java SE JRE program, choose Uninstall, and if you are prompted to confirm that you want to uninstall the program, click Yes.

![Windows Control Panel](image2.png)

6. Install OpenJDK.

7. Ensure that Apache Tomcat can locate your OpenJDK JRE.
   a) In Windows File Explorer, navigate to the bin folder of your Apache Tomcat installation.
      By default, this folder is %SystemDrive%:\Program Files (x86)\NVIDIA \License Server\Tomcat\bin.
   b) Double-click the Tomcat8w application in this folder.
   c) In the Apache Tomcat 8.5 Tomcat8 Properties window that opens, click the Java tab.
   d) Deselect the Use default option, set Java Virtual Machine to the full path to the JVM DLL file jvm.dll of your OpenJDK installation, for example, C:\Program Files (x86)\ojdkbuild\java-1.8.0-openjdk-1.8.0.201-1\jre\bin\server\jvm.dll, and click OK.
8. In the Services application, context-click the Apache Tomcat 8.5 Tomcat service and choose Start.

9. In the Services application, context-click the FlexNet License Server - nvidia service and choose Start.

10. Confirm that the license server is working by accessing the license server management interface as explained in Accessing the License Server Management Interface.

2.3. Installing the NVIDIA vGPU Software License Server on Linux

The license server requires a Java runtime environment and an Apache Tomcat server, which must be installed separately before you install the license server software.

If you require high availability for the license server, you must install the license server both on the system that you will use as the primary license server and on the system that you will use as the secondary license server.

2.3.1. Installing the Java Runtime Environment on Linux

If a suitable Java runtime environment (JRE) version is not already installed on your system, you can install OpenJDK from your Linux distribution's package repositories.

If you are installing OpenJDK to migrate from Oracle Java SE JRE, see Migrating an Existing Installation of NVIDIA vGPU Software License Server to OpenJDK on Linux.

For information about installing Oracle Java SE JRE, see the Java Platform, Standard Edition Documentation in the Oracle Help Center.

1. Determine whether a version of Java is installed on your system.

   [nvidia@localhost ~]$ java -version

   If a Java version is installed, the version is shown as follows and no further action is required.

   java version "1.7.0_51"
2. Use your Linux distribution’s package manager to install OpenJDK.
   - For distributions based on Red Hat, use the `yum` package manager to install the `java` package.
     ```
     [nvidia@localhost ~]$ sudo yum install java
     ```
   - For distributions based on Debian, use the `apt` package manager to install the `default-jdk` package.
     ```
     [nvidia@localhost ~]$ sudo apt install default-jdk
     ```

2.3.2. Installing and Running the Apache Tomcat Server on Linux

The license server’s management interface requires an Apache Tomcat server.

1. Use your Linux distribution’s package manager to install the required Apache Tomcat packages.
   - For distributions based on Red Hat, use the `yum` package manager to install the `tomcat` and `tomcat-webapps` packages.
     ```
     [nvidia@localhost ~]$ sudo yum install tomcat tomcat-webapps
     ```
   - For distributions based on Debian, use the `apt` package manager to install the `tomcat` package. For example, for Apache Tomcat 8, run:
     ```
     [nvidia@localhost ~]$ sudo apt install tomcat8
     ```

2. After installing the packages, enable the Tomcat service for automatic startup on boot.
   - For distributions based on Red Hat, enable the `tomcat` service.
     ```
     [nvidia@localhost ~]$ sudo systemctl enable tomcat.service
     ```
   - For distributions based on Debian, enable the `tomcat8` service. For example, for Apache Tomcat 8, run:
     ```
     [nvidia@localhost ~]$ sudo systemctl enable tomcat8.service
     ```

3. Start the Tomcat service.
   - For distributions based on Red Hat, start the `tomcat` service.
     ```
     [nvidia@localhost ~]$ sudo systemctl start tomcat.service
     ```
   - For distributions based on Debian, start the `tomcat8` service. For example, for Apache Tomcat 8, run:
     ```
     [nvidia@localhost ~]$ sudo systemctl start tomcat8.service
     ```

4. Verify that the Tomcat service is operational by opening the URL `http://localhost:8080` in a web browser.
   The home page of the default Tomcat web application should be displayed, as shown in Figure 7.
It works!

If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!

This is the default Tomcat home page. It can be found on the local filesystem at: /var/lib/tomcat8/webapps/ROOT/index.html

Tomcat8 veterans might be pleased to learn that this system instance of Tomcat is installed with CATALINA_HOME in /var/share/tomcat8 and CATALINA_BASE in /var/lib/tomcat8, following the rules from /var/share/doc/tomcat8-common/RUNNING.txt.gz.

You might consider installing the following packages, if you haven't already done so:

- **tomcat8-docs**: This package installs a web application that allows to browse the Tomcat 8 documentation locally. Once installed, you can access it by clicking [here](#).
- **tomcat8-examples**: This package installs a web application that allows to access the Tomcat 8 Servlet and JSP examples. Once installed, you can access it by clicking [here](#).
- **tomcat8-admin**: This package installs two web applications that can help managing this Tomcat instance. Once installed, you can access the [manager webapp](#) and the [host-manager webapp](#).

**NOTE**: For security reasons, using the manager webapp is restricted to users with role “manager-gui”. The host-manager webapp is restricted to users with role “admin-gui”. Users are defined in `/etc/tomcat8/tomcat-users.xml`.

---

2.3.3. Installing the License Server Software on Linux

Installation in Linux console mode is **not** supported. The license server installer must be run in a graphical desktop environment.

1. Extract the contents of the license server ZIP archive.

   ```bash
   [nvidia@localhost ~]$ unzip NVIDIA-ls-linux-5.1.0.23376826.zip
   ```

2. Add execute permission to the extracted setup binary file.

   ```bash
   [nvidia@localhost ~]$ chmod +x setup.bin
   ```

3. As root, run the extracted setup binary.

   ```bash
   [nvidia@localhost ~]$ sudo ./setup.bin
   ```

4. Accept the EULA to proceed with installation.
Choose the destination folder where you want the license server software to be installed.

Figure 8  License Agreements on Linux
6. Specify the path to the folder on the local host that contains the webapps folder. Web applications are deployed on Apache Tomcat Server to the webapps folder.

- For distributions based on Red Hat, the default path to this folder is /usr/share/tomcat.
- For distributions based on Debian, the default path to this folder is /var/lib/tomcat8, for example /var/lib/tomcat, for Apache Tomcat 8.
7. In the **Choose Firewall Options** dialog box, shown in **Figure 11**, select the ports to be opened in the firewall.

To enable remote clients to access licenses from the server and prevent remote access to the management interface, use the default setting, which sets ports as follows:

- Port 7070 is open to enable remote clients to access licenses from the server.
- Port 8080 is closed to ensure that the management interface is available only through a web browser running locally on the license server host.
8. After installation has completed successfully, click **Done** to exit the installer.
Installing the NVIDIA vGPU Software License Server

www.nvidia.com
Virtual GPU License Server Version 5.1.0 and 5.0.0

2.3.4. Migrating an Existing Installation of NVIDIA vGPU Software License Server to OpenJDK on Linux

If you no longer want to use Oracle Java SE JRE with your existing installation of NVIDIA vGPU software license server, you can replace the Oracle Java SE JRE with the OpenJDK JRE.

1. Check status of the Apache Tomcat service.
   - For distributions based on Red Hat, check the status of the tomcat service.
     
     [nvidia@localhost ~]$ systemctl status tomcat.service
   
   - For distributions based on Debian, check the status of the tomcat release service. For example, for Apache Tomcat 8, run:
     
     [nvidia@localhost ~]$ sudo systemctl status tomcat8.service

2. Check the status of the NVIDIA vGPU software license server flexnetls-nvidia service.

   [nvidia@localhost ~]$ systemctl status flexnetls-nvidia.service

3. Stop the NVIDIA vGPU software license server flexnetls-nvidia service.
4. Stop the Apache Tomcat service.
   - For distributions based on Red Hat, stop the `tomcat` service.
     
     ```
     [nvidia@localhost ~]$ sudo systemctl stop tomcat.service
     ```
   - For distributions based on Debian, stop the `tomcat` service. For example, for Apache Tomcat 8, run:
     
     ```
     [nvidia@localhost ~]$ sudo systemctl stop tomcat8.service
     ```

5. Use your Linux distribution’s package manager to install OpenJDK.
   - For distributions based on Red Hat, use the `yum` package manager to install the `java` package.
     
     ```
     [nvidia@localhost ~]$ sudo yum install java
     ```
   - For distributions based on Debian, use the `apt` package manager to install the `default-jdk` package.
     
     ```
     [nvidia@localhost ~]$ sudo apt install default-jdk
     ```

6. Optional: Uninstall Oracle Java SE JRE.
   For information about uninstalling Oracle Java SE JRE, see How do I uninstall Java for Linux? on the java.com: Java + You website.

7. Ensure that Apache Tomcat can locate your OpenJDK JRE.
   a) Get the parent of the `jre` folder for your OpenJDK installation.

      The following example gets the parent of the `jre` folder for an installation of 64-bit OpenJDK 8.

      ```
      [nvidia@localhost ~] update-java-alternatives -l
      java-1.8.0-openjdk-amd64       1081       /usr/lib/jvm/java-1.8.0-
      openjdk-amd64
      ```

     b) Open the file `/etc/default/tomcat8` in a plain text editor and edit the value of the `JAVA_HOME` environment variable to specify the full path to the `jre` folder of your OpenJDK installation.

      The following example sets `JAVA_HOME` for an installation of 64-bit OpenJDK 8.

      ```
      JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64/jre
      ```

8. Start the Apache Tomcat service.
   - For distributions based on Red Hat, start the `tomcat` service.
     
     ```
     [nvidia@localhost ~]$ sudo systemctl start tomcat.service
     ```
   - For distributions based on Debian, start the `tomcat` service. For example, for Apache Tomcat 8, run:
     
     ```
     [nvidia@localhost ~]$ sudo systemctl start tomcat8.service
     ```

9. Start the NVIDIA vGPU software license server `flexnetls-nvidia` service.
    
    ```
    [nvidia@localhost ~]$ systemctl start flexnetls-nvidia.service
    ```
10. Confirm that the license server is working by accessing the license server management interface as explained in Accessing the License Server Management Interface.
Chapter 3.
MANAGING LICENSES ON THE NVIDIA VGPU SOFTWARE LICENSE SERVER

Managing licenses on the NVIDIA vGPU software license server involves installing licenses on the license server and controlling and monitoring the usage of installed licenses. You manage the license server in a web browser through the license server management interface.

3.1. Accessing the License Server Management Interface

Access the license server management interface to verify that the license server is operating correctly or to manage licenses on the license server.

- If the license server host does not permit remote access, open a web browser on the license server host and connect to the URL http://localhost:8080/licserver.
- If the license server host’s network firewall is configured to permit remote access to the license server, open a web browser on a remote machine and connect to the URL http://hostname:8080/licserver, where hostname is the fully-qualified domain name or IP address of the license server host.

The browser should display the home page for the license server management interface, as shown in Figure 13.
If the management interface is not displayed, consult Management Interface Connection Errors for troubleshooting steps.

### 3.2. Obtaining the License Server’s MAC Address

The license server’s Ethernet MAC address uniquely identifies your server to the NVIDIA Software Licensing Center. You will need this address to register your license server with the NVIDIA Software Licensing Center to generate license files.

If you are configuring the license server for high availability, you will need the MAC address of both the primary license server and the secondary license server.

1. In the license server management interface, select **Configuration**.
2. On the **License Server Configuration** page that opens, in the **Server host ID** drop-down list, select the platform’s ETHERNET address.
Figure 14  Obtaining the License Server’s MAC Address

You must use the same ETHERNET ID to consistently identify the server when generating licenses on the NVIDIA Licensing Portal. If your platform has multiple Ethernet interfaces, multiple ETHERNET entries may be displayed in the Server host ID drop-down list. To ensure that you use the same ETHERNET ID to consistently identify the server, select one entry that corresponds to a primary (nonremovable) interface on the platform.

3.3. Enabling Failover Support on the Primary and Secondary License Servers

If you are configuring high availability for the license server, you must enable failover support on both the primary license server and on the secondary license server. Set the same options on both servers.

1. In the license server management interface, select Configuration. The License Server Configuration page opens.
Figure 15  License Server Settings for Enabling Failover Support

2. Under **License Generation**, use the **Backup URI** and **Main URI** fields to set the URI to each server in a failover configuration.
   
a) In the **Backup URI** field, enter `http://secondary-server:7070/fne/bin/capability`.
   
b) In the **Main URI** field, enter `http://primary-server:7070/fne/bin/capability`.

   **secondary-server**
   The fully-qualified domain name (for example, `gridlicense2.example.com`) or the IP address (for example, `10.31.20.46`) of the secondary license server.

   **primary-server**
   The fully-qualified domain name (for example, `gridlicense1.example.com`) or the IP address (for example, `10.31.20.45`) of the primary license server.

3. Set the options under **Settings for server to sync between License servers** as follows:
   
a) Set the **Synchronization to fne enabled** option to **true**.
   
b) In the **Main FNE Server URI** field, enter `http://primary-server:7070/fne/bin/capability`.

   **primary-server**
   The fully-qualified domain name (for example, `gridlicense1.example.com`) or the IP address (for example, `10.31.20.45`) of the primary license server.

4. Click **Save**.
3.4. Registering Your License Server and Getting License Files

To be able to generate and download licenses from the NVIDIA Software Licensing Center, you must register your license server. Before downloading a license file, you must generate the file by mapping to it the add-ons that correspond to your licenses. The license file is empty by default and does not contain any licenses it until you map add-ons to it.

If you require high availability for the license server, you must register a secondary server when the primary server is registered. If you do not register a secondary server when the primary server is registered, you cannot register the secondary server later.

1. If you are not already logged in, log in to the NVIDIA Enterprise Application Hub and click NVIDIA LICENSING PORTAL to go to the NVIDIA Software Licensing Center.
2. In the navigation pane of the NVIDIA Software Licensing Center page, under GRID Licensing, select Register License Server.
3. On the Register License Server page that opens, provide the details of your license server.
   a) In the MAC Address field, enter the MAC address of your primary license server.
      Enter only the numbers and letters in the address. Do not enter any spaces or punctuation.
      If you have only one license server configured, enter its MAC address in this field.
   b) In the Backup License Server ID field, enter the MAC address of your secondary license server.
      Enter only the numbers and letters in the address. Do not enter any spaces or punctuation.
      If you have only one license server configured, leave this field unset.
   c) Optional: Provide an alias and site name for your license server.
      If you do not provide an alias, it is set to the MAC address of your license server. You can edit the alias after your license server is registered.
      If you do not provide a site name, your license server is registered without a site name. You cannot add a site name after your license server is registered.
   d) Click Create.
4. On the **View Server** page that opens, follow the **Map Add-Ons** link.

5. On the **Map Add-Ons** page that opens, in the **Qty to add** field, enter the number of licenses you want to add to your license file and click **Map Add-Ons**.
You can also configure and register multiple servers and distribute your NVIDIA vGPU software licenses across them by mapping add-ons to servers as necessary. After clicking Map Add-Ons, you are returned to the View Server page.

6. Back on the View Server page, follow the Download License File link and save the .bin license file to your license server for installation.

```
The .bin license file is valid for 72 hours. If you do not install the file within 72 hours of downloading it, you must download it again.
```

### 3.5. Installing a License

NVIDIA vGPU software licenses are distributed as .bin files for download from the NVIDIA Software Licensing Center.

```
If you have configured high availability for the license server, you must install the license both on the primary license server and on the secondary license server.
```

Before installing a license, ensure that you have downloaded the license file from the NVIDIA Software Licensing Center.

1. In the license server management interface, select **License Management**.
2. On the **License Management** page that opens, click **Choose File**.
3. In the file browser that opens, select the `.bin` file and click **Open**.

4. Back on the **License Management** page, click **Upload** to install the license file on the license server. The license server should confirm successful installation of the license file.

5. If you have configured high availability for the license server, restart the license server service on the primary license server and on the secondary license server.
Managing Licenses on the NVIDIA vGPU Software License Server

- On Windows, use the **Service Manager**, which is accessible from **Task Manager**, to restart the **FNLS-nvidia** service.
- On Linux, as root, restart the **flexnetls-nvidia** service.

```
[nvidia@localhost ~]$ sudo systemctl restart flexnetls-nvidia
```

### 3.6. Verifying High Availability Setup of the License Server

The license server log file indicates the failover role of the given license server and its synchronization status.

For the location of the log file on your platform, refer to **Log File Locations and Types**.

In the license server log file, search for the string that designates the server role. The line that contains the string and the lines that follow it indicate the role and status of the server.

- **For the primary server**, search for the string **main server**.

  ```
  23:29:25,655 INFO  Server is designated as a main server in a failover configuration
  23:29:29,041 INFO  Received sync request from the backup server
  23:34:31,815 INFO  Generated sync message for the backup server
  ```

- **For the secondary server**, search for the string **backup server**.

  ```
  00:39:53,290 INFO  Server is designated as a backup server in a failover configuration
  00:39:55,388 INFO  Starting sync from main server
  00:39:56,784 INFO  Successfully completed sync from main server
  ```

**Tip** When a client acquires a license from the primary server, the number of available licensed features is reduced by 1 on both the primary and the secondary servers. When the license server is operating, you can verify its high availability setup by confirming that the count of available licenses on the primary and the secondary servers changes as expected as clients acquire licenses from the server.

### 3.7. Viewing Information About Installed Licenses

From the license server management interface, you can find out which licenses are installed on the server, view detailed information about individual licenses, and see how licensed clients are using the installed licenses.
3.7.1. Viewing the Properties of All Installed Licensed Features

By viewing licensed feature properties, you can see the licenses that are installed on the server and get detailed information about each installed license feature.

In the license server management interface, select **Licensed Feature Usage**.

The **Licensed Feature Usage** page that opens lists all licensed features installed on the license server.

![Licensed Feature Usage](http://localhost:8080/license/manageFeatureUsage_view.action?)

**Figure 18  Viewing Licensed Feature Properties**

For each licensed feature, the properties in the following table are displayed.

### Table 1  Licensed Feature Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature</td>
<td>An abbreviated name for the feature.</td>
</tr>
<tr>
<td>Version</td>
<td>The version number associated with the feature.</td>
</tr>
<tr>
<td>Count</td>
<td>The number of licenses for the feature that are currently installed on the license server. Each concurrent user of a feature normally consumes one license.</td>
</tr>
<tr>
<td>Available</td>
<td>The number of licenses for the feature that are currently available to borrow from the server. This number decreases as users borrow licenses from the server, and increases as licenses are returned.</td>
</tr>
</tbody>
</table>
### Property Description

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expiry</td>
<td>The date on which the right to use the licensed feature expires. If the licenses are perpetual use licenses, they have no expiration date. Perpetual licenses are indicated by <code>permanent</code> in place of an expiration date.</td>
</tr>
</tbody>
</table>

#### 3.7.2. Viewing the Details of a Single Licensed Feature

For each installed license feature, you can view detailed information about the feature.

1. In the license server management interface, select **Licensed Feature Usage**.
2. On the **Licensed Feature Usage** page that opens, click the individual licensed feature about which you want detailed information.

   The **Licensed Feature Details** page that opens shows information about the feature.

   ![Licensed Feature Details](image)

   **Figure 19** Licensed Feature Usage Details

#### 3.7.3. Viewing Information About All Borrowed Licenses

By viewing information about all borrowed licenses, you can find out which licenses have been borrowed from the license server and are in use by a licensed client.

In the license server management interface, select **Licensed Clients**.

The **Licensed Clients** page that opens lists the NVIDIA vGPU software client virtual machines are using licensed features.

The example in **Figure 20** shows that one NVIDIA vGPU software client virtual machine is using a Quadro-Virtual-DWS license.
3.7.4. Viewing the Details of a Single Licensed Client

1. In the license server management interface, select **Licensed Clients**.
2. On the **Licensed Clients** page that opens, click the **Client ID** of the licensed client about which you want detailed information.
   The **Client Details** page opens to show detailed information about the licensed client.

3.7.5. About the License Borrow Period

At the end of the borrow period, typically multiple days, a borrowed license is automatically freed by the license server for use by other clients, and becomes unavailable on the licensed client that previously held it. While active, a licensed client renews its license periodically to ensure the borrow period does not expire, if it continues to use the license and has ongoing network connectivity to the license server.
3.8. Reserving Licenses

Licenses are normally distributed to clients on a first-come, first-served basis. Reservations allow licenses to be set aside for specific clients, ensuring that those clients can always obtain a license.

3.8.1. Creating License Reservations

The license server management interface enables you to set up several new reservations and submit them to the license server in a single group.

After creating a group of license reservations, you cannot use the management UI to delete individual reservations in the group or to add new reservations to the group. If you try to use the management UI to delete a single entry from the Reservation page, all entries on the page are deleted. For more information about this issue and its workaround, see Virtual GPU License Server Release Notes.

In an HA configuration, create identical license reservations on the primary license server and the secondary license server. To ensure that the license reservations are identical on both servers, you can export reservations from one server and import them into the other server as explained in Exporting and Importing License Reservations.

1. In the license server management interface, select Reservations. The License Reservations page opens.
2. Add each reservation that you want to create to the list of pending reservations.

Figure 22 Adding a License Reservation
a) On the License Reservations page, click Add.
b) On the Add Reservation page that opens, provide the details of the client for which you are creating the reservation and click Add.

**Group Name**
(Optional) Enter the name you want to assign to this reservation group.

**Client ID**
Enter the client’s Ethernet MAC address without spaces. All letters in the MAC address must be in upper case.

**Feature Name**
Enter the licensed feature name as listed on the Licensed Feature Usage page, which is shown in Viewing the Properties of All Installed Licensed Features.

**Version**
Enter the version number listed for the feature listed on the Licensed Feature Usage page.

**Count**
Set to the number of licenses that you want to reserve for the client.

3. After adding all reservations that you want to create, click Submit to commit the pending reservations to the license server.

![Add Reservation](http://localhost:8080/licserver/reservation_add.action)

**Figure 23 Submitting a Pending Reservation**

After the reservations are submitted, the License Reservations page shows a list of currently stored reservations on the server.
Managing Licenses on the NVIDIA vGPU Software License Server

Figure 24  Listing Reservations

If GRID Virtual Workstation licenses and licenses are available on the same license server, GRID Virtual Workstation licenses are assigned first, even to clients that have reserved licenses.

3.8.2. Deleting License Reservations

If a client no longer requires a license that is reserved for it, delete the reservation to release the license for distribution to other clients.

1. In the license server management interface, select Reservations.
2. On the License Reservations page that opens, select the reservations that you want to delete and click Edit.
   The License Reservations page is updated to replace the existing buttons on the page with the Delete button.
3. On the updated License Reservations page, click Delete.
3.8.3. Exporting and Importing License Reservations

Exporting license reservations downloads the current reservation list as an XML file through your web browser. Importing license reservations from an XML file replaces the license server’s current reservation list with the contents of the file.

Because importing license reservations from a file replaces the license server’s current reservation list, any reservations on the server that are not in the file are lost.

1. In the license server management interface, select Reservations.
2. On the License Reservations page that opens, do one of the following:
   - To export license reservations, click Export.
   - To import license reservations, click Import, browse to the XML file that contains the reservations, and click Upload.
3.9. Removing Licenses from a License Server

Remove licenses from a license server if they are no longer needed or in preparation for migrating them to a new server. Removing licenses involves generating and downloading a license file from which you have removed the add-ons that correspond to the licenses that you want to remove.

1. If you are not already logged in, log in to the NVIDIA Software Licensing Center.
2. In the navigation pane of the NVIDIA Software Licensing Center page, under GRID Licensing, select Search License Servers.
3. On the Search Servers page that opens, select the license server from which you want to remove licenses.
4. On the View Server page that opens, follow the Remove Add-Ons link.

5. On the Remove Add-Ons page that opens, in the Qty to Remove field, enter the number of licenses you want to remove and click Remove Add-Ons.
After clicking **Remove Add-Ons**, you are returned to the **View Server** page.

6. Back on the **View Server** page, follow the **Download License File** link and save the `.bin` license file to your license server.

You must download the license file after you remove add-ons. If you do not download the license file, the licenses that correspond to the add-ons that you removed from the license file are not removed from the server.

If you removed licenses in preparation for migrating them to a new server, add them to the server as explained in **Registering Your License Server and Getting License Files**.

### 3.10. Converting an Evaluation License Server to a Permanent License Server

If you purchase NVIDIA vGPU software licenses after evaluating the software, you can use the same license server that you registered for your evaluation licenses to serve your permanent licenses.

1. Log in to the NVIDIA Software Licensing Center with the account that you created for getting your evaluation licenses.
2. Get the NVIDIA vGPU software for the licenses that you purchased.
   For instructions, refer to **Virtual GPU Software Quick Start Guide**.
3. Get your new license files as explained in **Registering Your License Server and Getting License Files**.

Follow the steps only for mapping add-ons and downloading the license file. Do not try to register your license server again. If you try to register a license server that is already registered, the attempt fails and you are warned that the MAC address is already in use.
Chapter 4.
TROUBLESHOOTING THE NVIDIA VGPU SOFTWARE LICENSE SERVER

You can troubleshoot some common issues with the license server yourself without the need to obtain help from NVIDIA.

Before troubleshooting, review Virtual GPU License Server Release Notes for information about known issues and potential workarounds.

4.1. Obtaining Diagnostic Information from the License Server Log files

The license server log files contain diagnostic information to help with troubleshooting. If necessary, you can increase the amount of information in the log files by changing the log level of the license server.

4.1.1. Log File Locations and Types

Log files from the installer and license server are in the locations in the following table.

Table 2  Log File Locations

<table>
<thead>
<tr>
<th>Host OS</th>
<th>Log</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Installer</td>
<td>%SystemDrive%:\Program Files (x86)\NVIDIA\License Server \Logs</td>
</tr>
<tr>
<td></td>
<td>License server</td>
<td>%SystemDrive%:\Windows\ServiceProfiles\NetworkService \flexnetls\nvidia\logs</td>
</tr>
<tr>
<td>Linux</td>
<td>Installer</td>
<td>/opt/flexnetls/nvidia/Logs/</td>
</tr>
<tr>
<td></td>
<td>License server</td>
<td>/var/opt/flexnetls/nvidia/logs</td>
</tr>
</tbody>
</table>
To confirm the location of the license server log files, use the license server management interface: Select **Configuration** and click the **Properties** tab.

The location of the log files is displayed on the **License Server Configuration** page in the **Logging Directory** field.

The license server generates these types of runtime log files:

- Management interface accesses are recorded in *access_*.request.log files.
- License server activity is recorded in *flexnetls_*.log files.

**4.1.2. Changing the License Server Log Level**

Since **5.1.0.23376826**: The default log level of the license server is **INFO**.

**5.0.0.22575570 only**: The default log level of the license server is **ERROR**.

To adjust the amount of information in the log files, set the log level to a different level.

1. In the license server management interface, select **Configuration** and click the **Properties** tab.
2. On the **License Server Configuration** page, in the **Logging Threshold** field, enter a new log level, for example **WARN** or **ERROR**, and click **Save**.
Troubleshooting the NVIDIA vGPU Software License Server

Figure 27  Changing the License Server Log Level

All messages at or below the level you set are recorded in the log file. For example, if you set the log level to **WARN**, fatal-event, error, and warning messages are recorded.

4.2. Management Interface Connection Errors

The management interface at `http://hostname:8080/licserver` might be unreachable because the license server host’s firewall disallows remote access to server TCP port 8080 or because the Apache Tomcat service is not running on the server.

1. If you are trying to access the management interface from a remote machine, try accessing the interface locally from the license server host.
   To access the interface locally, open a web browser on the license server host and connect to the URL `http://localhost:8080/licserver`.

2. If you can access the management interface locally, ensure that the license server host’s firewall is configured to allow remote access to server TCP port 8080.

3. If you cannot access the management interface locally, verify that the Apache Tomcat service is running on the license server host.
   - On Windows, use the **Services** application to restart the service if it is not running.

   **Figure 28  Apache Tomcat Status in the Windows Services Application**
   - On Linux, check the status of the **tomcat** service.
4.3. License Server Connection Errors

If the license server’s management interface cannot establish a connection to the license server, the management interface displays an error message.

Figure 29 License Server Connection Error

1. Verify that the license service is running.
   - On Windows, use the Services application to restart the service if it is not running.

Figure 30 License Server Status in the Windows Services Application

- On Linux, check the status of the flexnetls-nvidia service.
Troubleshooting the NVIDIA vGPU Software License Server

Active: active (running) since Fri 2019-04-19 14:44:34 PDT; 2h 49min ago
Process: 4502 ExecStart=/etc/rc.d/init.d/flexnetls-nvidia start (code=exited, status=0/SUCCESS) 
CGroup: /system.slice/flexnetls-nvidia.service 
├─4567 java -Dbase.dir=/var/opt/flexnetls/nvidia -jar /opt/flexnet...
└─4609 java -Dbase.dir=/var/opt/flexnetls/nvidia -jar /opt/flexnet...

2. Inspect the license server log files, which are described in Log File Locations and Types.

### 4.4. License Upload Failures

Errors may occur during an attempt to upload a license file to the license server.

#### 4.4.1. License Response Fails Trust Criteria

The license server reports a trust failure if it attempts to reload a license file that’s already loaded.

Verify that the license file being uploaded is not already active on the server.

#### 4.4.2. Capability Response Rejected - Response Time Too Old

The license server reports this error if the license file you are attempting to upload has expired. Licenses generated on the NVIDIA licensing portal must be installed onto your license server within 24 hours of generation.

Generate a new license file on the licensing portal and promptly upload the new file to your license server.

#### 4.4.3. Capability Response Rejected - Update Time Invalid

The license server reports this error if the license server is already configured with a license file that is newer than the license file you are attempting to upload.

You cannot roll back an active license to an older license file.

#### 4.4.4. Capability Response Rejected - Response Enterprise ID Does Not Match the Server

The license server reports this error if you are trying to download a license file to a license server on which licenses from a different customer account are installed.

To resolve this issue:

1. Stop the license server.
2. Delete the license server's trusted storage database.
3. Restart the license server.
4. Download and install the new license.

4.5. Trusted Storage Database Errors

Errors in the trusted storage database, such as corruption of the database, can prevent the license server from reading the database. If it cannot read the database, the license server cannot start.

You can correct errors in the trusted storage database by deleting the database and then reinstalling licenses on the license server.

4.5.1. Deleting the Trusted Storage Database

Deleting the trusted storage database clears all information about license assignments and allocations.

After deleting the trusted storage database, reinstall your licenses on the license server as explained in Installing a License.

4.5.1.1. Deleting the Trusted Storage Database on Windows

1. Close any web browser windows that are accessing the license server.
2. Stop the FlexNet License Server – nvidia service.
   a) Start Task Manager and in the Windows Task Manager window that opens, click the Services button.
   b) In the Services window that opens, context-click FlexNet License Server - nvidia and from the menu that pops up, choose Stop.
3. Delete all files in the %SystemDrive%:\Windows\ServiceProfiles\NetworkService\flexnetls\nvidia folder, which contains the trusted storage database files.
4. Start the FlexNet License Server – nvidia service.
   a) Start Task Manager and in the Windows Task Manager window that opens, click the Services button.
   b) In the Services window that opens, context-click FlexNet License Server - nvidia and from the menu that pops up, choose Start.

4.5.1.2. Deleting the Trusted Storage Database on Linux

This task requires system administrator privileges.

1. Close any web browser windows that are accessing the license server.
2. Stop the flexnetls-nvidia service.
   
   # sudo systemctl stop flexnetls-nvidia.service
3. Delete all files in the /var/opt/flexnetls/nvidia/ directory, which contains the trusted storage database files.
# sudo rm -rf /var/opt/flexnetls/nvidia/*

4. Start the `flexnetls-nvidia` service.

    # sudo systemctl start flexnetls-nvidia.service
You can uninstall the NVIDIA vGPU software License Server when it is no longer required.

5.1. Uninstalling the NVIDIA vGPU Software License Server on Windows

1. Start the license server uninstaller.
   You can start the license server uninstaller in Windows Control Panel or in Windows Explorer from the license server installation directory.
   - In Windows Control Panel, open the Programs and Features pane, select License Server from the publisher NVIDIA, and click Uninstall/Change.

![Figure 31 Starting the Uninstaller from Windows Control Panel]()}
In **Windows Explorer**, open the license server installation directory and double-click the **Change License Server Installation** application.

The default license server installation directory is `C:\Program Files (x86)\NVIDIA\License Server`.

![Image showing the license server installation directory in Windows Explorer](image)

**Figure 32** Starting the Uninstaller in Windows Explorer from the License Server Installation Directory

2. If the **Configure License Server** dialog box opens, ensure that the **Uninstall Product** option is selected and click **Next**.
3. When prompted, confirm that you want to uninstall the license server.

5.2. Uninstalling the NVIDIA vGPU Software License Server on Linux

1. Start the license server uninstaller.
   a) Change to the license server installation directory.
      The default license server installation directory is opt/flexnetls/nvidia.
      
      [nvidia@localhost ~]$ cd /opt/flexnetls/nvidia
   b) As root, run the Change License Server Installation command.
      
      [nvidia@localhost ~]$ sudo ./Change\ License\ Server\ Installation
2. If the Configure License Server window opens, ensure that the Uninstall Product option is selected and click Next.
Figure 34  Running the License Server Uninstaller on Linux

3. When prompted, confirm that you want to uninstall the license server.
Notice

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE.

Information furnished is believed to be accurate and reliable. However, NVIDIA Corporation assumes no responsibility for the consequences of use of such information or for any infringement of patents or other rights of third parties that may result from its use. No license is granted by implication of otherwise under any patent rights of NVIDIA Corporation. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all other information previously supplied. NVIDIA Corporation products are not authorized as critical components in life support devices or systems without express written approval of NVIDIA Corporation.

HDMI

HDMI, the HDMI logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

OpenCL

OpenCL is a trademark of Apple Inc. used under license to the Khronos Group Inc.

Trademarks

NVIDIA, the NVIDIA logo, NVIDIA GRID, vGPU, Pascal, Quadro, and Tesla are trademarks or registered trademarks of NVIDIA Corporation in the U.S. and other countries. Other company and product names may be trademarks of the respective companies with which they are associated.

Third-Party Software

This NVIDIA product contains third party software that is made available under their respective software licenses.

Apache Tomcat (https://tomcat.apache.org/download-80.cgi) is provided under the following terms:
Copyright 2015 NVIDIA Corporation
Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at http://www.apache.org/licenses/LICENSE-2.0
Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Copyright

© 2013-2019 NVIDIA Corporation. All rights reserved.

www.nvidia.com