ASCOMP
MULTIPHASE FLOW SCIENCE AND TECHNOLOGY

TransAT

Manual Series

Installation Manual on Windows - 64bit

Version 5.3.0.1

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Contents

Contents i

1 Requirements 1
- 1.1 Operating Systems . . . 1
- 1.2 Hardware Requirements . . . 1

2 Installing TransAT 5.3.0.1 on Windows 3
- 2.1 TransAT Installation . . . 3
  - 2.1.1 Step 1: Introduction . . . 3
  - 2.1.2 Step 2: License agreement . . . 3
  - 2.1.3 Step 3: Installation directory . . . 5
  - 2.1.4 Step 4: TransAT components selection . . . 6
  - 2.1.5 Step 5: Basic installation dependencies . . . 6
    - TransAT list of dependencies . . . 6
    - Dependencies check and installation . . . 7
  - 2.1.6 Step 6: Installation of TransAT modules . . . 9
  - 2.1.7 Step 7: Unit Test . . . 10
  - 2.1.8 Step 8: Log-Files and installation finalisation . . . 10
  - 2.1.9 Step 9: Visualisation Software Installation . . . 11
  - 2.1.10 Start Menu . . . 11
- 2.2 Advanced Initial Conditions Dependencies Tool . . . 12
- 2.3 TransAT 5.3.0.1 License . . . 15
  - 2.3.1 Activating the TransAT license . . . 15
- 2.4 TransAT - OLGA Coupling Requirements . . . 16
- 2.5 Troubleshooting . . . 17
  - 2.5.1 Windows SDK for Windows 7 . . . 17

References 18

Chapter 1

Requirements

1.1 Operating Systems

TransAT is supported on the following versions of Windows:

- Windows 7
- Windows 8
- Windows 10

1.2 Hardware Requirements

The hardware requirements in terms of memory and disk space depend on the problem at hand. The memory and disk space requirements increase with the number of cells in a given simulation. Likewise, they also increase with the number of activated equations and/or models in the simulation.

To illustrate this, the hardware recommendations for a simulation with a one-million-cell grid solving only for pressure and velocities are the following:

- RAM: 2 GB
- Disk space:

  per restart file: 1 GB

  per output file: ParaView 50 MB, Tecplot 100 MB

whereas the hardware recommendations for a simulation with a one-million-cell grid solving for pressure and velocities with turbulence, multiphase and phase change models activated are the following:

- RAM: 4.5 GB
- Disk space:

  per restart file: 2 GB

  per output file: ParaView 100 MB, Tecplot 150 MB

Chapter 2

Installing TransAT 5.3.0.1 on Windows

2.1 TransAT Installation

2.1.1 Step 1: Introduction

The installer starts with a welcome page as in Figure 2.1.

- Click Next >

2.1.2 Step 2: License agreement

The End User License Agreement (EULA) is displayed as in Figure 2.2 and needs to be accepted to continue the installation.

- Click I agree after reviewing the License terms

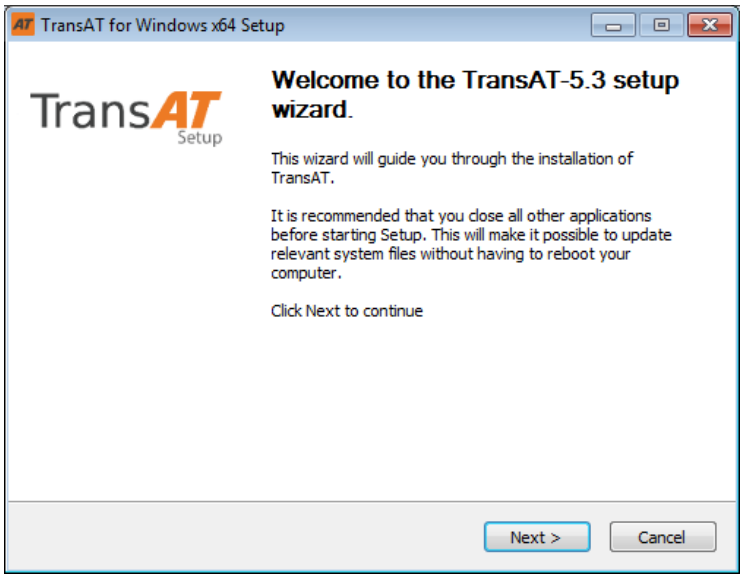

Figure 2.1: Welcome page on TransAT Installer.

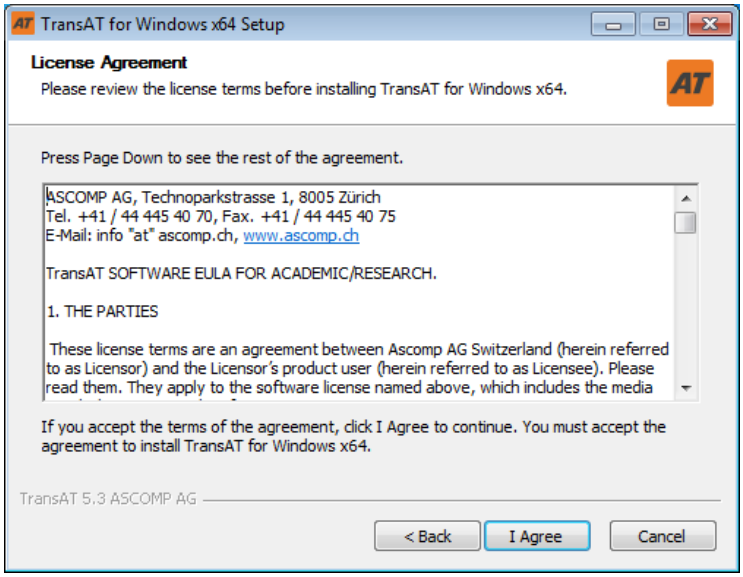

Figure 2.2: License Agreement page on TransAT Installer.

2.1.3 Step 3: Installation directory

After agreeing to the terms of the license,

- Specify the installation location of TransAT in the **Destination Folder** field using the Browse button. See Figure 2.3
- Click Next >

The Ascomp/TransATSuite-5.3.0.1 folder will be created in the specified destination folder.

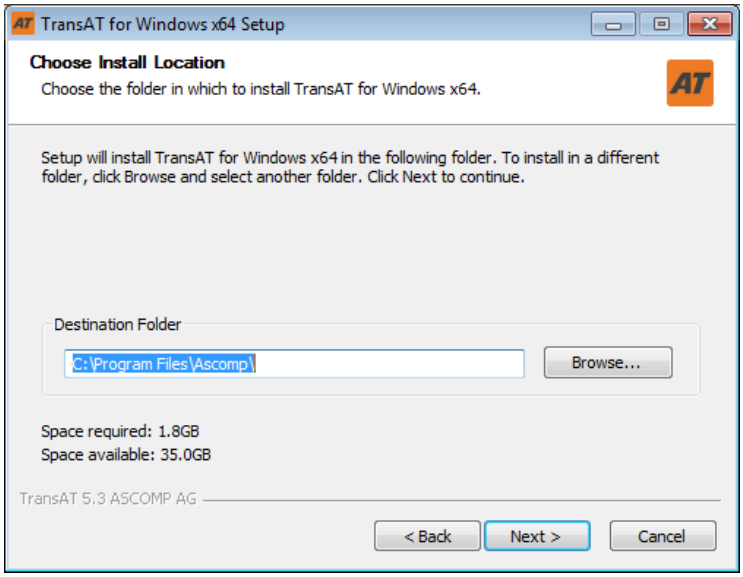

Figure 2.3: Installation directory on TransAT Installer.

2.1.4 Step 4: TransAT components selection

The following components are available:

- Tutorials
- MS-MPI Port Range Definition
- Unit Test

Tutorials The installation of the Tutorials is optional. If selected, a folder with simulation templates will be copied by the installer. See Tutorial Manual (after the installation) for more details.

MS-MPI Port Range Definition Ms-MPI Port Range Definition is an optional tool that simplifies the specifying of a range of firewall ports to be used by the TransAT solver to communicate data when running simulations in parallel. If selected, the MS-MPI Port Range Definition tool is automatically launched after the installation of the main TransAT modules.

Unit test The installation of the TransAT Unit Test tool is compulsory. It is a tool that checks whether TransAT is correctly installed. It is automatically executed at the end of the installation process.

- Click Install

2.1.5 Step 5: Basic installation dependencies

Before proceeding to the installation of the TransAT libraries, the installation status of the TransAT software dependencies are checked.

TransAT list of dependencies

The full list of dependencies with their corresponding minimal version for the basic installation of TransAT is the following:

- Python 2.7.5.
- Intel DLL package for Intel Fortran Compiler.
- Microsoft Visual C++ 2010 Redistibutable Package (x64)
- Microsoft HPC Pack 2008 R2 MS-MPI Redistributable Package

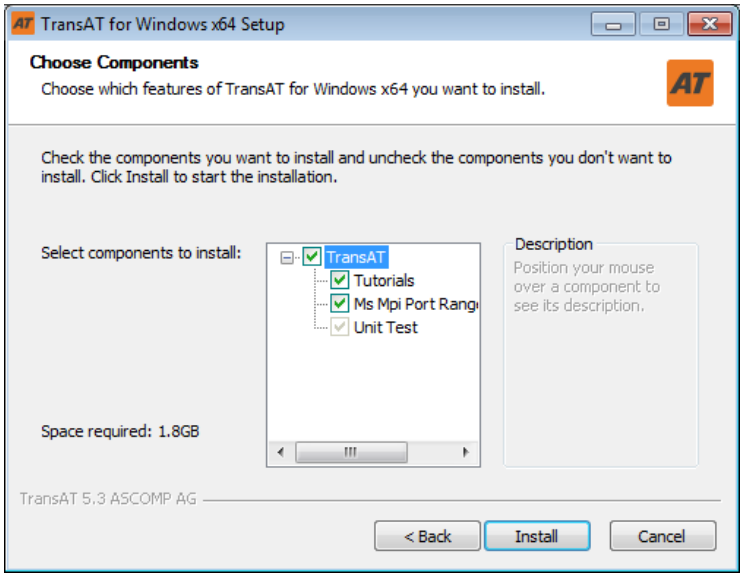

Figure 2.4: Components page on TransAT Installer.

Dependencies check and installation

The dependency check tool in the installer will automatically be launched. It will first create a list as in Figure 2.5 with the missing dependencies which must be installed for TransAT to be fully functional. Hence, the box for each of the dependencies is ticked by default for installation in the list of dependencies.

- Click Install

After clicking Install, you will be prompted to install each of the selected dependencies.

- Click Close when the installation of the Dependencies is completed

Please note: on some systems the list of dependencies is not automatically put in the foreground. Check for newly opened TransAT window in the Windows Taskbar to access it if that is the case.

Please note: If the installation of a dependency fails, an error message similar to Figure 2.6 will be displayed

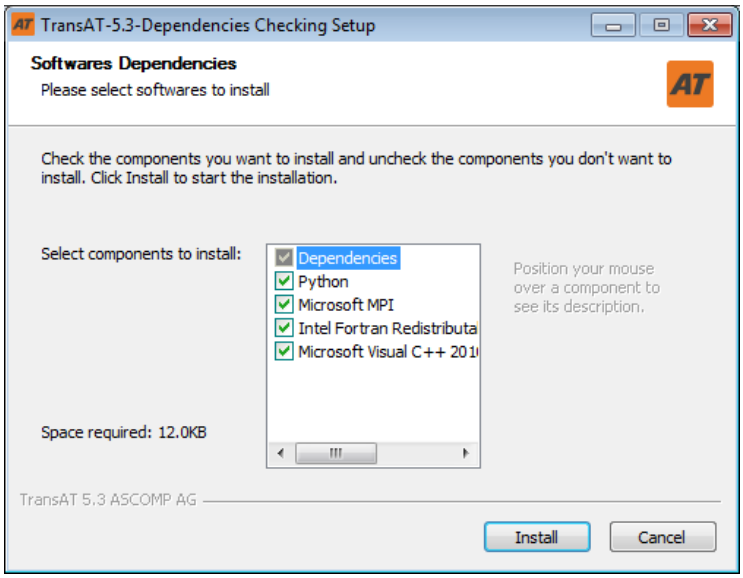

Figure 2.5: Dependencies list and installation

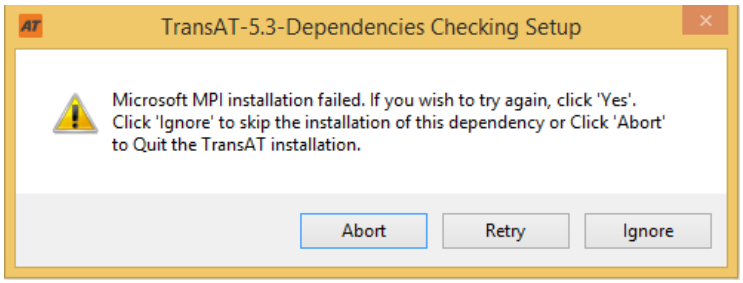

Figure 2.6: Error message after failure of dependency installation.

2.1.6 Step 6: Installation of TransAT modules

After the installation of the dependencies, the installer will install the modules selcted in Step 4. If the MS-MPI Port Range was not selected, the installer will directly skip to Step 7. Otherwise, the MS-MPI Port Range Definition tool will be executed.

In that tool, a range of ports must be specified. The range of ports specified in the tool as in Figure 2.7 are opened for the TransAT solver. By default the MS-MPI Port Range is 30000-30010, opening 11 ports and therefore allowing simulations on up to 11 processors. If the Ms-MPI Port Range option is not selected, the firewall ports will not be opened and the default Port Range will be used for the communications in the TransAT solver.

- Click Install
- Click Close once the setting of the MPI port range for TransAT is done

Note that the Ms-MPI Port Range can be changed anytime after the installation using the Ms-MPI Port Range Definition tool available in the Start Menu, under the TransAT_5.3.0.1 folder.

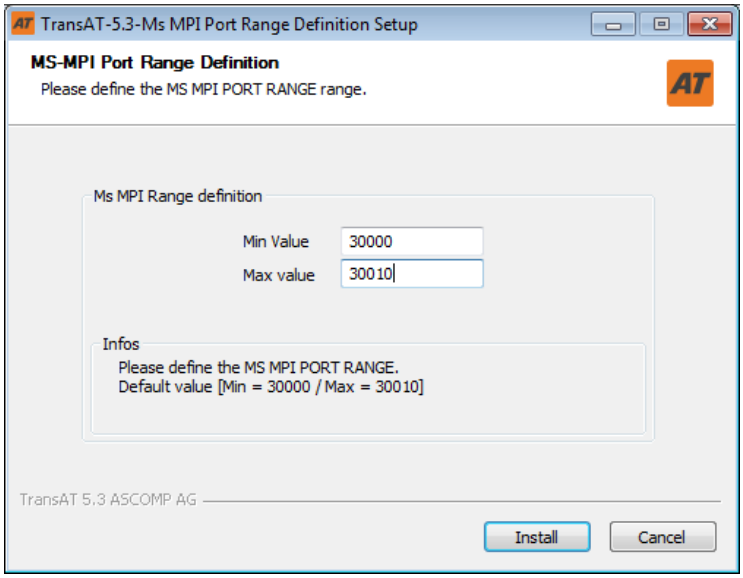

Figure 2.7: Ms-MPI Port Range Definition

2.1.7 Step 7: Unit Test

The Unit Test tool of TransAT is automatically run after the installation process of all dependencies and TransAT components is completed. It tests whether all the required components to run TransATUI (the Graphical User Interface of TransAT) and the TransAT solver are correctly installed.

Whether the unit test succeeds or fails, a message box will be displayed with the outcome of the test.

- Click OK to proceed with the finalisation of the TransAT installation.

Please note: the Unit Test may fail because some of the installed components or dependencies require the system to reboot. In that case, an error message will pop up advising to reboot the machine and re-run the Unit Test which is available as a stand-alone tool in the Start Menu.

2.1.8 Step 8: Log-Files and installation finalisation

After running the Unit Test the Log-Files Manager page is displayed. The TransAT Log-Files Manager allows to navigate through the Installation Log-Files generated. These Log-Files should be included to report installation problems on the Customer Portal.

Please note: the Log-Files Manager tool is also accessible as a stand-alone tool from the Start

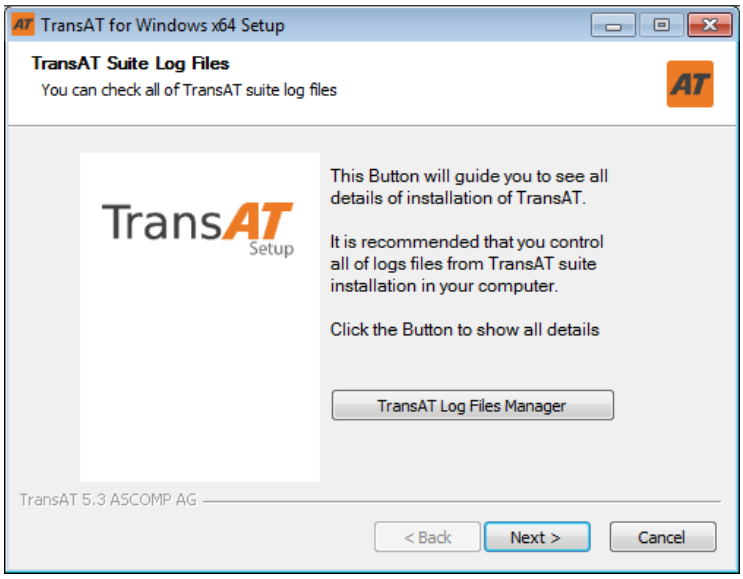

Figure 2.8: TransAT Log-Files Manager.

Menu, in the TransAT_5.3.0.1/Tools folder.

- Click Next > to go to the final page of the installer
- Click Finish to quit the installer

2.1.9 Step 9: Visualisation Software Installation

To visualise simulation results produced by TransAT, either one of ParaView or Tecplot must be installed on your machine.

ParaView is a free open source software which can be downloaded at the following link on the ParaView website where more information can be found.

Tecplot is a proprietary software for which installation and licensing information can be found on its editors' website.

2.1.10 Start Menu

Upon completion the installation of TransAT, a section in the Start Menu will be added under the TransAT_5.3.0.1 folder. The TransAT folder will contain links to the TransAT user interface and some additional TransAT tools.

2.2 Advanced Initial Conditions Dependencies Tool

To be able to get more control on the initial conditions and run user-defined functions, extra dependencies must be installed. The extra dependencies consist of:

- .NET Framework 4.5
- Microsoft SDK for Windows

The missing dependencies can be installed using the Advanced Initial Conditions Dependencies Tool which is accessible through the Start Menu (TransAT_5.3.0.1 > Tools > TransAT_5.3.0.1-Advanced Initial Conditions).

Upon execution, the Advanced Initial Conditions Dependencies Tool first checks whether the required dependencies are already installed. It will first create a list as in Figure 2.10 with the missing dependencies which must be installed for Advanced Initial Conditions to be fully functional. Hence, the box for each of the dependencies is ticked by default for installation in the list of dependencies.

Please note: Note that on top of the aforementioned dependencies, the uninstallation of the following programs may figure in the list of dependencies:

- Microsoft Visual C++ Compilers 2010 SP1 Standard - x86
- Microsoft Visual C++ Compilers 2010 SP1 Standard - x64
- Microsoft Visual C++ 2010 x86 Redistributable
- Microsoft Visual C++ 2010 x64 Redistributable

These uninstallations are required to successfully install Microsoft SDK for Windows.

- Click Install

If uninstallations are required, a message box similar to Figure 2.9 will pop-up.

- Click OK to continue with the uninstallations required to install Microsoft SDK for Windows
- Proceed with the uninstallation of the different programs

If no uninstallation is required or after the completion of the required uninstallations, you will be prompted to install each of the required dependencies for Advanced Initial Conditions.

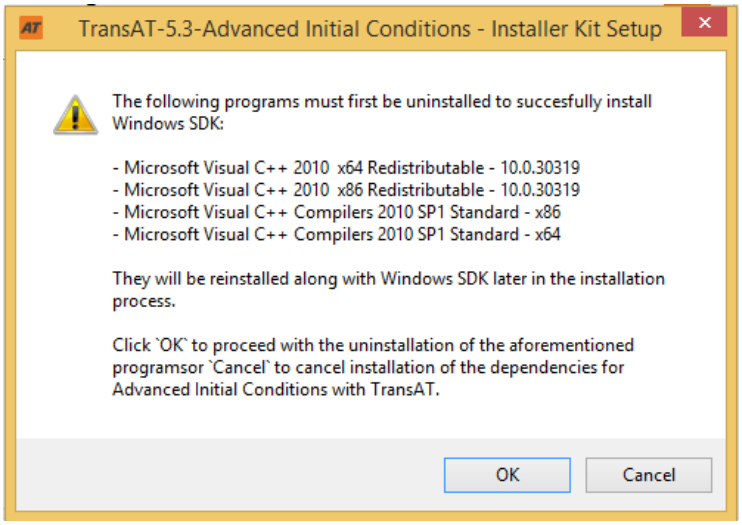

Figure 2.9: Program uninstallation pop-up message

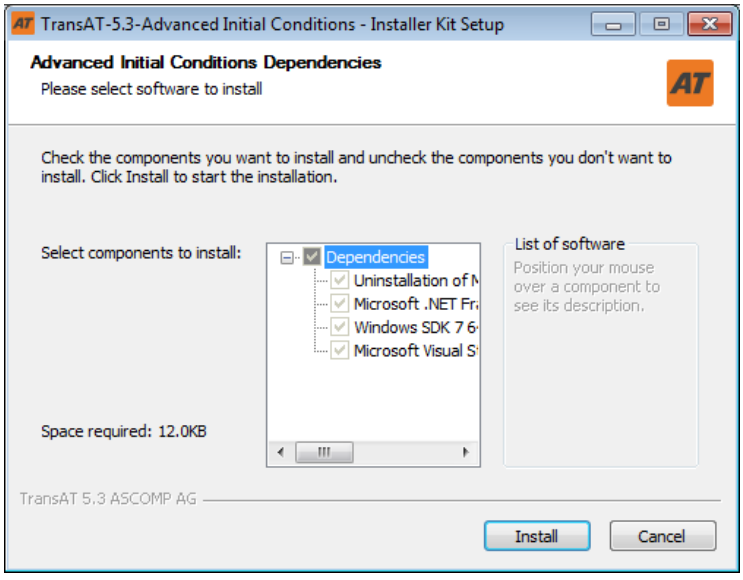

Figure 2.10: Advanced Initial Conditions Dependencies

Please note: keep the default installation settings as in Figure 2.11 when installing Microsoft SDK for Windows.

Note that the installation of the extra dependency for advanced use of TransAT may take

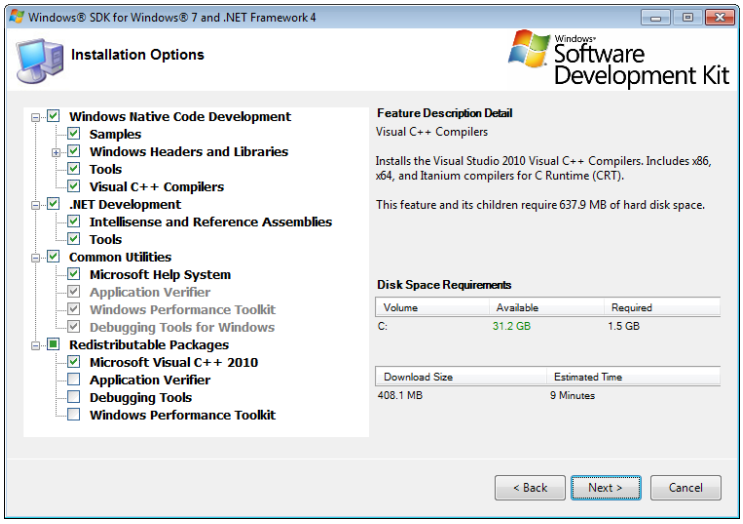

Figure 2.11: Component page of Microsoft SDK for Windows

some time as some installers are downloaded from the Web.

- Click Close when the installation of the Dependencies is completed

Please note: you must log out then log back into your machine to complete the installation of Advanced Initial Condtions and make them available in TransATUI.

2.3 TransAT 5.3.0.1 License

TransAT has a built-in demo version with simulations can be run for up to 1 hour wall time, using a maximum of 4 cores. No checkpoint/restart options are provided with the demo version.
To use the full capabilities of TransAT and get rid of the restrictions on simulation runtime and restarting options, a TransAT license needs to be acquired and activated. Depending on the contract, a restriction on the number of cores might remain.

2.3.1 Activating the TransAT license

The license file for TransAT will be sent separately by email.

- Save the license file (e.g. C:\Users\jerry\transat_jerry.lic).

Please note: the license file must be stored in a folder where the user has both the read and write permissions e.g. the user, Documents, Desktop, etc.

The TransAT License tool is accessible from the Start Menu, under the TransAT_5.3.0.1, Tools sub-folder.

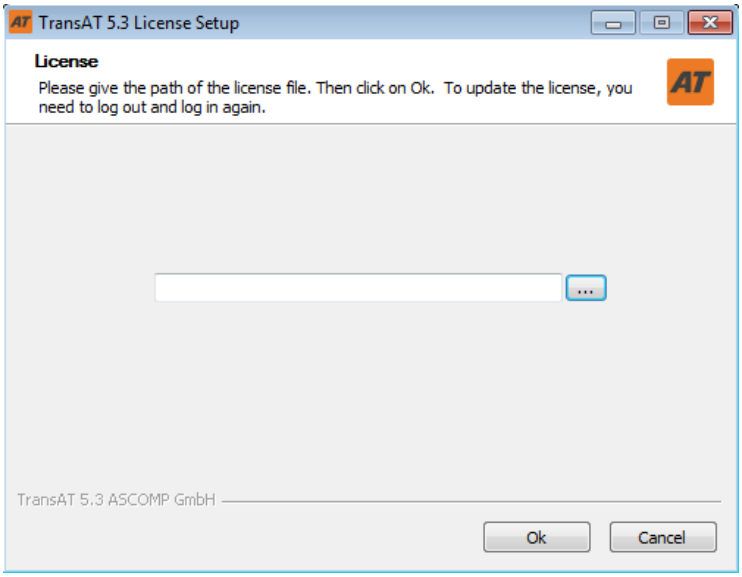

Figure 2.12: License Setup.

To set the TransAT license:

- Open the TransAT License tool

- Select the location of the license file, e.g C:\Users\jerry\transat_jerry.lic, then click Close to save the change.
- Log out then log back in to complete the activation of the license.

Note that the process is identical to update a license.

Please note: After installing TransAT and setting the license file TransAT has to be run once within a month of the creation of the license file in order to activate it.

2.4 TransAT - OLGA Coupling Requirements

The following additional requirements must be met, in order to run a TransAT-OLGA coupled simulation:

- OLGA 7.2 (supported version) installed
- OpenOPC 1.2.0 package installed

2.5 Troubleshooting

2.5.1 Windows SDK for Windows 7

On some systems, the Windows SDK installer fails for unknown reasons. When this fails, it is not possible to install Advanced Initial Conditions.

To fix this issue, Windows SDK must first be installed by hand before running the Advanced Initial Conditions dependency tool.

To install the Advanced Initial Conditions when this error occurs,

1. If installed, uninstall the Microsoft Visual C++ 2010 Redistributable packages and Microsoft Visual C++ 2010 Compilers (both x86 and x64 versions) using Control Panel > Programs > Programs and Features > Uninstall a program

2. Download the Windows SDK 7.1 installer from here then launch the installer

3. Uncheck Visual C++ Compilers and Microsoft Visual C++ 2010 in the component selection window of the SDK installer as in Figure 2.13

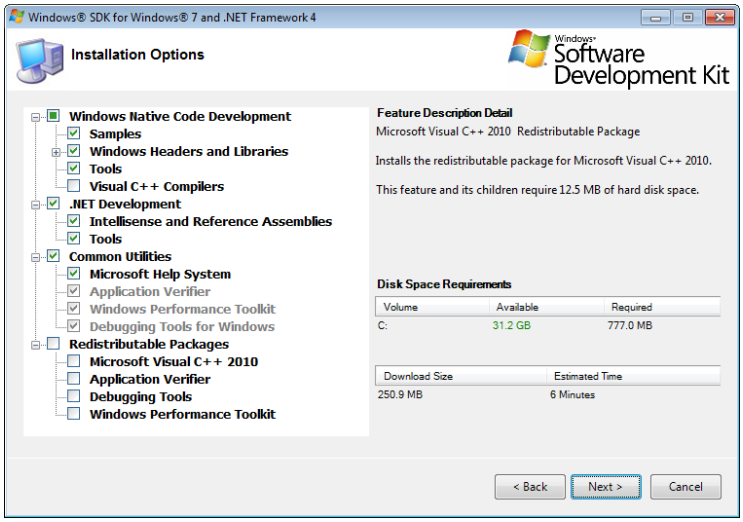

Figure 2.13: Component page of Microsoft SDK for Windows 7

4. Once the installation of Windows SDK 7 is complete, download the Windows SDK 7.1 patch from here then install it

5. Download and install the x86 and x64 versions of the Microsoft Visual C++ 2010 Redistributable packages from here and here

6. Launch the Advanced Initial Conditions Dependencies tool of TransAT