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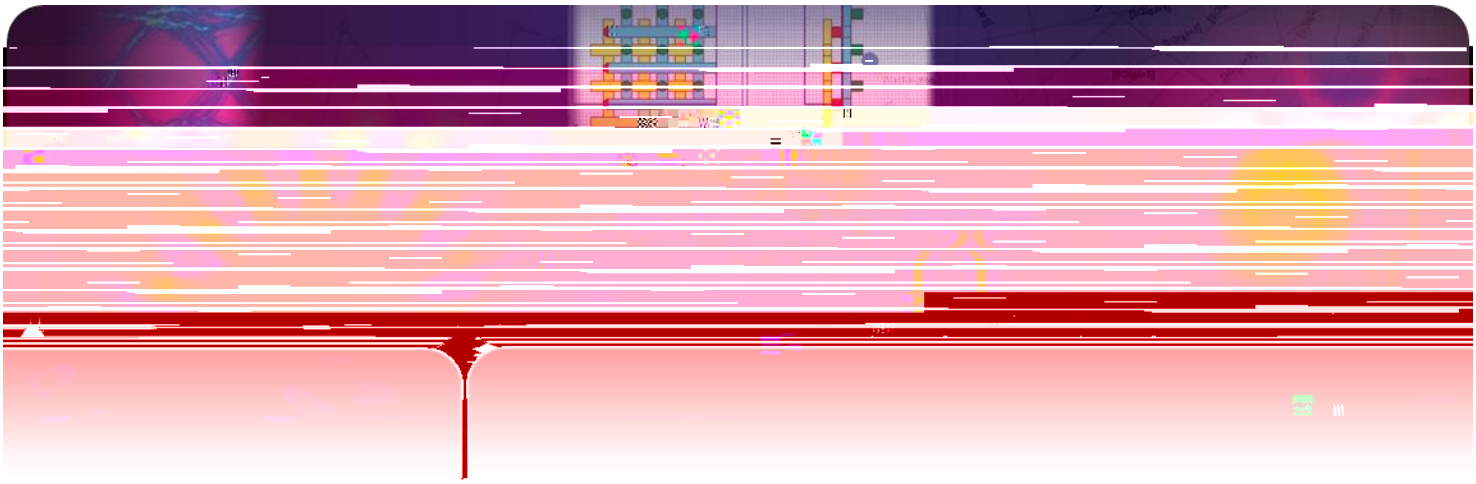

Photonic Solutions

Installation Guide

v2022.09

Synopsys, Inc.

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Free and Open Source Software (FOSS) notices are located in the \readme subfolder of the RSoft installation folder.

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How to Get the Installation Items:

Evaluators will receive instructions via email.

Customers who have purchased directly from Synopsys should create a SolvNetPlus account to download installation files as well as License Key Files at http://solvnetplus.synopsys.com/. Contact us at photonics_support@synopsys.com if you need assistance. The Photonic Solutions tools appear in the product list with name starting

Manuals can be accessed via menus and toolbar buttons in each program. For the RSoft tools, online help files are in the `\help` subdirectory; printable PDF versions are in the `\docs` subdirectory, and 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 RSoft 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. See the OptoDesigner manual for details about OptoDesigner examples.

Resources on the Web

You can go to our website (https://www.synopsys.com/photonic-solutions.html) for additional product resources, such as how to contact technical support, the latest product news, and more.

Synopsys provides the SolvNetPlus portal exclusively for customers, including resources to help our software users become even more productive, including downloads, documentation, knowledge articles, training, user group presentations, past webinar recordings, example models, and more. The portal can be accessed here: https://solvnetplus.synopsys.com/.

Error Message: Follow any instructions in the error message, particularly instructions about

1.G.1. Setting the PATH for RSoft

The `bin` directory (`C:\Synospys\PhotonicSolutions\XXXX.XX\RSoft\bin` by default, where `XXXX.XX` is the version numbe `PATH`. Contact your IT Department to assist you in modifying the `PATH`. Note that the installer does this by adding this to the PATH:

```
%PHOTONIC_SOLUTIONS_ROOT%\%PHOTONIC_SOLUTIONS_VERSION%\RSoft\bin
```

where `PHOTONIC_SOLUTIONS_ROOT` is set to the installation root directory (`C:\Synopsys\PhotonicSolutions` by default) and `PHOTONIC_SOLUTIONS_VERSION` is set the version number. To change versions, simply change the `PHOTONIC_SOLUTIONS_VERSION` variable.

1.G.2. MPI Installation Steps

This section is only applicable to FullWAVE FDTD and MOST when used for network clustering. See

1.G.6. Installing the License Key File

License key files have start and end dates and will not work outside this range. License key files are not needed when installing on network client. See Section 1.A for details about obtaining license key files.

License key files are most easily installed with the installer or the Configure Licensing Utility (Section 1.D). For additional help with SCL contact us as described in Section 1.F.

To manually install a license key file, use the `rsfixlic` utility (semi-automated) or manually edit the license key file:

Using rsfixlic:

Copy the license key file (represented by `<lkf>`) to `rsoft/licenses` and run the command `rsfixlic <lkf> rsoft.lic`. Use the `-vport` option to set the SCL vendor port described Section 1.G.4. You will have to restart SCL for the change to take effect, most easily done with the Configure Licensing Utility (Section 1.D).

Manually Edit License Key File:

`hostname1` `SERVER` line to the name of the License Server

Set the port on the `SERVER` line, it is `27020` by default

`path/to/snpslmd` `VENDOR` `snpslmd`

Optional: Set the vendor port by adding port=`27021` (or any other port) to the end of the `VENDOR`

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 t

1.G.9. Headless Installation for Network Clients

To install silently for network clients, use the following options:

Set the temporary environment variable `LICENSE_SETUP_OPTION` to `2` (use network client licensing)

Run the installer with the following options:

	client can access the server machine. See Section 1.G.4 for suggested firewall configurations.
-88	*System clock has been set back* 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 Section 1.F.
-18	*License server system does not support this feature* If this error mentions the feature `RSOFT_LMGRD_CHECK` likely not running correctly. Try restarting SCL with the Configure Licensing Utility (Section 1.D) or look `flexlog.txt` for additional details. 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.

-15 *Cannot connect to license server system*

This class of errors occurs when the SCL license server did not successfully start, or has not finished starting. Check `flexlog.txt` for additional details about your specific error. The error is usually due to one of the following:

If there are no errors in `flexlog.txt` 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 `flexlog.txt` again. If there are no errors contact us (Section 1.F).

If `flexlog.txt` contains an error, the usual cause is that the USB dongle is not

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Photonic Solutions software is installed to `<synopsys-root>/photonicsolutions`, referred to as `<ps-root>` in these instructions. Software is installed in versioned sub-directories. The version is referred to as `<ps-version>` and so the path of an individual version will be `<ps-root>/<ps-version>`.

Step 1: Running the Installers

There are two methods to install Photonics Solutions software on Linux:

Use this method if you are familiar with installing Synopsys spf files with the Synopsys Installer and either have an existing SCL license server or are familiar with setting up a SCL server manually.

You should install the required `photonicsolutions` spf files using the Synopsys Installer. The installation directory corresponds to `<synopsys-root>` described above. Additional steps are required to install OptoCompiler, see the OptoCompiler manual for more details.

If not using an existing SCL installation, you will have to download and set up an SCL server manually. We assume that

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.

2.F.2. Required Packages, Distribution-Specific Requirements, & Missing Libraries

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 and Required Packages:

This is a list of general requirements, see next section for distribution-specific requirements.

If you get a message about a missing library, Use the co `ldd <binary>` e which libraries required by a file.
library is available check the `etc` subdirectory in the RSoft installation directory. These libraries can be installed by moving to the `/bin` subdirectory and usin `tar zxf ../etc/libXXX.taz` `XXX` corresponds to the library name.

SCL (Synopsys Common Licensing) requires several packages:

The LSB (Linux Standards Base) package is required. If you get err *No such file or directory* *bad ELF interpreter* `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 `csh` package is required.

If installing the USB dongle driver you will need yo 2-bit compatibility package. *bad ELF interpreter* Instructions below for more details for RedHat/CentOS and Ubuntu.

75dpi and 100dpi font packages are required for the RSoft tools. Some distributions also require a font server. See Distribution-Specific Notes in the next section.

The `openmotif` package is required for the RSoft tools.

If using SE Linux and you get messages about a needed library (but not that it is missing), move to the `bin` s `../etc/chconlib *.so*`

OptoDesigner requires the `lsb_release` command available, this is a part of the redhat-lsb-core package on CentOS, the lsb-core package on Ubuntu, and the lsb-release package on openSUSE.

Distribution-Specific Instructions:

This section contains distribution-specific instructions that some of our users have found useful. Since every Linux system can be slightly amufffTQ0.00000911 5612,

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

Using Custom SCL Ports

While it is recommended to use the default SCL ports (27020, 27021), you can use other ports by editing the license file to use the new ports on the `SERVER` and or `VENDOR` lines. You will have to restart SCL to make any changes take effect. You will have to restart SCL to make any changes take effect. You can also use the `rsfixlic` utility with `-vport` option to force the vendor port to +1 more than the SCL port. See Section 2.F.6 for more details. You will have to restart SCL to make any changes take effect.

2.F.6. Installing the License Key File

License key files have start and end dates and will not work outside this range. License key files are not required for network client installations. See Section 2.A

Error Code	Description
-97	*The desired vendor daemon is down* This class of errors occurs when the SCL license server has gone down. Check `flexlog.txt` for additional details about your specific error. The error is usually due to one of the following: The USB dongle is not connected or recognized. All products licensed in the license key file have expired. In this case, `flexlog.txt` *No features to serve, exiting.* account representative for more details. The computer was woken up from hibernation/sleep and the SCL server did not come back online. The license key file

	or has not finished starting. Check `flexlog.txt` for additional details about your specific error. The error is usually due to one of the following: If there are no errors in `flexlog.txt` 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 `flexlog.txt` again, and if no errors, try to open the software. If `flexlog.txt` 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.
-9	*The hostid of this system does not match the hostid specified in the license file* This class of errors can occur in the following cases: The USB dongle is not recognized. The software is being used through Remote Desktop. If this is the case, contact RSoft support as described in Section 2.E.

A standalone (e.g. non-networked) cluster allows users to utilize multiple cores/CPUs in a single computer, and networked clusters allows users to utilize multiple cores/CPUs 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:

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/CPUs/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.

Starting the Hydra Service (Windows only)

See instructions in Section 1.G.2. Note that this service is only required for clustering between computers.

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
w

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

Test th `ssh cluster_node_name` ode. 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 modules or environment variables used by the software 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

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Uninstalling

Please follow these instructio Photonic Solutions tools.

Before uninstalling the software, it is recommended to back up the installation directory including any license key files and user work. Some of these uninstallation steps require administrative (root) access and can seriously impair your system; consult your IT department before performing any of these steps.

4.A. Uninstalling on Windows

The best way to uninstall is via the Add/Remove Programs option in the Control Panel. This should be sufficient to uninstall the software in most cases. Please contact us at photonics_support@synopsys.com with questions.

If it is necessary to completely remove the package, these manual steps may also need to be performed:

Run the following commands from the command line (DOS Window) to remove various items (see important notes):

Command	Description, Notes
`hydra_service -remove`	

other software on the computer. Only uninstall if you know that this will not affect other users/tools, contact your IT department with questions.