Scenargie®2.1

Installation Guide

Space-Time Engineering, LLC
September, 2016

Contents

Preface

This manual describes the procedure for installing a discrete event simulator, Scenargie 2.1.

Related documents

Installation Guide
Programmer's Guide
Visual Lab User Guide
Base Simulator User Guide
Base Simulator Model Reference
Dot Eleven Module User Guide
Emulation Module User Guide
LTE Module User Guide
ITS Extension Module User Guide
Multi-Agent Extension Module User Guide
Multi-Agent Extension Module Model Reference
Fast Urban Propagation Module User Guide
High Fidelity Propagation Module User Guide
Trace Analyzer User Guide

1. Preparation

1.1. Terms

Following terms are used in this document.

- SS (STE hosted license server)
  License authentication server hosted by Space-Time Engineering, LLC (STE). The server can be accessed via the Internet.
- LS (Local license server)
  License authenticated server hosted by user. The server can be accessed via LAN. Users can configure the setting of LS through web based UI.
- Scenargie License Manager
  A set of programs including LS and installation script.
- Account
  An account is issued to users (organization) who purchased Scenargie licenses, and those licenses are bound to the account. Users have to join to the account to to use licenses in that account.
- User role
  A user in an account has Owner, Admin or Member privilege. (Visit “My accounts” page in the STE web site for details) An account includes one user with Owner privilege when the account is created.

1.2. Product requirements

1) Software requirements

Windows

Windows 7 32bit	Visual Studio Express 2013 for Windows Desktop Update 5
Windows 7 64bit	Visual Studio Express 2013 for Windows Desktop Update 5
Windows 10 64bit	Visual Studio Express 2015 for Desktop Update 1

Linux

Red Hat Enterprise Linux 6 64bit	gcc 4.8.2, glibc 2.12, GNOME
Red Hat Enterprise Linux 7 64bit	gcc 4.8.5, glibc 2.17, GNOME
CentOS 6 64bit	gcc 4.8.2, glibc 2.12, GNOME
CentOS 7 64bit	gcc 4.8.5, glibc 2.17, GNOME

Mac OS X

Yosemite 10.10.5 64bit	Xcode 7.2.1, Apple LLVM version 7.0.2 (clang-700.1.81)
El Captitan 10.11.3 64bit	Xcode 7.2.1, Apple LLVM version 7.0.2 (clang-700.1.81)

Note: Emulation Module is available only for Linux.

Note: Fast Urban Propagation Module and High Fidelity Propagation Module are available only for Windows 64bit and Linux 64bit.

Note: To use Scenargie on Red Hat Enterprise Linux 6 or CentOS6, Developer Toolset 2 with gcc 4.8 is required. Install Developer Toolset 2 with gcc 4.8 using the following commands.

```
# wget http://people.centos.org/tru/devtools-2/devtools-2.repo -O
/etc/yum.repos.d/devtools-2.repo
# yum install devtoolset-2-gcc-c++ devtoolset-2-binutils
```

After installing Developer Toolset 2, enable the toolset by the following command. Then you can build Scenargie simulation programs using gcc 4.8.

```
$ scl enable devtoolset-2 bash
```

If you want to resume the original environment, use exit command to disable the Developer Toolset 2.

```
$ exit
```

You can enable Developer Toolset 2 only when you build Scenargie programs.

```
$ scl enable devtoolset-2 "make –f makefile.linux"
```

Note: If you use Scenargie on Mac OS X, you need “Command Line Tools”.
Install Command Line Tools using the following command.

```
$ xcode-select --install
```

2) Hardware requirements

Linux, Windows, Mac OS X

CPU： 1.8GHz or faster

Memory: 1GB or larger

Storage: 50GB or larger

Display resolution: 1024 x 768 or higher

3) Web browsers supported by SS and LS

Windows 7, Windows10

Internet Explorer 10 or later

Google Chrome version 39 or later

Mozilla Firefox version 31 or later

Linux (CentOS6, CentOS7)

Google Chrome version 39 or later

Mozilla Firefox version 31 or later

Mac OS X

Yosemite Safari 8

El Capitan Safari 9

Note: lshal command is required to run LS on Red Hat Enterprise Linux 6 or CentOS 6. If lshal command is not installed, please install by the following commands.

```
# yum install hal
# /etc/init.d/haldaemon start
```

Note: dmidecode command is required to run LS on Red Hat Enterprise Linux 7 or CentOS 7. If dmidecode command is not installed, please install by the following command.

```
# yum install dmidecode
```

1.3. Member registration

Member registration and joining an account are required for product downloads and licensing. Member registration and joining an account can be done in STE's web site (https://www.spacetime-eng.com/). If you have not registered and joined an account, please follow the steps below. If you are Owner of the account, you have already been registered and joined your account at the purchase of licenses. Please skip the following steps.

1) Visit STE's website (https://www.spacetime-eng.com/).

2) Click Member register in Members page. Fill in the information, and click Register.
3) You will receive an email. Click Activation Link and activate your member registration.
4) Login with your registered email address and password at Members page.
5) Go to “My accounts” page.
6) Click “Join Account”. Fill in Account ID which you’d like to join and Owner’s Email address, and click “Send request”. Please ask the account owner to obtain Account ID and/or Owner’s Email address.
7) Owner will receive an email to ask to active the requester. After the owner activates the requester, the requester will receive an email and the joining the account is completed.

1.4. Obtaining products

For obtaining the Scenargie products, follow the steps below.

- Visit STE’s web site (https://www.spacetime-eng.com/), then sign in according to the information that you have registered in STE’s web site.
- Download the software packages from the Product downloads page.
- Download the license management program from the Product downloads page.

Note: Member registration and joining an account are required to use Scenargie products.

Note: Web browsers, such as Safari on Mac OS X, automatically extract downloaded files according with the browser's default setting. This function makes different folders for different packages (zip archives). On the other hand, Scenargie's zip archive files except Visual Lab are made so that all files are extracted in the same folder named “scenargie_simulator”. If your web browser makes different folders for different packages, extract the packages from command line. Or you can disable the automatic extract function by the following operation.
In the menu bar, go Safari -> Preferences. In the “General” tab, uncheck “Open 'safe' files after downloading”.

2. Setting Up LS

This chapter is for Owner or Admin of an account.

There are two methods for licensing. One is to use SS via the Internet. The other is to use LS in your LAN. For using LS, you need to set up LS on ahead. If you have already set up LS or use SS, go to “3. Installing Scenargie” or later.

Note: LS and Scenargie program communicate each other via port 7575. If you have a firewall in your network, you are required to make port 7575 accessible.

Note: If there is a gap between actual time and the system clock in a server ruining LS, the LS may not work correctly. Please set accurate time for the LS by ntp, etc.

LS can run on Windows, Linux, Mac OS X platforms.
Refer to the following section to set up LS on each platform.

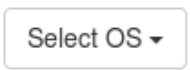
- Windows: Section 2.1
- Linux: Section 2.2
- Mac OS X: Section 2.3

2.1. Setting up LS on Windows

2.1.1. Obtaining the license management program

To obtain the license management program, follow the steps below.

- Visit STE’s web site（https://www.spacetime-eng.com/）, then sign in according to the information that you have registered when purchasing the license.
- Find “LS (Local license server)” at the left of the web page, and click 

.
- Select OS for LS from 

, then the download of “Scenargie License Manager” starts.

2.1.2. Installing and setting up the license management program

LS programs for Windows are provided as the following installer program files. Administrator privilege is required to execute the installer.

- For 32 bit: ScenargieLicenseManager-3-rxxxxx-win32.exe
- For 64 bit: ScenargieLicenseManager-3-rxxxxx-win64.exe

To install the LS program, execute the installer program suitable for your environment and select the location to install the program, and click “Extract”.

The following description assumes that you have installed the LS to C:¥ScenargieLicenseManager.

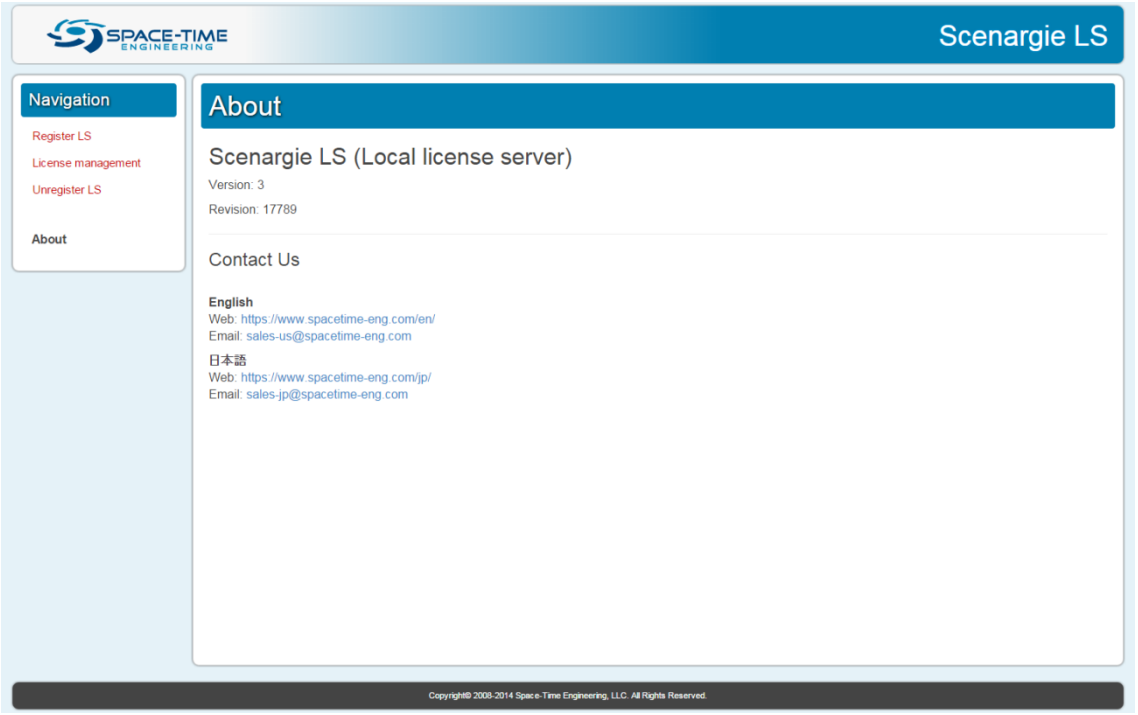
Administrator privilege is required to start the LS. To start the LS, right-click ScenargieLS.exe icon, then click “Run as administrator”, or open the command prompt as administrator, change directory to where ScenargieLS.exe exists, and run the program as follows.
Note: If you start the LS via command prompt, you need to change the directory to where ScenargieLS.exe exists.

<Example of commands>

```
> cd C:¥ScenargieLicenseManager
> ScenargieLS.exe
>
```

When the LS starts, the program runs as a resident program. If you’d like to terminate the LS, select “Exit” from context menu. If you’d like to start the LS automatically when starting the computer, select “Enable auto start” from context menu.

Visit http://localhost:8082 from the same machine that is running the LS. If the window content of the web browser is like as shown below, the LS works successfully.



2.1.3. Updating the LS program

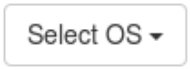
If you'd like to update the LS program that has been working, terminate the LS program first. Then, install the LS program at the same directory where the previous LS program was installed. You can find version and revision of the LS in the "About" page.

2.2. Setting up LS on Linux

2.2.1. Obtaining the license management program

To obtain the license management program, follow the steps below.

- Visit STE's web site（https://www.spacetime-eng.com/）, then sign in according to the information that you have registered when purchasing the license.
- Find "LS (Local license server)" at the left of the web page, and click 

.
- Select OS for LS from 

, then the download of "Scenargie License Manager" starts.

2.2.2. Installing and setting up the license management program

LS programs for Linux are provided as the following installer program files. Administrator privilege is required to execute the installer.

- For 64 bit: ScenargieLicenseManager-3-rxxxxx-linux64.run

To install the LS program, execute the installer program suitable for your environment. You will be asked to input the install path. Then, input the full path of the install path.

<Example of commands>

```
$ su
# ./ScenargieLicenseManager-3-rxxxxx-linux64.run
Installation path (Full path):
>> /home/user/
# exit
$
```

The following description assumes that you have installed the LS program to your home directory.

LS for Linux utilizes a service control script named slmd to start and stop the LS. Start, stop, restart, and status commands are available. Administrative privilege is required to execute slmd.

<Example of commands>

```
$ sudo service slmd start
```

If you'd like to start the LS automatically when starting the computer, follow the command below to enable auto start.

<Example of commands>

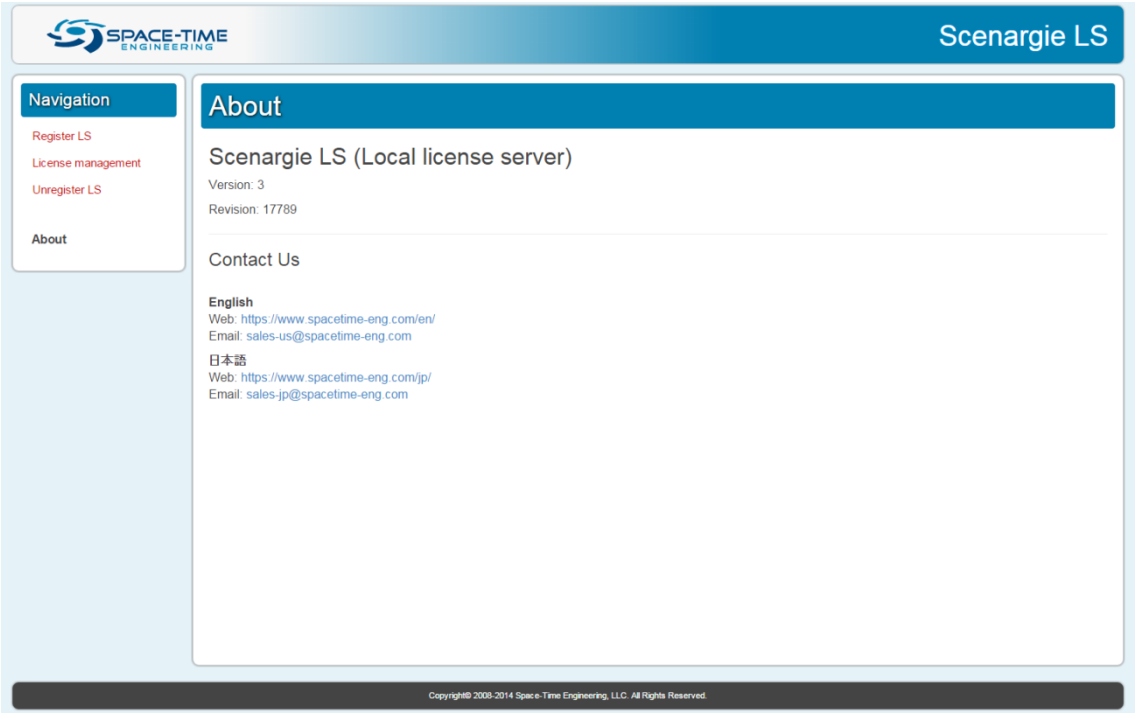
```
$ sudo chkconfig slmd on
```

If you'd like to disable auto start, follow the command below.

<Example of commands>

```
$ sudo chkconfig slmd off
```

Visit http://localhost:8082 from the same machine that is running the LS. If the window content of the web browser is like as shown below, the LS works successfully.



2.2.3. Updating the LS program

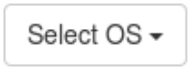
If you'd like to update the LS program that has been working, terminate the LS program first. Then, install the LS program at the same directory where the previous LS program was installed. You can find version and revision of LS in the "About" page of the LS.

2.3. Setting up LS on Mac OS X

2.3.1. Obtaining the license management program

To obtain the license management program, follow the steps below.

- Visit STE's web site（https://www.spacetime-eng.com/）, then sign in according to the information that you have registered when purchasing the license.
- Find "LS (Local license server)" at the left of the web page, and click 

.
- Select OS for LS from 

, then the download of "Scenargie License Manager" starts.

2.3.2. Installing and setting up the license management program

LS program for Mac OS is provided as the following installer program file. Administrator privilege is required to execute the installer.

- ScenargieLicenseManager-3-rxxxxx-mac.run

To install the LS program, execute the installer program. You will be asked to input the install path. Then, input the full path of the install path.

<Example of commands>

```
$ su
# chmod +X ./ScenargieLicenseManager-3-rxxxxx-linux32.run
# ./ScenargieLicenseManager-3-rxxxxx-linux32.run
Installation path (Full path):
>> /home/user/
# exit
```

The following description assumes that you have installed the LS program to your home directory.

LS for Mac OS X utilizes a service control script named slmd to start and stop the LS. Start, stop, restart, and status commands are available. Administrative privilege is required to execute slmd.

<Example of commands>

```
$ sudo service slmd start
```

If you'd like to start the LS automatically when starting the computer, follow the commands below to enable auto start.

<Example of commands>

```
$ sudo cp slmd.plist /System/Library/LaunchDaemons/
$ sudo launchctl load -w /System/Library/LaunchDaemons/slmd.plist
```

If you'd like to disable auto start, open /System/Library/LaunchDaemons/slmd.plist and change the following line.

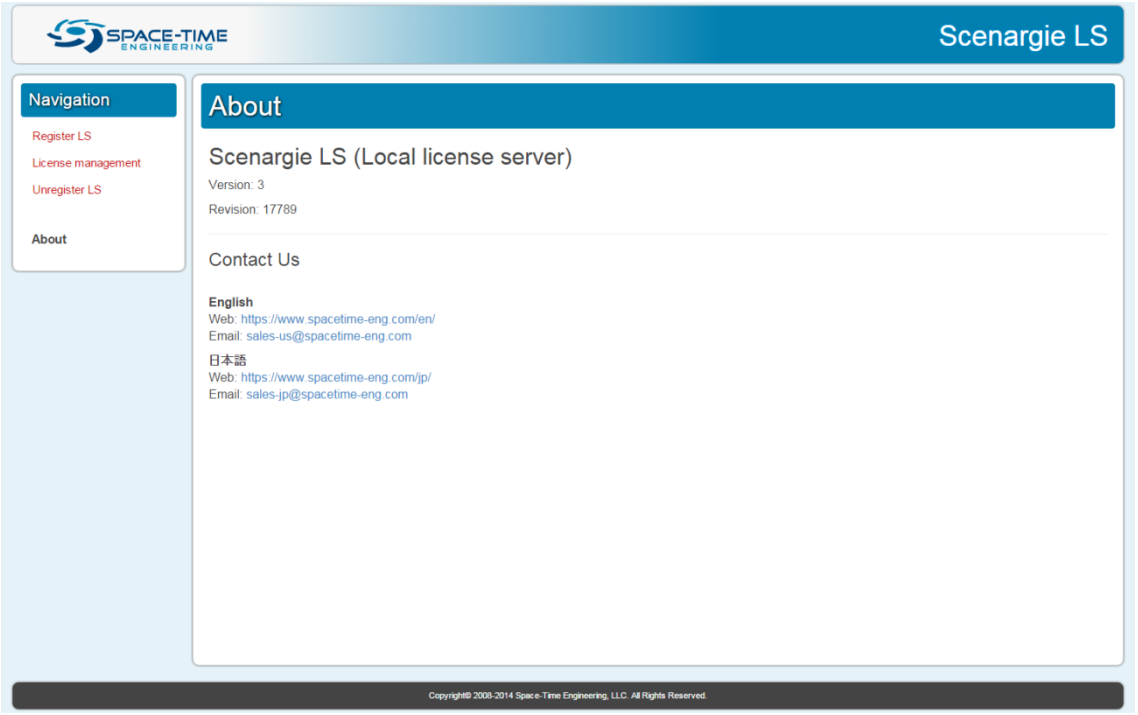
Before:

```
<key>RunAtLoad</key>
<true/>
```

After:

```
<key>RunAtLoad</key>
<false/>
```

Visit http://localhost:8082 from the same machine that is running the LS. If the window content of the web browser is like as shown below, the LS works successfully.

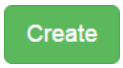


2.3.3. Updating the LS program

If you'd like to update the LS program that has been working, terminate the LS program first. Then, install the LS program at the same directory where the previous LS program was installed. You can find version and revision of LS in the "About" page.

2.4. Setting up licenses

2.4.1. Registering your computer for LS to the vender's database

1) Using a web browser on the computer that you have installed the LS, visit http://localhost:8082.
2) Click “Register LS”.
3) Click 

to save a server registration file, “ls_registration.dat”.
4) Visit https://www.spacetime-eng.com from a web browser.
5) Log in to the member pager, and the move to “LS (Local license server)” page. On the new page, input your computer's name to the “Nickname” at “5. Give a nickname for your new LS” text box and upload your "ls_registration.dat" file to the server.

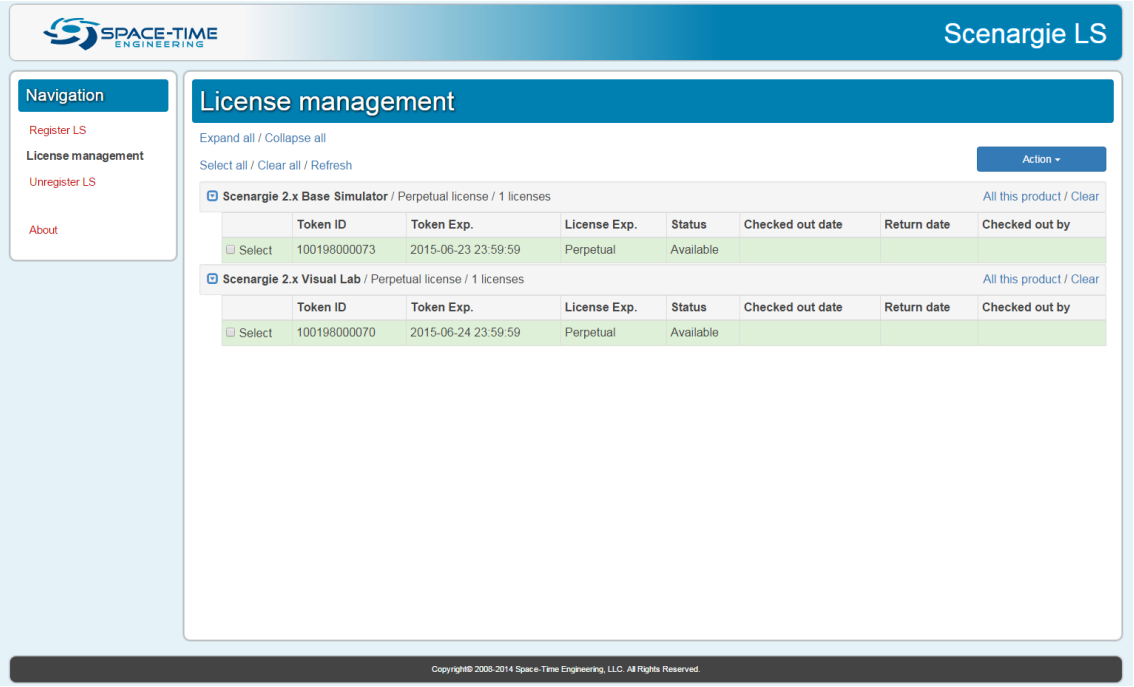
Note: If you change a computer for running the LS or change the hardware configuration of the computer running the LS, you need to unregister the computer that has been running the LS from the vender's database first, and register the new computer to the database. Refer “2.5. Changing the computer for LS” for details.

2.4.2. Moving your licenses to the LS

1) Visit https://www.spacetime-eng.com .
2) Log in to the member page, and then move to “License management” page.
3) Select one or more licenses which you’d like to move to the LS. Select “Move selected licenses to LS” from 

. Download a license setting file named “license_setting.dat” to the computer running the LS.
4) Visit http://localhost:8082 from the web browser on a computer running the LS.
5) Click “License management”.
6) Select “Apply new license” from 

, and then upload your license setting file “license_setting.dat”.



The list of valid licenses is displayed on “License management”.

If you’d like to extend the duration for moving to the LS, repeat the above procedures.

Note: If you change a password of a member in your account, you need to download your license setting file and apply the file to the LS.

2.4.3. Return your licenses from LS to SS

If you return your licenses from LS to SS, follow the steps below.

1) Visit https://localhost:8082 from the web browser on a computer running the LS.
2) Click “License management”.
3) Select one or more licenses which you’d like to return to SS. Select “Return selected to SS” from 

, and then download a license return file named “license_return.dat”.
4) Visit https://www.spacetime-eng.com .
5) Log in to the member page, and then move to “License management” page.

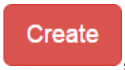
6) Select “Return license to SS” from 

, and then upload your license return file “license_return.dat”.

2.5. Changing the computer for LS

If you change a computer running the LS or change the hardware configuration of the computer running the LS, you need to unregister the computer running the LS from the vender's database first, and register the new computer to the database.

Note: If you have checked out licenses offline, you cannot change the computer for the LS.

1) Visit http://localhost:8082 from the web browser on a computer running the LS.
2) Click “Unregister LS”.
3) Click 

, and then download a LS unregistration file named “ls_unregistration.dat”.
4) Visit https://www.spacetime-eng.com .
5) Login to the member pager, and move to “LS (Local license server” page. Then, upload the LS unregistation file “ls_unregistration.dat” to the server. By this operation, the LS's information is unregistered from the vendor's database.
6) Set up the LS on the new computer, start the LS, register the LS to the vender's database, and move the license file to the new LS.

2.6. Adding new licenses

If you add licenses to your LS for adding an extension modules, etc, follow the steps described in “2.4.2 Moving your licenses to the LS” for new licenses.

3. Installing Scenargie

This chapter describes how to install Scenargie and build simulator on each platform.
Refer to the following section to install Scenargie on each platform.

- Windows: Section 3.1
- Linux: Section 3.2
- Mac OS X: 3.3

3.1. Installation on Windows

3.1.1. Installing Scenargie Visual Lab

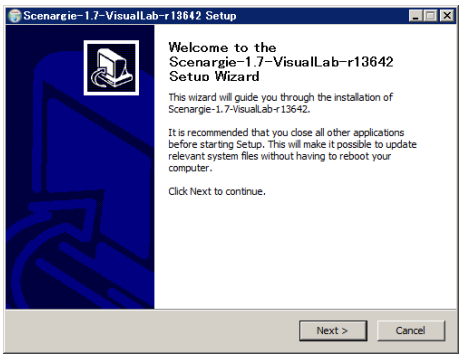
Extract the Visual Lab package in an arbitrary directory.
The package of Visual Lab for Windows includes the followings.

- Installer for 32 bit environment (Scenargie-2.1-VisualLab-rxxxx-32bit-Setup.exe)
- Installer for 64 bit environment (Scenargie-2.1-VisualLab-rxxxx-64bit-Setup.exe)
- Document

* It is recommended that uninstall the older version of Scenargie Visual Lab before installing the new version.

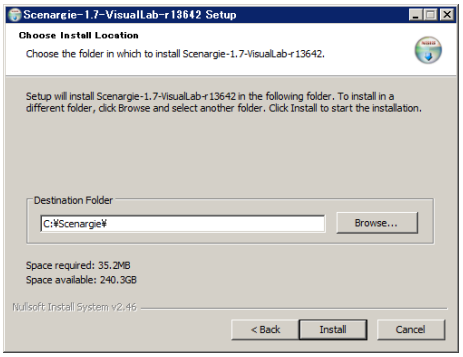
Note: If you install the software using an account that does not have the administrator privileges, the installer program may ask you to input the password of an administrator.

1) Executing the installer program



When you start the installer program, a set up wizard starts as shown in the left hand figure.
Click “Next” to continue.

The License Agreement of Scenargie is shown.
If you agree, click “I Agree” to proceed.

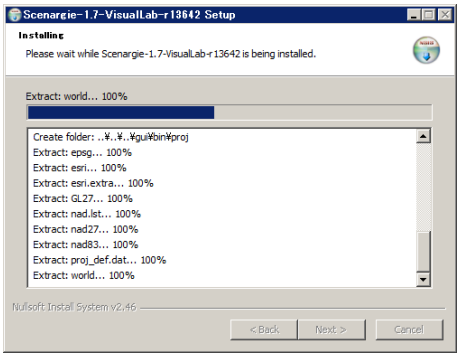


Specify the destination folder to install the program. The default destination folder is “C:¥Scenargie” If you want to specify another folder, type in the path of the folder from the keyboard or click “Browse…” to select the directory from a dialog window.

* The working directory during the execution of Scenargie Visual Lab (User Home Directory) is automatically set to the destination folder (directory) of the program.

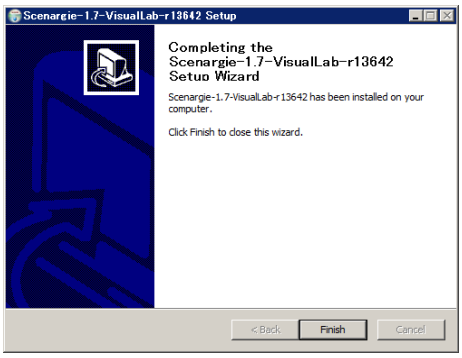
If you want to change the directory, you can configure it through “Options” menu of Visual Lab.

Click “Install” to install the program.



The installer starts copying files. It may take a long time depending on the environment. Wait until the end of the file copying.

Note: Please do not stop the setup during the file copying.



The installation has completed. Click “Finish” to close the setup wizard.

2) Launching Scenargie Visual Lab

Double-click a shortcut icon on the desktop 

, or select Scenargie from “Start Menu > Programs” to start up Scenargie Visual Lab. When launching Visual Lab, your information including account ID is required.

If you have faced the following error message, check the license settings.

3) Copying data files

Some extension modules provide data files to use the module with Visual Lab. If your module provides data files, move the files to data/ directory by following the instructions in the user guide of each extension module.

4) Copying sample files

Some extension modules provide sample files for using the module with Visual Lab. If your module provides sample files, move the files to sample/ directory by following the instructions in the user guide of each extension module.

3.1.2. Installing Scenargie Base Simulator

This subsection describes how to install Scenargie Base Simulator.

1) Extracting the package

Extracting the package of Scenargie Base Simulator creates a directory named “scenargie_simulator”, source code files are extracted in the directory. In the following example, it is assumed that “C:¥scenargie_simulator” is created and all files are extracted in the directory.

The directory structure of Scenargie Base Simulator is as follows.

```
scenargie_simulator/2.1/
|-- util
|-- document
|-- package_tree
|-- scenarios_windows
|-- scenarios_linux
|-- visuallab
`-- source
    |-- base
    |-- boost
    |-- include
    |-- multisystems
    |-- objlibs
    `-- simulator
```

2) Extracting extension module files

Extension modules such as Scenargie Dot Eleven Module have the same directory structure as Scenargie Base Simulator. Therefore you can place files to the appropriate directories by extracting the extension module packages in the same directory where “scenargie_simulator” directory is. For installing and using extension modules, refer to documents for the extension modules.

3.1.3. Installing Visual C++

To build executable file of Scenargie Base Simulator from source code files, the software development environment of Visual C++ is needed. Scenargie supports Visual Studio Express 2013 for Windows Desktop (Visual C++) on Windows 7 32bit/64bit, and Visual Studio Express 2015 for Desktop (Vsisual C++) on Windows 10 64bit. Install the suitable software development environment according to your OS.

To obtain Visual Studio Express 2013 for Windows Desktop (Visual C++), visit the following URL (As of May, 2016).
https://www.microsoft.com/en-us/download/details.aspx?id=48131

In this document, it is assumed that users use Visual Studio Express 2013 for Windows Desktop (Visual C++) English version. If you are using different version, read the document replacing the product name accordingly.

3.1.4. Building Scenargie Base Simulator

1) Open command prompt for Visual Studio

To build 32bit program with Microsoft Visual Studio Express 2013, use Command Prompt opened by clicking [Start]-[Program]-[Visual Studio 2013]-[Visual Studio Tools]-[VS2013 x86 Natie Tools Command Prompt].

To build 64bit program with Microsoft Visual Studio Express 2013, use Command Prompt opened by clicking [Start]-[Program]-[Visual Studio 2013]-[Visual Studio Tools]-[VS2013 x64 Cross Tools Command Prompt].

2) Building the simulation executable file

Change the working directory to the directory named “base” that is prepared for building Scenargie Base Simulator.

Note: To use extension modules, refer to documents for the extension modules.

<Example of commands>

```
> cd C:¥scenargie_simulator¥2.1¥source¥base
> nmake -f makefile.win
```

If the build succeeds, an executable file named “sim.exe” is created in the current directory.

If you build the simulation executable file with the sample makefile shipped with the package, you can specify the number of threads with BUILDTHREADS option to build with multi-threading.

BUILDTHREADS=[the number of threads]

<Example of commands>

```
> cd C:¥scenargie_simulator¥2.1¥source¥base
> nmake -f makefile.win BUILDTHREADS=4
```

Note: If you want to rebuild a simulation executable file after you have built a simulation executable file, it is required to clean the old simulation executable file and object files.

<Example of commands>

```
> cd C:¥scenargie_simulator¥2.1¥source¥base
> nmake -f makefile.win clean
> nmake -f makefile.win
```

If makedepend has been installed in your computer, you can utilize “nmake depend” command. When “nmake depend” is executed, the minimum necessary files are supposed to be compiled.

<Example of commands >

```
> cd C:¥scenargie_simulator¥2.1¥source¥base
> nmake -f makefile.win depend
> nmake -f makefile.win
```

If you command “nmake clean”, the information generated by “nmake depend” will be removed. Command “nmake depend” again after “nmake clean”.

<Example of commands>

```
> cd C:¥scenargie_simulator¥2.1¥source¥base
> nmake -f makefile.win clean
> nmake -f makefile.win depend
> nmake -f makefile.win
```

For using multiple extension modules, build the simulation executable file with a makefile for multisystems.

<Example of commands: For using Dot Eleven Module and LTE Module>

```
> cd C:¥scenargie_simulator¥2.1¥source¥multisystems
> nmake –f makefile.win clean
> nmake –f makefile.win DOT11_MODULE=on LTE_MODULE=on
```

<Example of commands: For using Dot Eleven Module and Multi-Agent Extension Module>

```
> cd C:¥scenargie_simulator¥2.1¥source¥multisystems
> nmake –f makefile.win clean
> nmake –f makefile.win DOT11_MODULE=on MULTIAGENT_MODULE=on
```

The relationship between makefiles dedicated for each extension module and options used with the makefile for multisystems is as follows.

its¥makefile.win = multisystems¥makefile.win ITS_MODULE=on DOT11_MODULE=on BASE_IPV6=on

For other available options, refer to the list of build options in this document.

3.1.5. License setting on the computer running Scenargie

On the computer running Scenargie, licensing is conducted with the information in the Scenargie License Setting File specified as an Environment Valuable “STE_LICENSE_FILE”. For LS (Local license server) setting, refer “2. Setting Up LS”. For license setting on the computer running Scenargie, refer “4. Online License Authentication” or “5. Offline License Authentication”.

3.2. Installation on Linux

3.2.1. Installing Scenargie Visual Lab

Extract the Visual Lab package in an arbitrary directory.

The package of Visual Lab for Linux includes the following.

- Scenargie-2.1-VisualLab-rxxxx-el6-x86_64.tar.gz

1) Extracting the package

Extract the package by using a command such as unzip or File Browser. Then a directory named “visuallab” is created. In the following the directory “visuallab”: is called Scenargie Visual Lab Install Directory. In this example, it is assumed that the install directory is extracted in the user's home directory.

* It is recommended that uninstall the older version of Scenargie Visual Lab before installing the new version.

<Example of commands>

```
$ cd ~
$ tar zxvf Scenargie-2.1-VisualLab-rxxxx-el6-x86_64.tar.gz
$ ls visuallab/
bin  data  doc  License  plugins  Scenargie
```

2) Launching Scenargie Visual Lab

Change the working directory to the Scenargie Visual Lab Install Directory, and then execute the startup script “Scenargie”. When launching Visual Lab, your information including account ID is required.

<Example of commands>

```
$ cd ~/visuallab/
$ ./Scenargie
```

If you have faced the following error message, check the license settings.

3) Configuring Scenargie home directory

If you start Scenargie Visual Lab with the startup script following the instructions in step 2), the Scenargie Visual Lab Install Directory is used as the Scenargie home directory. If you want to change the directory, you can configure it through “Options” menu of Visual Lab.

4) Copying data files

Some extension modules provide data files to use the module with Visual Lab. If your module provides data files, move the files to data/ directory by following the instructions in the user guide of each extension module.

5) Copying sample files

Some extension modules provide sample files for using the module with Visual Lab. If your module provides sample files, move the files to sample/ directory by following the instructions in the user guide of each extension module.

Note: If you are using Linux 64 bit and going to use the function of Video Clip output, you need 32 bit version of library files libz.so.1 and libbz2.so.1 because the function uses 32bit modules. Please install appropriate 32 bit libraries.

<Example: Installing 32bit libraries on CentOS 6 64bit>

```
$ su
# yum install zlib*i686*
# yum install bzip2*i686*
```

3.2.2. Installing Scenargie Base Simulator

This subsection describes how to install Scenargie Base Simulator.

1) Extracting the package

Extracting the package of Scenargie Base Simulator creates a directory named “scenargie_simulator”, source code files are extracted in the directory. In the following

example, it is assumed that a directory “scenargie_simulator” is created in the home directory of the user and all files are extracted in the directory.

<Example of commands>

```
$ unzip Scenargie-2.1-BaseSimulator-rxxxx.zip
```

The directory structure of Scenargie Base Simulator is as follows.

```
scenargie_simulator/2.1/
|-- util
|-- document
|-- package_tree
|-- scenarios_windows
|-- scenarios_linux
|-- visuallab
`-- source
    |-- base
    |-- boost
    |-- include
    |-- multisystems
    |-- objlibs
    `-- simulator
```

2) Extracting extension module files

Extension modules such as Scenargie Dot Eleven Module have the same directory structure as Scenargie Base Simulator. Therefore you can place files to the appropriate directories by extracting the extension module packages in the same directory where “scenargie_simulator” directory is. For installing and using extension modules, refer to documents for the extension modules.

<Example of commands>

```
$ cd ~/
$ unzip Scenargie-2.1-DotElevenModule-rxxx.zip
```
All files are extracted in a directory named “scenargie_simulator”.
```
$ cd scenargie_simulator/2.1/source
$ ls
base  boost  dot11  include  multisystems  objlibs  simulator
```
A directory named “dot11” is added to directory ~/scenargie_simulator/2.1/source/

3) Building the simulation executable file

Change the working directory to the directory named “base” that is prepared for building Scenargie Base Simulator.

Note: To use extension modules, refer to documents for the extension modules.

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux
```

If the build succeeds, an executable file named “sim” is created in the current directory.

If you use GNU make for building the simulation executable file, you can specify the number of threads with -j option to build with multi-threading.

make –j [the number of threads]

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux –j 4
```

Note: If you want to rebuild a simulation executable file after you have built a simulation executable file, it is required to clean the old simulation executable file and object files.

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux clean
$ make –f makefile.linux
```

If makedepend has been installed in your computer, you can utilize “make depend” command. When “make depend” is executed, the minimum necessary files are supposed to be compiled.
<Example of commands >

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux depend
$ make –f makefile.linux
```

If you command “make clean”, the information generated by “make depend” will be removed. Command “make depend” again after “make clean”.
<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make -f makefile.linux clean
$ make –f makefile.linux depend
$ make –f makefile.linux
```

For using multiple extension modules, build the simulation executable file with a makefile for multisystems.
<Example of commands: For using Dot Eleven Module and LTE Module>

```
$ cd ~/scenargie_simulator/2.1/source/multisystems
$ make –f makefile.linux clean
$ make –f makefile.linux DOT11_MODULE=on LTE_MODULE=on
```

<Example of commands: For using Dot Eleven Module and Multi-Agent Extension Module>

```
$ cd ~/scenargie_simulator/2.1/source/multisystems
$ make –f makefile.linux clean
$ make –f makefile.linux DOT11_MODULE=on MULTIAGENT_MODULE=on
```

The relationship between makefiles dedicated for each extension module and options used with the makefile for multisystems is as follows.
its/makefile.linux = multisystems/makefile.linux ITS_MODULE=on DOT11_MODULE=on BASE_IPV6=on

For other available options, refer to the list of build options in this document.

3.2.3. License setting on the computer running Scenargie

On the computer running Scenargie, licensing is conducted with the information in the Scenargie License Setting File specified as an Environment Valuable “STE_LICENSE_FILE”. For LS (Local license server) setting, refer “2. Setting Up LS”. For license setting on the computer running Scenargie, refer “4. Online License Authentication” or “5. Offline License Authentication”.

3.3. Installation on Mac OS X

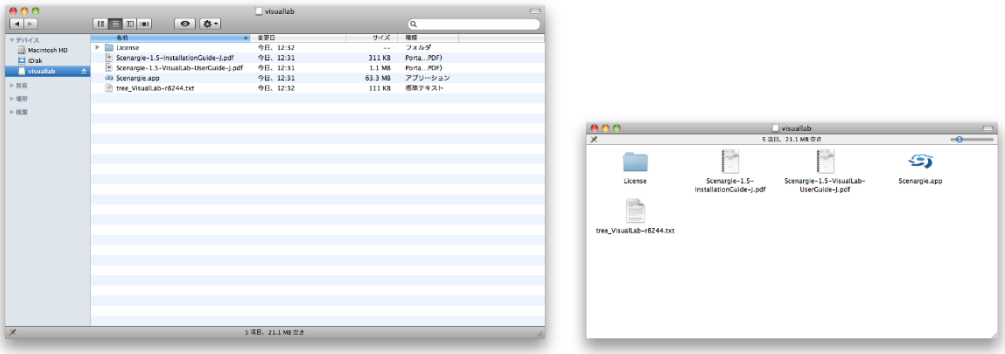
3.3.1. Installing Scenargie Visual Lab

The package of Visual Lab for Mac OS X is the following.

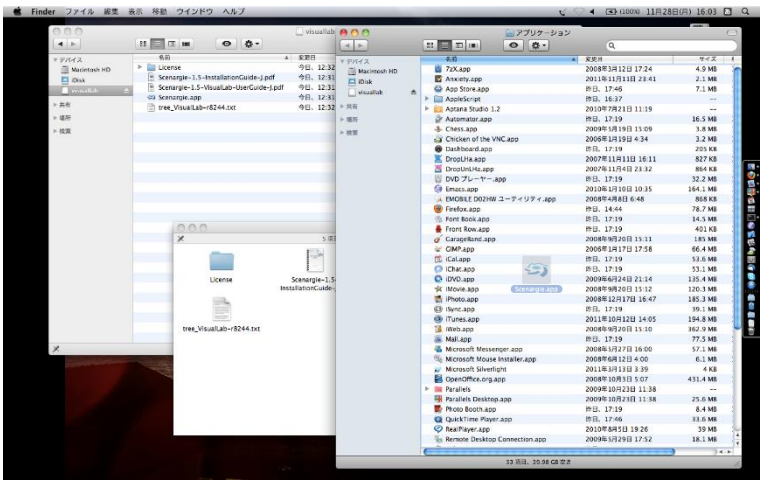
- Scenargie-2.1-VisualLab-rxxxx-macosx-x86_64.dmg

1) Extracting the package

Double-click the disk image file (.dmg) for Visual Lab. A device named “visuallab” is mounted within the finder, and a window is opened as shown below.



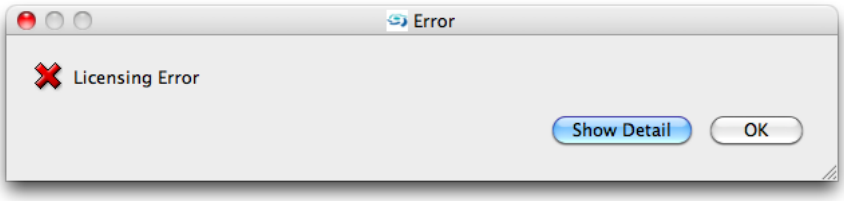
Copy the icon of “Scenargie.app” in the opened folder to the Application folder of your system by drag and drop to install Scenargie Visual Lab. If you have the older version of Scenargie Visual Lab, uninstall it before installing the new version. To uninstall the older version, drag and drop the icon to the trash.



2) Launching Scenargie Visual Lab

Double click the icon of the copied Scenargie Visual Lab application to start up Scenargie Visual Lab. When launching Visual Lab, your information including account ID is required.

If you have faced the following error message, check the license settings.



3) Copying data files

Some extension modules provide data files to use the module with Visual Lab. If your module provides data files, move the files to data/ directory by following the instructions in the user guide of each extension module.

```
/Applications/Scenargie.app/
`-- Contents
    |-- Frameworks
    |-- MacOS
    |-- Resources
    |-- bin
    |    `-- proj
    |-- data
    |-- plugins
    |    |-- imageformats
    |    `-- sqldrivers
    `-- sample
```

4) Copying sample files

Some extension modules provide sample files for using the module with Visual Lab. If your module provides sample files, move the files to sample/ directory by following the instructions in the user guide of each extension module.

```
/Applications/Scenargie.app/
`-- Contents
```

|-- Frameworks
|-- MacOS
|-- Resources
|-- bin
| `-- proj
|-- data
|-- plugins
| |-- imageformats
| `-- sqldrivers
`-- **sample**

3.3.2. Installing Scenargie Base Simulator

This subsection describes how to install Scenargie Base Simulator.

1) Extracting the package

Extracting the package of Scenargie Base Simulator creates a directory named "scenargie_simulator", source code files are extracted in the directory. In the following example, it is assumed that a directory "scenargie_simulator" is created in the home directory of the user and all files are extracted in the directory.

<Example of commands>

```
$ unzip Scenargie-2.1-BaseSimulator-rxxxx.zip
```

The directory structure of Scenargie Base Simulator is as follows.

scenargie_simulator/2.1/
|-- util
|-- document
|-- package_tree
|-- scenarios_windows
|-- scenarios_linux
|-- visuallab
`-- source
  |-- base
  |-- boost
  |-- include

```
|-- multisystems
|-- objlibs
`-- simulator
```

2) Building the simulation executable file

Change the working directory to the directory named “base” that is prepared for building Scenargie Base Simulator.

Note: To use extension modules, refer to documents for the extension modules.

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux
```

If the build succeeds, an executable file named “sim” is created in the current directory.

If you use GNU make for building the simulation executable file, you can specify the number of threads with -j option to build with multi-threading.

make –j [the number of threads]

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux –j 4
```

Note: If you want to rebuild a simulation executable file after you have built a simulation executable file, it is required to clean the old simulation executable file and object files.

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux clean
$ make –f makefile.linux
```

If makedepend has been installed in your computer, you can utilize “make depend” command. When “make depend” is executed, the minimum necessary files are supposed to be compiled.

<Example of commands >

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make –f makefile.linux depend
$ make –f makefile.linux
```

If you command “make clean”, the information generated by “make depend” will be removed. Command “make depend” again after “make clean”.

<Example of commands>

```
$ cd ~/scenargie_simulator/2.1/source/base
$ make -f makefile.linux clean
$ make –f makefile.linux depend
$ make –f makefile.linux
```

3) Extracting extension module files

Extension modules such as Scenargie Dot Eleven Module have the same directory structure as Scenargie Base Simulator. Therefore you can place files to the appropriate directories by extracting the extension module packages in the same directory where “scenargie_simulator” directory is. For installing and using extension modules, refer to documents for the extension modules.

<Example of commands>

```
$ cd ~/
$ unzip Scenargie-2.1-DotElevenModule-rxxx.zip
All files are extracted in a directory named “scenargie_simulator”.
$ cd scenargie_simulator/2.1/source
$ ls
base  boost  dot11  include  multisystems  objlibs  simulator
A directory named “dot11” is added to directory ~/scenargie_simulator/2.1/source/
```

For using multiple extension modules, build the simulation executable file with a makefile for multisystems.

<Example of commands: For using Dot Eleven Module and LTE Module>

```
$ cd ~/scenargie_simulator/2.1/source/multisystems
$ make –f makefile.linux clean
$ make –f makefile.linux DOT11_MODULE=on LTE_MODULE=on
```

<Example of commands: For using Dot Eleven Module and Multi-Agent Extension Module>

```
$ cd ~/scenargie_simulator/2.1/source/multisystems
$ make –f makefile.linux clean
$ make –f makefile.linux DOT11_MODULE=on MULTIAGENT_MODULE=on
```

The relationship between makefiles dedicated for each extension module and options used with the makefile for multisystems is as follows.

its/makefile.linux = multisystems/makefile.linux ITS_MODULE=on DOT11_MODULE=on BASE_IPV6=on

For other available options, refer to the list of build options in this document.

3.3.3. License setting on the computer running Scenargie

On the computer running Scenargie, licensing is conducted with the information in the Scenargie License Setting File specified as an Environment Valuable “STE_LICENSE_FILE”. For LS (Local license server) setting, refer “2. Setting Up LS”. For license setting on the computer running Scenargie, refer “4. Online License Authentication” or “5. Offline License Authentication”.

3.4. List of Build Options

3.4.1. Common build options for all modules

The following build options can be used for all modules.

BASE_IPV6=on	Use IPv6
BASE_ISCDHCP=on	Enables the ISC-DHCP function. (Available only with Linux)
BASE_LIBPCAP=on	Enables to use Pcap format data used by TraceBasedApp
FUPM=on	Enables FUPM function. * Requires Fast Urban Propagation Module
HFPM=on	Enables HFPM function. * Requires High Fidelity Propagation Module

3.4.2. Build options for Multisystems

The following build options can be used when you build the programs using a makefile in multisystems directory. You need extension modules corresponding to the options.

DOT11_MODULE=on	Enables Dot Eleven Module
DOT11_ADVANCED_MODULE=on	Enables Dot Eleven Module Advanced
ITS_MODULE=on	Enables ITS Extension Module
LTE_MODULE=on	Enables LTE Extension Module
MULTIAGENT_MODULE=on	Enables Multi-Agent Extension Module

4. Online License Authentication

If the computer running Scenargie is connected with the LS via LAN or the SS via the Internet, Scenargie can obtain the license directly from the LS or SS respectively. (Online Checkout)

4.1. Setting up online checkout

You have to create a Scenargie Setting File (scenargie_setting.txt) to enable Online Checkout. In the setting file, write settings in the format of <TagName>=<Value> for each line. In addition, set an environment variable “STE_LICENSE_FILE” for notifying Scenargie programs of the path to the setting file.

<Example of the setting file>

```
license-server=192.168.0.1
account-id=012345
email=aaa@bbb.ccc
```

Following tags are available for Online Checkout in the Scenargie Setting File.

- license-server

  If you utilize the LS, specify IP address of the computer running the LS. If you utilize the SS, specify “ss.spacetime-eng.com”.
- account-id

  Specify account ID (6 digits number). You can find the account ID in “My accounts” page of STE’s website. If you cannot find it, ask the owner of the account.
- email

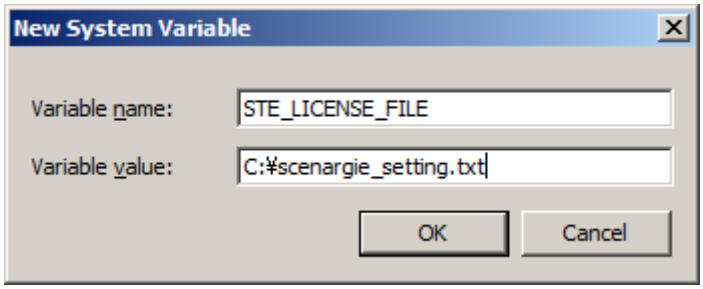
  Specify your email address registered in the STE’s website.

4.1.1. Setting up environment variable

Follow the instructions below to set up the environment variable “STE_LICENSE_FILE”.

4.1.1.1. Setting on Windows

Right-click “My Computer”, then click “Properties”. Click “Advanced system settings” and “Environment Variables” to set the following variable. In this example, it is assumed that the Scenargie Setting File is located in C:¥scenargie_setting.txt;



4.1.1.2. Setting on Linux / Mac OS X

Set the path of the Scenargie Setting File to the environment variable. In the following example, it is assumed that the setting file is located directly in the user directory.

<Example>

```
export STE_LICENSE_FILE=/home/user/scenargie_setting.txt
```

If you use bash for your shell, add this setting in ${HOME}/.bashrc to automatically set the environment valuable when the computer boots up.

If you start Visual Lab by GUI on Mac OS X, the following setting is required. Administrative privilege is required for this operation.

1) Create a file /etc/launchd.conf.
2) Add the following setting in /etc/launchd.conf
   setenv STE_LICENSE_FILE ${HOME}/scenargie_setting.txt
   * replace ${HOME} with your actual home directory. E.g.) /Users/john
3) Enable the setting by the launchctl command
4) Restart the computer.
   launchctl < /etc/launchd.conf

If you don't have Administrative privilege, specify the following setting as environment variable. As this setting is reset on rebooting the computer, set it again after rebooting.

<Example>

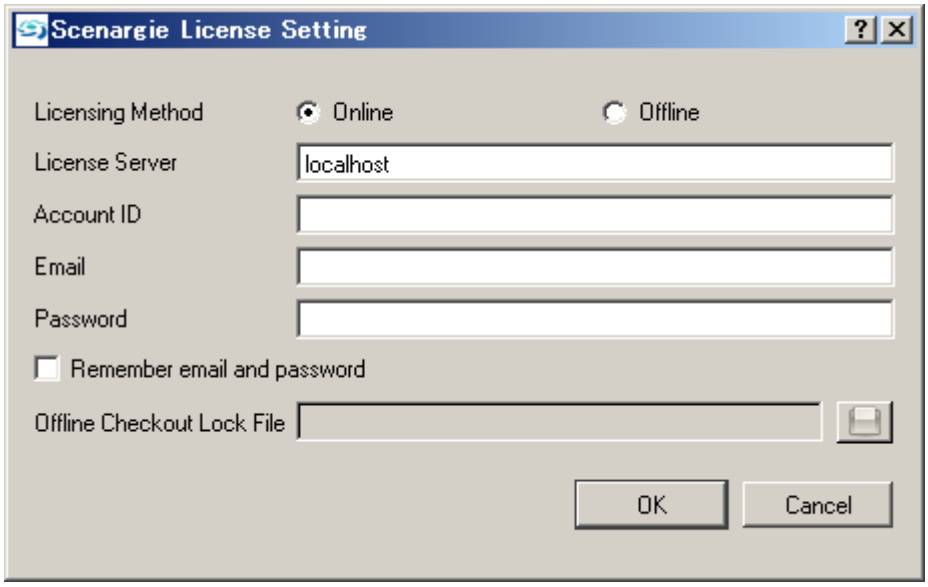
```
launchctl setenv STE_LICENSE_FILE /Users/user/scenargie_setting.txt
```

4.1.2. User authentication

User authentication and license authentication are performed before running Scenargie. If the required information for user authentication is missing, you need to specify the information.

- Visual Lab

  Scenargie License Setting dialog is displayed.



  Check “Online” on for Online Checkout, fill in License Server (IP address for LS or ss.spacetime-eng.com for SS), account ID, email, password fields, and click “OK”.

  Note: If you check “Remember email and password” on, the encrypted password is saved in the Scenargie Setting File.

  If Visual Lab is launched, user authentication and license authentication have successfully completed.

- Command line execution

  If email address and password are not saved in the Scenargie Setting File, you will be asked to fill in email address and password when running a scenario with command line execution. If the scenario runs, user authentication and license authentication have successfully completed.

Note: If you answer yes for "Would you like to save the password for (your email address)", the encrypted password is saved in the Scenargie Setting File.

If user authentication is conducted without environment variable "STE_LICENSE_FILE" setting, Scenargie Setting File is automatically created in the following directory.
Command line execution: current directory
Visual Lab: Visual Lab install directory (Windows and Linux), Application directory (Mac OS X)

5. Offline License Authentication

Offline license authentication (Offline Checkout) function allows users to detach licenses from the LS or the SS temporally and register the licenses to a designated computer running Scenargie. If you have done Offline Checkout, you do not need to connect your computer running Scenargie to the network; LAN for the LS nor the Internet for the SS. The number of offline checked out licenses decreases available licenses for Online Checkout.
In the case of Offline Checkout, the email address of the user who has conducted Offline Checkout is shown in the field of Moved/Checked out by (SS) or Checked out by (LS).

Note: The maximum period that the detached licenses can be used is seven days. Once you have done Offline Checkout, you cannot cancel Offline Checkout nor shorten the checkout period. As license authentication is exclusively performed with Online Checkout or Offline Checkout, you cannot mix Online Checkout and Offline Checkout to run a simulation.

5.1. Operation for Offline Checkout (on a computer running Scenargie part 1)

1) Extract the package of Scenargie Base Simulator, and then change your working directory to scenargie_simulator/2.1/util.
2) Move to a directory according to the architecture of your computer running Scenargie, then execute make-coreq-file(.exe) in the directory.
3) Specify user information including account ID, email address, password. If the information is saved in the Scenargie Setting File, the information is automatically used for user authentication. If you'd like to use different information instead of the saved one in the Scenargie Setting File, specify "--new" option as follows. The program generates an Offline Checkout Request File named "offline_co_request.dat".

<Example of commands>

```
$ ./make-coreq-file --new
$
```

Note: Administrative privilege is required to run make-coreq-file on Red Had Enterprise Linux 7 or CentOS7.

5.2. Operation for Offline Checkout（on the computer running the LS or the SS）

5.2.1. In the case of using the LS

1) Move “offline_co_request.dat” from the computer running Scenargie to the computer running the LS. Visit http://localhost:8082 from the computer the running the LS.
2) Click “License management”.
3) Select licenses you want to check out offline, then click “Offline checkout selected” from 

.
4) Specify checkout expiration period, and specify “offline_co_request.dat” which is generated on the computer running Scenargie in “Checkout request file”. Then, click “Offline checkout from LS”.
5) Click OK after confirmation.
6) The generated Offline Checkout Lock File (offline_co_lock.dat) will be downloaded on the computer.
7) Move the Offline Checkout Lock File to the computer running Scenargie.

5.2.2. In the case of using the SS

1) Visit https://www.spacetime-eng.com .
2) Move “License management” page from the member pages.
3) Select licenses you want to check out offline, then click “Offline checkout selected” from 

.
4) Specify checkout expiration period, and specify “offline_co_request.dat” which is generated on the computer running Scenargie in “Checkout request file”. Then, click “Offline checkout from SS”.
5) Click OK after confirmation.
6) The generated Offline Checkout Lock File (offline_co_lock.dat) will be downloaded on the computer.

5.3. Operation for Offline Checkout (on a computer running Scenargie part 2)

In the following instructions, it is assumed that the Offline Checkout Lock File is copied directly to the C drive (C:¥offline_co_lock.dat) on Windows.

Edit the Scenargie Setting File (scenargie_settting.txt) on the computer running Scenargie to specify the path of the Offline Checkout Lock File with “offline-checkout-lock-file” tag.

<Example of the setting file>

```
offline-checkout-lock-file=C:¥offline_co_lock.dat
```

The following tag is used for offline check out.

- offline-checkout-lock-file<Num>

  Specifies the path to the offline checkout lock file.

  The tag can be specified in multiple lines with the number as follows.

  <Example of the setting file>

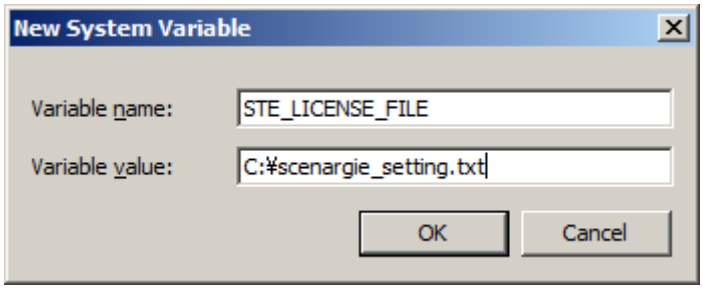
```
offline-checkout-lock-file1=C:¥offline_co_lock1.dat
offline-checkout-lock-file2=C:¥offline_co_lock2.dat
```

5.3.1. Setting up environment variable

Follow the instructions below to set up the environment variable STE_LICENSE_FILE.

5.3.1.1. Setting on Windows

Right-click “My Computer”, then click “Properties”. Click “Advanced system settings” and “Environment Variables” to set the following variable. In this example, it is assumed that the Scenargie Setting File is located in C:¥scenargie_setting.txt;



5.3.1.2. Setting on Linux / Mac OS X

Set the path of the Scenargie Setting File to the environment variable. In the following example, it is assumed that the setting file is located directly in the user directory.

<Example>

```
export STE_LICENSE_FILE=/home/user/scenargie_setting.txt
```

If you use bash for your shell, add this setting in ${HOME}/.bashrc to automatically set the environment valuable when the computer boots up.

If you start Visual Lab by GUI on Mac OS X, the following setting is required. Administrative privilege is required for this operation.

1) Create a file /etc/launchd.conf.
2) Add the following setting in /etc/launchd.conf
   setenv STE_LICENSE_FILE ${HOME}/scenargie_setting.txt
   * replace ${HOME} with your actual home directory. E.g.) /Users/john
3) Enable the setting by the launchctl command
4) Restart the computer.
   launchctl < /etc/launchd.conf

If you don't have Administrative privilege, specify the following setting as environment variable. As this setting is reset on rebooting the computer, set it again after rebooting.

<Example>

```
launchctl setenv STE_LICENSE_FILE /Users/user/scenargie_setting.txt
```

Note: Administrative privilege is required to run a simulation through Offline Checkout on Red Had Enterprise Linux 7 or CentOS7.