



# Installation Notes

## Version 2022

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1	Life Cycle of GT-SUITE .....	6
2	Installation Instructions .....	8
2.1	Installing GT-SUITE .....	8
2.2	Compatibility with Older Versions .....	11
2.3	Virus Scanners .....	12
2.4	Mapped network drive with UAC .....	13
2.5	Network Installations .....	14
2.6	Installing in Silent Mode .....	15
2.6.1	Creating the Options File for Silent Installations .....	16
2.6.2	Launching the Installer in Silent Mode - Windows .....	18
2.6.3	Launching the Installer in Silent Mode - Linux .....	19
2.6.4	Verifying a Successful Silent Installation – Windows and Linux .....	20
2.6.5	Uninstalling in Silent Mode – Windows and Linux .....	20
2.6.6	Special Notes for Installing "Client Only" in Silent Mode .....	21
2.7	Distributed Computing .....	22
2.8	GT-Play Web Application .....	23
2.9	SQLite and Legacy Database .....	24
2.9.1	Database Configuration - Normal Use .....	24
2.9.2	Database Configuration for External Queuing Systems (LSF, SGE, etc.) .....	27
2.10	Environment Variables .....	29
2.10.1	Environment Variables and Path .....	29
2.10.2	Alternative to Using Environment Variables .....	30
2.10.3	Setting Environment Variables .....	31
2.10.4	Environment Variables for Coupling GT with CFD Codes .....	32
2.11	Starting and Testing GT-SUITE .....	33
2.11.1	Installation Troubleshooting .....	33
2.12	Updating GT-SUITE .....	36
3	System Requirements .....	37
3.1	Supported Platforms for GT-SUITE and the License Server .....	37
3.1.1	Windows Operating Systems Notes .....	37
3.1.2	Linux Operating Systems General Notes .....	38
3.1.3	Linux License Server Specific Notes .....	39

- 3.2 Hardware Recommendations (Which computer should I buy?) ..... 40
- 3.3 Minimum System Requirements (PC and Linux) ..... 42
- 3.4 Virtual Machines ..... 43
- 3.5 Video Card Support ..... 44
  - 3.5.1 Video Card Setup and Details ..... 44
  - 3.5.2 Remote X-Windows ..... 45
  - 3.5.3 Testing the video card ..... 45
  - 3.5.4 Troubleshooting 3D Issues ..... 46
- 4 Coupling GT-SUITE with 3rd Party Software (CFD/Simulink) ..... 46
  - 4.1 Coupling GT-SUITE with CFD Codes ..... 47
  - 4.2 Coupling GT-SUITE with Simulink ..... 52
  - 4.3 Coupling GT-SUITE via Functional Mock-up Interface (FMI) ..... 53
  - 4.4 Other coupling to GT-SUITE using the GTLINK coupling library ..... 54
- 5 Licensing ..... 54
  - 5.1 Acceptable License Use ..... 55
  - 5.2 License Server Overview ..... 56
  - 5.3 License File Overview: ..... 58
    - 5.3.1 Description of License File Contents ..... 58
  - 5.4 Controlling License Usage via the Options File ..... 60
  - 5.5 Firewalls & Licensing ..... 61
    - 5.5.1 Software Firewall ..... 61
    - 5.5.2 Hardware Firewall ..... 62
  - 5.6 License Server Installation: ..... 63
  - 5.7 Manually Installing the License Server: ..... 64
  - 5.8 Triple Redundant License Servers: ..... 65
  - 5.9 Moving a License Server (USB Hardlock Licenses Only): ..... 66
  - 5.10 Setting up a License Server for Traveling: ..... 68
  - 5.11 Controlling the License Server, Graphical Tool (PC Only): ..... 70
  - 5.12 Controlling the License Server, Command Line (all platforms) ..... 72
  - 5.13 Starting the License Manager Automatically on Linux ..... 73
  - 5.14 License Manager Utilities (i.e. Kill Unused License Check-Outs) ..... 74



- 5.15 Troubleshooting FLEXIm Licensing ..... 75
- 5.16 Hardlocks (Dongles) ..... 80
  - 5.16.1 PC Hardlock Driver Installation ..... 80
  - 5.16.2 Linux Hardlock Driver Installation ..... 81
  - 5.16.3 Troubleshooting Hardlocks ..... 81
- 6 Contacting GT Support ..... 82
- 7 Uninstalling GT-SUITE ..... 83
  - 7.1 Uninstalling a Single Version ..... 84



# 1 Life Cycle of GT-SUITE

Please see our [download page](#) for the most up to date information regarding the life cycle of **GT-SUITE**. This page was current as of the release of this version/build of GT-SUITE and is subject to change.

## Release Schedule for GT-SUITE

A new version of GT-SUITE is released each year which contains new features and usability improvements for both the GUI and physical modeling capabilities. The version is named using the calendar year when build 1 is released, example v20## build 1 will be released in February 20##. Each version has a planned life cycle of 4 years and minor updates are released during the first year. The support period for each version will overlap with previous versions such that there will always be four versions with active technical support, thus allowing ample time for all organizations to adopt the latest version before the older version expires. We ask that users migrate to a newer version of GT-SUITE before the end of support, so that we may continue to assist you to drive productivity and innovation in your field.

## Early Adopter Phase

Those who wish to utilize the newest features as soon as possible may install the "**Release Candidate**" (**Build 0**) which is released in **October** of the preceding year. The official release of a version is Build 1, which is intended for all users. Full technical support is provided for the Release Candidate until Build 1 is released. After Build 1 is released, early adopters utilizing the Release Candidate should upgrade to Build 1.

## Initial Release

The main release of GT-SUITE is build 1.0000 and is generally in **February**. Build 1 is intended for general use, and we encourage those who were not early adopters with build 0 to begin to migrate to the new version starting with this build.

## Technical Support with Software Updates

During the first year of a new version of GT-SUITE, Gamma will provide our world-renowned phone and email support to help utilize GT-SUITE in becoming more productive and innovative in your field. Additionally, we will work to continually improve the usability and functionality of GT-SUITE by releasing updates to the software which are referred to as "builds". There are three main builds for general use, namely **Build 1.0000, 2.0000 & 3.0000** which are typically released in **February, June, and December** respectively. In the event of a specific improvement that is deemed too important to wait for the next build, it will be released and denoted by a fractional build number, such as 2.0001.

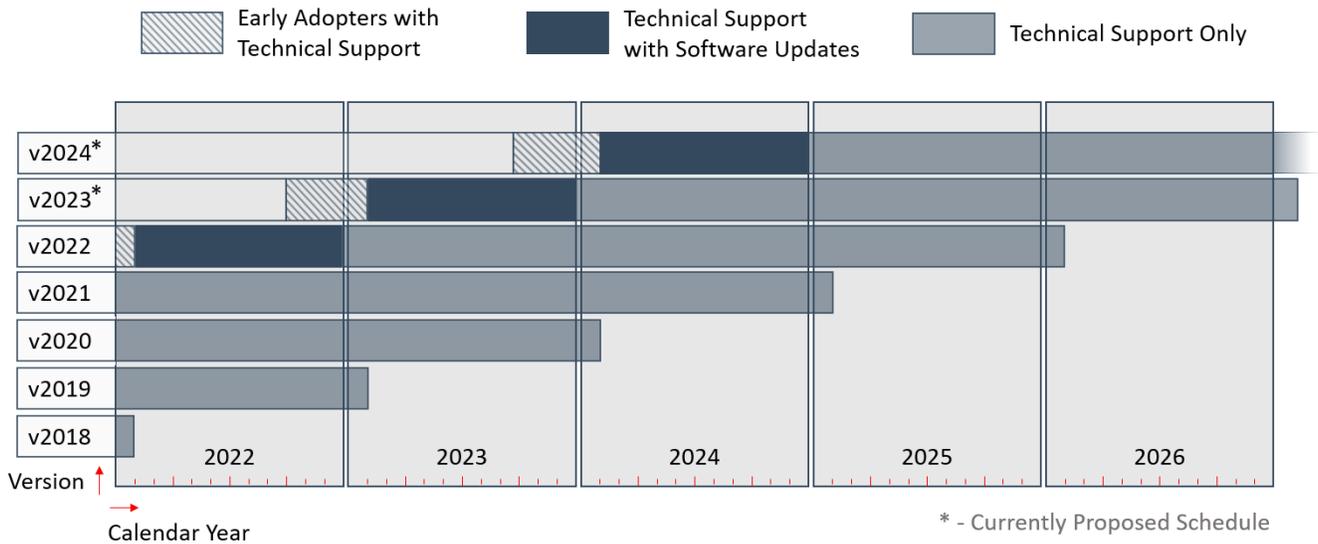
## Technical Support without Bug Fixes

The second, third and, fourth years of support for a version will continue with our world-renowned phone and email support. We will no longer be developing nor releasing builds of this version, but the most recent build will continue to be available for download.

## Unsupported Phase

A version will enter the "Unsupported Phase" four years after Build 1 was released and we will remove the download/installer from our website. Technical support will be strictly limited to inquiries that are still relevant in supported versions. The timing for this event will be shortly after the release of Build 1 of the latest version of GT-SUITE so that there will typically be four actively supported versions.

We ask that users migrate to a newer version of GT-SUITE before the end of support, so that we may continue to assist you to drive productivity and innovation in your field. Generally, GT-SUITE installations should continue to function past the supported period and can be used for legacy project work.



## 2 Installation Instructions

### 2.1 Installing GT-SUITE

**WARNING –Do not connect the licensing hardlock to your computer until the correct time and date have been set on the machine and GT-SUITE has been installed. Failure to do so may result in the hardlock being permanently disabled. Changing the date/time or time zone after the software has been installed may result in the failure of the software to run**

Before installing, please ensure that you have the [latest installation media](#). Also, please check the [operating system requirements](#) and install the [Linux 32-bit compatibility libraries](#). Then launch the **setup-windows.exe** or **setup-linux-x64.run** and follow the on-screen prompts. Full installation details can be found below.

1. Before installing, it is recommended to ensure that you have the latest installation so that you get the latest bug fixes and features. The primary contact for your organization will be able to download the latest software from <https://www.gtisoft.com/download/general-download/>
2. Check that the system meets the [minimum/recommended hardware requirements](#) and [Supported Platforms for GT-SUITE and the License Server](#)
3. Install the [Linux 32-bit compatibility libraries](#)
4. To view information about what versions of GT-SUITE are already installed on a machine, navigate to your main GT folder and refer to GT-SUITE-installed.txt. This file contains information about all versions installed as well as the date installed. Note that this was introduced in v2019 build 3, so no information will be present for versions/builds before v2019.3.
5. To install the license server for GT-SUITE, the user must have administrator privileges.
6. Please disable the local firewall before installing. It can be re-activated after GT-SUITE is confirmed to be running properly.
7. Launch the installer via either **setup-windows.exe** or **setup-linux-x64.run**.  
**Linux Note: setup-linux-x64.run must have the executable attribute set.** If you have trouble mounting the USB drive on Linux to enable the executable permissions, please copy the files locally and enable the executable attribute.
8. **Please review the remainder of these instructions to make the best choices in the installer,** then follow the on-screen instructions.
9. The install set should be chosen as follows.  
**Standard** - This is the typical installation choice, which will install all GT-SUITE application files. In addition it provides the option to install the local FLEXlm license server.  
**FLEXlm only** - This is to create a FLEXlm license server only, without installing GT-SUITE.  
**GT-SPACECLAIM Only** - This option should be used if GT-SPACECLAIM is to be installed without the rest of GT-SUITE. One example would be where the main GT-SUITE installation is on a network drive, but GT-SPACECLAIM needs to be installed on a local machine.

10. When installing on a system which has older versions of GT-SUITE, it is strongly recommended to install in the same installation folder, as GT-SUITE is designed to co-exist with older versions of the software in the same installation directory. If different versions of GT are installed into different folders, then the GTIHOME and PATH environment variables will need to be set to the appropriate values before launching either version of the software (either manually or via a launch script).
11. If mapped drives are not shown while attempting to use them as the installation location, see the section [Installing GT-SUITE on a mapped network drive when UAC is enabled](#)
12. The temporary/working folder should be chosen as follows. This is the directory that can be used by GT-SUITE applications for creating temporary working files and performing other database operations. This folder must be a local directory with at least 5 GB of space available. If the installation is a shared network installation, the directory specified should be a valid local directory on EACH machine on which GT-SUITE applications will be run. (Please do not choose a location on network/mounted drive to be shared between different machines.). Environment variables may be used within the path. The database temporary directory must have read+write permission for all users who will use the GT-SUITE application. Locating this directory on a Solid State Drive is preferred. Refer to the section [SQLite and Legacy Database](#) for more information.
13. Please ensure that [virus scanners](#) are configured to not interfere with GT-SUITE.
14. The licensing types are as follows:
  - Remote License Server** - This is the most common installation in which the user checks out a flexible license from a remote license server. This option will install only the GT-SUITE software. The license manager application is installed separately on a different machine.
  - Local License Server** - This option will install both the GT-SUITE software and the license server files on the same local machine. This is the typical choice for stand-alone laptops and workstations that do not communicate with a network license server.
  - NOTE – The license files are version specific. If your file is from the previous version, please request an updated file from GT. Also, license servers which were installed prior to v2018 will need to be re-installed to be compatible with GT-SUITE v2018+.**
15. Virtual Memory settings typically need to be increased when installing GT-SUITE on a Windows computer for the first time. Virtual Memory refers to swapping of data stored in “memory” between the RAM memory and the hard-disk. Adjust the virtual memory settings as follows:
  - Windows 7/8/10:** Go to Control Panel → System → “Advanced system settings” under the “Tasks” list on the left side → “Performance” section (press the “Settings” button) → “Advanced” folder → “Virtual Memory” (press the “Change” button) → “Paging File Size”. Set the “Maximum” to at least 1024 MB.
16. Windows computers require a reboot after installation before GT-SUITE can be run.
17. The 3D tools (GEM3D, COOL3D, 3D Flowsplit Viewer) will require a graphics driver compatible with OpenGL. Check the Video Card Support section for more information. If there are any problems, download the latest graphics driver from the graphics card manufacturer (not Microsoft in the case of Windows Users). For laptops where the graphics card manufacturer does not support the card, try obtaining the latest driver from the laptop manufacturer.

**The remaining steps are for Linux ONLY. PC users may stop here.**

- 18.Environment variables must be placed into each user's login script. These can be set by sourcing \$GTIHOME/gtenv.sh or \$GTIHOME/gtenv.csh. The section **Environment Variables and Path** describes the variables in detail.
- 19.It is recommended to increase the stack size by adding 'ulimit -s unlimited' in the users .bashrc or similar. Please see <http://software.intel.com/en-us/articles/intel-fortran-compiler-increased-stack-usage-of-80-or-higher-compilers-causes-segmentation-fault/> for details.
- 20.(Optional) Set up the printing capabilities by setting up the default printer for the system. This step is only necessary if the user wishes to print directly from a GT-SUITE application. See the operating system documentation for details.

## 2.2 Compatibility with Older Versions

GT-SUITE is designed to co-exist with older versions of the software in the same installation directory.

For example, if an older version is installed in C:\GTI, the new version can be installed in the same location without affecting the original installation. If different versions of GT are installed into different folders, then the GTIHOME and PATH environment variables will need to be set to the appropriate values before launching either version of the software (either manually or via a launch script).



## 2.3 Virus Scanners

**Virus Scanners** - If you are running an antivirus program, please configure it to not scan the database directory (dbdir). The database directory can be determined by launching the following from GT-ISE. Help → About GT-SUITE → System. If this is not done, the anti-virus may disable the connection to the legacy database process when working with larger models. Note that the legacy database daemon is required only for GT-SUITE v2020 and older versions. Refer to Chapter 4 for more information.

For certain antivirus programs, you might also need to add exceptions to the entire GTIHOME directory and/or the following executables that are launched during normal GT operation:

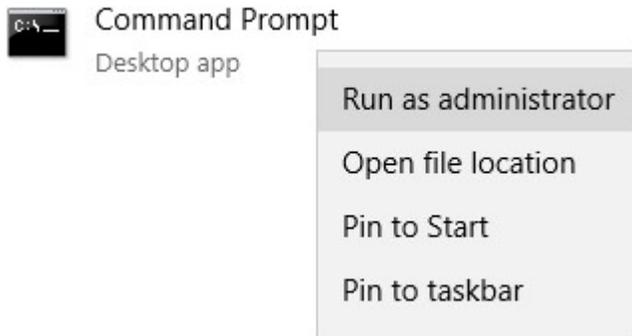
- \v20##\GTsuite\jre\win64\bin\javaw.exe
- \v20##\GTsuite\bin\win64\gtsuite\_\*.exe
- \db\v41\win32\bin\*.exe (folder only present in v2020 or older is installed)
- \v20##\GTsuite\jre\win64\bin\java.exe
- \perl\v\*\win\*\perl.exe

Please contact [support@gtisoft.com](mailto:support@gtisoft.com) for more information.

## 2.4 Mapped network drive with UAC

When Windows User Account Control (UAC) is enabled, the installer cannot access existing network shares without intervention. The solution is to map the network shares from an elevated command prompt before starting the installer.

1.



2. Start the Command Prompt as administrator by right clicking on it in the start menu

3. Use the "net use" command to re-create the drive mapping of the share of interest for use with the installer and elevated privileges. Example:

```
net use s:\ \\Scratch\Public
```

4. Run the installer as normal.

## 2.5 Network Installations

GT-SUITE is designed to allow for the installation of the software into a common network directory. Multiple versions may be installed to the same location, except Windows and Linux installations may not be installed to the same location.

To install the files to the network directory, run the installation program, choosing the Standard installation option.

An installation must also be performed on each client machine that will access the common network location. For Windows, run the installer on each client machine, choosing the Client Only installation option. This option does not install the program files. It sets environment variables and associates GT-SUITE file name extensions with the correct application. For Linux, the environment variables must be manually configured without using the setup program. See the section Environment Variables and Path for details.

A special version of GT-SPACECLAIM is required for network installations. The application must be installed on a Windows server, with the installation directory shared on the network. A client application is used on the individual workstations for access the network installation. Please contact GT Support for directions on how to download and set up the network version of GT-SPACECLAIM.

## 2.6 Installing in Silent Mode

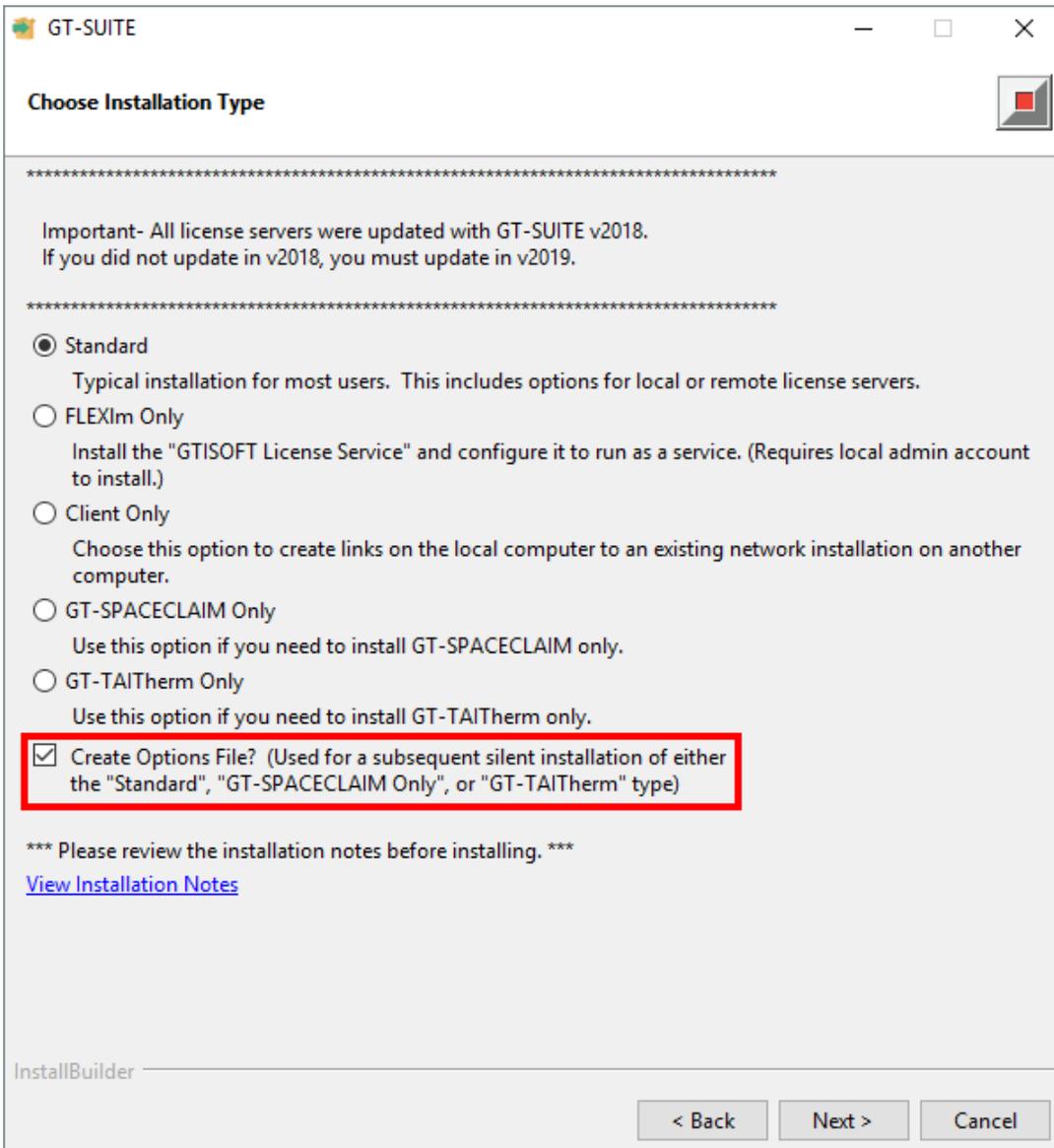
The installer can optionally be launched without the GUI to repeat the same installation on multiple machines. This silent installation will use an options file which is created by installing once via the GUI.

**NOTE – The silent installation will not properly install the local FLEXlm license server. The license server must be on another machine to use the silent install option.**

## 2.6.1 Creating the Options File for Silent Installations

In the installer folder, there are two options files, silent-windows.options and silent-linux.options. These can be hand edited if desired; however, all variables must be assigned a value for these to work properly. There is an explanation of each variable inside the options files. If you are unsure of a value, you can have the installer create a new options file using the installer UI as described below.

To create an options file, launch the installer and choose either 'Standard', 'GT-SPACECLAIM Only', 'GT-TAITHerm Only', or 'Client Only' for the installation type. Check the box to create an options file.



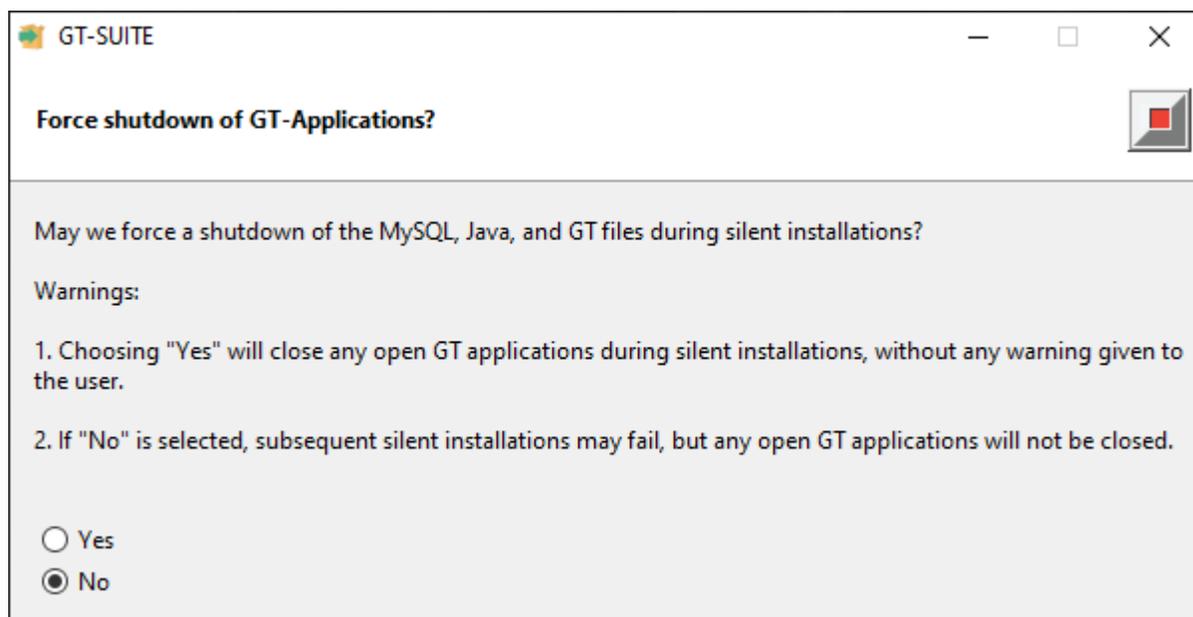
Choose a directory where you want to create the options file (it will default to your installation directory if not specified).

### Windows Only – Shutdown Option

When creating an \*.options file in Windows, another dialog will appear asking if you would like all GT applications to be closed when you perform silent installations.

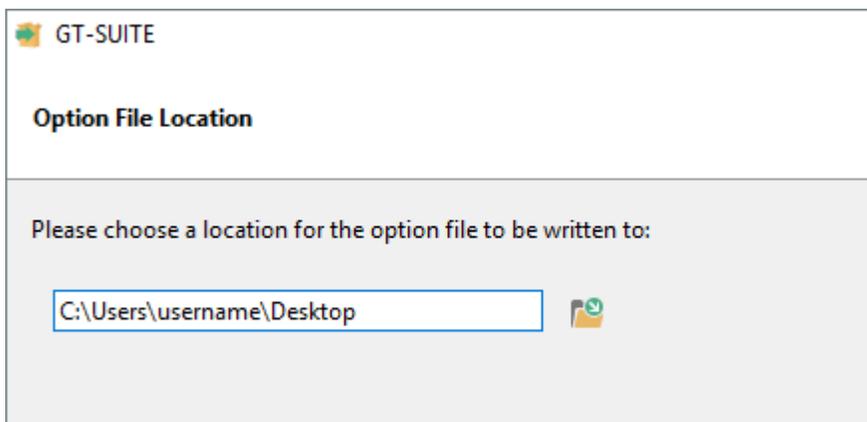
If yes is chosen, all open GT processes will be closed automatically during silent installations without any warning to the user of the machine being installed to.

If no is chosen, any running GT applications will continue to run. While this causes no disruption to users, the installation normally fails due to file locks on important files that need to be updated during the installation process.

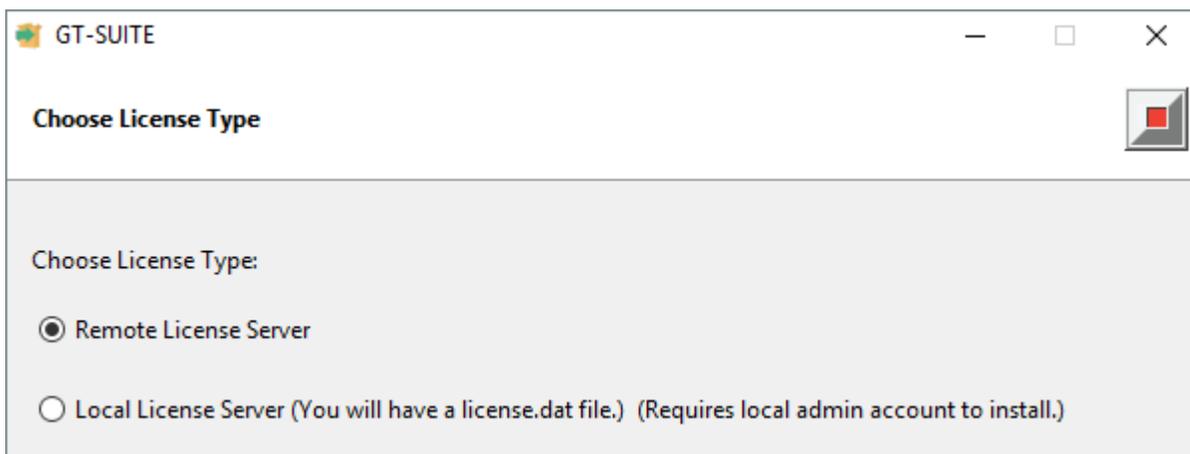


Choose a directory where you want to create the options file (it will default to your installation directory if not specified).





Choose 'Remote License Server' for the license type in the GUI. The silent installer will not work if the "Local License Server" option is chosen.



The options file will be created in the chosen directory as 'silent-windows.options' for Windows or 'silent-linux.options' for Linux.

To install silently, launch the installer as detailed below, using the options file created above. If you have troubles using an options file created with an older build, please recreate the options file using the current build.

**NOTE - Options files created for v2017 or older will NOT work with v2019, as the installer is now by BitRock.**

## 2.6.2 Launching the Installer in Silent Mode - Windows

For Windows installations, the command line option below can be used to launch the silent installer. However, once the \*.exe is launched, a new process is spawned and control is immediately returned to

command prompt, making it difficult to determine when a silent installation is completed. Please use the `silent_windows_install.bat` if you'd like indication of silent installation completion.

To launch the Windows silent installer, use the batch file in the installer directory, `silent_windows_install.bat`. To launch this script, simply open command prompt enter the path and name of the \*.bat file along with the path and name to the \*.options file. Use quotes around any paths with spaces in them.

Example:

```
C:\Installers\GT\silent_windows_install.bat "C:\Silent Installer\silent-windows.options"
```

The batch file produces interactive output and indicates when installation has completed successfully. If you do not wish to see this output or be notified of completion, you can simply use the commands shown below instead.

Windows command line syntax:

```
setup-windows.exe --mode unattended --optionfile PATH_TO_YOUR_FILE\silent-windows.options
```

Example: If your \*.options file is in C:\SilentInstaller, then the command used would be:

```
setup-windows.exe --mode unattended --optionfile C:\SilentInstaller\silent-windows.options
```

### 2.6.3 Launching the Installer in Silent Mode - Linux

Unlike Windows, the Linux silent installer returns control to the terminal after the installation is complete. You will see a message about setting the system environment variables, similar to what is shown below, after the installation has completed.

```
[user@centos7 ~]$ ./setup-linux-x64.run --mode unattended --optionfile silent-linux.options

To use GT-SUITE it is necessary to set a few system environment variables.
-----
This can be done by sourcing /home/username/GTI/gtenv.sh or
/home/username/GTI/gtenv.csh in the user's login script.

Full details can be found in the "Environment Variables and Path" section
in the following document:
/home/username/GTI/v2020/documents/Installation_and_Evolution/InstallationNotes.pdf

[user@centos7 ~]$
```

### Linux command syntax:

```
setup-linux-x64.run --mode unattended --optionfile PATH_TO_YOUR_FILE/silent-linux.options
```

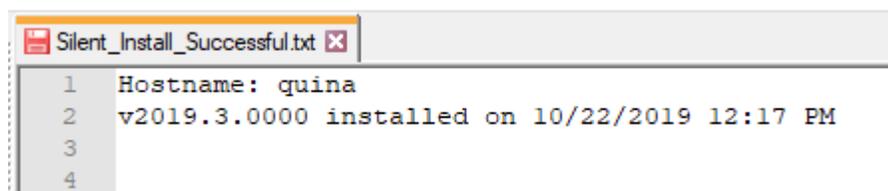
Example: If your \*.options file is in /local/silent\_installer, then the command used would be:

```
setup-linux-x64.run --mode unattended --optionfile /local/silent_installer/silent-linux.options
```

## 2.6.4 Verifying a Successful Silent Installation – Windows and Linux

When a silent installation is started, a Silent\_Install\_Status.txt file is written to the top-level GT installation folder. This file remains until a successful installation has completed. If Silent\_Install\_Status.txt is present, either the installation is still running, or the installation failed. If a failure is suspected, check the user's home folder for the GT installation log for confirmation.

When a silent installation completes successfully, Silent\_Install\_Status.txt is removed and replaced by Silent\_Install\_Successful.txt. This file contains the hostname of the computer installed to, the GT-SUITE version information, and the installation timestamp.



If you use silent\_windows\_install.bat to install silently on Windows machines, the command prompt will also indicate when the installation has completed and whether it succeeded or failed.

## 2.6.5 Uninstalling in Silent Mode – Windows and Linux

To uninstall silently, use the command below. WARNING: a silent uninstall will delete all files in the GTIHOME installation folder without any user interaction!!!

### Windows:

```
%GTIHOME%\Uninstall\Uninstall_GT-SUITE.exe --mode unattended
```

### Linux:

```
$GTIHOME/Uninstall/Uninstall_GT-SUITE --mode unattended
```

## 2.6.6 Special Notes for Installing "Client Only" in Silent Mode

The client installer cannot access UNC locations on Windows machines with UAC enabled. Prior to silently installing, any UNC network installations of GT-SUITE will need to be mapped to network drive letters on **each client machine**. Please see the section "[Installing GT-SUITE on a mapped drive with UAC](#)" for more detail.

When mapping the drive letters, please ensure that the drive letter is the same as the one specified in your \*.options file.

After the silent client installation completes, the computer must be rebooted in order for Windows to resolve the shortcuts created in the Start Menu and on the desktop.



## 2.7 Distributed Computing

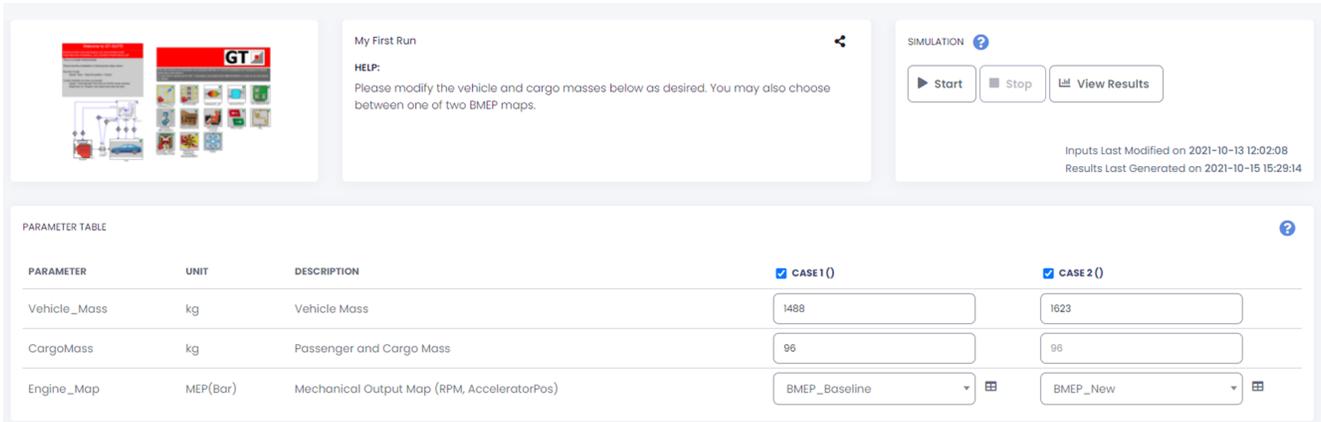
Distributed computing allows the processing of a single model with multiple cases to be divided among multiples cores of multiple computers and/or the local computer. In addition, distributed computing also provides a convenient way to efficiently use all available GT-SUITE licenses and processors within an office by using a job distribution server. Using this setup, each individual user can submit jobs to a centralized distribution server. This server is aware of all available processors and licenses, and can efficiently distribute jobs among the different machines.

All of the files necessary for distributed computing are installed when GT-SUITE is installed, however there are some steps necessary to configure distributed computing to run. Because distributed computing involves communication between a server machine and one or more client machines (solver nodes), there are configuration steps for both the distribution server and each solver node. Note that a single machine can act as both a server and a solver node if desired. For more information on setup and use of distributed computing, please see the document %GTIHOME%\<version>\documents\Distributed\_Computing\DistributedComputing.pdf.

In order to use multiple cores of a local machine, the "local distributed" feature is available. This does not require the configuration of any services or daemons. In fact, setup is very simple and should not require the involvement of any IT personnel. To use the "local distributed" feature, the user simply needs to start a simulation and select the "Local Distributed " option in the Run Simulation Wizard.

## 2.8 GT-Play Web Application

GT-Play is a new web application platform that enables GT-SUITE users to publish models to a central server which can then be accessed by others without the need to install or run the desktop application. GT-Play allows modification of parameter values, computation of models, and post processing directly from any connected device using a standard web browser.



*GT-Play Sample Model Interface*

All of the files necessary for distributed computing are installed when GT-SUITE is installed, however an additional license is required and there are some steps necessary to configure GT-Play to run. Because the web application is associated with some local resources as well as network settings, various properties must be defined before setting up the product. For more information on setup and use of GT-Play, please see the document %GTIHOME%\<version>\documents\Web\_Application\GT-Play\_Web\_Application.pdf.

GT-Play may be set up on a locally-hosted resource or using a public cloud provider like Amazon Web Services (AWS) or Microsoft Azure. Gamma Technologies can provide and maintain a ready-to-use GT-Play environment using such public cloud providers if desired.

## 2.9 SQLite and Legacy Database

### 2.9.1 Database Configuration - Normal Use

Up until v2020, GT-SUITE makes use of a legacy database daemon for storing and managing application resource data and simulation result data. Starting with v2021, all GT applications will start using SQLite database instead of the legacy database solution. v2020 and older versions will continue to use the legacy database daemon.

For details on the legacy database configuration, please refer to the Installation Notes manual from v2020 or older versions.

**As a result of the change to the new database solution, the result files generated by the GT solver will have a new .glx extension instead of the legacy .gdx extension.** Users will still be able to open the .gdx files from older versions in GT-POST v2021+.

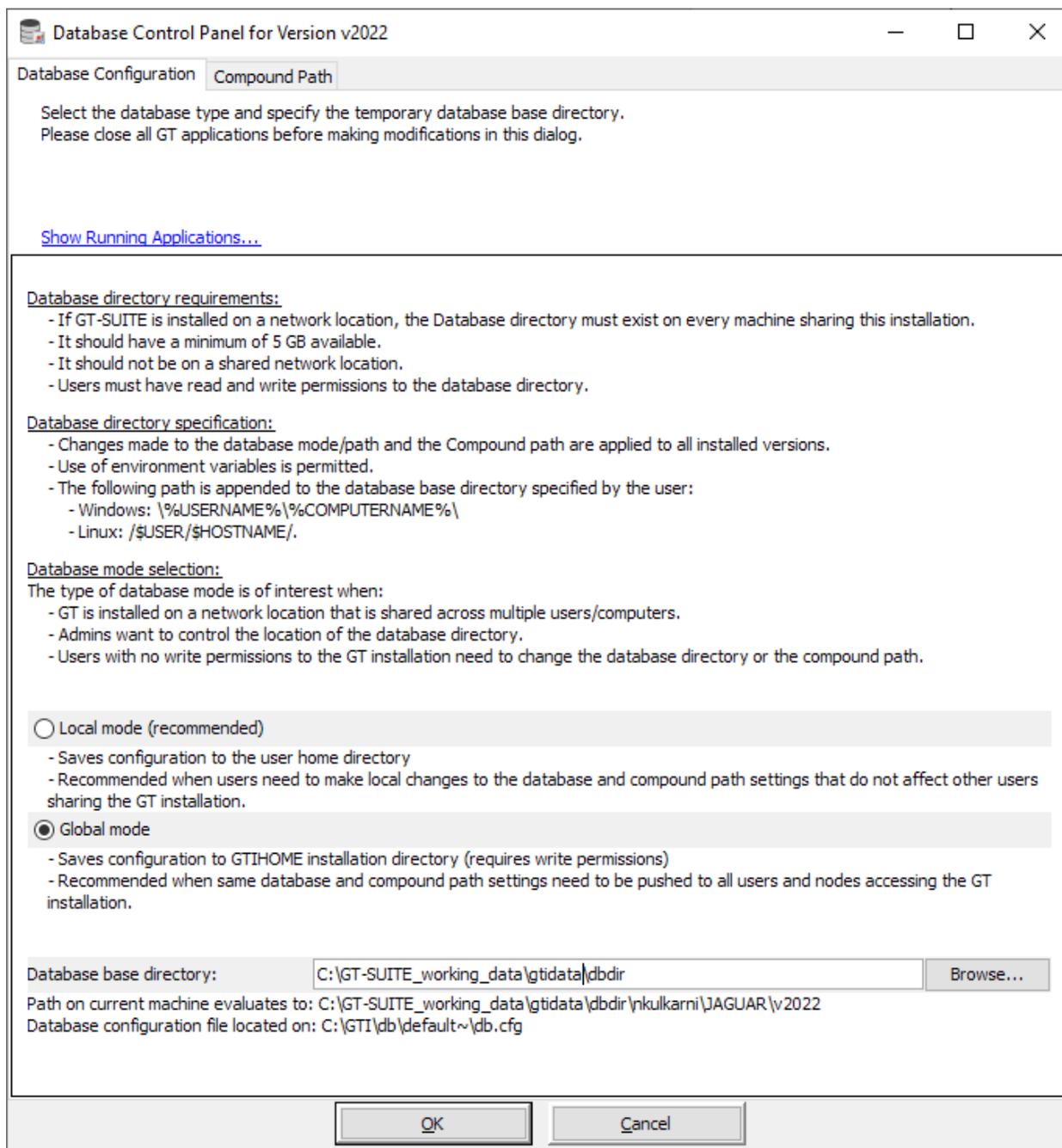
Unlike the legacy database solution, the SQLite database does not require installation of a server/daemon which runs in the background. However, there are situations where a user or administrator may wish to modify the configuration 'mode' of the database. For example, it may be desirable to change the location of the temporary directory used by the database that was set during the initial install. This section will briefly describe database operations and will discuss how configuration changes can be made.

Under normal operation, temporary database files are deleted when they are no longer needed. If a GT-SUITE application (solver, GT-POST, etc.) crashes or is killed some of these temporary files may be left behind. **Under most circumstances, no files should be deleted from the database directory manually** (see notes below in section "Database Directory Requirements" for more information). This may result in a loss of simulation results. Instead, the database directory should be cleaned-up via a utility discussed below, which will automatically clean temporary files which are no longer needed.

GT applications require a working directory which will be used for the creation of temporary working files during database operations. For example, when viewing results in GT-POST, the .glx file (containing results) is unzipped to this temporary location and accessed directly by GT-POST.

A database configuration tool has been provided with the GT-SUITE installation to manage database settings if necessary. In v2020 and older versions which use the legacy database solution, this tool can be used to control the database operation among other things. Starting with v2021, it can be used to change the database operating mode or database working folder and the Shared Compound path.

This tool can be accessed from a command prompt by entering "\$GTIHOME/bin/gtcollect dbconf". (Type 'gtcollect -help' in the console for other options). It can also be accessed from GT-ISE through File > Advanced > Database Control Panel. Both will open the dialog shown below:



When starting the database control panel from v2021+, the utility will issue a warning message if it detects that legacy database processes are running in the background from the same GT installation. In such cases, it is strongly recommended to open the database control panel from older versions to stop the legacy database process before making changes to the database mode/directory.

The criteria for the database mode selection is specified in the control panel as shown in the image above. This is main difference between the Global and the Local mode of the database is related to the location where the db.cfg configuration file is saved:

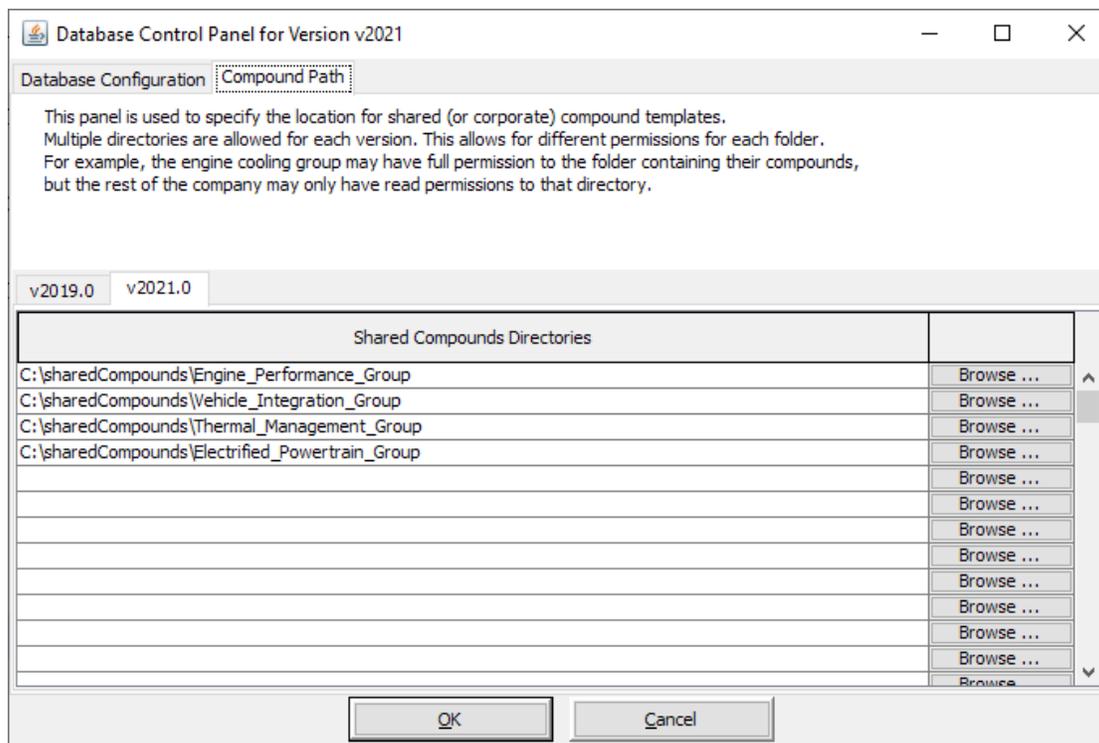
- Local Mode: The db.cfg configuration file is saved in the .gamma folder in the user home directory
- Global Mode: The db.cfg configuration file is saved in GTIHOME\db\default~ directory.

**Database Directory Requirements** - The temporary working directory is selected by person installing GT-SUITE. This directory must have a minimum of 5 GB available and should be a local directory. Please do not select a network or shared location. If the installation is a shared network installation, this directory must exist locally on each machine that will run using the installation. Locating this directory on a Solid State Drive or drive with faster I/O may show noticeable performance improvements. Environment variables may be used to define the directory location. All users must have read and write permissions to the temporary database directory. If the user switches from the default global mode to local mode, the same database directory requirements still apply.

**Important Note!** On Linux machines it is common to specify a temporary working directory under /tmp or /temp. It is also common to have cron jobs which periodically clean these locations.

**Please ensure that there are no cleaning processes on the directory chosen for the database directory when any GT-SUITE application is open!** Generally it is safer to avoid any "external" cleaning of the database directory, however certain applications, such as temporary-use Virtual Machines may require this cleaning. In such scenarios, the temporary database files may be deleted but only when all GT-SUITE applications are closed. If this is done, the next time a GT-SUITE application is opened, a one-time database creation task will occur. When hosting distributed computing schedulers/executors, since these are typically "always on", database cleaning should never be performed.

The primary reasons for opening this dialog will be to change the database working directory and/or the directories which contain shared compounds templates (user created templates which have been shared to multiple users). This is done in the **Compound Path** folder shown below. Note that environment variables of the form \$VARIABLE or %VARIABLE% may be used.



In the **Advanced** folder, local or global mode can be selected (Global is recommended), the database directory and shared compound directories can be defined. For Linux only, there is an option that may be useful for shared network installations to **Override the Global Database Directory** for only the workstation from which the configuration dialog was launched. If this checkbox is not turned on, then the configuration will affect all computers sharing this installation.

## 2.9.2 Database Configuration for External Queuing Systems (LSF, SGE, etc.)

This section pertains only to users who will run GT-SUITE simulations using an external queuing system, such as LSF, Sun Grid Engine, PBS, etc. In the standard operation of the legacy database solution used in v2020 and older, discussed in the previous section, the GT-SUITE application (the solver) will start the database daemon if it is not already running, but it will leave that database daemon running when the solver completes. This can cause problems with external queuing systems as they usually require all processes forked by a job to complete before the job is marked as completed. As a result, it is recommended that the database is run in a special mode, called "ds" mode for all jobs submitted to the external queuing system. All other jobs will use the database discussed in the previous section.

In ds mode, each job (packet) in the external queue can start and stop its own exclusive database independent of the database discussed in the previous section. The database should be started in this

mode immediately before running the solver, and should be stopped immediately after the solver finishes. The proper way to start and stop the database in "ds" mode is mentioned below:

```
$GTIHOME/bin/gtcollect -V ${VERSION} dbstart ds
```

Run the solver

```
$GTIHOME/bin/gtcollect -V ${VERSION} dbstop ds
```

There are some limitations of running the database in "ds" mode which are mentioned below:

- Only one simulation with the ds flag can be run in a given directory at the same time.
- The "ds" mode is only suitable for non-interactive mode. Neither GT-POST nor GT-ISE should be launched from the directory while the "ds" mode is active.
- The "ds" flag is only available on Linux (only for v2020 and older)

Note that, starting with v2021, even though SQLite does not start a database daemon/process, the above command line options are still supported to maintain compatibility with scripts. Also, the 'ds' flag is supported on Windows and not just Linux for v2021 and newer versions.



## 2.10 Environment Variables

### 2.10.1 Environment Variables and Path

The environment variables that are required for GT-SUITE are listed below. The installation program for PC automatically sets the necessary environment variables and the variables for Linux are stored in the scripts %GTIHOME%/gtenv.csh and gtenv.sh. If it is necessary to set the variables manually, see the section *Setting Environment Variables*

If GT-ISE does not start, a diagnostic utility can be called to help resolve the issue. This is currently only available on PC and it can be started by double clicking on the file `GTise_troubleshooting.bat` in the bin folder of the GT-SUITE installation.

Environment Variable Name	Value
PATH	(see notes below table)
GTIHOME	(path to installation directory, typically C:\GTI on PC)
GTISOFT_LICENSE_FILE	<p><i>port@hostname</i></p> <p>where <i>port</i> is the TCP/IP port number specified in the license file, and <i>hostname</i> is the license server hostname or IP address.</p> <p>The <i>hostname</i> is case insensitive.</p> <p>Optionally "localhost" can be used for the <i>hostname</i> if the license server and the client are the same machine.</p> <p>If multiple servers are available, they may be specified in order of priority, separated by semicolon (;) for PC and colon (:) for Linux. (i.e. 27005@host1;27005@host2).</p> <p>If using a triple redundant server system the three servers may be separated by semicolon (;) to designate the triple redundant system, and the servers should be listed in order of master, secondary, and tertiary here and on the server line of the license.dat file, and started in that order.</p>

## 2.10.2 Alternative to Using Environment Variables

GT-SUITE will now automatically attempt to set the PATH and GTIHOME variables internally as needed. It is still recommended to set the environment variables, but GT-SUITE will try to set the values if they are missing, perhaps due to a lack of administrator rights, etc.



Furthermore the location of the license server can be set in the file %GTIHOME%\GTI-License-Server.txt. The information in the GTI-License-Server.txt is only used if the GTISOFT\_LICENSE\_FILE is not set.

This ability was first added in v7.3 build 6 and v7.4 build 2.

### 2.10.3 Setting Environment Variables

#### Windows:

Set each environment variable in the Control Panel → System → Advanced Folder → Environment Variables using the graphical options given. With Windows Operating Systems, depending on view type you can click on Advanced System Settings in Control Panel → System to get to the Advanced Folder.

The path is also located in the “Environment Variable” section on Windows. Edit the existing “Path” environment variable, and prepend to the end of its current value the \bin directory of the GT-SUITE installation directory (i.e. C:\GTI\bin;).

Sometimes it is necessary to reboot the computer for the environment variables to be set. It is always necessary to close and re-launch any open applications that use the new variables.

If you do not have access to the environment variables on your machine, you may use the utility below to launch GT-ISE. Then any other GT application can be launched from GT-ISE. This utility currently only available on PC and it can be started by double clicking on the file **GTise\_troubleshooting.bat** in the bin folder of the GT-SUITE installation.

#### Linux .cshrc (C-Shell):

To check the value of an environment variable type the following command. Note GTIHOME may be replaced with any other environment variable

```
echo $GTIHOME
```

To set all the environment variables type the following from the \$GTIHOME directory:

```
source gtenv.csh
```

To manually set each environment variable in each user’s login script use the “setenv” command. Example:

```
setenv GTIHOME /user/me/GTI
```

To manually set the path in each user’s login script use (after the environment variable commands):



```
set path = ($GTIHOME/bin $path)
```

### LINUX .profile (Bash and Korn shell):

To check the value of an environment variable type the following command. Note GTIHOME may be replaced with any other environment variable

```
echo $GTIHOME
```

To set all the environment variables type the following from the \$GTIHOME directory:

```
./gtenv.sh
```

See the example below to manually set each environment variable in each user's login script.

```
GTIHOME=/user/me/GTI  
export GTIHOME
```

To manually set the path in each user's login script use (after the environment variable commands):

```
PATH=${GTIHOME}/bin:${PATH}
```

## 2.10.4 Environment Variables for Coupling GT with CFD Codes

For details on environment variables settings for coupling, refer to the CFD Coupling tutorials document which is located in \$GTIHOME\v\*\tutorials\Co-Simulation\_And\_UserRoutines\CFDcoupling.

## 2.11 Starting and Testing GT-SUITE

To start GT-SUITE, start the graphical interface called GT-ISE. For PC installations, GT-ISE may be started from the GT-ISE icon on the "Start" menu under the "GT Applications Group".

On Linux and PC, it can be started by typing `gtise` from a command prompt. If this is not successful, the environment variables have probably not been successfully set.

If GT-ISE does not start, a diagnostic utility can be called to help resolve the issue. This is currently only available on PC and it can be started by double clicking on the file `GTise_troubleshooting.bat` in the bin folder of the GT-SUITE installation.

Once GT-ISE is started, open an example model file and run it by selecting "Examples" from the "File" menu, then "Run" from the "Home" menu. For example, the file `%GTIHOME%\v*\examples\Engine_1D_Gas_Exchange_Combustion\Miscellaneous\SimpleTestofInstallation\RunMeFirst.gtm` could be run for a GT-POWER test.

After the simulation has run to completion, test GT-POST by selecting "View Results" from the "Home" menu and then select the \*.glx file. Finally, click on a plot or a group of plots and view by pressing 'F4'.

If there are any problems, please refer to the "Installation Troubleshooting" section below or contact GT at [support@gtisoft.com](mailto:support@gtisoft.com) or 1-630-325-5848.

### 2.11.1 Installation Troubleshooting

If you are not able to resolve the issue with the steps in this manual, please see the section [Contacting GT Support](#).

For troubleshooting licensing or the hard lock, please see the [Troubleshooting FLEXIm Licensing](#) section.

	Platform	Message / Problem Description	Suggested Remedy
1	PC	The local machine is the FLEXIm server and GT-ISE is not able to obtain a license when started.	Start the license server. See the section License Server Installation for more information.

	Platform	Message / Problem Description	Suggested Remedy
2	PC	Error when starting GT-ISE: "Hardlock module not found (Check Connection)"	The hardlock is not connected. Check to make sure the hardlock is securely fixed to either the parallel port or the USB port (depending on hardlock type).
3	ALL	"FLEXIm: Checkout Failed:"	There are two possible reasons for this error. First, make sure that the FLEXIm server's IP address is in the host file of the client computer. Second, check that the GTISOFT_ LICENSE_FILE environment variable is set.
4	PC	"Bad Command or File Name" when any GT-SUITE application is launched from a command prompt.	The environment variable GTIHOME is not set properly or %GTIHOME%\bin is not in the path. These should both be set automatically during installation. This may be caused by inadequate environment variable space (See item #12 in the <b>PC Installation Instructions</b> section).
5	PC	During or after a simulation, the code cannot find a resource file such as *.gpt or *.rll	Same as #4 above.
6	All	"CANNOT open GTO template file gtise*.gto"	The GTO template file gtise*.gto file is missing. Please check the file existence under your "\$GTIHOME/GTise/*/bin" directory.
7	PC	"Out of Environment Space" or "Inadequate Environment Variable Space"	Environment variable space must be increased. See item #12 in the <b>PC Installation Instructions</b> section.
8	ALL	Installer fails with an "Error copying file from packed archive" message	There are two main causes of this: 1. The installer was corrupted during the download process. 2. The installer is stored on a network location, and connectivity was temporarily lost. For the first problem, please download a new copy of the installer from our website. For the second problem, either retry the installation when the network has become stable or copy the installer locally before running it.



## 2.12 Updating GT-SUITE

To update GT-SUITE to the most recent build, simply [download](#) the latest installer and install into the same installation folder as normal.



## 3 System Requirements

### 3.1 Supported Platforms for GT-SUITE and the License Server

An up-to-date list of supported platforms for this version of GT-SUITE is available in the most recent InstallationNotes on our website at <https://www.gtisoft.com/download/general-download/#downloads>. Below is the list of supported platforms for GT-SUITE and the License Server at the time that this build was released.

Please see the minimum system requirements section for more information on the minimum requirements to run GT-SUITE software. Please refer to the hardware recommendations section for recommendations when purchasing new hardware.

Platform	Operating System	Version	Architecture	GT-SUITE	License Server
Windows See below for important <b>"Change in Supported Windows"</b>	Windows	2016, 2019, 10, 11	Any x86_64	Yes	Yes
Linux See below for important <b>"Change in supported Linux"</b>	RHEL /Centos	7.0 – 8.4		Yes	Yes
	Open SuSE SuSe	12.1 – 42.3		Yes	Yes
	SuSE Enterprise Server	12,15.2		Yes	Yes
License Server	Any above	RHEL 6.7+, OpenSuSE 12.3+, 2016, 2019, 10		N/A	Yes

#### 3.1.1 Windows Operating Systems Notes

**Important Notice for Windows 8.1 and Windows Server 2012–**

Starting in GT-SUITE v2022, Windows 8.1 and Windows Server 2012 are no longer officially supported.

**GT Services - All Windows** - An account with administrator rights must be used to install either of the following optional services on Windows 10: FLEXnet license services & distributed computing services. Additionally, if the distributed computing services will be used to run models with version 7.1 or earlier solvers, they must be set to run as a specified user. Please see the DistributedComputing.pdf document in the %GTIHOME%\<version>\documents\DistributedComputing directory for more information.

### 3.1.2 Linux Operating Systems General Notes

CentOS is also applicable where RHEL is noted below.

**Important Notice Change in supported Linux v2022 – RHEL 6 / OpenSUSE 11** - These platforms will have limited functionality in v2022 and will not be supported in v2023. The following features will not be available in v2022 for these platforms: "GT-SUITE Help Viewer", GT-TAITherm, GEM, and Tank3D solver feature. **These platforms will be officially unsupported in v2023.**

**Linux Minimum System** – The minimum system requirements for basic GT-SUITE functionality are RHEL7.0/openSUSE12.1/SLES12 (glibc >= 2.14) with the additional 32 bit **glibc\*.i686 package must be installed**. RHEL8 additionally requires ncurses-compat-libs.x86\_64. Also, the xterm package must be installed for certain operations from the GT-ISE (Launch a simulation without the solver UI interface, NN trainer, etc...)

**Linux required packages for legacy versions** – While we do not re-certify older versions of GT-SUITE on newer operating systems, we have found most features to be reasonably working when the required packages are installed. 3D graphics from some older versions are likely inoperable on newer uncertified operating systems.

32 bit compatibility libraries are required when running older versions of GT-SUITE, please see the older documentation for specific details if necessary. v7.3-v2017 requires /usr/lib/libstdc++.so.6. Additionally, recent operating systems such as RHEL 8 will require libxcrypt\*.i686 for v2017 and older. V7.2 or older require libstdc++.so.5. Also, SLES 15 will require that libncurses5 is installed.

**OpenSUSE 12.3** - There are problem with JAVA on this OS and it is not recommended. Run Time monitors are disabled on this platform due to a bug in this version of SuSE which would cause the solver to crash when using run time monitors. Also, the machine has been known to become unresponsive while using the GUI. This is not reproducible enough to have been corrected.

**SLES 15 / OpenSUSE Leap 42.1+ ncurses-** The libncurses5 package must be installed which provides libtinfo.so.5

**Linux GT-CONVERGE Studio** -To use the graphical pre-processor tool, GT-CONVERGE Studio, for GT-CONVERGE model setup it is recommended to use a Linux machine with discrete graphics and OpenGL 3.3 or newer drivers. This recommendation is a requirement to use the Polygonica add-on feature for 3D volume and area calculations from GT-CONVERGE Studio. Depending on the operating system, libgfortran and other additional packages may be required to be installed separately to use the GT-CONVERGE Studio on Linux.

**Linux SVN Integration:** In order to run features of GT-SUITE that use SVN libraries, zlib for the corresponding architecture must be installed. Typically, this is installed by default, but depending on installation options of the distribution may not include this package.

**Linux GT-SPACECLAIM** - GT-SPACECLAIM is a Windows only application and is not available on Linux. It is used for translating 3D geometry between formats, modifying 3D geometry before importing to GT-SUITE, and some 3D plots in GT-ISE and GT-POST.

**JavaFX** – GT-ISE uses JavaFX by default, but this may not be supported by all Linux operating systems. GT-ISE will attempt to determine when JavaFX should be disabled, but you may force GT-ISE to not use JavaFX with the option: `-javafx:off` . . For details on which systems support JavaFX, please see the “notes” in <http://www.oracle.com/technetwork/java/javase/certconfig-2095354.html>. An unsupported system which attempts to use JavaFX might fail with errors about libprism\_es2.so or libpng16.so.

### 3.1.3 Linux License Server Specific Notes

**General Linux License Servers:** To run the license server on a Linux machine it must minimally have LSB 4.0 compliance and GLIBC-2.7 and Kernel 2.6.2+ and the **32 bit glibc.\*.i686 package** for the hardlock driver.

## 3.2 Hardware Recommendations (Which computer should I buy?)

There are several factors that can affect the performance of GT-SUITE, which are addressed below.

**CPU:** The most important factor is the CPU. CPUs have evolved to such a state that the clock speed is no-longer the only important factor in determining its processing power. However, when comparing within a processor family, the simulation times will roughly scale inversely with the clock speed. Larger memory caches can also reduce runtimes. The speed of our simulations can roughly be correlated to the floating point math operations of the system. As a reference to help in deciding on new hardware, the following will describe the hardware that Gamma Technologies is using internally as of 9/2020. We are not endorsing these products, but rather they are provided as a reference. Our *desktops* are running Intel® Core™ i7-9700 (6 Core 3.0GHz, 12MB Cache, w/ UHD Graphics 630) with 32 GB RAM, and *laptops* are running Intel® Core™ i7-7820HQ (Quad Core, 3.9GHz, 8MB Cache) 32GB RAM and *cluster machines* are running dual Intel® Xeon™ E5-2683 v4 (32 Cores total, 2.1GHz, 40MB Cache) with 64GB RAM. For other types of CPU, a comparative listing of computation speed can be found by viewing the latest benchmarks from <http://www.cpubenchmark.net>. Please see our webpage <https://www.gtisoft.com/gt-suite/supported-platforms-and-hardware/> for our currently supported platforms.

**32/64 bit:** Starting in v2018 the operating system must be 64-bit, as most 32-bit GT applications have been discontinued. However, Linux is still required to install the 32-bit compatibility packages as per the [Linux Operating Systems General Notes](#).

**Multiple Processors or Cores:** There are two ways in which GT-SUITE simulations can take advantage of multi-processor/core systems, distributed computing or parallel processing.

In distributed computing, each case of a simulation may be run on a single processor/core. As a result, multiple processors will not decrease computation time for a single case. A multiple-case model will be divided into single cases or packets of cases, and sent to multiple processors for solving by using the distributed computing feature. Additionally, with a multiple processor system other software applications will have improved responsiveness while a simulation is running.

A solver license will be required for each core which is simultaneously processing a simulation. A multi core machine will function with a single solver license, but it will be limited to only solve one model/packet at a time.

In parallel processing, selected parts of the code can be branched into multiple threads that can be run on different processors or cores at the same time. A single case of a simulation can be run in this manner to reduce the run-time of a simulation. Parallel processing is supported on the same hardware that is supported for serial (single processor) calculations. GT-SUITE will use only one solver

license for a parallel calculation, no matter how many processors are used. More information on realistic expectations of speedup can be found in the GT-ISE help for the Run Simulation Wizard.

**RAM (Memory):** The amount of RAM may limit the responsiveness of the GUI, but has not been found to limit the computational speed. The minimum recommended amount of installed RAM is 16 GB. On machines with higher core counts, at least 2GB per core with 4GB each recommended. More may be desirable if other applications concurrently used with GT-SUITE. The RAM should be increased if significant memory paging is found to occur.

**Storage ::** Locating your database temporary directory and GT-SUITE installation (if possible) on a Solid State Drive (SSD) will improve GUI performance, especially in GT-POST. See [SQLite and Legacy Database](#) for reference.

**Video Card:** The video card performance is only important for the 3D parts of GT-SUITE, such as: GEM3D, COOL3D, 3D Flowsplit Viewer in GT-ISE, and 3D Plots in GT-POST. We recommend that you use a stand-alone video card rather than one that is built into the computer's motherboard. Please see the section [Video Card Support](#) for full the full requirements.

**Monitor:** The absolute minimum is 1280x768. This is true for projectors as well because a widescreen projector is recommended. Dual monitors are recommended for maximum productivity, especially when working with GT-POST.



### 3.3 Minimum System Requirements (PC and Linux)

This section describes the bare minimum. **Please see the section above which describes the specifications for good performance** and see Coupling GT-SUITE with 3rd Party Software (CFD/Simulink) for other specific requirements.

**Video:** 1280x768 or more screen resolution, Additionally, to use the 3D graphical features, the system must have a modestly powerful video card.

**Storage/Disk:** 18 GB free space + additional working space (minimum 5 GB). Please see the section [SQLite and Legacy Database](#) for more information on the requirements for temporary working directory.

**RAM:** 8 GB RAM. Systems with less RAM might still functional, but might experience slow-downs in the GUI

**CPU:** x86\_64 processor. The computation time is highly dependent on the CPU and this is simply a minimum which has the necessary instruction set to run GT-SUITE. It is highly recommended that a better CPU is used. Please see the section [Hardware Recommendations \(Which computer should I buy?\)](#) for recommendations.

**Compilers (optional) :** To create custom user code it may be desirable to also install a compiler. Currently all the use routines are available in Fortran the controls component is available in C. For details see the Co-Simulation\_And\_UserCode document.

## 3.4 Virtual Machines

### Software

GT software is expected to function properly on a virtual machine, as long as the VM is properly emulating the hardware/OS and the underlying operating system is one that we support. 3D and graphics acceleration are dependent on the proper choice and configuration of the hardware, hypervisor, and video drivers.

### License Server

GT license servers are by default expected to be run on a physical, non-virtualized machine. If this is not possible for any reason, we do support running the license server on a virtual machine. Please contact the [licensing team](#) or your sales rep if you wish to extend your software license agreement to reflect a virtual machine configuration for your license server.

## 3.5 Video Card Support

GT-SUITE has many features (GEM3D, GT-ISE 3D viewer, GT-POST 3D viewer, etc.) related to 3D graphics. In order to make these new features function properly, the video card hardware AND the driver for the system must meet specific requirements described below.

It is strongly recommended to keep the video card driver current. Using outdated video drivers can cause troubles with JAVA applications, such as GT-SUITE. If your driver is over two years old, please update to the latest provided by the manufacturer to prevent any compatibility issues.

A stand-alone video card is highly recommended. Integrated graphics cards on the motherboard are typically inferior to stand-alone graphics cards for 3D applications and are not recommended. A few high-end laptops have an expensive, high performance video card integrated on the motherboard for purposes of minimizing battery consumption that may prove acceptable. The video card should have a minimum of 64MB of dedicated video card memory, but more is recommended. 1 GB minimum is recommended for GT-SpaceClaim. Please see some additional details in the next section.

The video card driver from the video card manufacturer is more likely to meet the requirements than a generic one from the operating system and is highly recommended. The video driver must support:

- GLX 1.4+
- OpenGL 3.1+ (much of the 3D capability will function properly with OpenGL 2.0+, but some of the more advanced rendering capabilities will not be available without OpenGL 3.1.)
- DirectX 11 (for GT-SpaceClaim)
- Shader Model 5.0 (for GT-SpaceClaim)

Note that those using a X-Windows or remote access tool to view graphics from another workstation must also have all participants in the graphics process meeting these same standards. Please see the X-Windows section below for more details.

### 3.5.1 Video Card Setup and Details

In addition to the video card requirements listed above, here are some additional details on setup and configurations that have been encountered by the GT-SUITE support staff:

1. **Note on laptops:** Some laptops that include NVIDIA graphics cards may try to maximize battery life by automatically selecting the integrated video processor instead of the NVIDIA card for applications that it does not think are graphics intensive. Please make sure that all GT-SUITE applications are forced to use the NVIDIA card, rather than use the “automatic detection” algorithm (the automatic detection will use the weaker integrated processor and may result in graphical issues).

2. **Note on LINUX:** It is not recommended to use AMD video cards on Linux 64-bit platforms. There are known driver and compatibility issues with AMD video card drivers and Linux operating systems that can cause 3D application to fail. Depending on the exact configuration, this may work, but no guarantees can be made.
3. The graphics card driver should be kept updated for use with GT-SUITE. Using outdated video drivers can cause troubles with JAVA applications, such as GT-SUITE. Updating to your video card manufacturer's latest driver is strongly recommended to prevent any compatibility issues.
4. The video card's hardware acceleration should be fully enabled.

We have tested a number of video cards in-house, using both NVIDIA and AMD graphics processors. Based on our testing of GT-SUITE, NVIDIA cards work well more often than other brands, but recent cards that meet the memory and driver requirements should be sufficient for GT-SUITE 3D applications.

Recent generations of Intel integrated graphics cards have been tested with GT-SUITE. The Intel HD 3000 and higher provide basic 3D graphics support for GT-SUITE, but performance is reduced when compared to a dedicated graphics card. Therefore, these cards are not recommend for regular use with GT-SUITE 3D applications.

### 3.5.2 Remote X-Windows

When using X-Windows to display the graphics on another machine's display, both the client and server's GLX version must be at least 1.4 and have the required OpenGL version shown above. The hardware on the machine displaying the graphical image is the one that is important for the speed of updating the image. Network traffic or speed limitations may also affect the frame rate.

We do not officially support any third-party X-Windowing software. However, as a service to our users we have tested the following: Cygwin (v2019), Xming (v2019), Exceed (v2017), and Exceed PowerSuite (v2017). Please be sure to use the latest release of the clients, as some older clients were found to be insufficient. For example, Xming 7.5 does not support key GT distributed dialogs on Linux, but Xming 7.7 does. Also, for some clients the standard/basic version did not meet the minimum graphics driver requirements and did not function properly for 3D applications. Some do offer support, but only when upgrade or add-in versions are installed, often for a surcharge. In our tests with very idealized conditions and latest upgrades, the remote access still gave a 20% to 50% reduction in frame rate, and so a local workstation is the preferred mode of operation.

### 3.5.3 Testing the video card

The script **gttestj3d**, located in the \$GTIHOME/bin directory, may be used to test whether the required versions of OpenGL and GLX are installed and working properly on your machine. If the required versions are not installed, it can typically be upgraded by installing the latest graphics driver for the video card from the graphics card manufacturer, not Microsoft (in the case of Windows operating system).

### 3.5.4 Troubleshooting 3D Issues

If you are experiencing problems with our 3D applications, please read through the "Video Card Support" section first. There are many details above that will more than likely resolve your problem. If the above information does not help, please follow the steps below.

- I. Check that your video card meets the minimum requires as stated above.
  - a. If you do not meet these requirements, please update your card. Refer to our list of recommended cards that are known to work well with our 3D applications.
- II. Update the video card driver from the video card vendor.
  - a. The driver must be provided by the vendor and not the OS default driver.
  - b. This is necessary to ensure that you are using the proper version of OpenGL and GLX (refer to the information above). Using an outdated video driver with an older version of OpenGL or GLX will prevent our 3D applications from running.
- III. Run the test program `gttestj3d` script, located in the `$GTIHOME/bin` directory and read the on screen instructions. This will report the relative performance of the graphical system.
- IV. Another option is to test with upgraded video card. Install and test 3D on your machine, but with an upgraded video card. Make sure that this new card meets the minimum requirements we specify. Run the `gttestj3d` script as mentioned in Step 3.

## 4 Coupling GT-SUITE with 3rd Party Software (CFD/Simulink)

The follow sections contain information regarding coupling of GT software with other software code. Please note the versions which are supported as well as licensing considerations.

## 4.1 Coupling GT-SUITE with CFD Codes

The following table provides a summary of the supported versions of CFD codes that are confirmed compatible with released versions of GT-SUITE.

Confirmed incompatibilities are indicated. **Absence from the below table does not imply incompatibility**, but rather lack of compatibility testing performed by Gamma Technologies at the time this document was released. Please contact [support@gtisoft.com](mailto:support@gtisoft.com) (or the CFD software support if the CFD version is new) if it is desired to use a combination not that is listed.

*Italicized* version numbers in the below table indicate a version with no planned future verification for the next major release of GT-SUITE. Please contact [support@gtisoft.com](mailto:support@gtisoft.com) if any of the planned removals are problematic.

**Verified Compatibility: General flow CFD coupling using 'CFDComponent'  
and GT-SUITE/GT-POWER/GT-SUITE-MP**

	GT-SUITE v2022	GT-SUITE v2021	GT-SUITE v2020
<b>STAR-CCM+</b>	v2020.2 (v15.04) v2020.1 (v15.02) v2019.2 (v14.04) v2019.1.1 (v14.02.010)	v2020.2 (v15.04) v2020.1 (v15.02) v2019.2 (v14.04) v2019.1.1 (v14.02.010)	v2020.2 (v15.04) v2020.1 (v15.02) v2019.2 (v14.04) v2019.1.1 (v14.02.010)
<b>CONVERGE</b>	v3.0.22 v3.0.20 <b>v3.0.16-v3.0.19<sup>S</sup></b> v3.0.15 v2.4.21 v2.4.13	v3.0.20 <b>v3.0.16-v3.0.19<sup>S</sup></b> v3.0.15 v2.4.21 v2.4.13	v2.4.21 v2.4.13
<b>FLUENT</b>	2021 R2.** 2021 R1.** 2020 R2.** 2020 R1.** 2019 R1.** R19.2.** R19.1.** <b>Incompatible: R19.0*</b> <b>Incompatible: R18.2*</b> R18.1. <sup>V</sup>	2020 R1.** 2019 R1.** R19.2.** R19.1.** <b>Incompatible: R19.0*</b> <b>Incompatible: R18.2*</b> R18.1. <sup>V</sup> R18.0 <sup>V</sup>	2019 R1.** R19.2.** R19.1.** <b>Incompatible: R19.0*</b> <b>Incompatible: R18.2*</b> R18.1. <sup>V</sup> R18.0 <sup>V</sup>
<b>CFX</b>	2021 R1 <sup>V,R</sup>	2021 R1 <sup>V,R</sup>	
<b>Simerics-MP+</b>	5.2.15 <sup>R</sup> 5.1.5 <sup>R</sup> 5.0.15 <sup>R</sup>	5.1.5 <sup>R</sup> 5.0.15 <sup>R</sup>	
<b>FIRE**</b>	2017 <sup>V</sup>	2017 <sup>V</sup>	2017 <sup>V</sup>
<b>scFLOW</b>	2021	2020 v14	v14
<b>SC/Tetra (SCRYU/Tetra® in Japan)</b>	v14 <sup>V</sup>	v14 <sup>V</sup> v13 <sup>V</sup>	v14 <sup>V</sup> v13 <sup>V</sup>

<sup>V</sup> - CFD products versions marked with this superscript do not support mass-based coupling with GT-SUITE, which is recommended for systems involving a CFD coupling component that is part of a closed circuit.

<sup>R</sup> - CFD products versions marked with this superscript do not cleanly support remote-machine coupling at this time. Verification has been completed for "localhost" simulations (not involving the use of a *gtlink.prm* file) only.

<sup>S</sup> - These CONVERGE solvers feature a changed startup sequence compared to earlier CONVERGE v3.0 builds that can cause the first coupled timestep to be ill-conditioned in GT-SUITE. This may cause a failure that would not otherwise be experienced or may only lead to non-ideal startup with subsequent time integration sound and accurate. Convergent Science has indicated development of a correction for a future v3.0 CONVERGE release.

\* - Due to a bug in FLUENT R18.2 and FLUENT R19.0, simulations coupled with GT-SUITE are prone to FLUENT results being corrupted. It is therefore not recommended to use these versions. ANSYS reports this problem is repaired for R19.1.

\*\* - Coupled job hangs have been experienced at Gamma using FLUENT R19.1 - 2021 R2. In the case of 2019 R1-2021 R2, we have observed messaging from the FLUENT solver can cycle perpetually when using the **openmpi FLUENT solver**. If this output is redirected to file, this can lead to the creation of enormous log files that may consume shared resources. While this hanging job problem is not reliable and Gamma has also observed many successful runs of these FLUENT versions, Gamma is withholding these FLUENT versions from verified status due to the severity of the racing condition encountered.

• - Indicated FLUENT versions are known to feature a non-ideal initial calling sequence with GT-SUITE which can cause otherwise stable models to be unstable if the simulation meets both of the below criteria:

- i) The GT circuit containing the CFD component is solved using a GT implicit flow solver
- ii) A CFDFlowConn part of type Liquid or Advanced is used with the pressure-relaxation feature activated.

This issue has been communicated to ANSYS and a preferable startup sequence is being pursued.

\*\* - Other FIRE versions are likely supported, but only compatibility with the listed versions have been verified at GT.

When coupling GT-SUITE with CFD codes, the applied CFD software does NOT necessarily need to be run on the same machine that runs the GT software. The user has the option to run both codes on separate machines OR on the same machine. If using different machines, the CFD software only needs to be installed on one machine.

Although the GT-SUITE solver itself does not have any dependence on MPI libraries, when GT-SUITE is used to couple with a separately licensed parallel version of GT-CONVERGE the MPI GT-CONVERGE solvers installed with GT-SUITE do require MPI library installation.

Starting with GT-SUITE v2021, Intel MPI libraries are included in the GT-SUITE installation and are available as the "Default" MPI choice in the CFDGTCONVERGE part.

A table of MPI library versions used to verify MPI GT-CONVERGE solvers is shown below.

**Verified Compatibility: General flow and/or heat transfer CFD integration using 'CFDGTCONVERGE'**

Platform	GT-SUITE/GT-POWER/GT-SUITE-MP v2022 MPI Library versions	GT-SUITE/GT-POWER/GT-SUITE-MP v2021 MPI Library versions	GT-SUITE/GT-POWER/GT-SUITE-MP v2020 MPI Library versions
	GT-CONVERGE v3.0 R3/R2	GT-CONVERGE v3.0 R1/R2	CONVERGE Lite v2.4 R2/R3
64-bit Linux	Intel <a href="#">2019 update 7*</a> MPICH <a href="#">3.2.1</a> OpenMPI <a href="#">3.1.3</a> "	Intel <a href="#">2019 update 7*</a> MPICH <a href="#">3.2.1</a> OpenMPI <a href="#">3.1.3</a> "	Intel v2017.0.098 MPICH 3.1.4 OpenMPI 1.10.1
64-bit Windows	Intel <a href="#">2019 update 5*</a> Microsoft MPI <a href="#">v10.1</a>	Intel <a href="#">2019 update 5*</a> Microsoft MPI <a href="#">v10.1</a>	Intel v2017.0.098 Microsoft MPI (HPC Pack 2012)

\*- MPI run-times packaged in GT installer and used when "Default" MPI library is selected in CFDGTCONVERGE part.

" - This OpenMPI solver has not been verified at Gamma Technologies, and the number listed indicates the version support per vendor documentation.

Microsoft MPI is a free redistributable available from Microsoft. Both MPICH and OpenMPI are also freely available under BSD-like licenses.

**Verified Compatibility: Aftertreatment Device CFD coupling using 'CFDInterfaceAT' and GT-SUITE/GT-POWER**

	GT-SUITE v2022	GT-SUITE v2021	GT-SUITE v2020
CONVERGE	v2.4.21	v2.4.21	v2.4.21

**Verified Compatibility: General CFD FSI coupling using GT-SUITE/GT-SUITE-MP**

	GT-SUITE v2022	GT-SUITE v2021	GT-SUITE v2020
CONVERGE	'CFDMechConn' (1D translational): v3.0.20	'CFDMechConn' (1D translational): v2.4.23 <b>Incompatible: v3.0.19-</b> v2.4.23	'CFDMechConn' (1D translational): v2.4.23

**Verified Compatibility: Mechanical Turboshaft CFD coupling using 'CFDComponent' and GT-SUITE/GT-POWER/GT-SUITE-MP**

	GT-SUITE v2022	GT-SUITE v2021	GT-SUITE v2020	GT-SUITE v2019
CFX	2021R1	2021R1	-	-
FLUENT	R20.1 (R21 not supported)	R18.1	R18.1	R18.1
STAR-CCM+	{file-based coupling only}	{file-based coupling only}	{file-based coupling only}	{file-based coupling only}
CONVERGE				

## 4.2 Coupling GT-SUITE with Simulink

Coupling of GT-SUITE with Simulink is currently supported for below Matlab/Simulink versions, depending on the role of GT-SUITE:

	<b>GT-SUITE as Master</b>	<b>GT-SUITE s-function</b>	<b>Compiled GT-SUITE MEX</b>
<b>Windows</b>	<i>2011b-</i>	<i>2006b-</i>	<i>2011b-</i>
<b>Linux</b>	<i>2014a-</i>	<i>2014a-</i>	<i>2014a-</i>

Coupling is performed via a GT supplied S-Function Block in the Simulink model or compiled MEX exported from GT-SUITE and through the use of either a 'SimulinkHarness' or 'CoSimInterface' object in the GT-SUITE model. For additional information regarding coupling with Simulink, please refer to the Controls Coupling Manual, which is accessible from GT-ISE under Help → Manuals → Co-Simulation And User Routines → ControlsCouplingAndRealTime.pdf .

From v2019, Compiled GT-SUITE MEX functionality is no longer supported for Windows 32-bit applications.



### 4.3 Coupling GT-SUITE via Functional Mock-up Interface (FMI)

GT-SUITE is an FMI capable tool for both FMIv 1.0 and FMI v2.0. The below table shows all FMI variants that are supported by GT-SUITE:

	<b>Export for Model Exchange</b>	<b>Export for Co-Simulation</b>	<b>Import for Model Exchange</b>	<b>Import for Co-Simulation</b>
<b>Windows</b>	-	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>
<b>Linux</b>	-	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>

For additional information regarding coupling with Simulink, please refer to the Controls Coupling Manual, which is accessible from GT-ISE under Help → Manuals → Co-Simulation And User Routines → ControlsCouplingAndRealTime.pdf .

From v2019, building GT-SUITE models as FMUs functionality is no longer supported for Windows 32-bit applications.



## 4.4 Other coupling to GT-SUITE using the GTLINK coupling library

Support of CAE client software using the gmlink library provided by Gamma Technologies is required to be built with glibc version 2.11 or higher.

# 5 Licensing

A floating license allows many users to share GT-SUITE license(s). The GT-SUITE software is installed on an unlimited number of Linux and/or PC computers, and everyone on the network has access to the license(s). The license server is installed on a single computer, and it allows the licenses to be “checked out” by each of the “client” computers where GT-SUITE is run. If all of the available licenses for a product are checked out, the server will prevent the product from being started again until someone else is finished, freeing a license.

A single license actually consists of two separately licensed parts: a “solver” license, and a “GTgui” license. The “GTgui” license allows a single user to use one license for multiple GUI applications. A Java message will appear and block if the single user tries to attempt to launch the same GUI application more than twice. A single user is defined by the combination of login name and the machine name (this includes the DISPLAY and tty values on Linux), basically a unique USER:HOST:DISPLAY uses one GUI license. The “solver” license is used while a simulation is running. Running multiple simulations concurrently on a multiple processor system will require multiple licenses. The “solver” and “GTgui” parts of the license can be checked out independently by different users. This means that different users could potentially share a single license as long as they are using different parts of the software. This is particularly relevant when using the “Run Remote” option, where GT-ISE is run on a computer and the solver is run on another remote computer.

## 5.1 **Acceptable License Use**

The GT Software License Agreement (the "SLA") dictates the terms of use for GT-SUITE software. The SLA will specify the locations where the software may be installed and used, and will govern how the software may be accessed. Prior to installation and authorization of use, please confirm these terms to ensure the appropriate access is granted. Should you have any questions about such access, please contact [contracting@gtisoft.com](mailto:contracting@gtisoft.com).

## 5.2 License Server Overview

Floating licenses are managed by a third-party software program called FLEXlm or FLEXnet. FLEXlm is used by many software companies to control licensing. For detailed information about FLEXlm, please visit <http://www.flexerasoftware.com/>

Supported license server platforms are listed at the beginning of this document. In addition to being a supported platform, the requirements for the license server computer are that it must have a static IP Address and it must be connected via network to all of the client computers. The license server computer could be a dedicated server or a stand-alone GT-SUITE workstation.

There are three license server options during the installation process:

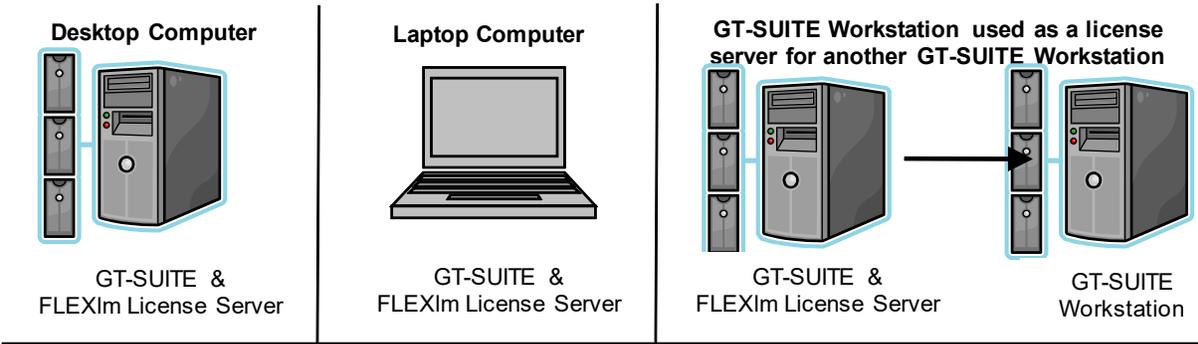
- 1.) Standard GT-SUITE, Local FLEXlm Server - This computer will be a GT-SUITE workstation, and the license server.
- 2.) Standard GT-SUITE, Network FLEXlm Server - This computer will be a GT-SUITE workstation, but it will check out a license from another computer in the network.
- 3.) FLEXlm Only - This computer will be the license server for the GT-SUITE workstation(s), but it will not be a GT-SUITE workstation.

Examples of license server configurations are shown on the following page.

A license server must be uniquely identified before Gamma Technologies can generate a license file. An x86 system (PC or Linux) uses an external hardlock. The hardlock is a small USB device which is attached to the computer to provide the unique identifier to which the license is tied (see the section Hardlocks (Dongles) for more information). Thus, a PC/Linux license file may be moved to another server by moving the hardlock (see the section [Moving a License Server](#) for more information).

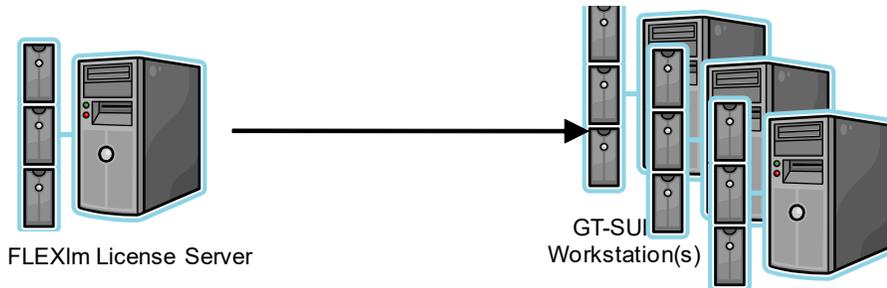
If the license file is for a group of triple redundant FLEXlm servers, the setup is the same as for a single server, except that the license.dat file must be modified for each server by un-commenting the appropriate vendor daemon for each platform (e.g. VENDOR GTISOFT GTISOFT.exe). Start the first server listed in the license file, then the remaining two servers.

## Local FLEXIm License Server Examples

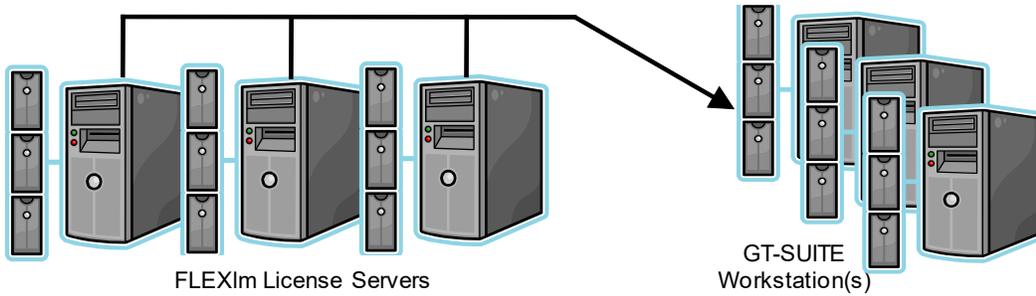


## Network FLEXIm License Server Examples

### Single License Server networked with one or more GT-SUITE Workstations



### Multiple or Triple Redundant License Servers networked with one or more GT-SUITE Workstations



## 5.3 License File Overview:

### 5.3.1 Description of License File Contents

The license file contains information about the license server and the GT-SUITE applications that it will allow to be run. It lists how many of which products can be run, on what type of machine, until what dates.

Each license will contain a few “features”. The first feature is for the solver and will allow the use of GT-SUITE, GT-POWER, or any other solver type. A solver feature will be checked out from the server for each simulation that is run and checked back in when the simulation completes. The next feature is GTgui, which is used for all the graphical applications. The GTgui feature (the 'GTise' license feature is the legacy equivalent of 'GTgui') is checked out whenever a new user opens their first GT-SUITE graphical application and is checked back in when that user closes all the GT-SUITE graphical applications. A user is defined by the combination of login name and the machine name (this includes the DISPLAY and tty values on Linux), basically a unique USER:HOST:DISPLAY uses one GUI license. Thus a user can open GT-ISE and GT-POST at the same time while only using one “GTgui” license.

An example FLEXlm license is shown below with a description of each line following the example.

```
# File generated by user on Thursday, December 21 2006 at 11:48:07
SERVER myServerName.com GTI_ID=HARDLOCKNAMEUSB 27005
VENDOR GTISOFT GTISOFT.exe
INCREMENT GTsuite GTISOFT 700 31-dec-2009 3 654A64C645D PLATFORMS=i86_n \
    VENDOR_STRING=SALKSADFFJSDALJFSA SUPERSEDE \
    ISSUED=21-Dec-2008 \
    vendor_info=77862417a0fda9711f
INCREMENT GTgui GTISOFT 700 31-dec-2009 3 9EA48033E939 \
    VENDOR_STRING=SAL123KFJSDALJFSA SUPERSEDE \
    ISSUED=21-Dec-2008 \
    vendor_info=1f77862417a0fda971
INCREMENT GTtools GTISOFT 610 31-dec-2009 3 1CA9AA073CE1 \
    VENDOR_STRING=SALSADFKFJSDALJFSA SUPERSEDE \
    ISSUED=21-Dec-2008 \
    vendor_info=9q77862417a0fda971
```

**Comment lines** – any line starting with a pound sign (#) is ignored by the license server

**Server lines** – A line starting with “SERVER” is a sever line and can take form as shown below. A license file for a triple redundant server will contain three “SERVER” lines

```
SERVER myServerName.com GTI_ID=HARDLOCKNAMEUSB 27005
```

SERVER	HOSTID	PORT
myServerName.com	GTI_ID=HARDLOCKNAMEUSB	27005

Where:

The server name is a user editable field and must match the name of the server. The name is case insensitive. Optionally "localhost" can

be used if the license server and the client are the same machine. Typically the domain (e.g. .com) is optional, not needed if the license server and GT-SUITE workstations are part of the same network. The HOSTID is the name of the hardlock provided by GT (PC/Linux). This field must not be changed. Port number, which is used for communication to the clients. This can be changed if another process is using the port, but the GTISOFT\_LICENSE\_FILE must be set accordingly on the clients.

**Vendor lines** – A line starting with “VENDOR” is a vendor line which tells the FLEXlm server the name of an executable to run for the given server. A license file for a triple redundant server will contain three “VENDOR” lines, two of which should be commented out before running on a given machine by adding # at the beginning of the line.

```
VENDOR GTISOFT GTISOFT.exe
Vendor Daemon
```

Where:

The vendor daemon is the name of an executable provided by GT that the license server will run. It is the last entry on the line. This example shows “GTISOFT.exe” which is for PC. This may need to be changed to use the appropriate daemon for the given platform, i.e. “GTISOFT.linux\_x86\_64”. When the license server is started via a script, it may also be necessary to modify this to use the full path to the vendor daemon, not just the name as it is currently shown.

**Feature lines** – A line starting with “INCREMENT” is a feature line and it contains the actual “license”. There may be any number of feature lines in a license file. To find the total number of licenses available for a given product, it may be necessary to add the number of licenses from many feature lines. If any part of the feature lines is modified, the license may be disabled.

```
INCREMENT GTsuite GTISOFT 620 31-dec-2007 3 654A64C645D PLATFORMS=i86_n\
Product Ver Date # PLATFORMS
VENDOR_STRING=SALKSADFFJSDALJFSA SUPERSEDE \
ISSUED=21-Dec-2006 \
vendor_info=77862417a0fda9711f
```

Where:

Name of the product, (GTsuite, GTise/GTgui, GTtools, GTpower, etc.)  
 Maximum version allowed to run (All lower versions are OK)  
 Expiration date  
 Number of concurrent uses allowed of this feature.  
 The platforms text is present when the license can only be checked out by a PC (Windows) machine. There is a surcharge to run on other platforms. Please contact GT to enable running GT-SUITE on non windows platforms.

**Combining licenses from multiple vendors** – It is possible to combine licenses from multiple vendors into one license file. It is generally not recommended and is certainly not necessary for serving licenses for multiple vendors. The SERVER line must be identical for all the original license files. A license file list can be created if hostids are not identical, for example Windows machine with USB hardlocked licenses. See the Flexlm/Flexnet End User Guide for more information.

## 5.4 Controlling License Usage via the Options File

There is an optional feature of FLEXlm licensing called the Options File. The Options File gives the license administrator special control over which users, hosts, or groups of users or hosts have access to specific license features. The Options File is a text file created by the license administrator and called from the Vendor Line of the License File by an argument "options," for example:

```
VENDOR GTISOFT GTISOFT.exe options=/path/options.opt
```

The Options File is a text file that can be placed in any location on the license server computer, but preferably in the same location as the other license server files. When the license server is restarted, the specified options.opt file will be used.

An example options.opt file to reserve three GTsuite licenses to a group of users is shown below:

```
GROUP GTsuite_users joe barbara susan  
RESERVE 3 GTsuite GROUP GTsuite_users
```

If you would like more information about how to use the Options File please refer to chapter 13 of FLEXnet\_v11\_14\_LicAdmin.pdf. The pdf is located in FLEXlm installation directory (typically %GTIHOME\flexlm), or may be extracted from the packaged zips in the licensing folder of the installer.

Note that if there is a mixture of licenses of more than one version, or a mixture of separate licenses of the same feature within a license file, the RESERVE option will most likely not work correctly. Even with VENDOR\_STRING= identifier the licenses may be pooled in such a way that licenses will not be reserved properly. In such a situation it is better to use combination of MAX and EXCLUDE commands to restrict license usage instead of RESERVE.

Note that the option BORROW is not supported by Gamma Technologies.

## 5.5 Firewalls & Licensing

### 5.5.1 Software Firewall

A software firewall is a program running on a machine to limit network traffic in or out of the machine. Support is only provided for the Windows firewall. However, there should be similar functionality on other software firewalls.

If the firewall is on a machine, which is a FLEXIm server for other machines, "GTISOFT.exe" and "Imgrd.exe" must be added to the firewall exception list. This can be done as follows:

1. Open the Windows firewall settings window: Start → Settings → Control Panel → Network Connections → Change Windows Firewall Settings (top left of window).
2. If the firewall is on, "Don't Allow exceptions" must be unchecked. If the firewall is off, no further action is required.
3. On the "Exceptions" tab, press "Add Program" and browse for GTISOFT.exe and press OK. The file located is in the FLEXIm installation directory, which is typically `c:\gti\flexIm\`.
4. Add the file `Imgrd.exe` to the exception in a similar manner as in step 3.

If the firewall is on a machine running GT-ISE or a solver from the command line, GT's version of java must be added to the firewall exception list. The program is not necessarily accessing the network, but internally it uses some of the same functions as an internet application might and as such, it must be allowed by the firewall. This can be done as follows:

1. Open the Windows firewall settings window: Start → Settings → Control Panel → Network Connections → Change Windows Firewall Settings (top left of window).
2. If the firewall is on, "Don't Allow exceptions" must be unchecked. If the firewall is off, no further action is required.
3. On the "Exceptions" tab, press "Add Program" and browse for: `%GTIHOME%\v*\GTsuite\jre\win64\bin\javaw.exe`, then press OK.
4. If older versions of GT-SUITE are installed, other files may have to be allowed through the firewall. These can be added by using the option to "Display a notification when Windows Firewall blocks an application". Then run a simulation in the older version and choose to allow when prompted. Running a simulation and post processing, disable the option to "Display a notification when Windows Firewall blocks an application".

## 5.5.2 Hardware Firewall

This section applies when a hardware firewall is between the FLEXIm sever and the FLEXIm client. This section does not apply to a single machine with its own license file and an external firewall. To configure a hardware firewall to operate properly with FLEXIm, two ports must be made available for the both the Imgrd and vendor daemon.

Before allowing access through a firewall, please review the [Acceptable License Use](#) section.

To allow FLEXIm traffic through a hardware firewall, enable the port used by FLEXIm, which is typically 27005. This port number may be changed by editing the license.dat file and stopping and starting the FLEXIm server.

Some hardware firewalls require a fixed port be made available for the vendor daemon to operate properly. For the vendor daemon to operate through the fixed port, the vendor line in the license.dat file should be modified as follows:

```
VENDOR GTISOFT GTISOFT.exe port='port number'
```

where 'port number' is the fixed port being used by the hardware firewall. This may be needed if a user is trying to connect to the license server from outside the local network and is going through a firewall.

## 5.6 License Server Installation:

**WARNING - Before installing any type of hardlock, set the correct date, time, and time zone on the computer. Failure to do so may result in the hardlock being permanently disabled. Changing the date, time, or time zone after the software has been installed may result in the failure of the software to run.**

**IMPORTANT – Existing license servers from versions older than v2018 must be re-installed to update Imgrd and GTISOFT\* vendor daemon to v11.14+.**

The following directions explain how to install the license server:

1. The Hostname, and operating system of the license server must be sent to GT before the license file can be created. GT will send a license.dat license file.
2. To install the FLEXIm files, installer by launching setup-windows.exe (PC) or setup-linux-x64.run (Linux) and select the "FLEXIm Only" option, and follow the on-screen instructions. Please read the Installation Instructions section for detailed installation information. (If you are familiar with FLEXIm and confident in doing a manual installation the other option is to browse to the installer and find the folder called "licensing". Then copy the .zip or .tar.gz file for the particular platform to a temporary directory, extract all contents to the desired location, and then setup the license service and install the hardlock drivers if applicable.)
3. Start the license manager from the GUI (PC) as described below under the heading *Graphical Interface for License Manager* or from command line (Linux) as described in *Controlling the License Server, Command Line (all platforms)*.

## 5.7 Manually Installing the License Server:

**WARNING - Before installing any type of hardlock, set the correct date, time, and time zone on the computer. Failure to do so may result in the hardlock being permanently disabled. Changing the date, time, or time zone after the software has been installed may result in the failure of the software to run.**

1. Run/Mount the installer as described in the section of the manual titled *Installing*.
2. Find the directory named "licensing" on the installer. Copy the .zip or .tar.gz file for the corresponding license server platform to a temporary directory.
3. Extract the contents of the .zip or .tar.gz file to the desired final directory location. The typical location is %GTIHOME%\flexlm\, where GTIHOME is typically C:\GT.
4. On Windows/PC and Linux platforms manually install the USB hardlock driver by following the directions in sections titled *PC Hardlock Driver Installation* and *Linux Hardlock Driver Installation*. Then plug in the USB hardlock
5. Start the license manager from the GUI (PC) as described in the section *Graphical Interface for License Manager* or from command line (Linux) as described in the section *Controlling the License Server, Command Line (all platforms)*.
6. Finally, on any client workstations that will be checking out a license, including the license server machine if it is also a client workstation, the GTISOFT\_LICENSE\_FILE environment variable needs to be set to port@host where "port" is the TCP/IP port number for communication and "host" is the name of the license server computer. See the chapter *Environment Variables* for instructions on how to set this variable.

## 5.8 Triple Redundant License Servers:

To minimize the possibility that a license server is unavailable due to a hardware failure, a group of three license servers can function as a triple redundant group to serve the licenses to the clients. A special license must be used for this. Please let GT know if you would like to use this feature before the license file is generated.

If the license file is for a group of triple redundant FLEXlm servers, the setup is the same as for a single server, except that the license.dat file must be modified for each server by un-commenting the appropriate vendor daemon for each platform (e.g. VENDOR GTISOFT GTISOFT.linux\_x86\_64). Start the first server listed in the license file, then the remaining two servers. Please see the sections *License File Overview* and *Setting Environment Variables* for more information about the triple redundant license file and how to set the environment variable on workstations to use the triple redundant system properly.

## 5.9 Moving a License Server (USB Hardlock Licenses Only):

**WARNING - Before installing any type of hardlock, set the correct date, time, and time zone on the computer. Failure to do so may result in the hardlock being permanently disabled. Changing the date, time, or time zone after the software has been installed may result in the failure of the software to run.**

Before moving a license server, please review the [Acceptable License Use](#) section.

One feature of FLEXIm is that a license server that uses a USB hardlock may be moved easily from one computer to another. The license is linked to the USB hardlock, so the computer with the license.dat file and the USB hardlock can be the license server. The most common application of this feature is changing the license server from one PC to another PC, or from one Linux x86 to another Linux x86. Below are the steps for moving a license server:

1. Check the list of supported license server platforms to make sure the proposed new license server machine is supported. There is a list at the beginning of this document, as well as an up-to-date list on our website at <https://www.gtisoft.com/gt-suite/supported-platforms-and-hardware/>.
2. Make sure no users are currently using a GT-SUITE application. Then stop the license server from the GUI as described in the section *Controlling the License Server, Graphical Tool (PC only)* or from command line as described in the section *Controlling the License Server, Command Line (all platforms)*.
3. Remove the USB hardlock from the old license server computer.
4. Copy the license.dat file from the old license server computer to the new license server computer. The old license.dat file is typically located at %GTIHOME%\flexIm. Save the license.dat file in a convenient location on the new license server computer. When the FLEXIm software is installed it will ask for the license.dat file and copy the file to the new %GTIHOME%\flexIm directory.
5. Update the license.dat file to use the information specific to the new license server computer. The license.dat file can be opened and modified with a text editor, for example Notepad. Change the SERVER name to match the name of the new license server computer. Change the port number if necessary (default=27005). Change the VENDOR extension to match the platform type of the license server, for example, GTISOFT.exe for a PC license server, GTISOFT.linux\_x86 for a Linux license server. For more detailed information see the section *License File Overview*. Below is an example of the first two lines of the license.dat file, with the underlined items representing user-editable fields.

```
SERVER myServerName.com GTI_ID=HARDLOCKNAMEUSB 27005  
VENDOR GTISOFT GTISOFT.exe
```

6. To install the FLEXlm files, launch `setup-windows.exe` (PC) or `setup-linux-x64.run` (Linux) and select the "FLEXlm Only" option, and follow the on-screen instructions. Note that `setup-linux-x64.run` must have the executable attribute set. If you have trouble mounting the USB drive on Linux to enable the executable permissions, please copy the files locally and enable the executable attribute.
7. Plug in the USB hardlock.
8. Start the license server from the GUI as described in the section *Controlling the License Server, Graphical Tool (PC only)* or from command line as described in the section *Controlling the License Server, Command Line (all platforms)*.
9. Change the `GTISOFT_LICENSE_FILE` environment variable of any GT-SUITE workstation to point to the new license server computer. This includes the license server computer itself if it is also used as a GT-SUITE workstation. Please see the section *Setting Environment Variables* for instructions on how to set the environment variable. The environment variable `GTISOFT_LICENSE_FILE` will be set to `27005@server_name`, where `27005` matches the port number listed in the `license.dat` file, and `server_name` matches the name of the license server computer and the `SERVER` name in the `license.dat` file.

## 5.10 Setting up a License Server for Traveling:

**WARNING - Before installing any type of hardlock, set the correct date, time, and time zone on the computer. Failure to do so may result in the hardlock being permanently disabled. Changing the date, time, or time zone after the software has been installed may result in the failure of the software to run.**

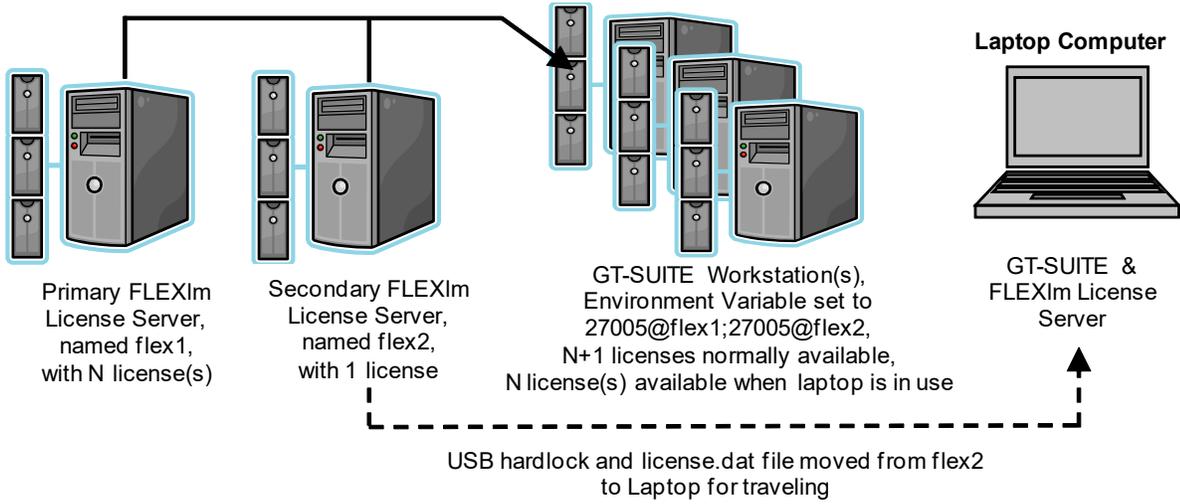
Before moving a license server, please review the [Acceptable License Use](#) section.

The GT-SUITE license does not support the FLEXIm Borrow feature that some other software programs use for portable licenses. In order for a GT-SUITE license to be used while traveling, the USB hardlock and corresponding license file must be installed on the portable computer, as well as GT-SUITE and FLEXIm.

If GT-SUITE has not yet been installed on the portable computer, please consult the GT-SUITE installation instructions and perform a Standard full installation, choosing Local FLEXIm Server. If GT-SUITE was previously installed on the portable computer, but FLEXIm was not (workstation using network license server), then choose to install FLEXIm Only. In both cases, please read the section *Moving a License Server*, because it explains what changes will need to be made when moving the license server from one computer to another.

If you have a single license, you can simply move it to the portable computer as explained in the section *Moving a License Server*. If your company has multiple licenses, we recommend that you contact us and negotiate a new license agreement such that you have at least one GT-SUITE license linked to a USB hardlock. To keep this license in your server pool when it is not being used for traveling, simply install FLEXIm, the hardlock, and the license file on a permanent server or workstation. All other computers on the same network using GT-SUITE can then point to this computer as an additional, secondary license server through the environment variables as outlined in the section *Environment Variables*. Please note that two GTISOFT license servers (two hardlocks) cannot be used on the same computer at the same time, because only one GTISOFT vendor daemon can run on a computer at one time. Below is an example of a typical situation for moving a license server to a laptop for traveling.

Typical FLEXlm license server arrangement for when a license is occasionally needed for traveling



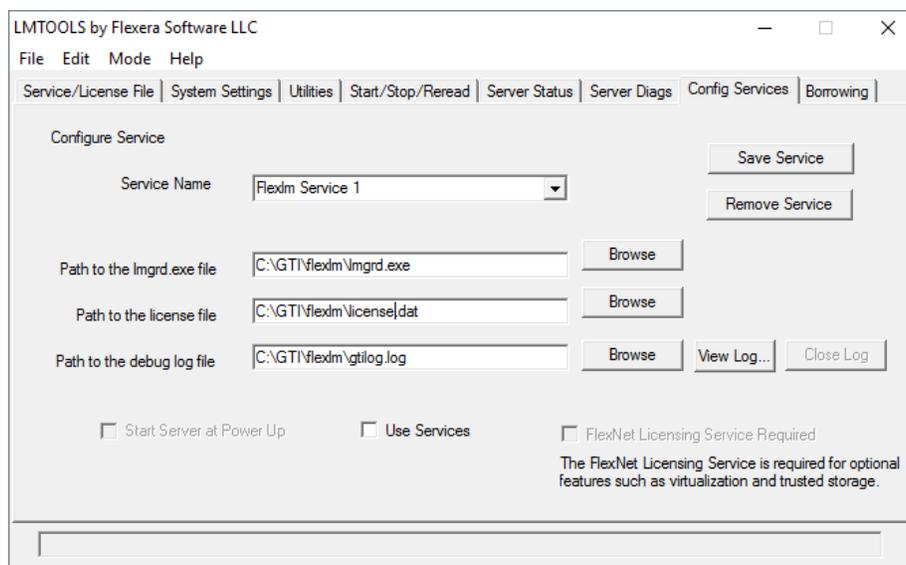
## 5.11 Controlling the License Server, Graphical Tool (PC Only):

The graphical tool "lmtools.exe" is available only on Windows and can be launched from Start → Programs → GTI Applications Group → lmtools, or by browsing to the license server installation directory %GTIHOME%\flexlm\lmtools.exe.

### Configuration

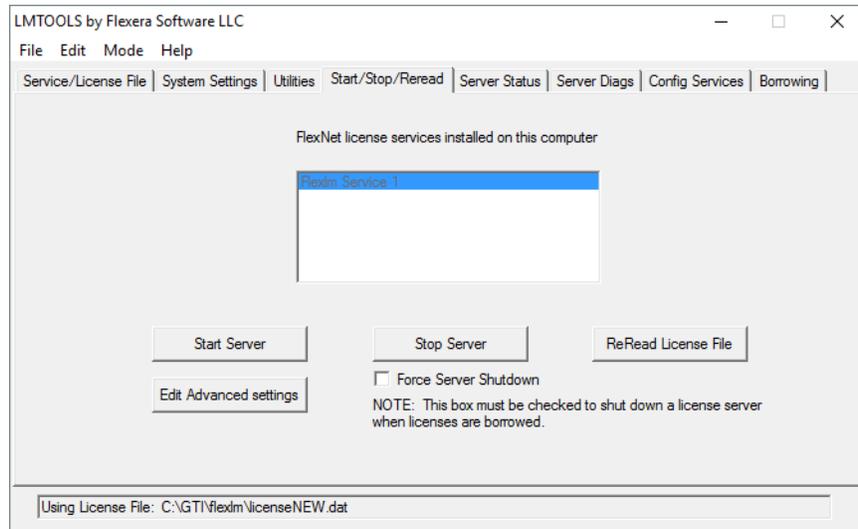
Ensure that the paths are set to the proper file locations. To automatically start the server when the machine starts, check "Start Server At Power-Up" and "Use Services". The hardlock must be attached to the machine when the server starts up.

Note the "View Log" button. This is used to view the log file after it has been started. The log file will show the check in/out of all licenses and any error messages from the server.

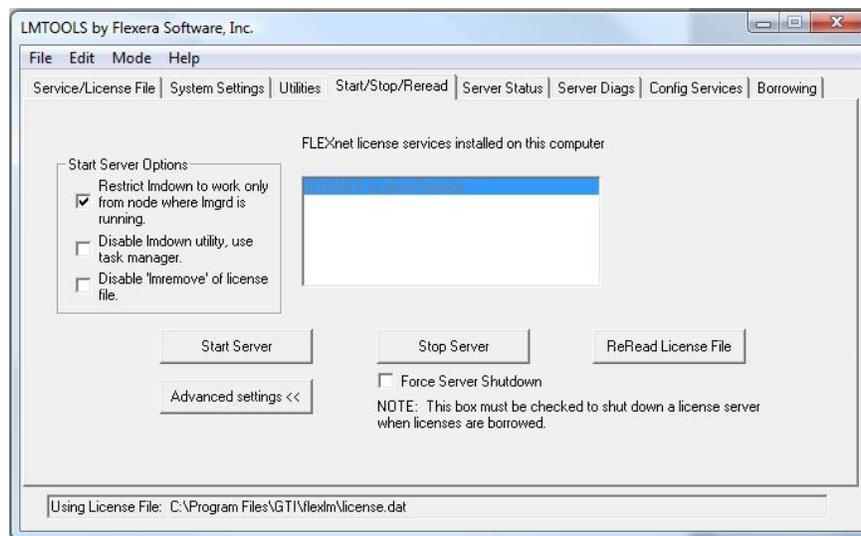


### Start/Stop the license server

After lmtools has been configured, use the "Start Server" and "Stop Server" buttons on the "Start/Stop/Reread" tab. The "ReRead License File" should only be used by "Experts" as it has been known to not properly re-read the license under certain circumstances. Please stop/start the server instead of ReReading.



Note that in some cases it may be necessary to restrict the ability to Stop Server. If there are multiple Imgrds on one network then it is possible that pressing the Stop Server may inadvertently shut down all Imgrds. To avoid this problem there are at least two solutions. If you press the Advanced settings button then the Start Server Options box will appear. The first checkbox "Restrict Imdown..." will make it so Imdown (Stop Server) will only affect the Imgrd on this specific license server node. The second checkbox "Disable Imdown..." is more restrictive and prevents Stop Server button from working, such that the Imgrd and vendor daemon can only be stopped by killing the process (Linux) or stopping the process via task manager (Windows).



## 5.12 Controlling the License Server, Command Line (all platforms)

The license server may be started by entering the FLEXlm directory, typically %GTIHOME%\flexlm which was created during the installation and then issuing the command below. (Prepend ./ to the command on Linux, ./lmgrd.....)

```
lmgrd -c license.dat -l gtilog.log
```

Where:

- c license.dat; specifies the license file to use
- l gtilog.log; specifies the log file to be used by the server.

The license server may be stopped by entering the FLEXlm directory, typically %GTIHOME%\flexlm which was created during the installation and then issuing the command below.

```
lmutil lmdown -c license.dat
```

Note: on Linux, the lmutil executable may be in a sub directory to distinguish the executables for each platform. So the command may take the form of ./linux\_x86/lmutil lmdown -c license.dat

Note that in some cases it may be necessary to restrict the ability to Stop Server using lmdown. If there are multiple lmgrds on one network then it is possible that using a general lmdown command may inadvertently shut down all lmgrds. To avoid this problem there are at two solutions. Adding the argument "-local" after the log file will make it so lmdown (Stop Server) will only affect the lmgrd on this specific license server node. Alternatively adding the argument "-x lmdown" after the log file is more restrictive such that the lmgrd and vendor daemon can only be stopped by killing the process (Linux) or stopping the process via task manager (Windows).

```
lmgrd -c license.dat -l gtilog.log -local
```

```
lmgrd -c license.dat -l gtilog.log -x lmdown
```

## 5.13 Starting the License Manager Automatically on Linux

The script file located at `$GTIHOME/flexlm/gtilic` can be used as a reference for setting up a Linux computer so that the license manager will be started automatically at boot-up. This script is only meant to be used as a reference and has not been tested on all platforms. The *network administrator will need to make modifications to the script*. The following are instructions specific to each platform:

For **Linux**, perform the following steps as root (May change depending on distribution):

1. Save the script shown above to: `/etc/init.d/gtilic`
2. `>> chmod +x /etc/init.d/gtilic`
3. `>> chkconfig --add gtilic`  
Note: Enabling runlevel 345 may be necessary.  
`>> chkconfig --level 345 gtilic on`

Please see <http://www.flexerasoftware.com/> for more information on the use of the license manager daemon.



## 5.14 License Manager Utilities (i.e. Kill Unused License Check-Outs)

FLEXIm provides a number of convenient utilities for license management. A complete description of the utilities is available from <http://www.macrovision.com>. The file `lmutil.exe` contains the utilities and is included on the GT-SUITE installer at `gti\flexlm\*.zip` or `*.z` and may be in the local FLEXIm directory.

Anyone who has access to check out licenses from the license server may use the utilities. The FLEXIm administrator has the option to prevent others from using the utilities, but this is not part of the standard installation procedure and no special network or read/write permissions are required.

The `lmutil.exe` file is run from a command prompt. To display a list of the options and the syntax, type:

```
lmutil -h
```

To see options for a subcommand, for example the `lmstat` subcommand, type:

```
lmutil lmstat -h
```

The most frequently used utility is the "status" utility, which lists which licenses are checked out by whom. To view all active GT-SUITE licenses for specific license file, type:

```
lmutil lmstat -c license.dat
```

To view all active licenses for all license servers, type:

```
lmutil lmstat -a
```

It will generate output similar to the following:

```
"GTgui" v740, vendor: GTISOFT floating license
```

```
username computerID /dev/pts/0 (v730) (serverID/PORT HANDLE), start Fri  
1/25 13:37
```

Another option allows one to kill any of the license processes listed by the status command. This utility may be necessary if a computer crashes while a simulation is running and the license is not automatically freed up. (The whole computer must crash for this problem to occur. If a simulation itself fails, the license will be released properly.) However, this option should be used with discretion or one may accidentally remove a colleague's license. To kill a license process type the following command replacing `serverID`, `PORT` and `HANDLE` with the values from the `lmstat` report:

```
lmutil lmremove -c license.dat -h GTgui serverID PORT HANDLE
```

## 5.15 Troubleshooting FLEXIm Licensing

There is a utility for **automated troubleshooting of licensing errors**. To run it launch on PC double-click %GTIHOME%\bin\gtlicense.bat on all other platforms launch \$GTIHOME/bin/gtlicense

- I. **Verify the environment variables.** GTISOFT\_LICENSE\_FILE must be set to <port>@<license server>. Where <port> is the FLEXIm port which is 27005 by default and <license server> is the host name of the computer serving the license (e.g. 27005@myServer). See the section Environment Variables and Path **Environment Variables and Path** for instructions on how to inspect and set environment variables.
- II. **Verify that network communications are working properly.** This step should be performed on all systems, even on local license servers.
  - a. Open a dos window or a shell. On some Windows systems, this can be done from Start → Accessories → Command prompt. On others by Start → Run → "cmd".
  - b. Type: ping <license server>. Where <license sever> is the host name of the license server.
  - c. If there was not a reply, the network is not set up properly or the host name is incorrect. Disable any personal firewall which may be active and try again. Please discuss this with your network administrator.
  - d. If there was a reply, attempt to restart GT-ISE.
  - e. The reply from ping does not necessarily mean that the client can communicate with the server. If you have a firewall on your machine or if there may be a firewall between your machine and the server, please see the section **Firewalls & Licensing** section under **GT-SUITE Floating Licenses (FLEXIm)**.
  - f. If this fails, send a screen shot of the error, the FLEXIm debug log and the license.dat to [support@gtisoft.com](mailto:support@gtisoft.com). You may need to get the debug log and the license.dat from your network administrator.
- III. **Verify the status of the FLEXIm server.** If the license server is local or you have access to the server, perform the following instructions on the license server.
  - a. Look for a FLEXIm directory. This is typically installed in the %GTIHOME%\flexIm directory. If it does not exist anywhere on the system, reinstall and select the "FLEXIm Only" option.
  - b. Verify the hardlock is working.
    - i. Make sure the hardlock is attached to the computer.
    - ii. If the hardlock is on the parallel port and there are any other devices attached to the parallel port, temporarily remove them.
    - iii. Open a dos window or a shell. On some Windows systems, this can be done from Start → Accessories → Command prompt. On others by Start → Run → "cmd"
    - iv. Change to the FLEXIm directory. Typically: cd c:\flexIm.
    - v. Type getid

- vi. This should return the name on the hardlock. If not proceed to the section on "Troubleshooting a Hardlock"
- c. PC Only
  - i. Open Imtools. This can be done from Start → Programs → GT Applications Group → FLEXIm → Imtools or by launching the executable from the FLEXIm directory.
  - ii. Make sure that there are not any other products on this machine which use FLEXIm before continuing. If there are, make sure that it is ok to shut down the server.
  - iii. Go to the "Config Services" tab and make sure that all the fields cells are properly filled in and pointing to the FLEXIm directory. When creating a new service, make sure to name the service before editing any of the fields. If the fields are edited first, this can result in an error message.
  - iv. If you would like the license server to automatically start whenever the computer is booted, check both of the boxes at the bottom of the window.
  - v. Go to the "Start Stop Reread" tab.
  - vi. Stop the server, and ignore any messages.
  - vii. Start the server. This should display the message "Server Start Successful" in the lower part of the window. If a windows error message that says "error 5 – access denied" is displayed, this indicates that something was not input correctly in the "Config Services" tab in Imtools. Verify that all paths and files are valid and restart.
- d. Linux Only
  - i. Open a shell and change to the FLEXIm directory. Typically: `cd $GTIHOME/flexIm`
  - ii. Make sure that there are not any other products on this machine which use FLEXIm before continuing. If there are, make sure that it is ok to shut down the server.
  - iii. Type: `Imutil lmdown -c license.dat`
  - iv. Verify that the license.dat file is in the same directory and you have write permissions to the directory.
  - v. It is not recommended to perform this step as root.  
Type: `Imgrd -c license.dat -l gtilog.log`
  - vi. If you would like the license server to automatically when the system boots, see the section **Starting the License Manager Automatically on Linux**.
- e. Try to check out a license by starting GT-ISE on the client computer.
- f. View the file gtilog.log from the FLEXIm directory and look for errors
  - i. ERROR\_HL\_UNKNOWN should also produce a line which contains "hostid is GTI\_ID=", this indicates that the hardlock is not functioning properly. Proceed to the section on "Troubleshooting a Hardlock"
  - ii. ERROR\_HL\_TAMPERED this indicates that the time on the system has been modified or the hardlock has failed. The hardlock must be replaced. Please email [support@gtisoft.com](mailto:support@gtisoft.com)
- g. If the system is still not working, please email support and include all the information requested in the "Contacting Support" section.

IV. **FLEXIm fails to start when using "star server at power up"**. If the FLEXIm server is set to automatically start but fails do so and issuing "stop" & "start" from Imtools successfully starts

the server, the FLEXlm server may be starting before the hardlock driver has started. This can be corrected by installing FLEXlm from the installer or issuing the following commands in a command prompt in the FLEXlm directory:

a. Uninstall Old Services:

**installs -r -n "GTISOFT License Service"**

b. Install New Services:

**installs -c Path\_to\_license.dat -e Path\_to\_lmgrd.exe -l Path\_to\_gtilog.log**

Note: the service name "GTISOFT License Service" is the default service name set up by the installer. If this is not the service name which you are using, please enter the correct name accordingly. Also, for "Path\_to\_" please specify the full path for the respective items.

V. **Using remote location servers over long distances.** If the client machine is attempting to connect to the FLEXlm server from a remote location, the FLEXlm server may time out before the license was successfully checked out. When this occurs, it will appear to the client as if the server is not available. This can occur when the communication is over a long distance (like across an ocean) and takes longer than the default timeout period. This can be corrected by setting the following environment variable on the client machine to increase the timeout period:

a. FLEXLM\_TIMEOUT = 1500000000 (this represents 1,500,000,000 microseconds or 25 minutes)

VI. **Licenses not properly returned to FLEXlm server.** If the network connection between the FLEXlm server and the client machine is unexpectedly lost while a license was checked out, the license that was being used may not be successfully checked back in. This could result in a license being unavailable for a period of time, typically 2 hours, and has been known to occur when a network is down or possibly with wireless networks. To correct this problem the following changes can be made on the FLEXlm server machine:

a. Create an option file (example below) called 'GTISOFT.opt'. The file should be a text file and contain information similar to the following. Note that the hardwired minimum set by Flexlm/Flexnet is 900 seconds so if the number is set less than 900 it will be ignored and 900 will be used. The number given is in units of seconds. The default is 7200 sec (2 hours).

```
TIMEOUT GTgui 1000
TIMEOUT GTsuite 1800
TIMEOUT GTtools 900
```

b. Modify the vendor line in the license.dat file by adding the path and filename to the \*.opt file. The only change to the line is the addition of the options file name and directory path. If the options file is in the same directory as the license file then the directory path does not need to be given. The vendor line may appear similar to this:

VENDOR GTISOFT GTISOFT.exe options=GTISOFT.opt

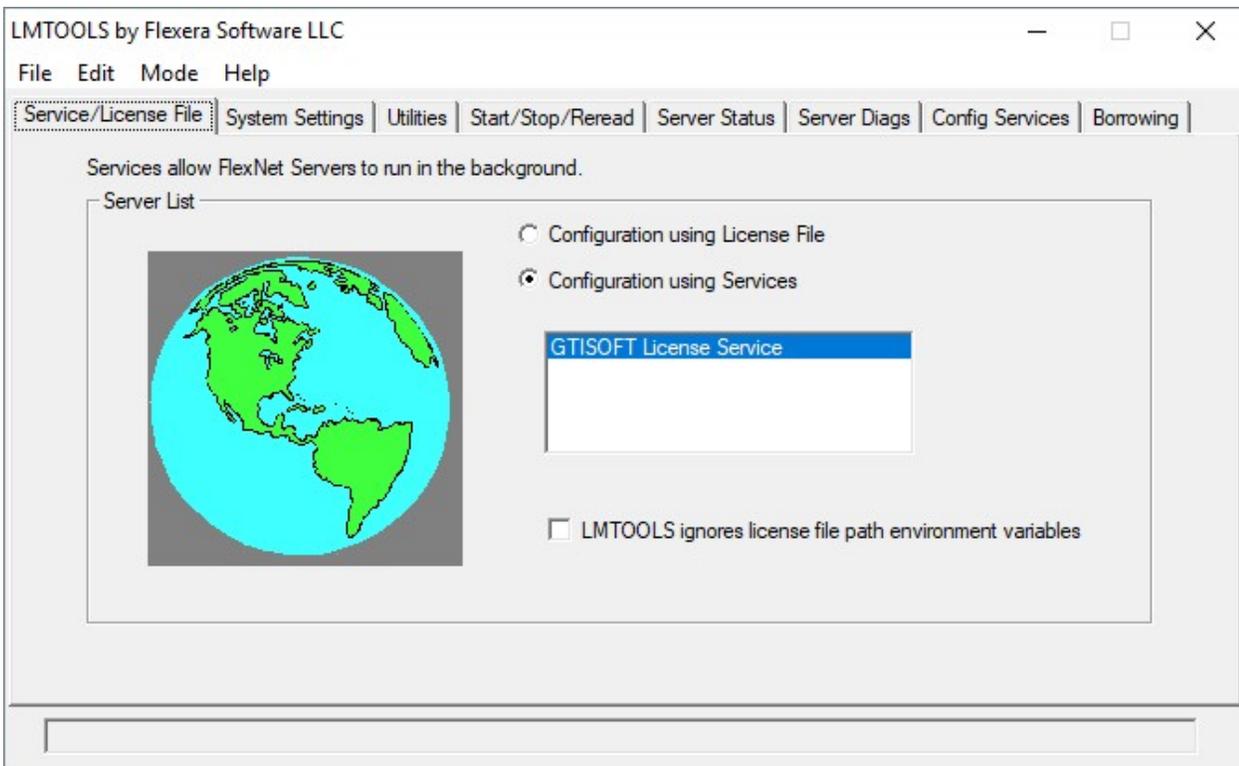
- c. Stop and Start the license server. Do not use reread. It will not reread the license file correctly. If it works correctly the following messages will be visible in the license server log file:

(GTISOFT) Using options file: "GTISOFT.opt"

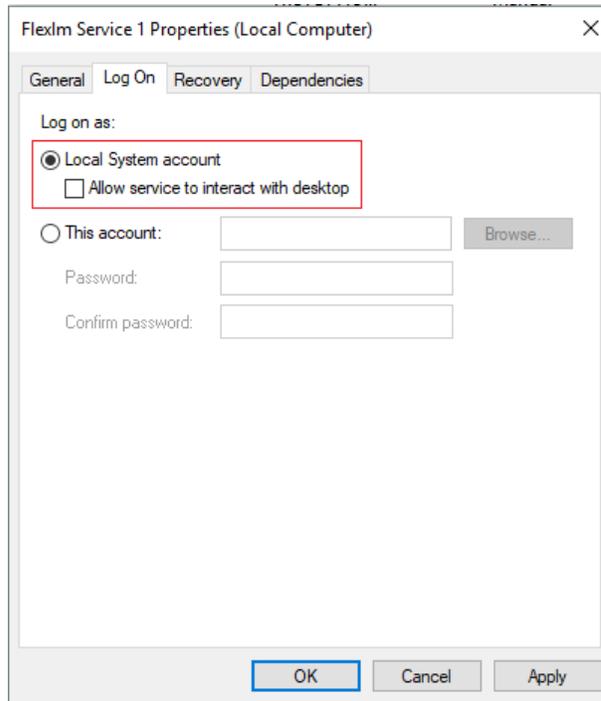
(GTISOFT) FEATURE GTgui INACTIVITY TIMEOUT set to 1000 seconds  
 (GTISOFT) FEATURE GTsuite INACTIVITY TIMEOUT set to 1800 seconds  
 (GTISOFT) FEATURE GTtools INACTIVITY TIMEOUT set to 900 seconds

**VII.Windows "GTISOFT License Service" created using Lmtools will not start.** Lmgrd installed as a windows service by Lmtools is now configured with LocalService privilege instead of LocalSystem privilege. LocalService does not by default have sufficient privilege to write the server debug log to Windows Program Files or Users directories.

- a. Open a dos window or a shell. On some Windows systems, this can be done from Start → Accessories → Command prompt. On others by Start → Run → "cmd"
- b. Type: services.msc
- c. Find the service created by Lmtools.



- d. Right-click on the service and select Properties.
- e. In the Log On tab, change Log on as: to 'Local System account', and click apply.



- f. Restart the license service using Imtools.

When contacting Gamma Technologies for assistance with FLEXIm licensing problems, please include the following information with your e-mail:

1. A copy of the complete FLEXIm debug log file. Include the file for all three servers, when using a triple redundant server. Make a copy of this file before restarting the license server, because the FLEXIm software will erase the existing file when the server is restarted.
2. The error message that is written on the client computer.
3. A copy of the license file (while a copy is on file at Gamma Technologies, this is needed to make sure that the correct one is used).
4. The command used to start the license server.

## 5.16 Hardlocks (Dongles)

HASP hardlocks are issued for FLEXIm license servers used on Windows and LINUX operating systems.

The HASP hardlock requires drivers, which should install automatically if the FLEXIm files are installed from the installer, however if needed the drivers can be installed manually (see *PC Hardlock Driver Installation* or *Linux Hardlock Driver Installation* below for more information).

A notable limitation of the hardlock is that since it is attached to a USB port, the port must be working and receive electrical power for the hardlock to function correctly. If the power to the USB port is disrupted, the hardlock will lose connection with the computer, and the license server will stop. GT-SUITE will not work again until the license server has been restarted (see *Controlling the License Server, Graphical Tool (PC only)* or *Controlling the License Server, Command Line (all platforms)* for instructions for starting the license server).

There are two common situations that will cause the power problem to occur. The first is hibernate, standby, or sleep mode, which are power saving modes, commonly used on laptops to save battery power. These modes will cut power to the USB ports. The second situation is if the hardlock is connected to a USB port on the monitor. If the computer is set to turn off the monitor after a certain idle period, this will cut power to the USB ports on the monitor. We recommend disabling hibernate/standby/sleep modes and the "turn off monitor" feature (if using monitor USB port) when using GT-SUITE. In Windows, the power management settings can be accessed from the screen saver settings.

### 5.16.1 PC Hardlock Driver Installation

The hardlock driver should be installed by the installation program, but the manual method is listed below. Please see the section **Troubleshooting a Hardlock** if necessary. To install the driver a copy of `haspdinst.exe` (old) or `HASPUUserSetup.exe` (new) must be located. If FLEXIm has been installed on the machine a copy of the file will be in the FLEXIm installation directory, which is typically `%GTIHOME%\flexIm`.

If `HASPUUserSetup.exe` is located in the `flexIm` directory, simply double-click on the file to launch the HASP graphical user interface, which will install the hardlock driver.

If `haspdinst.exe` is located in the `flexIm` directory, open a command prompt window and change the directory to the `flexIm` directory by typing something similar to:

```
cd %GTIHOME%\flexIm
```

Then install the driver by typing:

```
haspdinst -install
```

### 5.16.2 Linux Hardlock Driver Installation

The hardlock driver should be installed by the installation program, but the manual method is listed below. Please see the section **Troubleshooting Hardlocks** if necessary. In order for the hardlock to work, a daemon (aksusbd) must be loaded. This section assumes that the flexlm directory and files were created and uncompressed by the installation program. Alternatively, the appropriate file for the platform from may be copied from the directory /licensing on the installer. Previous drivers should be uninstalled before an attempt to install.

For **USB** hard locks, install the rpm as root by typing the following from the FLEXlm directory:

```
rpm -i aksusbd-*.rpm
```

To check the version of the hardlock driver that is installed, to verify correct installation run the following command:

```
rpm -qa | grep aksusb
```

**SUSE License Server** - The drivers depend on a USB setting that is not enabled by default on SuSE 10.3

(and some later builds of 10.2). Please see the 'SuSE License Server' heading in the [Supported Platforms for GT-SUITE and the License Server](#) section.

### 5.16.3 Troubleshooting Hardlocks

- I. Make sure the hardlock is attached to the computer.
- II. Open a dos window or shell. On some Windows systems, this can be done from Start → Accessories → Command prompt. On others by Start → Run → cmd
- III. Enter the following:

```
cd %GTIHOME%\bin (for PC)
cd $GTIHOME/bin (for Linux)
```
- IV. Type: getid  
If the getid command is not found, change directory to the license server installation directory, typically C:\GTI\flexlm, and try again.
- V. If this returns the name on the hardlock and says status is okay, it is installed properly. Quit here.
- VI. **SUSE License Server** - The drivers depend on a USB setting that is not enabled by default on SuSE 10.3 (and some later builds of 10.2). Please see the 'SuSE License Server' heading in the [Supported Platforms for GT-SUITE and the License Server](#) section
- VII. Remove and Reinstall the hardlock driver. See the appropriate Hardlock Driver Installation section (rpm -e \*.rpm).
- VIII. Check again to see if getid returns the correct hardlock ID and status.

- IX. PC ONLY: If the hardlock is a USB type and if it may have been connected to the computer before GT-SUITE was installed perform the following steps. This situation is usually indicated by the red light on the hard lock not being lit.
- a. Remove the USB hardlock driver
    - i. Right Click on My Computer
    - ii. Select Properties, Hardware, Device Manager
    - iii. Expand the USB devices and right click on the "Aladdin USB Key" and select "Uninstall"
    - iv. Remove the hard lock
    - v. Go back to the command prompt, change directory to the license server installation directory, typically C:\GTI\flexlm, and type: `haspdinst -install` for HASPUserSetup -i for 7/8/10
    - vi. Reconnect the hardlock.
    - vii. The red light should now be on.
- X. Verify that the USB port where the hardlock is functioning by removing the hardlock and inserting a flash disk into the same port. Try to access the files on the flash disk.
- XI. Make sure that the correct port is enabled in the computer's BIOS. This step may be harmful to your computer if not done properly. Do not attempt this if you are not qualified.
- XII. For detailed technical information regarding HASP hardlocks please visit <http://www.aladdin.com/support/hasp/enduser.aspx>

## 6 Contacting GT Support

If you are not able to resolve the problem by attempting the steps outlined in this document, please email [support@gtisoft.com](mailto:support@gtisoft.com) and include items listed below. These items will help us to resolve the problem quickly.

1. A screen shot of message when trying to start GT-ISE
2. The version and build number of the client software. This can be determined from Help → About in GT-ISE or from the top of a \*.out file from a recently run model.
3. If a \*.out file is available which illustrates the problem, please send a copy of it.
4. If the problem is due to licensing on a client machine it may be beneficial to attempt to run the solver from the command prompt and send a copy of the \*.out file created. This can be done by opening a command prompt and typing the commands below to run an example model.  
(see \* below for instructions on how to open a command prompt)  
`cd %GTIHOME%\v*\examples\Engine_Performance\SI_4cyl\` (PC only)  
`cd $GTIHOME/v*/examples/Engine_Performance/SI_4cyl/` (Linux only)  
`gtpower SI_4cyl.gtm`

5. Send a copy of the results from gtdiag. To do this, open a command prompt<sup>\*</sup> and type the text below. Make sure that the file gtdiag\*.out has information in it and send a copy.

PC Command: gtdiag.exe gtdiag.out

Linux Command: gtdiag.sh

6. For FLEXlm licensing, please include the FLEXlm debug log and a copy of the license.dat file.

<sup>\*</sup> - To open a command prompt on some Windows systems, this can be done from Start → Accessories → Command prompt. On others by Start → Run → "cmd".

## 7 Uninstalling GT-SUITE

To remove the installation of GT-SUITE, launch the program listed below and follow the onscreen instructions. Note: the current user must have permissions to delete the program files, also clean up might not be complete if older versions are also installed, as the installation program has changed in v2018.

### **Windows:**

Use the "Add or Remove Programs" option,  
or launch %GTIHOME%\Uninstall\Uninstall\_GT-SUITE.exe

### **Linux:**

\$GTIHOME/Uninstall/Uninstall\_GT-SUITE

## 7.1 Uninstalling a Single Version

Since common files are shared between versions, the uninstaller cannot be used to remove a single version. If you wish to remove a single version, navigate to your %GTIHOME% folder and delete *only* the folder for the version you wish to uninstall.

For example, if you had several versions installed and wanted to uninstall v7.5.0 only, you would right-click the v7.5.0 folder and then select "Delete." No other folders should be deleted.

