



**RSoft**

# **Installation Guide**

**Component (v2017.03)**

**System (v2017.03)**

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# 1

# Windows Installation

This chapter describes the installation of all Synopsys' RSoft products on Windows platforms.

## 1.A. Getting Started

You will need these items to install RSoft software on a Windows system:

- **RSoft Installer:** RSoft's Component and System suites have separate installers. The required licensing program (Synopsys Common Licensing, or SCL) is included.
- **License Key File:** This file corresponds to your RSoft license and is not needed when installing a network license on a client machine.
- **USB Dongle:** Purchased licenses require a USB dongle that corresponds to your RSoft license. For network installations the dongle should be attached to the server machine.

### How to Get the Installation Items:

- **Evaluators** will receive instructions via email.
- **Customers who have purchased directly from Synopsys** should create a SolvNet account to download installation files as well as License Key Files at <http://solvnet.synopsys.com>. See the document '[Obtaining RSoft Software and License Keys](#)' for further instructions.
- **Customers who have purchased through a Distributor** will get these items via their distributor. See <http://optics.synopsys.com/support/support-global-contacts.html> for a current list of distributors.

## System Requirements and Upgrade Notes:

See <http://optics.synopsys.com/rsoft/rsoft-product-system-requirements.html> for a current list of supported systems. Note the following about upgrading:

- *Valid Maintenance Contract Required:* Don't upgrade unless you have a valid maintenance contract as you may lose your installed version.
- *Backup:* Though not required, it is recommended to create a backup copy of the existing installation directory (do not simply rename it).

## 1.B. Windows Installation Procedure

Once you have gathered all the items listed in [Section 1.A](#), log in as Administrator and double-click the RSoft installer. Follow the steps in the RSoft Setup Wizard to complete the installation. If required, you will be prompted to plug in the USB dongle after the drivers have been installed.

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For most cases the default options are sufficient. Below are more details about some options.

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- **Installation Directory**

The default installation directory is preferred; use the same directory if installing both the Component and System suites.

- **License Type Setup**

- *Nodelocked* licenses are standalone software copies that are used on one computer.
- *Network (Server)* licenses are floating licenses installed on the Network License Server.
- *Network (Client)* licenses are floating licenses installed on client computers. You will be prompted to enter the name or IP address of the Network License Server.

- **Select License Key File**

You can leave this blank if updating and a new license key file is not needed (if the installed and new versions have the same first two numbers, i.e., 2015.06 and 2015.06-2). You can install a new license key file after installation via the Configure Licensing Utility described in [Section 1.D](#).

- **Select SCL Installer**

We recommend using the included SCL version that has been automatically selected.

Once installed, you can open the software via the Start Menu. If the software does not start, see [Section 1.E](#) for troubleshooting help and/or contact us as described in [Section 1.F](#).

## 1.C. Support, Upgrades, and Resources

RSoft software typically has one year of maintenance, including support, updates, and resources.

- *Technical Support & Product Updates.*

Technical support is handled from our U.S. offices ([rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com)), except in countries where we have international representatives. For information about support or for product updates, go to: <http://optics.synopsys.com/support/index.html>.

- *Product Manuals and README Files*

Manuals can be accessed via menus and toolbar buttons in each program. Online help files are in the `\help` subdirectory; printable PDF versions are in the `\docs` subdirectory. README files are in the `\readme` subdirectory and contain the latest information about new or improved features and options.

- *Example Design and Tutorial Files*

The software comes with an extensive set of examples and tutorial files in the `\examples` subdirectory. It is recommended to back up this directory as it is easy to accidentally overwrite these files when experimenting.

- *Resources on the Web*

You can go to our website ([optics.synopsys.com](http://optics.synopsys.com)) for additional RSoft product resources, such as how to contact technical support, the latest product news, and more.

We also provide a Customer Support Portal exclusively for our users. The portal includes extensive resources to help users become even more productive: including training materials, user group presentations, links to Webinar recordings, example models, and more. The portal can be accessed at <http://support.opticalres.com>.

## 1.D. Configure Licensing Utility

The Configure Licensing utility can be used to easily change licensing options after installation. To open it, select **Configure Licensing** from the Start Menu in the ‘RSoft Photonics CAD Suite’ group. This utility can be used for the following functions (you will need admin rights):

- **Restarting SCL:** Simply click **Next** for all screens.
- **Installing a New License Key File:** Select the new license key file in the appropriate screen; click **Next** for other screens.
- **Installing a New Version of SCL:** Select the new SCL installer in the appropriate screen; click **Next** for other screens. Note this should only be done at the direction of RSoft Support.
- **Changing License Type:** Select the new license mode (nodelocked, network server, or network client). Enter any new network information required; click **Next** for other screens.

## 1.E. Troubleshooting a Windows Installation

If you have followed the installation procedure above and one or more steps were unsuccessful, or if you get a licensing error when the software is opened, here is a list of basic things to check:

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If you are unable to find a solution, please contact us as described in [Section 1.F](#).

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- **Error Message:** Follow any instructions in the error message, particularly instructions about collecting data to email [rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com) for additional help.
- **Check License Key File:** Make sure that you are using the correct license key file for your license. Use the Configure Licensing Utility ([Section 1.D](#)) to install a new license key file.
- **Check USB Dongle:** For purchased licenses, make sure the USB dongle is plugged in, that the light in the dongle is continuously lit, and that Windows has recognized it. See [Section 1.G.6](#) for more instructions.
- **SCL Server Not Running:** The Synopsys Common Licensing (SCL) package is required to use the RSoft software. If the SCL server is not running you will be instructed to restart it via the Configure Licensing Utility ([Section 1.D](#)). If this fails, there may be a problem with SCL configuration. Contact us as described in [Section 1.F](#).
- **Check Flexlog:** The `\licenses\flexlog.txt` file can contain useful information to help solve installation problems. Some things to look for are:
  - If the flexlog is not present, or if the timestamps in the file are old, SCL is not running correctly. Contact us as described in [Section 1.F](#).
  - If the USB dongle is not recognized or if it does not match the license file, you will get a -97 SCL error message and the flexlog will contain a message like ‘SERVER line says XXXX, hostid is...’. See [Section 1.G.6](#) for further instructions.
- **Firewalls & Antivirus/Security Software:** Ensure firewall(s) are opened as described in [Section 1.G.4](#). Note firewall issues can occur for both Nodelocked and Network licenses.

## 1.F. Contact Us for Help!

Contact RSoft Support for help with installing the RSoft products and SCL by emailing [rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com); if you have obtained the software through a distributor, contact your distributor. See <http://optics.synopsys.com/support/support-global-contacts.html> for a list of current distributors. Please provide a description and screenshot of the problem, as well as a copy of the `flexlog.txt`, `rsoft.lic`, and `rslmdlog.txt` files (all in `\licenses`) if applicable.



# 1.G. Manual Windows Installation Steps

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These steps are automatically performed by the RSoft installer and/or the Configure Licensing Utility. You should only manually perform these steps if needed.

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## 1.G.1. Setting the PATH

The 'bin' directories (C:\RSoft\bin and C:\RSoft\bin32 by default) must be in the systems' PATH. To test that this setting is correct, open a Command Prompt (DOS window) and type the command 'winplot'. If the program is not recognized, type 'PATH' and check that the correct directories are present. If not, contact your IT Department to assist you in modifying the PATH.

## 1.G.2. Installing MPI for Clustering

To manually install MPICH2 which is required for clustering, log on as administrator, open a Command Prompt (DOS window), and type the command:

```
smpd -install
```

Additional configuration steps are required for network clustering. See [Chapter 3](#).

## 1.G.3. RSoft License Manager (rslmd.exe)

The RSoft License Manager (rslmd.exe) is required for all installations. To manually install it, log on as administrator, open a Command Prompt (DOS window), and type the command:

```
rslmd -install
```

The rslmd process runs as a Windows service. Other options are:

```
options:
  -? or -help  prints this message
  -install    installs the service (Windows only)
  -remove     removes the service (Windows only)
  -start      starts the server as a background process
  -stop       stops the currently running server
  -restart    restarts the currently running server
  -restartall restarts both rslmd and rslmgrd (i.e. LMGRD)
  -status     lists the running programs
  -version    displays the local and server version
```

The rslmd program keeps a log (\licenses\rslmdlog.txt), which may contain useful information for debugging licensing problems.

## 1.G.4. Configuring Firewalls and Installing a Network License

Firewalls may have to be configured for the software to work correctly (for both nodelocked and network licenses), and, for network licenses, client machines need to be pointed to the server machine.

### Pointing Client Machines to the Server

When using a Network license the environment variable `RSLM_SERVER` must be set to the network name or IP address of the Network License Server. This must be done on the Network License Server and on all network clients; contact your IT department to assist you in adding environment variables. This variable must either be set system-wide or for all user accounts that will use the software. When using a nodelocked license, this variable does not need to be set and a default value of `localhost` is assumed.

### Configuring Firewalls

Firewall(s) must be configured to allow the RSoft License Manager (`rslmd.exe`) to communicate via port 8988, and the SCL Server (`lmgrd.exe`) to communicate on port 27020. Note that SCL uses another 'vendor' port which is chosen when the server starts. This typically does not cause problems, but if you have opened both standard ports and still experience issues such as a -96 SCL error, rerun the `rsfixlic` utility described in [Section 1.G.5](#) with the syntax '`rsfixlic -vport ...`'. This forces the vendor port to 1 more than the SCL port (27021 by default).

### Using a Custom SCL Port

While it is recommended to use the default SCL port (27020), another port can be used if necessary. To do this, create a text file named `rslmd.ini` in the `<rsoft_dir>\licenses\` folder with the following content:

```
[RSLMD]
snpslmd_license_file=27020@localhost
```

Changing the port in this file will change the SCL port used. Note that you will also must change the port on the 'SERVER' line in the license key file as well.

## 1.G.5. Installing or Updating the License Key File

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License key files can be installed via the RSoft installer or the Configure Licensing Utility ([Section 1.D](#)). License key files are not needed when installing on network client. For additional help with SCL contact us as described in [Section 1.F](#).

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A valid license key file is required to use the RSoft software. Note that license key files have start and end dates and will not work outside this range. See [Section 1.A](#) for details about obtaining license key files.

## Using rsfixlic to Install or Update a License Key File

Open a command prompt (DOS window), move to the directory which contains the unedited license key file, and type this command:

```
rsfixlic [options] <file> <rsoft_dir>\licenses\rsoft.lic
```

where <file> is the unedited license key file and <rsoft\_dir> is the RSoft installation directory (C:\RSoft by default). This utility supports the '-vport#' option which, if set, fixes the SCL vendor port. The default value is 1 more than the SCL port (27021). After installing a new license key file with rsfixlic you need to configure and restart SCL with the Configure Licensing Utility ([Section 1.D](#)).

## Manually Installing or Updating a License Key File

To edit a license key file by hand, open it in a text editor and make the following changes:

- Change 'hostname1' on the line that begins with 'SERVER' to the name of the computer where the license key file will be installed.
- Make sure the port (after the Host ID) on the 'SERVER' line is set to 27020.
- Change 'path/to/snpslmd' on the line that begins with 'VENDOR' to 'snpslmd'.
- Optional: you can set the vendor port by adding it to the end of the line that begins with 'VENDOR'. The syntax for this line is 'VENDOR snpslmd snpslmd port=27021'.

Save a copy of the edited file in the directory <rsoft\_dir>\licenses\ with the name rsoft.lic, and configure and restart SCL with the Configure Licensing Utility ([Section 1.D](#)).

## 1.G.6. USB Dongle Drivers & HOST ID

The USB dongle driver is installed by the RSoft installer. Also, in most cases, Windows will automatically locate an appropriate driver for the USB Dongle via Windows Update (requires internet access) when it is first plugged into the computer.

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For additional help with USB dongle issues, contact us as described in [Section 1.F](#).

---

### Dongle Issue Symptoms

If your license requires a dongle and the correct USB dongle is not recognized, you will get a -97 SCL error message and the flexlog (\licenses\flexlog.txt) contains a message like 'SERVER line says XXXXX, hostid is...' (where XXXXX is your actual Host ID).

You can check that the dongle is working correctly by using the commands 'rslmd -rsoftid' (RSoft dongles) or 'lmhostid -flexid' (FLEX dongles). Both commands will return the Host ID of the dongle which should match what is physically written on the side of the dongle. Note that the lmhostid command must be run from its location (c:\synopsys\scl\VVV\win32\bin\ by default, where VVV is the SCL version).

After fixing a dongle issue, use the Configure Licensing Utility to restart SCL ([Section 1.D](#)).

## What to Check

- Make sure that the dongle is attached and that the red light inside the dongle is continuously lit. If it is not lit, try installing the dongle driver as described below or try another USB port. If the dongle is blinking, contact us as described in [Section 1.F](#).
- If using the software on a virtual machine, make sure that the emulation software is set so that the virtual machine sees the dongle attached to the parent machine.
- If using a FLEX dongle and you get a 'Can't get hostid of type 15 []' error in the flexlog (\licenses\flexlog.txt), install the SCL\_FLEXID9\_Installer.exe package as described below.
- Make sure the dongle driver is installed as described below.

## Manually Installing Dongle Drivers

For cases where you must manually install the USB dongle drivers, log on as Administrator, open a Command Prompt (DOS window), move to the \hardlock subdirectory in the RSoft installation directory, and type the command:

```
haspdinst -install
```

If previous versions of the drivers were installed, use the command 'haspdinst -fremove' to uninstall them. You can check what driver version is installed with the 'haspdinst -info' command. If needed, you can download the latest driver from the manufacturers website. Go to <http://www.safenet-inc.com/sentineldownloads/> and select Sentinel HASP/LDK – Command Line Run-time Installer.

If using SCL v11.8+ and manually installing the dongle drivers for a FLEX dongle the SCL\_FLEXID9\_Installer.exe package must be installed. This package can be found in the Synopsys/SCL folder in the Start Menu after SCL has been installed. Once the dongle drivers have been installed, you must configure and restart SCL with the Configure Licensing Utility ([Section 1.D](#)).

## 1.G.7. Installing and Configuring SCL

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SCL is not required when installing network license on a client machine. For additional help with SCL contact us as described in [Section 1.F](#).

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SCL (Synopsys Common Licensing) is required to run the RSoft software and is automatically installed and configured by the RSoft Installer. It is recommended to use the Configure Licensing Utility ([Section 1.D](#)) to manually install and configure SCL.

## Configuring SCL with LMTTOOLS

SCL must be configured when SCL is installed or updated, or when a new license key file is installed. This is automatically done when installing via the RSoft Installer or the Configure Licensing Utility.

To manually configure SCL, go to the Windows Start Menu, All Programs, Synopsys, and choose LMTOOLS. For SCL to successfully start the dongle must be recognized by Windows and a valid license key file must be installed.

- Select the **Config Services** tab and make these settings:

*Note: <scl\_dir> and <rsoft\_dir> are the SCL and RSoft installation directories.*

<b>Option</b>	<b>Setting</b>
<b>Path to the lmgrd.exe file</b>	<scl_dir>\win32\bin\lmgrd.exe
<b>Path to the license file</b>	<rsoft_dir>\licenses\rsoft.lic
<b>Path to the debug log file</b>	<rsoft_dir>\licenses\flexlog.txt
<b>Use Services</b>	Select checkbox
<b>Start Server at Powerup</b>	Select checkbox
<b>Save Service</b>	Click <b>Save Service</b> button and <b>Yes</b> to save the changes.

- Select the **Start/Stop/Reread** tab click **Start Server** to start the SCL server. If the server is already running (if you are upgrading, for example), you may have to click **Stop Server** first. Use the **Force Server Shutdown** option if necessary.

## Manually Stopping & Starting SCL

SCL can be easily restarted using the Configure Licensing Utility ([Section 1.D](#)). Follow these steps to manually stop\start\restart SCL:

- *Using rslmgrd*

The SCL server can be restarted with the ‘rslmgrd -restart’ command. Other commands can be used to interact with the SCL server to install, stop, start, or remove the server. To see a complete list of options, use the command ‘rslmgrd -help’.

- *Using LMTOOLS*

Open LMTOOLS (go to the Windows Start Menu, All Programs, Synopsys, and choose LMTOOLS). On the **Start/Stop/Reread** tab, click the **Stop Server** button then click the **Start Server** button. You can check if the SCL server has correctly started by looking at the \licenses\flexlog.txt log file. Additional information can be found in the rslmdlog.txt file in the same directory.

## 1.H. SCL Error Codes

SCL error codes indicate the type of error that has occurred. Additional information is shown in the SCL error dialog and, in some cases, more detailed information can be found in the `flexlog.txt` log file (in `\licenses` by default).

---

The error code refers to the first number in the SCL error; look under ‘-97’ for a ‘-97,234’ error.

---

Error Code	Description
-97	<p><i>The desired vendor daemon is down</i></p> <p>This class of errors occurs when the SCL license server has gone down. Check <code>flexlog.txt</code> for additional details about your specific error. The error is usually due to one of the following:</p> <ul style="list-style-type: none"><li>• The USB dongle is not connected or recognized (see <a href="#">Section 1.G.6</a>).</li><li>• All products licensed in the license key file have expired. In this case, <code>flexlog.txt</code> will indicate ‘<i>No features to serve, exiting.</i>’ Contact your account representative for more details.</li><li>• The computer was woken from hibernation/sleep and SCL did not come back online. Restart SCL using the Configure Licensing Utility (<a href="#">Section 1.D</a>).</li><li>• The license key file was modified or edited incorrectly. Try re-installing it with the Configure Licensing Utility (<a href="#">Section 1.D</a>).</li></ul>
-96	<p><i>License server machine is down</i></p> <p>This error occurs when the client computer (where the software is being used) is not able to contact the license server. Check that the server is running, and that the client can access the server machine. See <a href="#">Section 1.G.4</a> for suggested firewall configurations.</p>
-88	<p><i>System clock has been set back</i></p> <p>This error indicates that the system clock may have been changed. Make sure the system time is correct, and, if the problem persists, contact RSoft support as described in <a href="#">Section 1.F</a>.</p>
-18	<p><i>License server system does not support this feature</i></p>

	<p>If this error mentions the feature ‘<code>RSOFT_LMGRD_CHECK</code>’, the SCL Server is most likely not running correctly. Try restarting SCL with the Configure Licensing Utility (<a href="#">Section 1.D</a>) or look <code>flexlog.txt</code> for additional details.</p> <p>In all other cases, this error occurs when an unlicensed feature is attempted to be used. If you get this error while using a feature that you should be licensed for, please check your license key file and contact your account representative.</p>
-15	<p><i>Cannot connect to license server system</i></p> <p>This class of errors occurs when the SCL license server did not successfully start, or has not finished starting. Check <code>flexlog.txt</code> for additional details about your specific error. The error is usually due to one of the following:</p> <ul style="list-style-type: none"> <li>• If there are no errors in <code>flexlog.txt</code> then the SCL server has not finished starting. Wait 30 seconds and try to open the software again. If the error persists, wait a few minutes, check <code>flexlog.txt</code> again. If there are no errors contact us (<a href="#">Section 1.F</a>).</li> <li>• If <code>flexlog.txt</code> contains an error, the usual cause is that the USB dongle is not connected or recognized or the license key file was not installed correctly. Make sure the USB dongle is recognized (<a href="#">Section 1.G.6</a>), and the license key file has been installed (<a href="#">Section 1.D</a>), and then try restarting SCL (<a href="#">Section 1.D</a>).</li> </ul>
-9	<p><i>The hostid of this system does not match the hostid specified in the license file</i></p> <p>This class of errors can occur in the following cases:</p> <ul style="list-style-type: none"> <li>• The USB dongle is not recognized (see <a href="#">Section 1.G.6</a>).</li> <li>• The software is being used through Remote Desktop. If this is the case, contact RSoft support as described in <a href="#">Section 1.F</a>.</li> </ul>





# 2

## Linux Installation

This chapter describes the installation of Synopsys' RSoft products on Linux platforms.

### 2.A. Getting Started

You will need to perform the following steps to install/use the RSoft software on a Linux system:

- **Installation on License Server:** This requires the following items:
  - **RSoft Installer:** This installer contains the RSoft software. For a network installation it may be installed into a shared location where all users can access it. RSoft's Component and System suites have separate installers.
  - **SCL Installer & Synopsys Installer:** Synopsys Common Licensing (SCL) must be installed, the 'common' and 'linux64' SCL files are required. The Synopsys Installation Framework is also required to install SCL.
  - **License Key File:** This file corresponds to your RSoft license. If updating the RSoft software you do not need to update your license key file if the installed and new versions have the same first two numbers, i.e. 2015.06 to 2015.06-2.
  - **USB Dongle:** Purchased licenses require a USB dongle corresponding to your license.
- **Installation on Clients:** If the client is the same machine as the server, or if the installation on the server was to a shared location, then nothing additional needs to be installed on the client. Otherwise, the RSoft Installer must be installed on each client.
- **User Configuration:** Each user's environment must be configured as documented later.

## How to Get the Installation Items:

- **Evaluators** will receive instructions via email.
- **Customers who purchased directly from Synopsys** should create a SolvNet account to download installation files as well as License Key Files at <http://solvnet.synopsys.com>. See the document ‘[Obtaining RSoft Software and License Keys](#)’ for further instructions.
- **Customers who purchased through a Distributor** will get these items via their distributor. See <http://optics.synopsys.com/support/support-global-contacts.html> for a list of distributors.

## System Requirements and Upgrade Notes:

See <http://optics.synopsys.com/rsoft/rsoft-product-system-requirements.html> for a list of supported systems. Most required dependencies are typically included on Linux systems by default; see [Section 2.F.2](#) for required packages and distribution-specific instructions. Note the following about upgrading:

- *Valid Maintenance Contract Required:* Don’t upgrade unless you have a valid maintenance contract as you may lose your installed version.
- *Backup:* Though not required, it is recommended to create a backup copy of the existing installation directory.

## 2.B. Linux Installation Steps

Gather the necessary items listed in [Section 2.A](#). These instructions are for a typical RedHat system, see [Section 2.F.2](#), for additional notes about installing on other distributions. Consult your System Administrator before following these steps. Contact us if installing both Component and System tools on the same machine ([Section 2.E](#)).

### Step 1: Running the RSoft Installer

*(On License Server and optionally on each network client)*

Copy the RSoft installer (`rsoft_XX.bin`) to the installation directory, e.g., `/usr/local`. Move to this directory and run it using these commands:

---

These instructions install to `/usr/local`; modify the paths used in these instructions and elsewhere in the documentation as appropriate if installing to a different directory.

---

```
cd /usr/local
chmod +x rsoft_XX.bin
./rsoft_XX.bin
```

The RSoft program files will be placed in the `/usr/local/rsoft/` directory. For a network installation it may be installed into a shared location where all users can access it, or on each computer that will use the software.

## Step 2: Installing the RSoft License Server

*(On License Server Only)*

### 1. Install SCL:

SCL v11.12 requires the files `SynospysInstaller_v3.3.run`, `scl_v11.12_common.spf`, and `scl_v11.12_linux.spf`. Other versions of SCL are installed similarly. Note: don't upgrade SCL if not required, the required version is listed in `/rsoft/readme/readme.txt`.

- Install the Synopsys Installer to `/usr/synopsys/installer`:

```
chmod 755 SynospysInstaller_v3.3.run
SynospysInstaller_c3.3.run -d /usr/synopsys/installer
chmod -R 755 /usr/synopsys/installer
```

- Move to the `/usr/synopsys/` directory and create the `/spf` subdirectory:

```
cd /usr/synopsys/
mkdir spf
```

- Move both SCL 'spf' files to the new `/spf` subdirectory and install SCL:

```
cd /usr/synopsys/installer
installer -install_as_root -gui -new_installer
```

Follow the prompts using default settings: set source directory to `/usr/synopsys/spf` and target directory to `/usr/synopsys`. Select SCL for installation and then select all SCL components.

You do not need a Site ID. Once completed, close the installer.

### 2. Install License Key File:

Copy the license key file (represented by `<lkf>`) to `rsoft/licenses` and install it:

```
cd /usr/local/rsoft/licenses
rsfixlic <lkf> rsoft.lic
```

See [Section 2.F.6](#) for more details about installing license key files.

### 3. Copy FLEX Dongle Library: *(Skip if not using a FLEX dongle)*

If using a FLEX USB dongle (your HOST ID starts with "FLEXID=") you must copy a required library file to `/usr/lib`:

```
cd /usr/synopsys/scl/11.X/linux64/drivers
copy libhasp_linux_x86_64.so /usr/lib
```

### 4. Start Licensing Daemons:

The RSoft License daemon (`rs1md`), the SCL daemons (`lmgrd/snps1md`), and, if required, the USB driver daemon (`aksusbd`) must be run on the license server. This is done by a sequence of

commands placed in your system startup script (e.g., `/etc/rc.d/rc.local`), which can be configured by executing the following command once during installation:

```
/usr/local/rsoft/etc/setup_rsoft /usr/local
```

For reference, the above will add the following commands to the startup script:

```
export RSOFT_PROGRAMPATH=/usr/local/rsoft/bin
#export RSOFT_LICENSEPATH=$RSOFT_PROGRAMPATH/./licenses
#export SCL_PATH=/usr/synopsys/scl/<version>
$RSOFT_PROGRAMPATH/./hardlock/hldinst_usb
$RSOFT_PROGRAMPATH/rslmgrd -install
$RSOFT_PROGRAMPATH/rslmd &
```

If did not install SCL and/or the license file to the default directory, then you will need to uncomment and edit the commented out lines above as appropriate.

See [Section 2.F.8](#) for more information about starting/stopping `lmgrd` and see [Section 2.F.4](#) for information about starting/stopping `rslmd`. Note that firewalls may need to be configured to allow both `lmgrd` and `rslmd` to communicate. See [Section 2.F.5](#) for details.

### Step 3: Configuring User's Environment to use RSoft Tools

Users must set several system environment variables to use the RSoft software. This is normally done in the users startup script for their default shell (e.g. `.bashrc` or `.cshrc`). Below we give the commands to be added to `.bashrc`:

---

Several optional commands are included and commented out. It is recommended to only insert these commands if needed as described below.

---

```
export RSOFT_PROGRAMPATH=/usr/local/rsoft/bin
export PATH=$PATH:$RSOFT_PROGRAMPATH
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$RSOFT_PROGRAMPATH
#export RSLM_SERVER=localhost
#export RSOFT_LICENSEPATH=$RSOFT_PROGRAMPATH/./licenses
#export SCL_PATH=/usr/synopsys/scl/<version>
#export P4_RSHCOMMAND=rshlocal
```

Optional Commands:

- If you are installing a network client license, you should set the `RSLM_SERVER` variable to point to the IP address of the RSoft License Server.
- If you must manually restart licensing from the client machines (via `rslmd` and/or `rslmgrd` commands), and if did not install SCL and/or the license file to the default directory, then you will need to uncomment and edit the `RSOFT_LICENSEPATH` and `SCL_PATH` variables. Most users will not have to use this option.
- If you are using FullWAVE or MOST clustering between machine, you will have to change the `P4_RSHCOMMAND` variable as described in [Chapter 3](#).

## Step 4: Running the RSoft Software

Once installed the software can be opened via the command `xbcad` for the RSoft Component Device Tools or via `OptSim` for OptSim/ModeSYS. See [Section 2.D](#) for troubleshooting help if the software does not start.

## 2.C. Support, Upgrades, and Resources

RSoft software normally comes with one year of maintenance that includes technical support, product updates, and resources.

- *Technical Support & Product Updates.*

Software sales and technical support worldwide is handled from our U.S. offices ([rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com)), except in those countries where we have international representatives. For information about how to contact us for support or for how to get product updates, go to: <http://optics.synopsys.com/support/index.html>.

- *Product Manuals and README Files*

Manuals can be accessed via menus and toolbar buttons in each program. Online help files are in the `/help` subdirectory; printable PDF versions are in the `\docs` subdirectory. README files are in the `readme` subdirectory and contain the latest information about new or improved features and options.

- *Example Design and Tutorial Files*

The software comes with an extensive set of examples and tutorial files in the `/examples` subdirectory. As it is easy to accidentally overwrite these files when experimenting, it is recommended to back up this directory such as home directory.

- *Resources on the Web*

You can go to our website ([optics.synopsys.com](http://optics.synopsys.com)) for additional RSoft product resources, such as how to contact technical support, the latest product news, and more.

We also provide a Customer Support Portal exclusively for our users. The portal includes extensive resources to help our software users become even more productive: including training materials, user group presentations, links to Webinar recordings, example models, and more. The portal can be accessed here: <http://support.opticalres.com>.

## 2.D. Troubleshooting a Linux Installation

If you have followed the installation procedure above and one or more steps were unsuccessful or if you get a licensing error when the software is opened here is a list of basic things to check:

---

If you are unable to find a solution, please contact us as described in [Section 2.E](#).

---

- **Error Message:** Follow any instructions in the error message, particularly instructions about collecting data to email [rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com) for additional help.
- **Check License Key File:** Make sure that you are using the correct license key file for your RSoft license.
- **Check USB Dongle:** For purchased licenses, make sure the USB dongle is plugged in, that the light in the dongle is continuously lit, and that the driver has been installed. See [Section 2.F.](#) for additional distribution-specific instructions and [Section 2.F.7](#) for dongle troubleshooting.
- **SCL Server Not Running:** The Synopsys Common Licensing (SCL) package is required to use the RSoft software. If the SCL server is not running, you will have to start it as described in the installation steps above or in [Section 2.F.8](#). If this fails, there may be a problem with SCL configuration. Contact us as described in [Section 2.E](#).
- **Check Flexlog:** The `\licenses\flexlog.txt` file can contain useful information to help solve installation problems. Some things to look for are:
  - If the flexlog is not present, or if the timestamps in the file are old, SCL is not running correctly. Contact us as described in [Section 2.E](#).
  - If the USB dongle is not recognized or if it does not match the license file, you will get a -97 SCL error message and the flexlog will contain a message like `'SERVER line says XXXX, hostid is...'`. See [Section 2.F.7](#) for further instructions.
- **Firewalls & Antivirus/Security Software:** Ensure firewall(s) are opened as described in [Section 2.F.5](#). Note firewall issues can occur for both Nodelocked and Network licenses.

## 2.E. Contact Us for Help!

Contact RSoft Support for help with installing the RSoft products and SCL by emailing [rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com); if you have obtained the software through a distributor, contact your distributor. See <http://optics.synopsys.com/support/support-global-contacts.html> for a list of distributors. Please provide a description and screenshot of the problem, as well as a copy of the `flexlog.txt`, `rsoft.lic`, and `rslmdlog.txt` files (all in `/licenses`) if applicable.

## 2.F. Additional Linux Installation Information

If after performing the installation an error message appears when the program is opened, review the instructions above and the notes in this section. If a solution cannot be found, contact us.

## 2.F.1. Missing Libraries & Required Packages

Most required dependencies are typically included on Linux systems by default. However, depending on your exact configuration, some additional steps might be required.

### Missing Libraries:

Use the command `ldd <binary>` to see which libraries required by a file. If libraries are missing, check your distribution's repository first. If no library is available check the `/etc` subdirectory in the RSoft installation directory. These libraries can be installed by moving to the `/bin` subdirectory and using the command `tar zxf ../etc/libXXX.taz`, where `XXX` corresponds to the library name.

### Required Packages:

- If installing the USB dongle driver you will need your distribution's 32-bit compatibility package. Errors include `'...aksusb: not found'` or `'bad ELF interpreter'`. See Distribution Specific Instructions below for more details for RedHat/CentOS and Ubuntu.
- 75dpi and 100dpi font packages are required. Some distributions also require a font server. See Distribution-Specific Notes in [Section 2.F.2](#).
- SCL (Synopsys Common Licensing) requires the LSB (Linux Standards Base) package. If you get error messages such as `'No such file or directory'` or `'bad ELF interpreter,'` when running `lmgrd`, check to see if the LSB package is installed; on RedHat/CentOS, try the `redhat-lsb` package and on Ubuntu try the `lsb` package.
- The `openmotif` package is required.
- If using SE Linux and you get messages about a needed library (but not that it is missing), move to the `bin` subdirectory and give the command `../etc/chconlib *.so*`.

## 2.F.2. Distribution-Specific Instructions

This section contains distribution-specific instructions that some of our users have found useful. Since every Linux system can be slightly different, the specific steps you need might be slightly different. Please consult your System Administrator before trying these steps; contact us ([Section 2.E](#)) with questions.

### Installing the USB Dongle on RedHat/CentOS 7.x or Ubuntu Systems

Installing the USB dongle driver on RedHat/CentOS 7.x or Ubuntu systems requires some additional steps:

- The 32-bit compatibility package is required (`glibc.i686` for RedHat/CentOS or `libc6-dev-i386` for Ubuntu).
- Remove the dongle if attached.

- Stop all ‘aksusbd’ daemons: Run ‘ps -ef | grep aksusbd’, kill all the processes, and then run the ps command again to check that they are gone.
- Copy the file /usr/local/hardlock/80-hasp.rules to /etc/udev/rules.d. Note that if you did not install to the /usr/local/rsoft you must modify the path to the aksusbd daemon in the 80-hasp.rules file several times.
- If using a FLEX dongle, you will need to copy the Flex Dongle Library as described in the main installation instructions in [Section 2.B](#).
- Install the USB driver with the command /usr/local/rsoft/hardlock/hldinst\_usb.
- Attach the USB dongle to the computer. It may be necessary to restart udev and reload the rules with the commands ‘service udev restart’ and ‘udevadm control -reload-rules’.
- An easy way to check if the dongle is recognized is using the commands: ‘rslmd -rsoftid’ (if your Host ID starts with ‘RSOFT=’) or ‘lmhostid -flexid’ (if your Host ID starts with ‘FLEXID=’).
- If this does not work, try one or more of the following and retry:
  - For older Ubuntu systems you may have to use the archived older 80-hasp.rules file.
  - Remove the executable bit from 80.hasp.rules (chmod -x 80-hasp.rules).
  - Try renaming the rules file 90-hasp.rules. This may help the changes become persistent after reboot.

## Installing 75dpi and 100dpi Fonts on RedHat and Ubuntu

If you get a message about missing fonts, try the following. If remotely accessing the Linux machine, you may have to do this both on the client and server.

- *RedHat*: install these 75dpi and 100 dpi font packages:

```
xorg-x11-fonts-75dpi
xorg-x11-fonts-100dpi
xorg-x11-fonts-ISO8859-1-75dpi
xorg-x11-fonts-ISO8859-1-100dpi
```

- *Ubuntu*: install the packages xfonts-100dpi and xfonts-75dpi. Additionally, it may be necessary to tell the X server where to find these fonts:

```
xset +fp /usr/share/fonts/X11/100dpi,/usr/share/fonts/X11/75dpi
```

### 2.F.3. DOS Format \*.ind & other text files

The Windows and Linux versions of Synopsys’ RSoft products are functionally identical and input files can be interchanged between platforms. However, input ASCII files transferred between Windows and Linux should be converted to the native format of the new platform. This is easily accomplished using the dos2unix and unix2dos utilities which are most likely included with your Linux distribution but if not are widely available on the Internet.



## 2.F.4. RSoft License Manager (rslmd)

There are several commands can be used to interact with the daemon:

```
options:
  -? or -help  prints this message
  -install     installs the service (Windows only)
  -remove      removes the service (Windows only)
  -start       starts the server as a background process
  -stop        stops the currently running server
  -restart     restarts the currently running server
  -restartall  restarts both rslmd and rslmgrd (i.e. LMGRD)
  -status      lists the running programs
  -version     displays the local and server version
```

The `rslmd` program keeps a log (`/licenses/rslmdlog.txt`), which may contain useful information for debugging licensing problems.

## 2.F.5. Firewall Configuration

Firewall(s) must be configured to allow the RSoft License Manager (`rslmd`) to communicate via port 8988, and the SCL Server (`lmgrd`) to communicate on port 27020. Note that SCL uses another ‘vendor’ port which is chosen when the server starts. This typically does not cause problems, but if you have opened both standard ports and still experience issues such as a -96 SCL error, rerun the `rsfixlic` utility with `-vport` option to force the vendor port to +1 more than the SCL port (vendor port is 27021 when the SCL port is the default 27020). See [Section 2.F.6](#) for more details.

### Using a Custom SCL Port

While it is recommended to use the default SCL port (27020), another port can be used if necessary. To do this, create a text file named `rslmd.ini` in the `/licenses/` folder with the following content:

```
[RSLMD]
snpslmd_license_file=27020@localhost
```

Changing the port in this file will change the SCL port used. Note that you will also must manually change the port on the ‘SERVER’ line in the license key file as well.

## 2.F.6. Installing the License Key File

---

See [Section 2.A](#) for details about obtaining license key files. License key files are not required for network client installations.

---

Installing a license key file requires you to edit the file and copy it to the correct location. This process is automatically done by the `rsfixlic` utility. The basic usage is to copy the license key file (represented by `<lkf>`) to the `/licenses` directory and running these commands:

```
cd /usr/local/rsoft/licenses
rsfixlic <lkf> rsoft.lic
```

The edited license file (`rsoft.lic`) will be put in the `/licenses` folder. Use the `-vport` option to set the SCL vendor port described in [Section 2.F.5](#):

```
rsfixlic -vport <lkf> rsoft.lic
```

## Manually Editing the License

To manually edit a license file and install it, open it in a text editor and make the following changes:

- Change `'hostname1'` on the line that begins with `'SERVER'` to the name of the computer where the license key file will be installed.
- Make sure the port (after the Host ID) on the line that begins with `'SERVER'` is set to `27020`.
- Change `'path/to/snpslmd'` on the line that begins with `'VENDOR'` to `'snpslmd'`.
- Optional: you can set the vendor port by adding it to the end of the line that begins with `'VENDOR'`. The syntax for this line is `'VENDOR snpslmd snpslmd port=27021'`.

Save the edited file as `/licenses/rsoft.lic` and start the SCL server.

## 2.F.7. USB Dongle Drivers and HOST ID

If your license requires a dongle and the correct USB dongle is not recognized, you will get a `-97 SCL` error message and the flexlog (`/licenses/flexlog.txt`) contains a message like `'SERVER line says XXXXX, hostid is...'` (where `XXXXX` is your actual Host ID).

You can check that the dongle is working correctly by using the commands `'rslmd -rsoftid'` (RSoft dongles) or `'lmhostid -flexid'` (FLEX dongles). Both commands will return the Host ID of the dongle which should match what is physically written on the side of the dongle.

### What to Check

- Make sure that the dongle is attached and that the red light inside the dongle is continuously lit. If it is not lit, try installing the dongle driver as described below or try another USB port. If the dongle is blinking, contact us as described in [Section 2.E](#).
- If using the software on a virtual machine, make sure that the emulation software is set so that the virtual machine sees the dongle attached to the parent machine.
- If you get errors like `'aksusb: not found'` or `'bad ELF interpreter'`, make sure you have your Linux package's 32-bit compatibility package installed. See [Section 2.F.2](#) for distribution specific instructions.
- If using a FLEX dongle and you get a `'Can't get hostid of type 15 []'` error in the flexlog (`\licenses\flexlog.txt`), make sure the `libhasp_linux_x86_64.so` library is copied as described in the installation steps.

- Make sure the dongle driver is installed as described in the installation steps.

## 2.F.8. Manually Stopping & Starting SCL

If the license key file has been installed and the SCL server has been started, most SCL errors occur when the SCL server is not running. While ensuring that the USB dongle is attached and restarting the computer will fix most problems, this is not the preferred solution. The `rslmgrd` utility can be used to easily interact with the SCL Server. To stop and start the SCL server, use these commands:

```
rslmgrd -restart
```

Note that the server can take several seconds to completely start. Other commands can be used to interact with the SCL server to install or remove the server. To see a complete list of options, use the command `rslmgrd -help`.

You can check if the SCL server has correctly started by looking at the `licenses/flexlog.txt` log file. Additional information can be found in the `rslmdlog.txt` file in the same directory.

Alternatively, you can start the SCL server with the command:

```
<scl_path>/linux/bin/lmgrd -c /usr/local/rsoft/licenses/rsoft.lic  
-f /usr/local/rsoft/licenses/flexlog.txt
```

where `<scl_path>` is the SCL installation path.

## 2.G. SCL Errors

SCL error codes indicate the type of error that has occurred. Additional information is shown in the SCL error dialog and, in some cases, more detailed information can be found in the `flexlog.txt` file (in `/licenses` by default).

---

The error code refers to the first number in the SCL error; look under ‘-97’ for a ‘-97,121’ error.

---

Error Code	Description
-97	<p><i>The desired vendor daemon is down</i></p> <p>This class of errors occurs when the SCL license server has gone down. Check <code>flexlog.txt</code> for additional details about your specific error. The error is usually due to one of the following:</p> <ul style="list-style-type: none"> <li>• The USB dongle is not connected or recognized.</li> <li>• All products licensed in the license key file have expired. In this case, <code>flexlog.txt</code> will indicate ‘<i>No features to serve, exiting.</i>’ Contact your account representative for more details.</li> </ul>

	<ul style="list-style-type: none"> <li>• The computer was woken up from hibernation/sleep and the SCL server did not come back online.</li> <li>• The license key file was modified or edited incorrectly.</li> </ul>
-96	<p><i>License server machine is down</i></p> <p>This error occurs when the client computer (where the software is being used) is not able to contact the license server. Check that the server is running, and that the client can access the server machine. See <a href="#">Section 2.F.5</a> for details about firewall configuration.</p>
-88	<p><i>System clock has been set back</i></p> <p>This error indicates that the system clock may have been changed. Make sure the system time is correct, and, if the problem persists, contact RSoft support as described in <a href="#">Section 2.E</a>.</p>
-18	<p><i>License server system does not support this feature</i></p> <p>If this error mentions the feature ‘<code>RSOFT_LMGRD_CHECK</code>’, the SCL Server is most likely not running correctly.</p> <p>In all other cases, this error occurs when an unlicensed feature is attempted to be used. If you get this error while using a feature that you should be licensed for, please check your license key file and contact your account representative.</p>
-15	<p><i>Cannot connect to license server system</i></p> <p>This class of errors occurs when the SCL license server did not successfully start, or has not finished starting. Check <code>flexlog.txt</code> for additional details about your specific error. The error is usually due to one of the following:</p> <ul style="list-style-type: none"> <li>• If there are no errors in <code>flexlog.txt</code> then the SCL server has not finished starting. Wait 30 seconds and try to open the software again. If the error persists, wait a few minutes, check <code>flexlog.txt</code> again, and if no errors, try to open the software.</li> <li>• If <code>flexlog.txt</code> contains an error, the usual cause is that the USB dongle is not connected or recognized or the license key file was not installed correctly. Make sure the USB dongle is recognized, and the license key file has been installed correctly, and then try starting SCL.</li> </ul>

-9	<p><i>The hostid of this system does not match the hostid specified in the license file</i></p> <p>This class of errors can occur in the following cases:</p> <ul style="list-style-type: none"><li>• The USB dongle is not recognized.</li><li>• The software is being used through Remote Desktop. If this is the case, contact RSoft support as described in <a href="#">Section 2.E</a>.</li></ul>
----	--



# 3

## Cluster Installation

This chapter describes the configuration of a cluster for both Windows and Linux systems. Synopsys' RSoft products support a customized version of the MPICH2 implementation of MPI from Argonne National Lab (Copyright 2002 Argonne National Lab). The complete distribution and further information regarding MPICH2 can be found at <http://www.mcs.anl.gov/mpi/mpich2/>.

### 3.A. Pre-Install Checklist

Please read this section before starting to use clustering features.

- *Licensing*

Clustering allows simulations to use multiple cores, CPUs, or machines utilizing the message passing interface (MPI). Clustering is included with every license of FullWAVE. The number of processes is limited by the number of FullWAVE licenses available, and each machine to be used in the cluster must be licensed for FullWAVE.

- *Basic Software Installation*

Before configuring a cluster installation, the software should be installed on all nodes (computers) as described in the previous chapters.

- *Cluster Installation and Testing*

It is recommended that all cluster users first configure and test a standalone cluster. Users who are licensed for network clustering can then proceed to configuring and testing a networked cluster.

## 3.B. Configuring and Testing a FullWAVE Cluster

---

See Chapter 6 in the MOST manual for instructions on configuring and testing a MOST cluster.

---

A standalone (e.g. non-networked) cluster allows users to utilize multiple cores/CPU's in a single computer, and networked clusters allows users to utilize multiple cores/CPU's across a computer network.

### 3.B.1. 'Standalone' FullWAVE Clusters

Standalone clustering is enabled by default. If the software installation has been successful, there should be no additional configuration necessary. If not, here are some steps to follow:

- Windows users need to install MPICH to use a 'standalone' FullWAVE cluster. This is done automatically during installation but can be done manually as described in [Section 1.G.2](#).
- Linux users need to set the environment variable `P4_RSHCOMMAND=rshlocal` in their login script. This is automatically done by the software, but can be done manually if needed.

To test clustering, open the file `\examples\FullWAVE\wg.ind` in the CAD interface. Click the **Perform Simulation** button in the left toolbar. Make sure that *Auto* is set in the **Cluster Options** dialog and that **# Procs** is set to **Auto**. Click **OK** to start the clustered simulation. See the FullWAVE manual for more details about using clustering.

### 3.B.2. Configuring and Testing a Networked Cluster

A networked cluster allows users to utilize multiple cores/CPU's/machines on a network. First the connectivity between the nodes must be ensured, and then the cluster can be tested. Note that clusters cannot be a mix of Windows and Linux machines.

#### Ensuring Network Connectivity

Nodes within a cluster must be able to access the same simulation data and communicate with each other across the network to remotely start jobs and share data.

#### Windows Clusters

To ensure network connectivity under Windows, perform these steps:

- *Configure firewall(s)*  
Any firewalls on the network must be configured to allow MPICH2 traffic to pass through it.
- *User accounts and running mpiexec*

MPICH2 requires that a single user account be able to remotely access and start simulation jobs on all computers in the cluster. The account should be created on each node if using a Windows



workgroup, or created on the domain controller if using a Windows domain. Do not use user accounts with the name 'administrator' or blank passwords.

To enable MPICH2 access, issue this command on the master node:

```
mpiexec -register
```

Enter the username and password to be used. To check that the user does indeed have remote access, issue the command

```
mpiexec -validate -host cluster_node_name
```

where `cluster_node_name` is the name of a specific node computer. Repeat this test for all nodes in the cluster.

- *Using a shared workspace*

The working directory where simulation files are stored must be a shared folder on the network that all cluster nodes can access and have full read/write permission. Furthermore, it must be accessible via the same path by all nodes in the cluster.

- Open design files (`.ind`) via their UNC path on the master node. For example, if design files are located in the directory `c:\tmp` on a computer named `master_node`, and this directory is shared on the network as `cluster_sims`, open the file from the location  
`\\master_node\cluster_sims.`
- Map a shared drive to the shared directory where the design files are located. For example, if the local drive `c:\tmp` on the master node is shared on the network and mapped as `z:` on all the nodes, open the file from the mapped drive (`z:\`) on the master node.

In both scenarios, each node will be able to access the design files using the same path.

## Linux Clusters

To ensure network connectivity under Linux, perform these steps:

- *Configure firewall(s)*

Any firewalls on the network must be configured to allow MPI traffic to pass through it.

- *Enable ssh*

You must enable `ssh` to remotely access nodes involved in a networked cluster (note `ssh` is not needed for local clustering). You should ask your system administrator if these steps are necessary as many systems already have this enabled:

- Add `'export P4_RSHCOMMAND=ssh'` to your user login file.
- Assuming that the cluster has a shared directory structure and that your home directory is the same when you log into any node, issue the command `'ssh-keygen -t dsa'` from your home directory.

- Accept all the defaults (including the empty passphrase), then issue the commands ‘`cd ~/.ssh`’ and ‘`cp id_dsa.pub authorized_keys2`’. This will allow you to `ssh` from one node to another without a password.
- Test this by using the command ‘`ssh cluster_node_name`’ twice from the master node. The first time you try each node, you will get a question about the authenticity of the host - type `yes` to continue. After that, you will not be asked again.
- This should be repeated for each cluster node.

- *Creating a shared workspace*

The working directory where simulation files are stored must be a shared folder on the network that all cluster nodes can access and have full read/write permission. Furthermore, it must be accessible via the same path by all nodes in the cluster. This is most easily done by accessing all design files and running all simulations with UNC paths. For example, if design files are located in the directory `\tmp` on a computer named `master_node`, and this directory is shared on the network as `cluster_sims`, open the file from the location `\\master_node\cluster_sims`.

- *Environment Variables*

In order for remote shells created by `ssh` to function correctly, they require any variables defined locally to be set in the new shell. Since `ssh` only uses standard shell initialization files, make sure that any environment variables used by RSoft software (`RSLM_SERVER`, `PATH`, `RSOFT_PROGRAM_PATH`, `LD_LIBRARY_PATH`, etc.) are defined in the standard login file.

- *X11 forwarding*

For FullWAVE simulation windows to appear on the master node, you must enable X11 forwarding in the `ssh` configuration file. This can be done by creating (or editing) the `~/.ssh/config` file and adding the line ‘`ForwardX11=yes`’. FullWAVE can of course be used in a non-graphic mode if desired.

## Testing a Networked FullWAVE Cluster

First test each node separately and then test as a group.

### Testing Nodes Separately

Open a command prompt on a node, move to the `\examples\FullWAVE` directory, and issue the following command:

```
fwmpirun -np1 -hosts localhost -show1 wg.ind
```

This command indicates that a clustered simulation of the file `wg.ind` should be performed on the local machine with one process (CPU). A FullWAVE simulation window should open showing a ‘normal’ simulation of a simple waveguide.

Next, issue this command to use two processes (CPUs) on the local machine:

```
fwmpirun -np2 -hosts localhost -show1 wg.ind
```

A FullWAVE simulation window should open that shows half of the simulation domain seen before. If this appears MPICH is working correctly. This should be repeated on all nodes to ensure they function correctly.

## Testing Nodes Together

Once the nodes have been verified to work on their own, the networked aspect of the clustering can be tested. Open a command prompt on the master node and move to the shared directory created in the previous section. Copy the file `\examples\FullWAVE\wg.ind` to this directory and issue the command

```
fwmpirun -np2 -hosts master_node_name,cluster_node_name -show1 wg.ind
```

where `master_node_name` and `cluster_node_name` are the names of the master node and a cluster node respectively. Note that the path to the design file (`wg.ind`) might have to be modified as described in the previous section depending on where it is located. If everything has been set up correctly, a simulation window will open showing half of the simulation domain. Repeat this test with the rest of the cluster nodes to ensure they have been set up correctly.

For more details on the usage of FullWAVE clustering, including how to integrate FullWAVE with a cluster scheduling system, see Chapter 7 in the FullWAVE manual.



# 4

## Uninstalling

Should you choose to uninstall Synopsys' RSoft products, please follow these instructions:

### 4.A. Uninstalling the Package

Before uninstalling the software, it is recommended to back up the installation directory including any license key files and user work.

Some of these steps require administrative (root) access and, if done incorrectly, can seriously impair your system; consult your IT department before performing any of these steps.

#### **Windows:**

In most cases, it is sufficient to uninstall the package via the Add/Remove Programs option in the Control Panel. However, if it is necessary to completely remove the package, use these steps:

- Run the following commands from the command line (DOS Window) to remove the MPI daemon, the License Manager, and USB dongle driver:

```
smpd -remove
```

```
rslmd -remove
```

```
haspdinst -fremove
```

- Remove the following environment variables if they exist: `RSLM_SERVER`, `RSOFT_PROGRAMPATH`, `RSOFT_LICENSEPATH`, `RSOFT_MATLIB_GROUP_PATH`, or `HLS_IPADDR`.
- Delete `BCADW32.INI`, `WINPLOT.INI`, and `LASERMOD.INI` from the user's home directory.
- Modify the `PATH` environment variable to remove RSoft's executable directories `c:\rsoft\bin` and `c:\rsoft\bin32`.
- Delete the installation directory (`c:\RSoft` by default).
- If needed, uninstall SCL (Synopsys Common Licensing) from the Windows Control Panel.

If all of the above steps have been completed, it should be able to be removed. If not, contact Synopsys at [rsoft\\_support@synopsys.com](mailto:rsoft_support@synopsys.com).

## Linux:

To uninstall the package under Linux, remove any commands from login/startup scripts related to the package, including:

- Commands that start the USB dongle driver and License Daemon.
- Remove the following environment variables if they exist: `RSLM_SERVER`, `RSOFT_PROGRAMPATH`, `RSOFT_LICENSEPATH`, `LD_LIBRARY_PATH`, `RSOFT_MATLIB_GROUP_PATH`, or `HLS_IPADDR`.
- Commands that add the executable directories `/usr/local/rsoft/bin` and `/usr/local/rsoft/bin32` from the system `PATH`.

Finally, delete the installation directory `/usr/local/rsoft`.

## 4.B. Uninstalling Older Versions

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These instructions are for versions earlier than RSoft CAD 5.0g, OptSim 4.0, and LaserMOD 2.0.

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To remove any of these versions, it is first recommended to back up any license key files and the installation directory (usually `C:\BEAMPROP`, `C:\LINKSIM`, or `C:\LaserMOD` on Windows, `/usr/local/beamprop` on Linux). Then, depending on the platform, perform the following:

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These steps require administrative access and, if not done correctly, can seriously impair your system; consult your IT department before performing any of these steps.

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- *Windows only:* Remove dongle driver by opening a Command Prompt (DOS Window), moving to the old installation directory, and issuing the following command: `'hldinst -remove'` or `'hlinst -d'`. If you are running a network license server, first stop and remove the server by typing `'hls32svc -remove'`.

- *Linux only:* Remove any lines in `rc.local` or other startup scripts for the dongle driver.
- Remove any environment variables for RSoft products that you may have set and remove all `PATH` settings that refer to the installation directory.
- Delete the installation directory.
- *Linux only:* Links in `/usr/local/bin` will be broken after deleting/renaming the old installation directory. These can be manually removed, or, if installing the new version, can be automatically removed.