

Supported Platforms and Hardware Requirements & Recommendations

GT-SUITE V2016

This document is intended to inform potential customers and current users about what software and hardware is needed to run GT-SUITE. The first section on Supported Platforms covers what platform the GT-SUITE GUI and solver will run on, as well as what platforms may be used as a license server for GT-SUITE. The second section on Hardware Recommendations gives typical recommendations for what to consider when buying a new computer for a GT-SUITE workstation. The third section on Minimum System Requirements presents general information about what hardware is required to run the software on each operating system. Finally the fourth section on Video Card Support explains recommended and required video card hardware and drivers, and a troubleshooting guide for diagnosing and fixing video card problems.

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1.1 Supported Platforms for GT-SUITE and the License Server

Below is the most recent list of supported platforms for GT-SUITE and the License Server at the time that this build was released. If a platform is listed as "Yes" for GT-SUITE, but "No" for the License Server, then it cannot be the license server, and must checkout a license from a supported License Server platform. We do not support GT-SUITE or the license server on a virtual machine.

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 2016	License Server *-See OS specific notes below table for details
Windows	Windows	2008 R2 Server, Vista, 7, 8, 10	Any x86* which has SSE2 support * - Must be 64 bit for Linux	Yes (See "Services on Vista/Windows 7/8/10" below)	Yes*
Linux See below for required patches	RHEL /Centos	5.8 -7.2 *		Yes – * See "Linux Minimum System" below for future version support	Yes*
	SuSE SuSE	10.3 -13.3 *		Yes – * See "Linux Minimum System" below for future version support	Yes*
	SuSE Enterprise Server	11, 12 *		Yes – * See "Linux Minimum System" below for future version support	Yes*
License Server Only	Any above	-		N/A	Yes*
	UNIX	-	-	NOT SUPPORTED	NOT SUPPORTED
<u>Virtual Machines</u>	Any	-	-	Unsupported, but might work	NOT SUPPORTED

1.1.1 Windows Operating Systems Notes

Windows XP - Windows XP is no longer officially supported in v7.5+. GT-SUITE may still be installed on XP, but it is no longer tested nor fully supported by GT.

Windows Vista - Windows Vista will no longer be supported starting in v2018. It will continue to be supported through v2017.

Windows 8 Licensing – Older USB dongles which are 52mm in length will not work with Windows 8. Please contact support@gtisoftware.com for a replacement dongle.

Windows 8 GT-SPACECLAIM - GT- SPACECLAIM will no longer be supported on Windows 8 starting in v2018. However, it might work in Windows 8 and it is supported on Windows 8.1.

GT Services - All Windows - An account with administrator rights must be used to install either of the following optional services on Vista and Windows 7/8/10: 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.

GT-SPACECLAIM 32-bit - Starting in v2017 GT-SPACECLAIM will be only 64 bit. A 32 bit version will not be provided, but it can be installed from older versions if required.

1.1.2 Linux Operating Systems General Notes

CentOS is also applicable where RHEL is noted below.

Linux Minimum System - Starting in v2018, the minimum system requirements will be RHEL6.5/SLES12/openSUSE11.3. All platforms which are currently supported will continue to be supported through the end of v2017.

Linux 32-bit compatibility libs - Recent 64-bit versions of Linux may not install the necessary 32-bit libraries to run GT. The following 32-bit (i686) libraries will need to be installed. These can be installed using the yum utility for RHEL or through YaST software management on SLES.

- glibc
- libstdc++-4.4*.i686 (This will install the libstdc++.so.6 for i686).
- libXext - This will also install the dependencies libX11, libXau, and libxcb for i686.
- libXtst - This will also install the dependency libXi for i686.
- libXxf86vm
- libXinerama
- libXrender

Linux libstdc - All Linux platforms must have /usr/lib/libstdc++.so.6 installed to run v7.3 and later. Additionally, libstdc++.so.5 is required to run version v7.2 or older. Please see the older documentation for details if necessary.

Linux 3D Applications - All 3D applications (GEM3D, COOL3D, GT-ISE 3D viewer, GT-POST 3D viewer, etc) require glibc 2.5 or higher on Linux operating systems.

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.

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.

OpenSUSE 11.3 - Linking in GT-ISE may not work on this platform due to a problem in the JAVA implementation. A work around for this is to disable the automatic panning when a link is pulled outside the map. This can be disabled by adding the entry "gti.disableDragLink=true" under the heading [GUI-gtise default] in the file */v*/GTsuite/bin/product.cfg.

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 reproducibile enough to have been corrected.

1.1.3 Linux License Server Specific Notes

General Linux License Servers: To run the license server on a Linux machine it must conform to LSB 3.0+ (Linux standard base)

OpenSUSE 11.2 64 bit - The 32 bit hardlock driver does not work correctly on OpenSUSE 11.2 64 bit.

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). There is a work-around, but there is a security risk, please see below.

To mount the /proc/bus/usb for the Aladdin drivers, change the mount line in /etc/fstab similar to that shown below. Then run `mount -a`. Doing this may be a security risk, and as such we cannot officially recommend it.

```
#The original line might look like the following:
#usbfs          /proc/bus/usb  usbfs  noauto          0 0
#
#Newer systems use "devmode" while older ones still use "mode". Please try one of the
# following lines. If it gives a warning when mounting, unmount it and then use the other option.
#usbfs          /proc/bus/usb  usbfs  mode=0666       0 0
usbfs           /proc/bus/usb  usbfs  devmode=0666    0 0
```

If the above mount was not present when the drivers were installed, remove and reinstall the drivers. This can be done by running `rpm -e aksusbd-*` and `rpm -i aksusbd-*` from the flexlm folder.

The mount above requires that the kernel has the option CONFIG_USB_DEVICEFS enabled. If your kernel does not have this enabled, you must either update to the latest kernel, or re-compile with this option enabled. (It was completely disabled due to security concerns in a few builds of 10.2 & 10.3) See the link below for full details:

https://bugzilla.novell.com/show_bug.cgi?id=210899#c47

1.2 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 January 2015. We are not endorsing these products, but rather they are provided as a reference. Our desktops and cluster machines are running Intel Core i7 4790 @ 3.40 GHz (Quad-Core) with 16 GB of RAM, and our laptops are running Intel Core i7 4800MQ @ 2.7 GHz (Quad-Core). 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 v7.5, GT-SUITE provides both 32 and 64 bit executables for Windows installations, and 64 bit only for Linux installations. Versions previous to v7.4 of GT-SUITE only had a 32 bit executable which would run on both 32 and 64 bit systems. When purchasing a new system 64 bit is the preferred choice for both the hardware and the OS, as this allows for more system memory.

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. 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. Please note that a 32-bit operating system is limited to 4 GB of RAM, but more can be installed for 64 bit systems.

Hard Disk: GT-SUITE does not rely heavily on I/O, so the disk choice has a minimal effect.

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. Monitors are cheap, larger is better, and dual monitors are recommended for maximum productivity.

1.3 Minimum System Requirements (PC and UNIX)

This section describes the bare minimum. Please see the section above which describes the specifications for good performance. All systems must have 1280x768 or more screen resolution, an x86 processor with the SSE2 instruction set (P4+ / Athlon 64+), 5GB Free Disk Space (plus 5 GB of temp storage used during the install) , DVD-ROM Drive, and 8 GB RAM. The computation time is highly dependent on the CPU and the above is simply a minimum which has the necessary instruction set to run. It is highly recommended that a better CPU is used. Please see the section [Hardware Recommendations \(Which computer should I buy?\)](#) for recommendations. Additionally, to use the 3D graphical features, the system must have a modestly powerful video card. Platform and OS requirements for coupling GT-SUITE with CFD codes are shown later in this manual.

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. (All can be made available C with a Fortran wrapper. We hope to provide more C functions natively in the next version). For Fortran, the compiler required is Intel version 12 or higher & Microsoft Visual Studio 2010 on PC; and for Linux is Intel Fortran compiler version 12 or higher (ifort/icpc/icc). For C, the compiler can be: Microsoft Visual Studio 2010 or later, GCC 4.1 or later

1.4 Virtual Machines

Virtual machines of any sort are officially unsupported. We do not plan to support virtualization as there are too many possibilities. Furthermore, if the visualization product is working correctly, there should not be any issues over those from the base operating system. GT-SUITE clients (GT-ISE, solver, GT-POST, etc...) might run on virtual machines, but Gamma Technologies will not be able to assist with issues specific to a virtual machine.

A license server will require the use of a USB hardlock and as such a license server should be run on physical hardware, not on a virtual machine.

1.5 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. 256 MB 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 1.3+
- OpenGL 2.0+ (much of the 3D capability will function properly with OpenGL 1.2+, but some of the more advanced rendering capabilities will not be available without OpenGL 2.0.)
- DirectX 9c (for GT-SpaceClaim)
- Shader Model 3.0 (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.

1.5.1 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.

1.5.2 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 1.3 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, Exceed, and Exceed PowerSuite. For several, the base version that is available did not meet the minimum graphics driver requirements specified above and as such 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.

1.5.3 Testing the video card

The script `gttestj3d`, located in the `$GTIHOME/bin` directory, may be used to test whether OpenGL and GLX is 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).

1.5.4 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.

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.

1.6 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.

1.6.1 Coupling GT-SUITE with CFD Codes

CAUTION: GT-SUITE should be re-downloaded and re-installed if build 1 of v2016 GT-SUITE was downloaded between January 3rd through January 8th, 2016. The pre-defined 'CFDSpeciesMap' lump_products and track_products reference objects incorrectly had the left-side activation checkbox unchecked. CFD coupling models referencing these objects will malfunction and may result in a simulation failure.

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 (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 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 v2016	GT-SUITE v7.5	GT-SUITE v7.4
STAR-CCM+	v11.02 v10.06† v10.04† v10.02† v9.06‡† v9.04‡† v9.02† v8.06† v8.04† v8.02†	v10.02 v9.06‡ v9.04‡ v9.02 v8.06 v8.04 v8.02	v9.04‡ v9.02 v8.06 v8.04 v8.02 v7.06
STAR-CD	v4.24 v4.22	v4.24 v4.22 v4.20 ^L v4.18 ^L v4.16 ^L v4.14	v4.20 ^L v4.18 ^L v4.16 ^L v4.14
CONVERGE™	v2.3.9 v2.2 (Linux 052915) (Windows 092415) v2.0	v2.2 (Linux 082114) (Windows 010915) v2.1 (Linux 081114)	v2.1 (Linux 013014) (Windows 080913) v2.0

	<i>(Linux 090214)</i>	<i>(Windows 080913) v2.0 (Linux 06112112)</i>	<i>(Linux 112112) (Windows 120412)</i>
FLUENT	R16.2 R16.1 R16.0 R15.0 R14.5 R14.0 <i>(R13.0 SP2 only)*</i> R12.1	R16.0 R15.0 R14.5 R14.0 <i>(R13.0 SP2 only)*</i> R12.1	R15.0 R14.5 R14.0 <i>(R13.0 SP2 only)*</i> R12.1 R12.0
OpenFOAM (Linux only)	v1.4.1-dev	v1.4.1-dev	v1.4.1-dev
FIRE**		v2013 v2010.1	v2013 v2010.1
SC/Tetra (SCRYU/Tetra® in Japan)	v12 (July 2015 update module)	v12 (July 2015 update module)	v12 (July 2015 update module)

**Verified Compatibility: CFD Cylinder coupling using 'EngCylinderCFD'
and GT-SUITE/GT-POWER**

	GT-SUITE v2016	GT-SUITE v7.5	GT-SUITE v7.4
CONVERGE™	v2.0 <i>(Linux 090214)</i>	v2.0 <i>(Linux 112112)</i>	v2.0 <i>(Linux 112112)</i>

* - Due to a critical bug in the first release of FLUENT R13.0 and R13.0 SP1, GT-SUITE coupling was not supported (for all GT-SUITE versions). This is fixed for R13.0 SP2 and higher.

† - These STAR-CCM+ versions can not use the "default" option its "GT-SUITE Root" field when coupling to GT-SUITE v2016 and newer installations. This can be readily corrected with installation changes using a STAR-CCM+ macro provided courtesy of Gamma Technologies, as described in the STAR-CCM+ coupling tutorial. Execution of this macro will not be necessary for future versions of STAR-CCM+.

‡ - STAR-CCM+ v9.04 and v9.06 has been tested, but a coupled restart test using Linux OpenSUSE v12.1 resulted in a STAR-CCM+ failure without workaround (this failure was not observed with the same model when run using a RHEL 6.0 installation). With identical model setup, previous versions of STAR-CCM+ (e.g. v9.02) do not fail for coupled restart using OpenSUSE v12.1. If using OpenSUSE it is recommended to avoid using STAR-CCM+ v9.04-v9.06. We have received notice that future STAR-CCM+ v10 will not be subject to this problem.

** - Other FIRE versions are likely supported, but only compatibility with the listed versions have been verified at GT. FIRE has not been verified for GT-SUITE v7.5 build 2 or higher due to a lack of FIRE license at GT.

^L - Errors in the default installed STAR-CD STARGTPOWER plugin scripts prevent STAR-CD solvers from coupling to major release versions of GT-SUITE that are different than the default GT-SUITE version specified in %GTIHOME%\VERSIONS.TXT when using automatic port setup. The default GT-SUITE version in this file is typically the newest version of GT-SUITE installed to the specified %GTIHOME% installation. To correct, either STARGTPOWER plugin scripts need to be adapted to use a changeable GT major release flag, or the %GTIHOME%\VERSIONS.TXT file needs to be changed. These problematic plugin scripts were removed by CD-Adapco starting with STAR-CD v4.22.

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

While MPI CONVERGE™ Lite solver MPI library compatibility is not expected to be limited to particular versions of MPI libraries, a table of MPI library versions used to verify MPI CONVERGE™ Lite solvers is shown below.

Verified Compatibility: General flow CFD coupling using 'CFD CONVERGE Lite'

Platform	GT-SUITE/GT-POWER/GT-SUITE-MP v2016 MPI Library versions		
	CONVERGE™ Lite v2.3 R2	CONVERGE™ Lite v2.3	CONVERGE™ Lite v2.2 R2
64-bit Linux	(glibc 2.5+ required) OpenMPI 1.6.5 HP-MPI 02.03.00.00 MPICH 3.1.4*	(glibc 2.7+ required) OpenMPI 1.6.5 HP-MPI 02.03.00.00 MPICH 3.1.4*	(glibc 2.5+ required) OpenMPI 1.6.5 HP-MPI 02.03.00.00 MPICH2 1.2.1.2.3e16*
64-bit Windows	Microsoft MPI (HPC Pack 2012) <i>MPICH2 1.4.1p1</i>	Microsoft MPI (HPC Pack 2012) <i>MPICH2 1.4.1p1</i>	Microsoft MPI (HPC Pack 2012) <i>MPICH2 1.4.1p1</i>
32-bit Windows	Unsupported	Unsupported	MS-MPI Microsoft HPC Pack 2008 R2

* - Only single-node MPI has been verified by Gamma Technologies for these MPI libraries.

If a GT-SUITE installation is used for parallel CONVERGE™ Lite coupling, all MPI libraries must be obtained and installed separately. HP-MPI libraries can be downloaded from one's local CONVERGE™ support office. Microsoft MPI HPC Pack 2012 MS-MPI is a free redistributable available from Microsoft (as is MS-MPI HPC Pack 2008 R2, which would be needed if using Windows XP). Both MPICH2 and OpenMPI are also freely available under BSD-like licenses.

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

	GT-SUITE v2016	GT-SUITE v7.5
CONVERGE™	'CFDMechConn' (1D translational): v2.2 061915	'CFDMechConn' (1D translational): v2.2 061915

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

	GT-SUITE v2016	GT-SUITE v7.5
CONVERGE™	v2.3.9	

1.6.2 Coupling GT-SUITE with Simulink

Coupling of GT-SUITE with Simulink is currently supported for Matlab/Simulink versions 2006b to R2013a. Coupling is performed via a GT supplied S-Function Block in the Simulink model 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.

1.6.3 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 2.5 or higher.