

PSCAD™

# Installing PSCAD (v4.5)

November 22, 2013

Revision: 4



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## APPENDIX A LICENSING ACROSS NETWORKS

# 1. Introduction

## 1.1 Overview

This document provides instructions for installing and configuring software and licencing. It is written for all PSCAD X4 v4.5 releases, which include PSCAD v4.5.0 to v4.5.3, and PSCAD License Manager v1.31 to v1.34.

The software includes PSCAD, Licence Manager, GFortran Compiler, and LiveWire. The licensing includes PSCAD licensing, LiveWire licensing, and Expanded Licensing. These instructions are intended for both Professional and Educational licenses, and for both Multi-User and Single-User licences. Instructions are included for contacting our support desk in case any issues are encountered.

Prior to beginning your installation, it is recommended that you determine which products to install ([Section 1.2](#)). Once you have set up your software and licensing (Sections 2 to 6 as applicable), it may be necessary to modify the setup. As such, instructions for adding and removing software, and for moving the license to a different computer are also included (Sections 7 and 8). To request assistance, see [Section 9](#).

### Note

This document is intended for new installations. If you are updating software, please refer instead to “Updating PSCAD”, available at <https://hvdc.ca/knowledge-library/reference-material>.

## 1.2 Determining Your Installation

It is recommended that you determine which products to install prior to beginning the installation. The products will depend on the type of license you have, the Multi-User licence (MUL) or the Single-User licence (SUL). For an MUL, this will also depend on whether the installation is on the licence Server or PSCAD Client computer. Table 1-1 may be used to help determine software and hardware requirements. Following the table are product descriptions.

Licence Type	Machine	Products							
		PSCAD	Licence File (License.txt)	Licence Manager	GFortran	LiveWire Lite (Demo)	Live-Wire	Expanded Licensing	USB Lock
<b>Multi-User licence (MUL)</b> <b>(Network Licence)</b>	PSCAD Licence Server	Opt	Yes	Yes**	Opt	Opt	Opt*	Opt*	Yes
	PSCAD Client Computer	Yes	No	No	Yes	Opt	Opt*	No	No
<b>Single-User licence (SUL)</b>	Computer running PSCAD and Licence	Yes	Yes	No	Yes	Opt	Opt*	No	Yes

**Legend:**  
 Yes = Installation is required  
 No = Installation is not recommended  
 Opt = Optional to install, not required  
 \*May be installed, but requires a licence to use  
 \*\*Typically installed. Refer to the [description of the Licence Manager](#) to see when not to install the Licence Manager.

**Table 1-1. Determining Your Installation**

### Multi-User licence

The Multi-User licence (MUL) is installed on a Server, and is used to share one or more PSCAD seats across a network to Client computers. For example, if the MUL consists of five seats, the MUL may issue up to five PSCAD licences at one time.

### Single-User licence

The Single-User licence (SUL) is a single licence that is used to run one instance of PSCAD at one time. This licence may be used on any computer on which the software, licence and USB lock are installed.

## **PSCAD**

PSCAD (Power Systems Computer Aided Design) is a powerful and flexible graphical user interface to the world-renowned, EMTDC electromagnetic transient simulation engine. PSCAD enables the user to schematically construct a circuit, run a simulation, analyse the results, and manage the data in a completely integrated, graphical environment. Online plotting functions, controls, and meters are also included, enabling the user to alter system parameters during a simulation run, and thereby view the effects while the simulation is in progress.

PSCAD comes complete with a library of pre-programmed and tested simulation models, ranging from simple passive elements and control functions, to more complex models, such as electric machines, full-on FACTS devices, transmission lines, and cables. If a required model does not exist, PSCAD provides avenues for building custom models.

## **Licence Manager**

The Licence Manager, installed on a Server computer, is used to manage the PSCAD seats on a Multi-User licence. These seats are issued to Client computers over a network. Each time a Client computer opens or closes PSCAD, it requests or relinquishes its seat, respectively.

There are two conditions under which the Licence Manager is never installed on the Server, as follows:

- On a computer running a Single-User licence.
- On a computer running a Multi-User licence when the following two conditions are both met:
  - The licence contains only one PSCAD seat, and
  - The licence will not be shared with Client computers across a network.

## **Licence File**

The licence file, "License.txt", is installed on the computer that is running the PSCAD licence. This file contains the following information about the licence:

- The type of licence:
  - MUL or SUL
  - Professional or Educational
- The type of software (PSCAD, Expanded Licensing, LiveWire)
- For an MUL, the number of PSCAD seats.
- If applicable, the licensed software's expiry date.

The licence file is used in conjunction with the USB lock to validate a licence. The licence file and USB lock are installed as follows:

- For an MUL, the licence file and USB lock are both installed on the Server computer. The Client computer is issued a PSCAD seat from the Server through a network.
- For an SUL, the licence file and USB lock are both installed on the local computer that is running PSCAD.

## **GFortran 95 Compiler**

A Fortran compiler is required to compile your simulations with PSCAD. The GFortran 95 compiler is a free product that is available as part of the installation.

If you own a Professional or Educational PSCAD licence, it is recommended that you purchase the Intel® Visual Fortran Composer XE 2011 (v12) compiler, mainly for its superior debugging environment and optimization features. The Intel v12 compiler has shown to provide EMTDC runtime executables that are significantly faster (twice as fast in some cases) than those built by its predecessor (Intel® Visual Fortran 11). Please contact our sales desk for purchasing details ([sales@pscad.com](mailto:sales@pscad.com)).

## **LiveWire**

LiveWire is a data analysis program that visualizes and analyzes data. It is not required for using PSCAD. There are two LiveWire packages available for installation:

- “LiveWire Lite (Demo)” is an unlicensed limited version of LiveWire, and is available for free.
- “LiveWire” is the fully-featured version, which may be licensed via either a trial or permanent license. This document includes instructions for obtaining the trial license; to purchase a permanent license, please contact our sales desk ([sales@pscad.com](mailto:sales@pscad.com)).

## **Expanded Licensing**

Expanded Licensing is provided to approved organizations whose Client computers reside on a different network than the Server. Please refer to [Appendix A](#) to determine whether this alternative licensing is required for your networking configuration.

## USB Lock

The USB lock is a device that plugs into the USB port of a computer. It is part of the licensing validation process. Refer to the [description of the licence file](#) for more information.

### 1.3 How to Use this Document

Sections 2 to 6 provide instructions for installing software and configuring licensing. Once you have determined which products are applicable for your installation ([Section 1.2](#)), begin the installation as follows:

- To install software and configure licensing for a Multi-User licence, proceed to [Section 2](#).
- To install software and configure licensing for a Single-User licence, proceed to [Section 3](#).

Within Sections 2 and 3, references are made to Sections 4 to 6 as applicable:

- GFortran is installed as per [Section 4](#).
- LiveWire is installed as per [Section 5](#).
- LiveWire is licensed as per [Section 6](#).

Sections 7 and 8 contain instructions that are related to making modifications after your installation and licensing are finalized, as follows:

- To add or remove software, see [Section 7](#).
- To move the licence from one computer to another computer, see [Section 8](#).

[Section 9](#) provides instructions for contacting our support desk in case you encounter any issues.

[Appendix A](#) provides networking requirements when using a Multi-User licence.

## 2. Software Installation and Licensing Configuration (MUL)

This section provides instructions for software installation and licensing configuration for the following types of licences:

- Professional Multi-User licences (MULs)
- Educational Multi-User licences (MULs)

These instructions include all required installations and configurations for the Server and Client computers, and should be completed in the order presented. Specifically, the Licence Manager and PSCAD licence (and LiveWire licence and Expanded Licensing as applicable) will be installed and configured on the Server. On the Client computers (and in rare cases, on the Server), PSCAD and GFortran (and LiveWire if applicable) will be installed and configured to obtain a licence from the Licence Manager.

The instructions for the Professional and Educational licences are very similar; any differences are as noted.

Before beginning these instructions, verify that the Client computers are on the same network as the Server, as described in [Appendix A](#). If any of the client computers are on a different network, your setup may require Expanded Licensing. Please contact [support@pscad.com](mailto:support@pscad.com) if you have any questions.

## 2.1 Configuring the Software Installation on the Server

Configure the software installation on the Server as follows:

- a. Upon purchasing the software, our sales desk will forward the following:
  - The software installation files. These files will typically either be saved to a website for download or saved to a compact disk (CD).
  - A USB lock.
  - The licence for running the software. This is a "License.txt" file, and will typically either be provided in an email or saved to a CD.

### **Note**

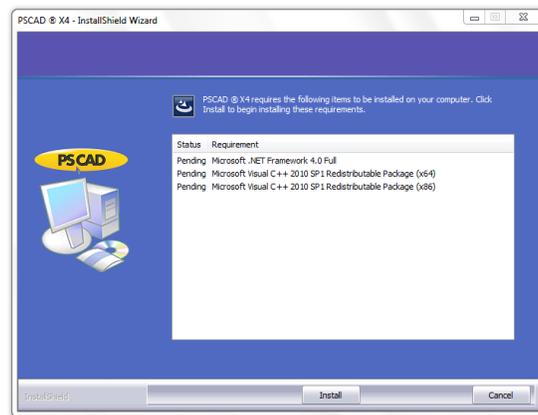
The licence file will contain the license for PSCAD, and if applicable, LiveWire and Expanded Licensing.

- b. Save the "License.txt" file to your computer desktop.
- c. If operating on Windows Vista or Windows 7, ensure that you have local administrator privileges prior to beginning the installation.
- d. Run "setup.exe" from the installation files.

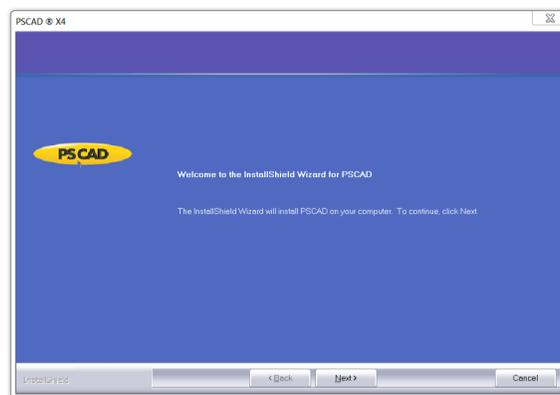
### **Notes**

1. If you downloaded the installation files, ensure that they are saved to a local drive rather than to a network drive.
2. For a PSCAD installation on the Server, the 32-bit version of PSCAD will be installed on a 32-bit machine, and both the 32-bit and 64-bit versions will be installed on a 64-bit machine. The suitable version may then be launched, as determined in [Step 2.5\(b\)](#).
3. If you encounter any installation issues, refer to [Section 9.1](#).

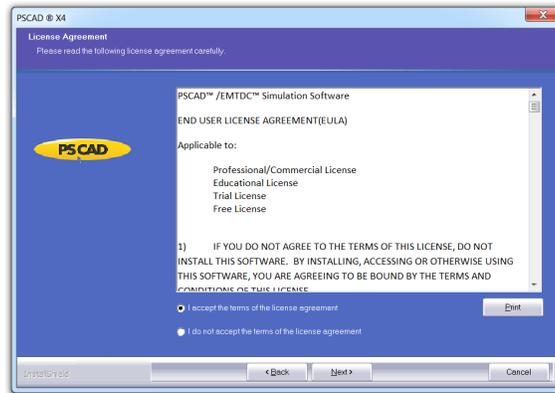
- e. The "User Account Control" dialog box may display to inquire whether you want to allow "setup.exe" to make changes to your computer. This message is a standard warning to protect your computer when an executable file is detected. Select "Yes" to begin the installation.
- f. The InstallShield Wizard will launch and display the following screen if any required prerequisite software must be installed. Select "Install".



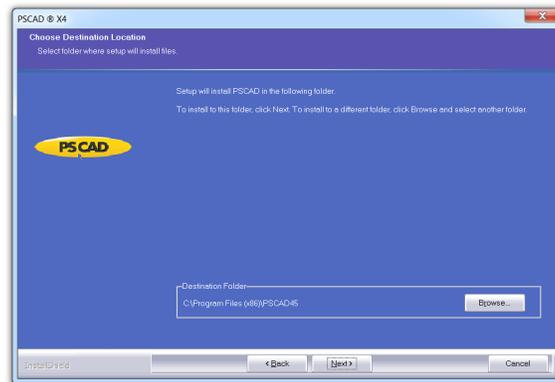
- g. Select "Next".



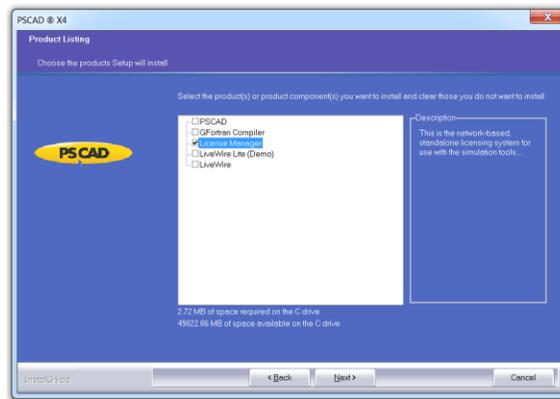
- h. If you agree with the software licence agreement, select "I accept the terms of the licence agreement", then select "Next".



- i. Review the default destination folder for the program files. To install to a different folder, set the file path with the "Browse" button. Select "Next".

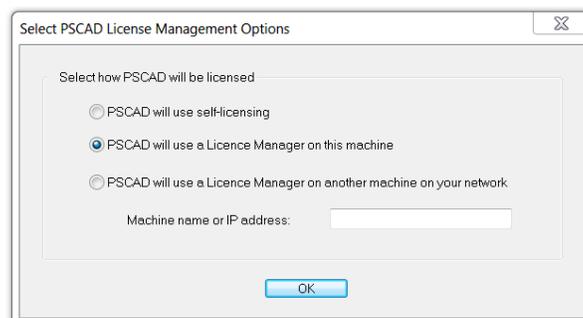


- j. From the “Product Listing” screen, select all required programs, then select “Next”. Normally, only the “License Manager” is installed on a Server. For Servers also running PSCAD, however, also select “PSCAD” and “GFortran Compiler” (and “LiveWire Lite (Demo)” to use the free limited version, or “LiveWire” to be licensed using either a trial or permanent license).

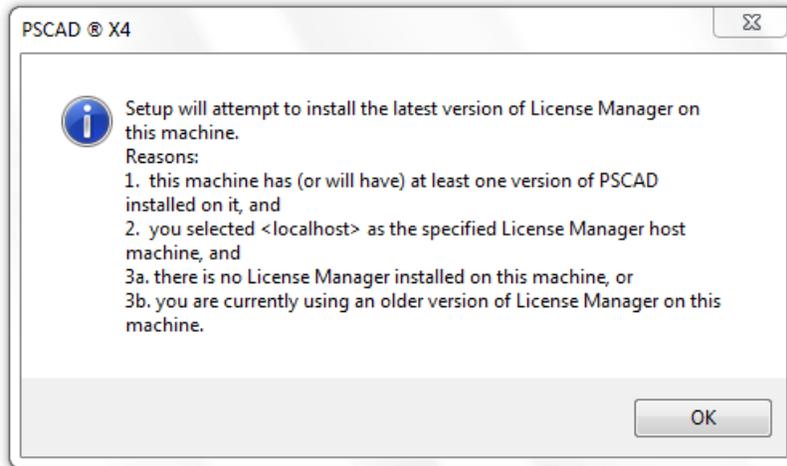


### Notes

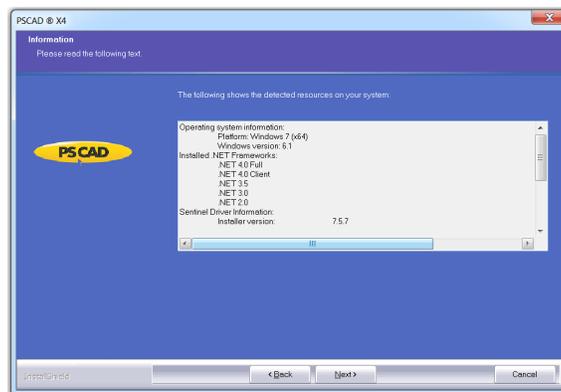
1. To select a product for installation, place a checkmark next to the product.
  2. To display a description of a product in the “Description” field, click on the product name.
  3. You may install or remove a product at a later time, in accordance with [Section 7](#).
- k. In the following dialog box, select “PSCAD will use a Licence Manager on this machine”, then select “OK”.



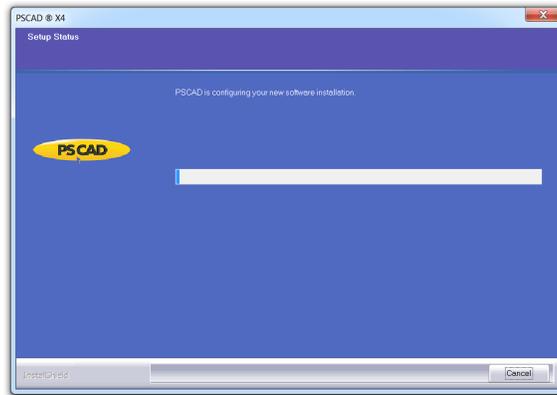
- I. If the following message is displayed, likely the Licence Manager was not selected in [Step\(j\)](#). For this type of installation, the Licence Manager is required, and will therefore automatically be installed.



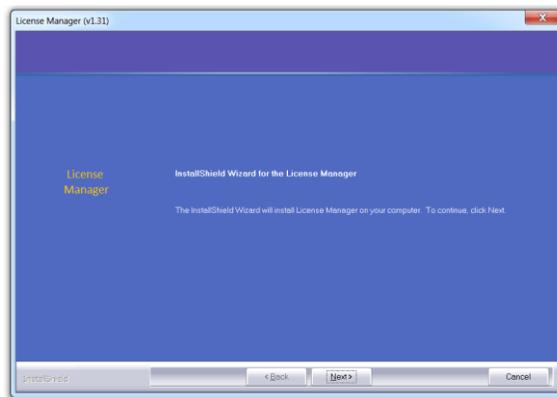
- m. The "Information" screen will display your system resources. Select "Next".



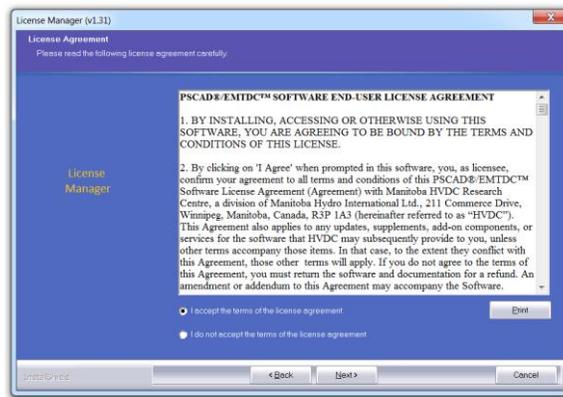
- n. The "Setup Status" screen will indicate that the InstallShield Wizard is configuring your installation. If selected, PSCAD will be installed at this time.



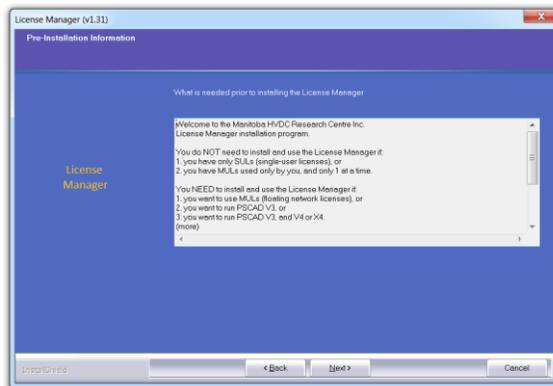
- o. The Licence Manager will be installed. Select "Next".



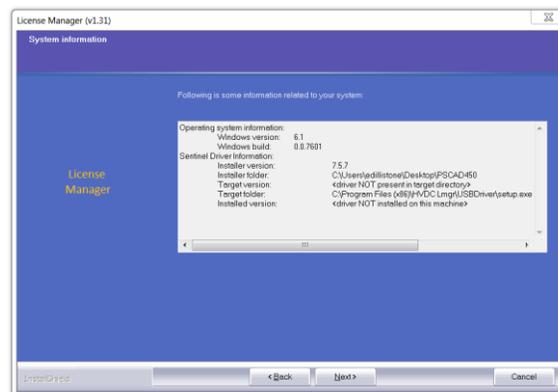
- p. If you agree with the software licence agreement, select "I accept the terms of the licence agreement" and "Next".



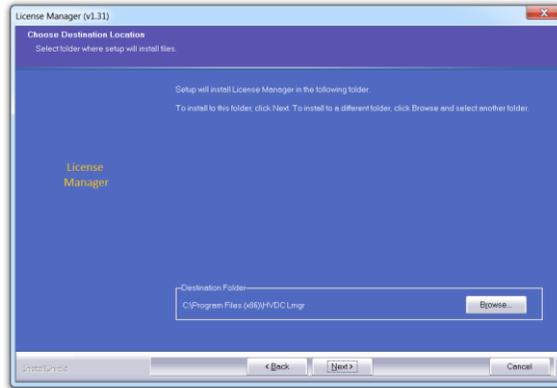
- q. Read the "Pre-Installation Information" screen, and then select "Next".



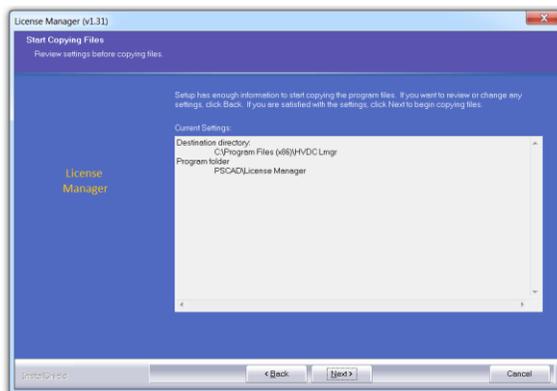
- r. The "System Information" screen will display. Select "Next".



- s. Review the default destination folder for the Licence Manager program files. To install to a different folder, set the file path with the "Browse" button. Select "Next".



- t. Select "Next" to install the Licence Manager.



- u. The Sentinel drivers will be installed (or updated). These drivers are required for reading the USB lock. Unplug all Sentinel USB locks from your computer, then select "OK".



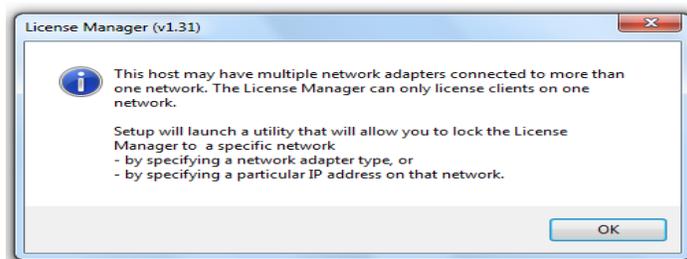
- v. The Sentinel drivers will be installed. Select "OK".



- w. When the Sentinel drivers have been installed or updated, connect your USB lock to the computer, then select "OK".



- x. The following message is displayed as a reminder that if the Client computers are on a different network than the Server, Expanded Licensing is required. This is determined by comparing your networking configuration against the Licence Manager's networking configuration as described in [Appendix A](#). Select "OK".



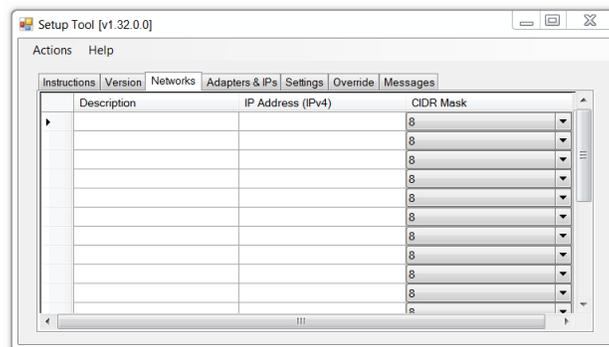
- y. The Licence Manager "Setup Tool" utility will display. Proceed to [Section 2.2](#) to configure the Licence Manager using this utility.

## 2.2 Configuring the Licence Manager

This section is a continuation from [Section 2.1](#). The Licence Manager “Setup Tool” utility will have been displayed automatically, and will be used to configure the Licence Manager as follows:

### Notes

1. To display the “Setup Tool” manually, browse to “Setup Tool” in the Windows “Start” menu.
  2. For further reference information, refer to the contents in the “Help” menu of the “Setup Tool”.
  3. If you encounter any issues, refer to [Section 9.2](#).
- a. **For Expanded Licensing Only:** If your licence includes Expanded Licensing, configure the “Networks” tab as specified by our support desk.



### Notes

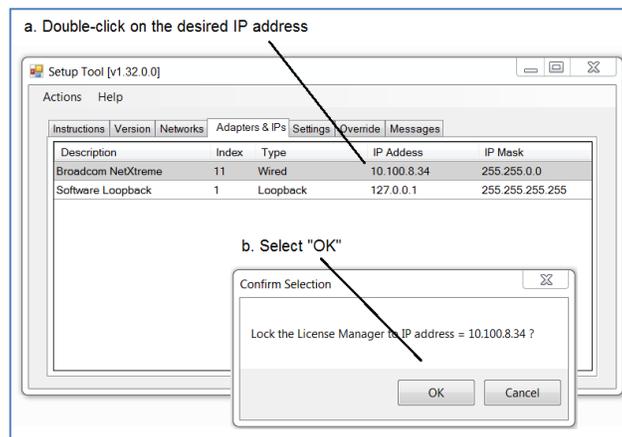
1. The licence for Expanded Licensing is included as part of the “License.txt” file that was provided to you by our sales desk. This file is installed in [Section 2.3](#).
2. See [Appendix A](#) for more information on Expanded Licensing.

- b. In the "Adapters & IPs" tab, select the network on which the Server computer and the Client computers will communicate. There are two methods for configuring the networking:

**Note**

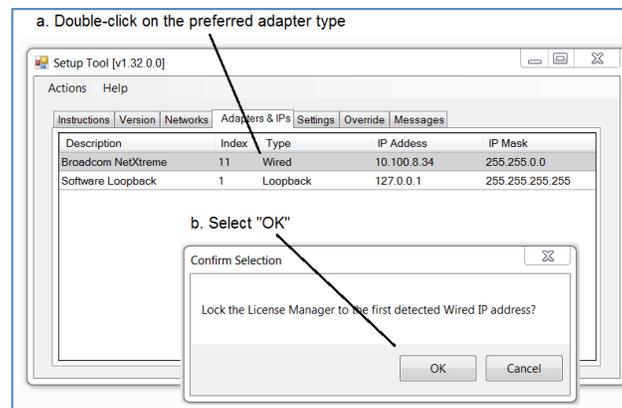
This step is applicable for all Multi-User licences, regardless whether you have Expanded Licensing or not. If you do not have Expanded Licensing, this tab permanently sets the network communication between the Server and Client computers. If you do have Expanded Licensing, this tab sets the default network communication between the Server and Client computers if the Expanded Licensing expires.

- The preferred method for setting the network is to lock communication to a specific network, which lists the specific IP address. Proceed as shown.

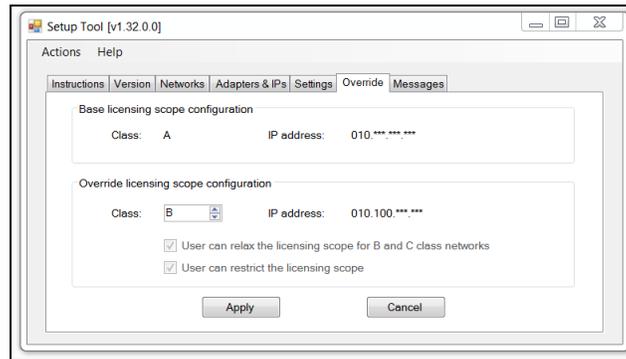


## Notes

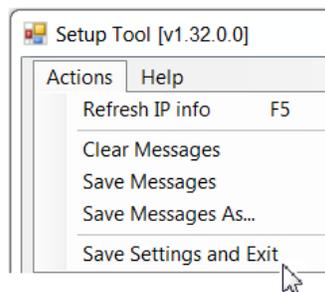
1. The IP address 127.0.0.1 is typically never selected since this is the IP address of the current computer, and networking to other computers would not be possible.
2. Alternatively, select IP address 127.0.0.1 if the following two conditions are both met:
  - You are installing a PSCAD licence with multiple PSCAD seats on your machine, and
  - You will not share these seats with other computers over the network.
- The second method of configuring the networking is to lock to an adapter type, such as wired or wireless, as shown. The Licence Manager will lock to the first detected adapter of the type selected. This is not the preferred method of setting the networking, as the IP address can vary depending on which adapter type is detected first. Proceed as shown.



- c. If required, the networking permission that was set in the “Adapters & IPs” tab may be relaxed or restricted by configuring the “Override” tab. Use the up and down arrows to restrict or loosen permission. For more detailed information on networking permissions, see [Appendix A](#).



- d. Save settings and close the utility by selecting “Save Settings and Exit” in the “Actions” menu.



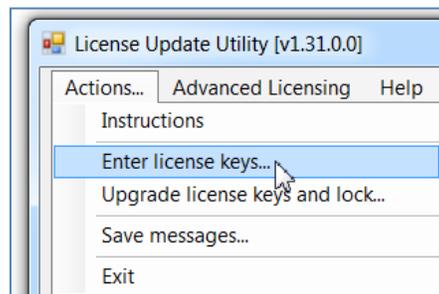
- e. When prompted, select “Yes – install/update product licenses”, then select “Next”. This will display the “License Update Utility”. Go to [Section 2.3](#) to install the licence on the Server.

## 2.3 Installing the Licence on the Server

This section is a continuation from [Section 2.2](#). The “License Update Utility” will have been displayed automatically, and will be used to configure the licence on the Server as follows:

### Notes

1. You may display the “License Update Utility” manually from the Windows “Start” menu by browsing to “Enter License Key”.
2. If you encounter any issues, refer to [Section 9.3](#).
  - a. Ensure that the USB lock is plugged in on the computer.
  - b. From the “Actions” menu, select “Enter license keys”.

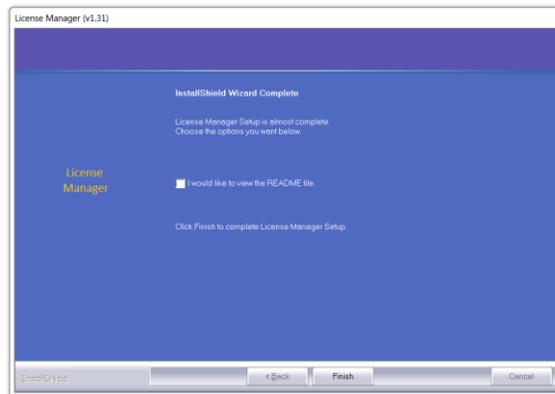


- c. When prompted, browse to and select the “License.txt” file that you saved to the desktop in [Step 2.1\(b\)](#), then select “Open”.
    - d. The licence will be installed on the Server.
    - e. Close the “License Update Utility”.
    - f. Proceed to [Section 2.4](#) to finalize the installation.

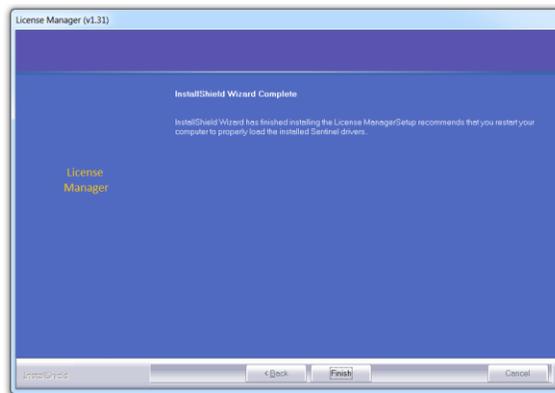
## 2.4 Finalizing the Installation on the Server

This section is a continuation from [Section 2.3](#). The InstallShield Wizard screen will have been displayed automatically, and will be used to finalize the installation as follows:

- a. Select "Finish".



- b. The following screen will indicate that the Licence Manager has been installed and configured, and recommend that you restart your computer. Select "Finish".



c. Proceed as follows:

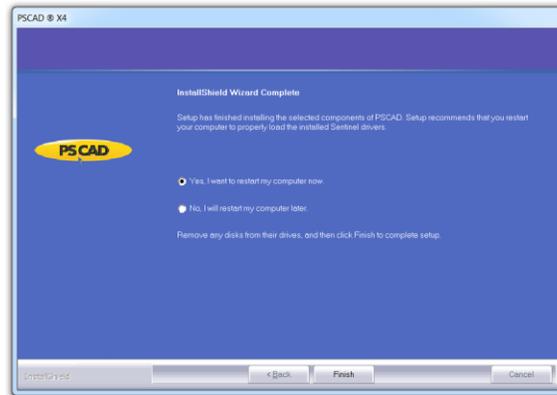
- If you chose to install GFortran on the Server, go to [Section 4](#) for this installation. You will then be prompted to either install LiveWire (if selected for installation), or to return to [Step \(d\)](#) to finalize installations on the Server.
- If you chose to install LiveWire (Lite) or LiveWire on the Server, go to [Section 5](#) for this installation. You will then be prompted to return to [Step \(d\)](#) to finalize installations on the Server.
- If you did not choose to install GFortran or LiveWire, this concludes the installation and configuration on the Server. The Licence Manager will be ready to issue licences from the Server to the Client computers. Proceed to [Step \(e\)](#).

d. Once you have installed GFortran or LiveWire, you will be prompted to unplug your Sentinel USB locks. The InstallShield will repair your Sentinel drivers.



e. All selected software will have been installed on the Server.

- f. Select whether to restart your computer, then press "Finish".



**Note**

It is recommended that you restart the Server before proceeding.

- g. If PSCAD was installed on the Server, go to [Section 2.5](#) to activate the licence on the Server.
- h. If PSCAD was not installed on the Server, go to [Section 2.6](#) to install software on the Client computers.

## 2.5 Activating a Licence to Run PSCAD

Activate a licence to run PSCAD on the Server or Client computer as follows:

### **Note**

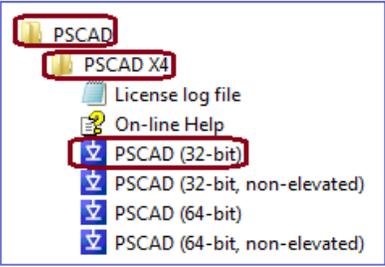
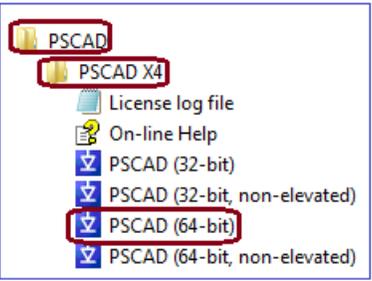
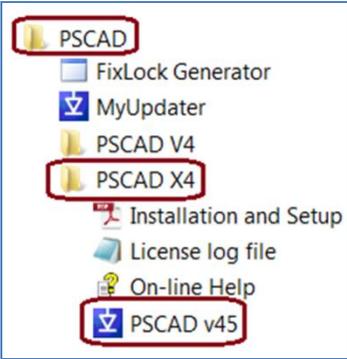
If you encounter any licensing issues, refer to [Section 9.4](#).

- a. On the Server, ensure the USB lock is plugged in and the licence is installed ([Section 2.3](#)).
- b. Launch PSCAD as follows:

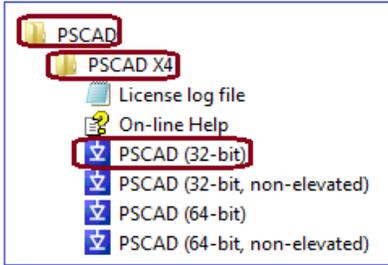
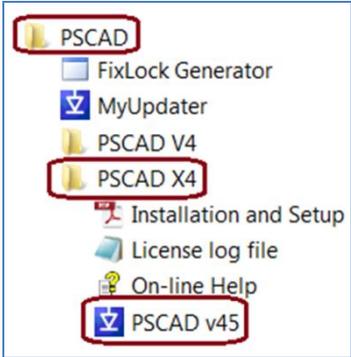
### **Note**

The method for launching PSCAD v4.5 varies depending on the type of licence, (Professional or Educational), PSCAD version, and Windows operating system (32-bit or 64-bit).

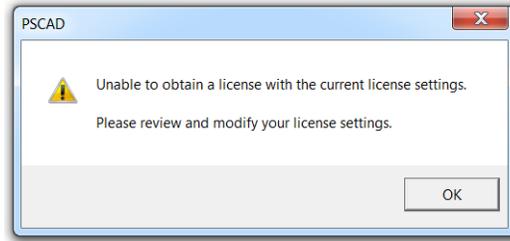
- **For a Professional Licence:** Using the following table, launch PSCAD according to your Windows operating system and PSCAD version:

Operating System PSCAD Version	Windows 32-bit	Windows 64-bit
PSCAD v4.5.0	<p>Browse to "PSCAD (32-bit)" in the Windows "Start" menu:</p> 	<p>Browse to "PSCAD (64-bit)" in the Windows "Start" menu:</p> 
PSCAD v4.5.1 and later	<p>Browse to "PSCAD v45" in the Windows "Start" menu:</p>  <p><b>Note</b> The version corresponding to the machine's operating system (32-bit or 64-bit) will automatically be selected to run.</p>	

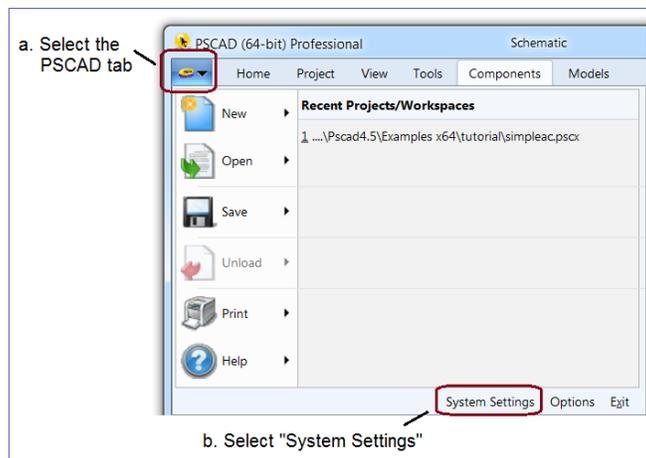
- **For an Educational Licence:** Using the following table, launch PSCAD according to your Windows operating system and PSCAD version:

Operating System PSCAD Version	Windows 32-bit	Windows 64-bit
PSCAD v4.5.0	<p>Browse to "PSCAD (32-bit)" in the Windows "Start" menu:</p>  <p><b>Notes</b></p> <ol style="list-style-type: none"> <li>1. The 64-bit version of PSCAD v4.5.0 is not available for an Educational License. Ensure to select the 32-bit version of PSCAD.</li> <li>2. The 64-bit versions of PSCAD v4.5.1 and later are available for an Educational License (see below).</li> </ol>	
PSCAD v4.5.1 and later	<p>Browse to "PSCAD v45" in the Windows "Start" menu:</p>  <p><b>Note</b></p> <p>The version corresponding to the machine's operating system (32-bit or 64-bit) will automatically be selected to run.</p>	

- c. A licence will not be available at this time. Select "OK".

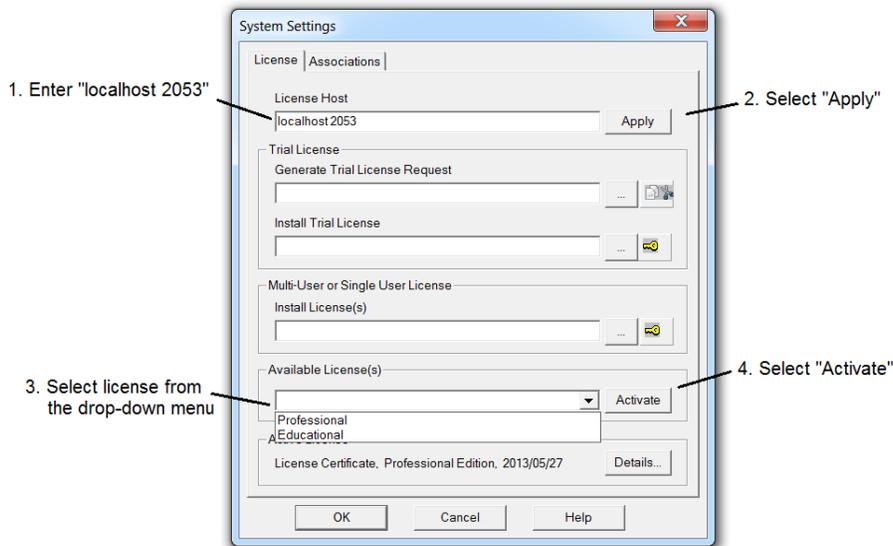


- d. The "System Settings" dialog box will display automatically. To display it manually, browse to "System Settings".



e. Configure the licence on the Server or Client computer as follows:

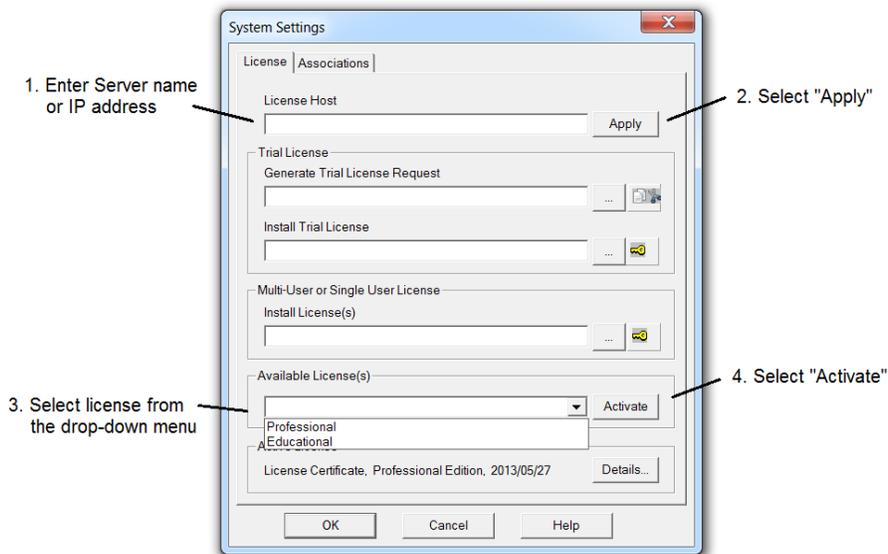
- **On the Server:** Configure the licensing as shown:



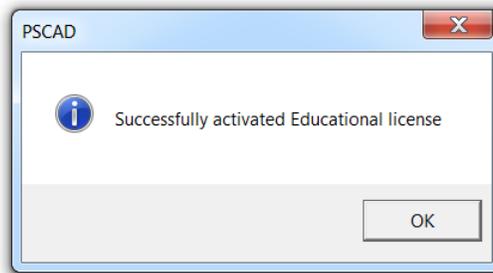
**Note**

Servers do not typically run PSCAD.

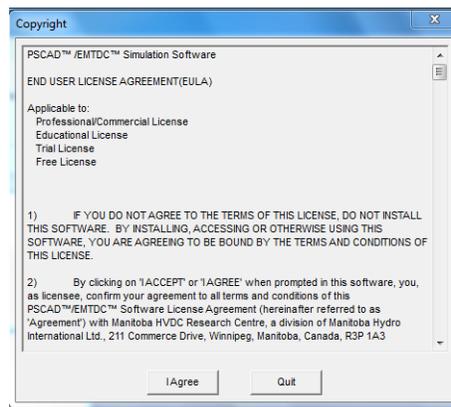
- **On the Client Computer:** Configure the licensing as shown:



- f. If the licence has successfully been activated, a message similar to the one shown will display. Select “OK”.



- g. If you agree with the software licence agreement, select “I Agree”.



- h. PSCAD will be licensed to run.
- i. If you installed “LiveWire” (full version):
- If your license includes LiveWire, activate the LiveWire licence ([Step 6\(a\)](#)).
  - If your license does not include LiveWire, request a trial license ([Step 6\(b\)](#)).
- j. If not yet performed, install software on the Client computers ([Section 2.6](#)).

## **2.6 Installing Software on the Client Computers**

Install software on the Client computers as follows:

### **Notes**

1. If you encounter any issues, refer to [Section 9.1](#).
  2. The 32-bit version of PSCAD will be installed on a 32-bit machine, and both the 32-bit and 64-bit versions will be installed on a 64-bit machine. The suitable version may then be launched, as determined in [Step 2.5\(b\)](#).
- a. If operating on Windows Vista or Windows 7, ensure that you have local administrator privileges prior to beginning the installation.
  - b. Run "setup.exe" from the installation files (see [Step 2.1\(a\)](#)).

### **Note**

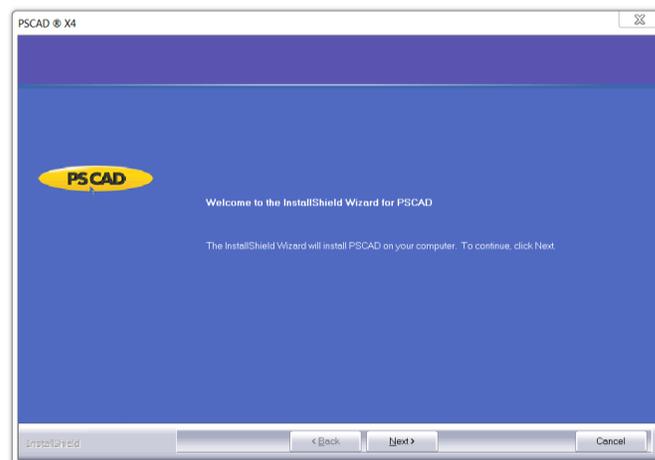
If you downloaded the installation files, ensure that they are saved to a local drive rather than to a network drive.

- c. The "User Account Control" dialog box may display to inquire whether you want to allow "setup.exe" to make changes to your computer. This message is a standard warning to protect your computer when an executable file is detected. Select "Yes" to begin the installation.

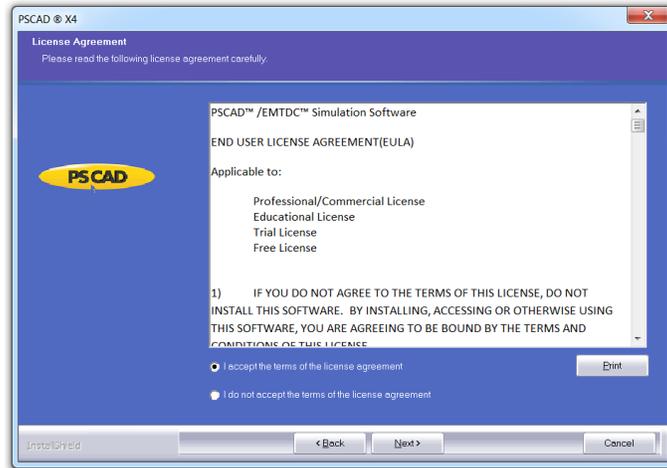
- d. The InstallShield Wizard will launch and display the following screen if any required prerequisite software must be installed. Select “Install” to proceed.



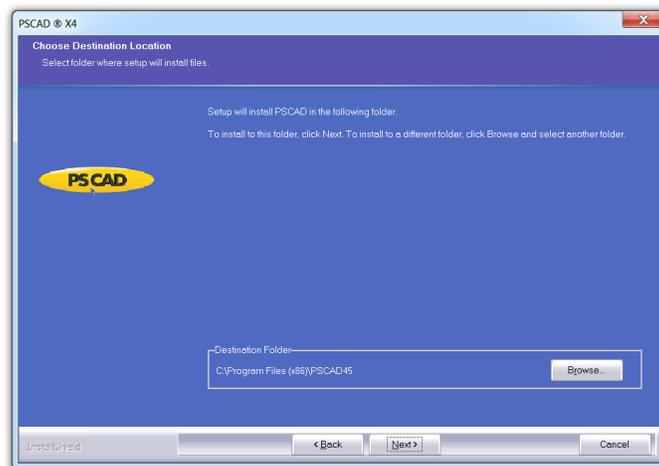
- e. Select “Next” to continue.



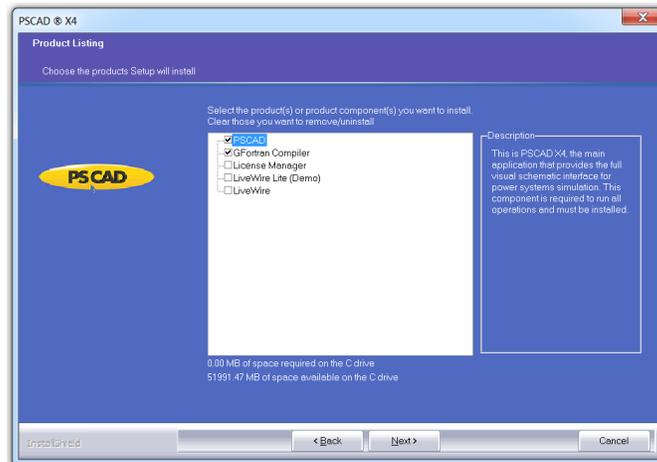
- f. If you agree with the software licence agreement, select "I accept the terms of the license agreement", then select "Next".



- g. Review the default destination folder for the program files. To install to a different folder, set the file path with the "Browse" button. Select "Next".



- h. From the “Product Listing” screen, select all required programs, then select “Next”. Normally, “PSCAD” and “GFortran Compiler” are installed on a Client computer, as well as “LiveWire Lite (Demo)” to use the free limited version, or “LiveWire” to be licensed using either a trial or permanent license.



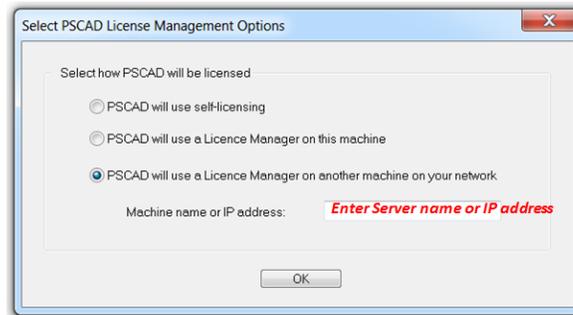
## WARNING

Do not select “License Manager”. This may cause licensing issues.

## Notes

1. To select a product for installation, place a checkmark next to the product.
2. To display a description of a product in the “Description” field, click on the product name.
3. You may install or remove a product at a later date, in accordance with [Section 7](#).

i. In the following dialog box, perform the following:

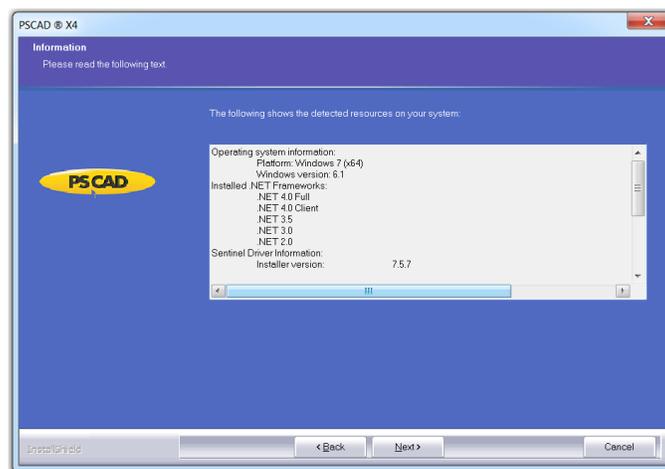


- Select "PSCAD will use a Licence Manager on another machine on your network".
- Enter the Server name or IP address in the field provided.
- Select "OK".

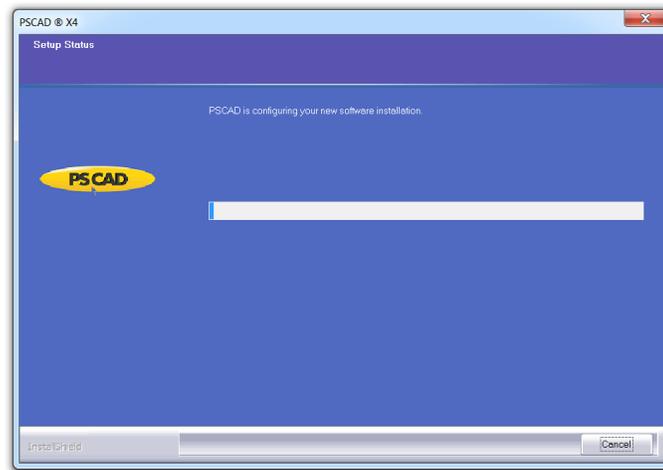
**Note**

If you do not yet know the Server name nor IP address, select "PSCAD will use self-licensing". This will permit the installation to continue. The Server information will, however, be required to activate a license to run PSCAD ([Section 2.5](#)).

j. The "Information" screen will display your system resources. Select "Next".



k. When the "Setup Status" screen displays, v4.5 will be installed.



l. Proceed as follows:

- If you chose to install GFortran, go to [Section 4](#) for this installation. You will then be prompted to either install LiveWire (if selected for installation), or to return to [Step \(m\)](#) to finalize the installation on the Client computer.
- If you chose to install LiveWire, go to [Section 5](#) for this installation. You will then be prompted to return to [Step \(m\)](#) to finalize the installation on the Client computer.
- If you did not choose to install GFortran or LiveWire, then proceed to [Step \(p\)](#).

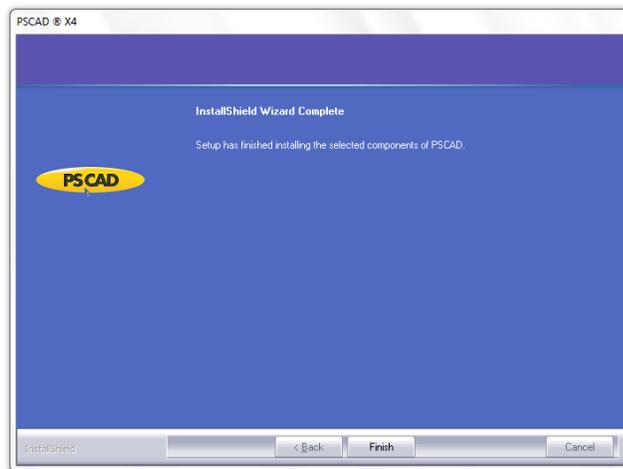
m. Once all software has been installed, the Sentinel drivers will be installed or repaired as required. Unplug your Sentinel USB locks from your computer, then select "OK".



- n. Once the Sentinel drivers have been installed or repaired, a message will display as a reminder to re-install your USB locks.
- o. The Sentinel drivers will be installed. Select "OK".



- p. The installations on the Client computer will be complete at this time. Select "Finish", then proceed to [Section 2.5](#) to activate a licence on the Client computer.



### 3. Software Installation and Licensing Configuration (SUL)

This section provides instructions for software installation and licensing configuration for the following type of licences:

- Professional Single-User licences (SULs)
- Educational Single-User licences (SULs)

These instructions include all required installations and configurations, and should be completed in the order presented. Specifically, PSCAD and GFortran (and LiveWire if applicable) will be installed and configured to obtain a licence from the Licence Manager.

The instructions for the Professional and Educational licences are very similar; any differences are as noted.

### **3.1 Installing Software**

Install software as follows:

- a. Upon purchasing the software, our sales desk will forward the following:
  - The software installation files. These files will typically either be saved to a website for download or saved to a compact disk (CD).
  - A USB lock.
  - The licence for running the software. This is a "License.txt" file, and will typically either be provided in an email or saved to a CD.

#### **Note**

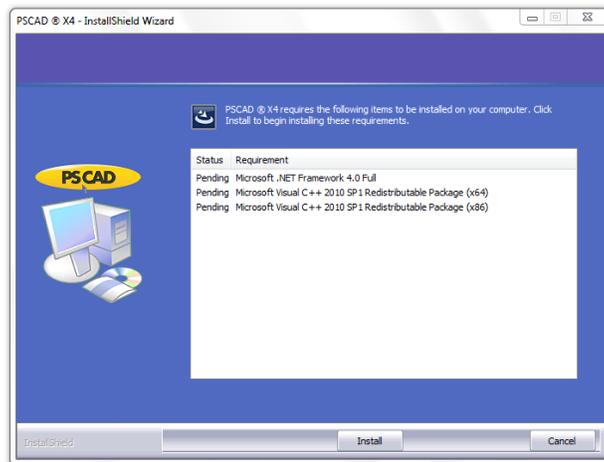
The licence file will contain the licence for PSCAD, and if applicable, LiveWire.

- b. Save the "License.txt" file to your computer desktop.
- c. If operating on Windows Vista or Windows 7, ensure that you have local administrator privileges prior to beginning the installation.
- d. Run "setup.exe" from the installation files.

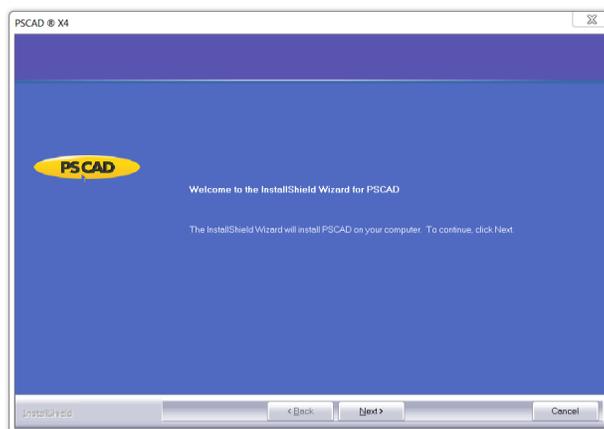
#### **Notes**

1. If you downloaded the installation files, ensure that they are saved to a local drive rather than to a network drive.
2. The 32-bit version of PSCAD will be installed on a 32-bit machine, and both the 32-bit and 64-bit versions will be installed on a 64-bit machine. The suitable version may then be launched, as determined in [Step 3.2\(b\)](#).
3. If you encounter any issues, refer to [Section 9.1](#).

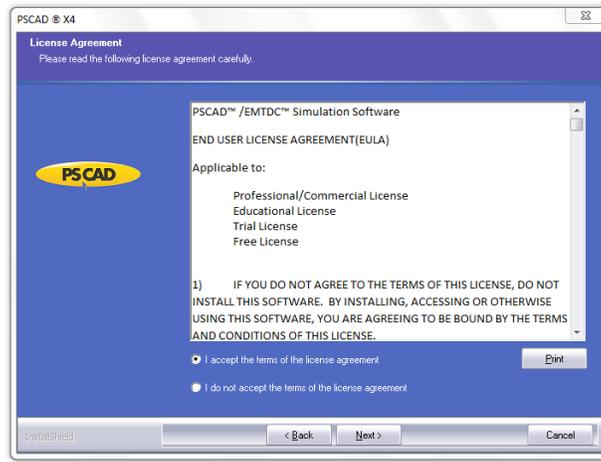
- e. The "User Account Control" dialog box may display to inquire whether you want to allow "setup.exe" to make changes to your computer. This message is a standard warning to protect your computer when an executable file is detected. Select "Yes" to begin the installation.
- f. The InstallShield Wizard will launch and display the following screen if any required prerequisite software must be installed. Select "Install" to proceed.



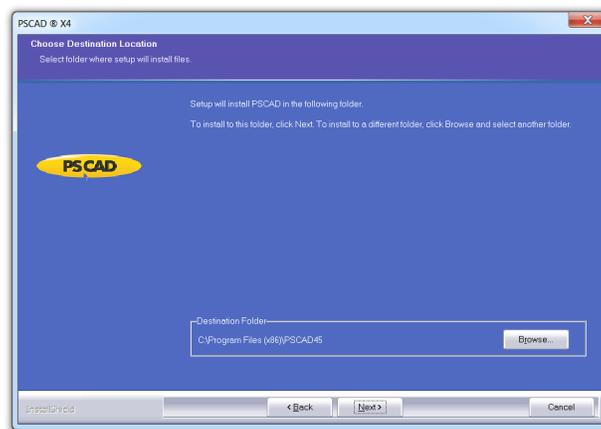
- g. Select "Next" to continue.



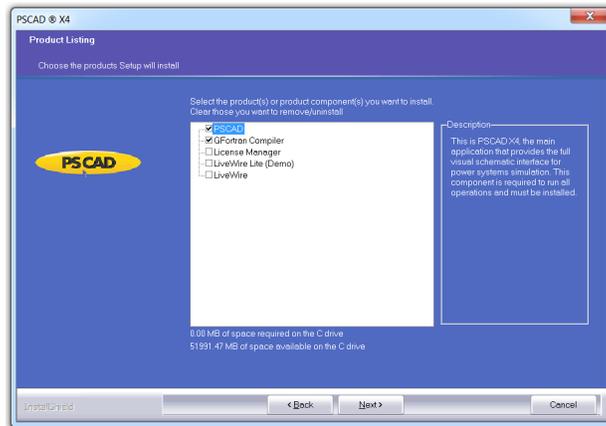
- h. If you agree with the software licence agreement, select "I accept the terms of the license agreement", then select "Next".



- i. Review the default destination folder for the program files. To install to a different folder, set the file path with the "Browse" button. Select "Next".



- j. From the “Product Listing” screen, select all required programs, then select “Next”. Normally, “PSCAD” and “GFortran Compiler” are installed, as well as “LiveWire Lite (Demo)” to use the free limited version, or “LiveWire” to be licensed using either a trial or permanent license.



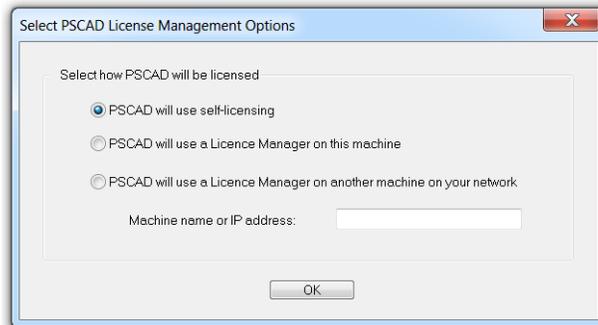
## WARNING

Do not select “Licence Manager”. This may cause licensing issues.

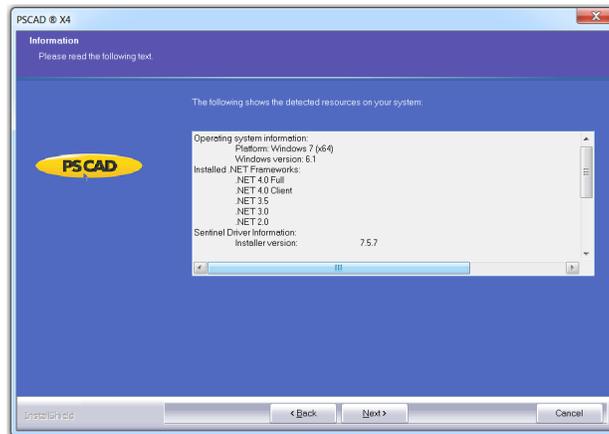
## Notes

1. To select a product for installation, place a checkmark next to the product.
2. To display a description of a product in the “Description” field, click on the product name.
3. You may install or remove a product at a later date, in accordance with [Section 7](#).

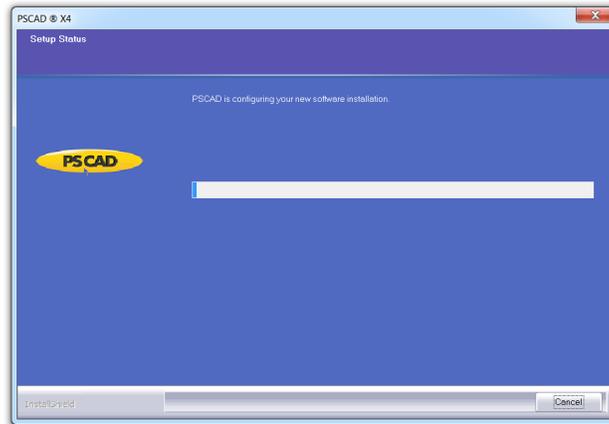
- k. In the following dialog box, select "PSCAD will use self-licensing", then select "OK".



- l. The "Information" screen will display your system resources. Select "Next".



m. When the "Setup Status" screen displays, the software will be installed.



n. Proceed as follows:

- If you elected to install GFortran, go to [Section 4](#) for this installation. You will then be prompted to either install LiveWire (if selected for installation) or to return to [Step \(o\)](#) to finalize the installation.
- If you chose to install LiveWire, go to [Section 5](#) for this installation. You will then be prompted to return to [Step \(o\)](#) to finalize the installation.
- If you did not choose to install either GFortran or LiveWire, proceed to [Step \(r\)](#).

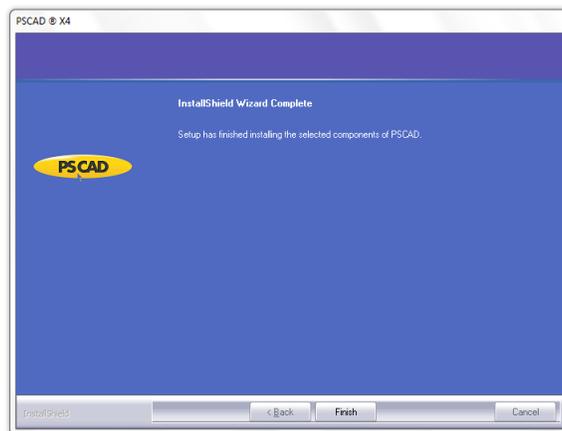
o. Once the software has been installed, the Sentinel drivers will be installed or repaired as required. Unplug all Sentinel USB locks from your computer, then select "OK".



- p. The Sentinel drivers will be installed. Select "OK".



- q. Once the Sentinel drivers have been installed or repaired, a reminder to re-install the USB locks before running the software will display.
- r. The installations will be complete at this time. Select "Finish", then proceed to [Section 3.2](#) to install and activate the licence.



### **3.2 Installing and Activating a Licence**

Once software has been installed ([Section 3.1](#)), install and activate a licence as follows:

**Note**

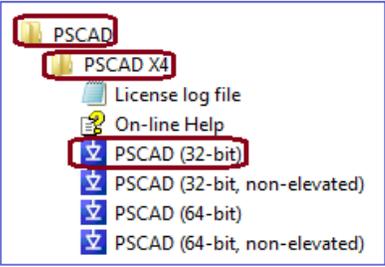
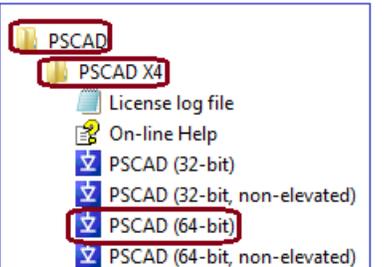
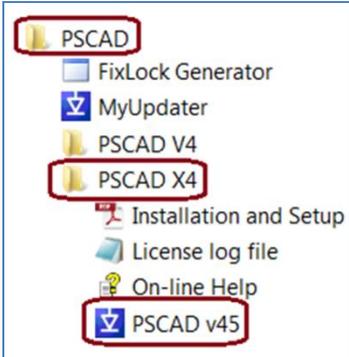
If you encounter any issues, refer to [Section 9.4](#).

- a. Ensure the USB lock is plugged in.
- b. Launch PSCAD as follows:

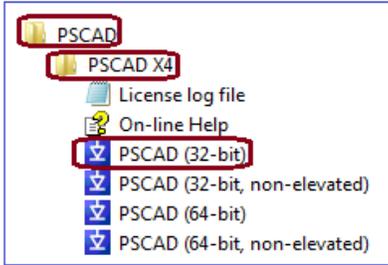
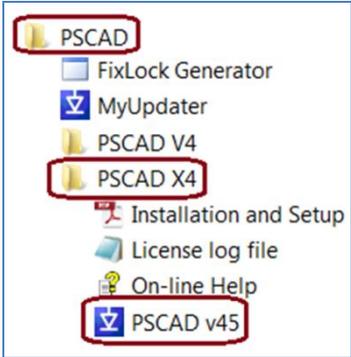
**Note**

The method for launching PSCAD v4.5 varies depending on the type of licence, (Professional or Educational), PSCAD version, and Windows operating system (32-bit or 64-bit).

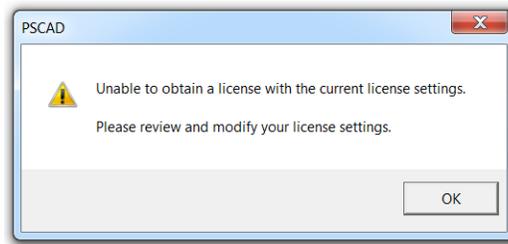
- **For a Professional Licence:** Using the following table, launch PSCAD according to your Windows operating system and PSCAD version:

Operating System PSCAD Version	Windows 32-bit	Windows 64-bit
PSCAD v4.5.0	<p>Browse to "PSCAD (32-bit)" in the Windows "Start" menu:</p> 	<p>Browse to "PSCAD (64-bit)" in the Windows "Start" menu:</p> 
PSCAD v4.5.1 and later	<p>Browse to "PSCAD v45" in the Windows "Start" menu:</p>  <p><b>Note</b> The version corresponding to the machine's operating system (32-bit or 64-bit) will automatically be selected to run.</p>	

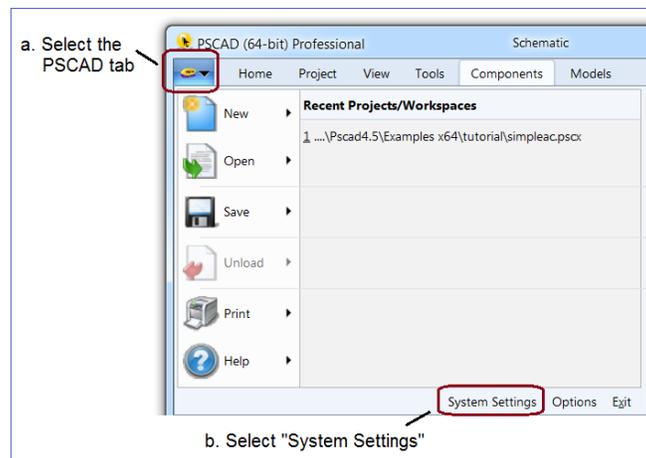
- **For an Educational Licence:** Using the following table, launch PSCAD according to your Windows operating system and PSCAD version:

Operating System PSCAD Version	Windows 32-bit	Windows 64-bit
PSCAD v4.5.0	<p>Browse to "PSCAD (32-bit)" in the Windows "Start" menu:</p>  <p><b>Notes</b></p> <ol style="list-style-type: none"> <li>1. The 64-bit version of PSCAD v4.5.0 is not available for an Educational License. Ensure to select the 32-bit version of PSCAD.</li> <li>2. The 64-bit versions of PSCAD v4.5.1 and later are available for an Educational License (see below).</li> </ol>	
PSCAD v4.5.1 and later	<p>Browse to "PSCAD v45" in the Windows "Start" menu:</p>  <p><b>Note</b></p> <p>The version corresponding to the machine's operating system (32-bit or 64-bit) will automatically be selected to run.</p>	

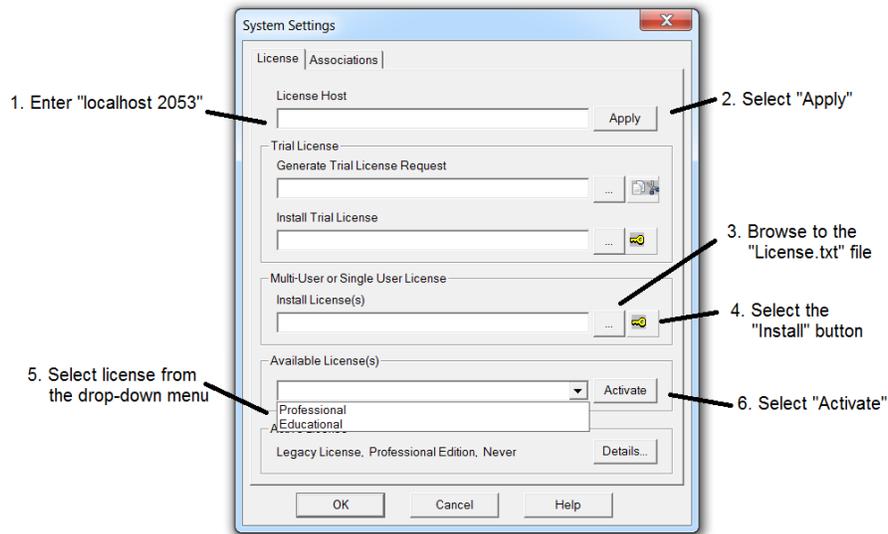
- c. A licence will not be available at this time. Select "OK".



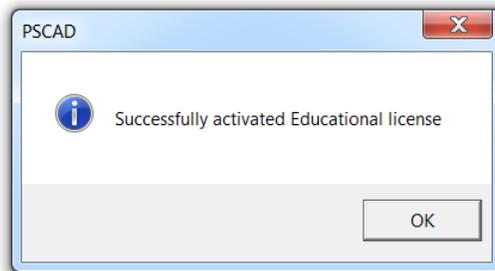
- d. The "System Settings" dialog box will display automatically. To display it manually, browse to "System Settings".



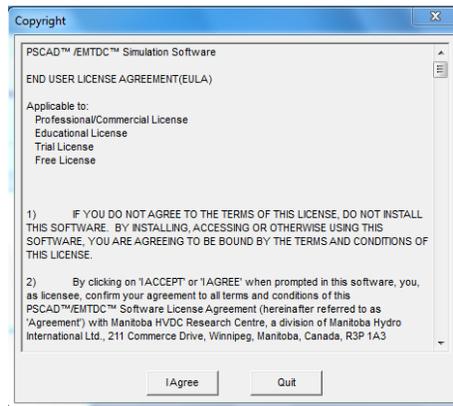
e. Configure the licence as shown.



f. If the licence has been successfully activated, a message similar to the one shown will display. Select "OK".



g. If you agree with the software licence agreement, select "I Agree".



h. PSCAD will be licensed to run.

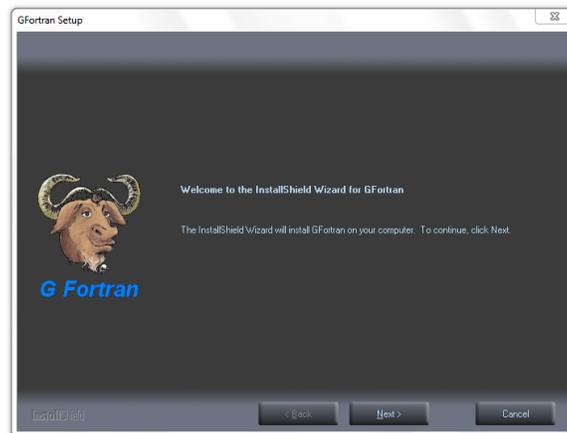
i. If you installed "LiveWire" (full version):

- If your license includes LiveWire, activate the LiveWire licence ([Step 6\(a\)](#)).
- If your license does not include LiveWire, request a trial license ([Step 6\(b\)](#)).

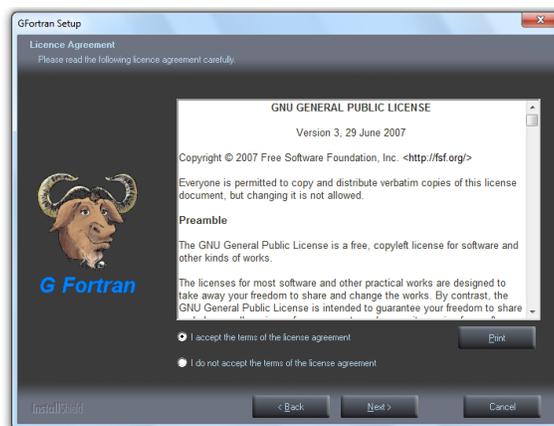
## 4. Installing GFortran

This section contains instructions for installing the GFortran compiler, and is a continuation (from [Section 2](#) or [Section 3](#) as applicable). Install GFortran as follows:

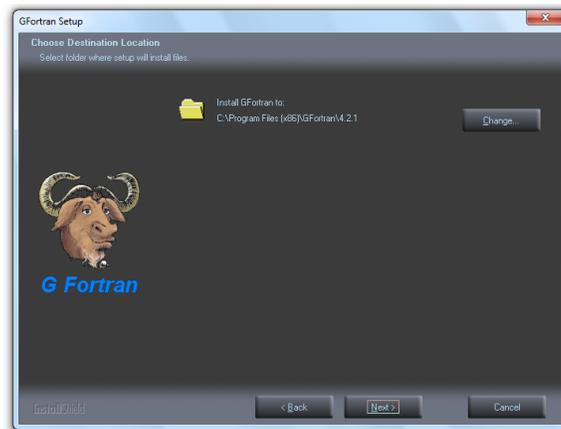
- a. If selected for installation, the InstallShield Wizard will automatically begin the installation of GFortran. Select "Next".



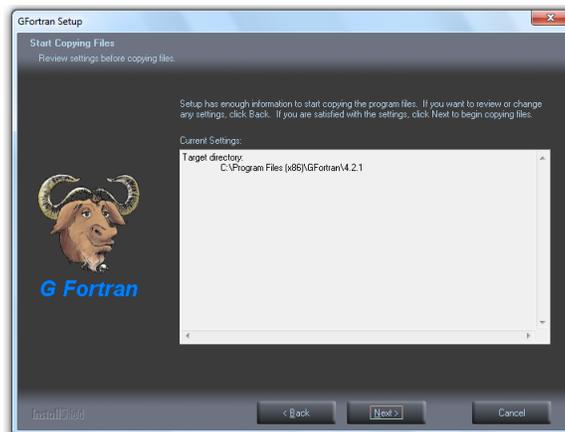
- b. If you agree with the software licence agreement, select "I accept the terms of the license agreement" and "Next".



- c. Review the default destination folder for the software files. To install to a different folder, use the "Change" button to set the file path. Select "Next".

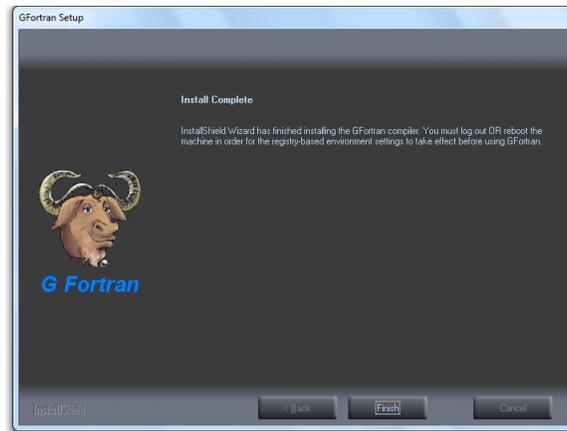


- d. Review the instructions in the "Start Copying Files" screen. Select "Next".



- e. GFortran Setup will configure your software installation.

- f. Once the installation is complete, you will be advised to restart your computer before using GFortran. Select "Finish". It is recommended that you log out (preferred) or reboot your machine only once all software has been installed.

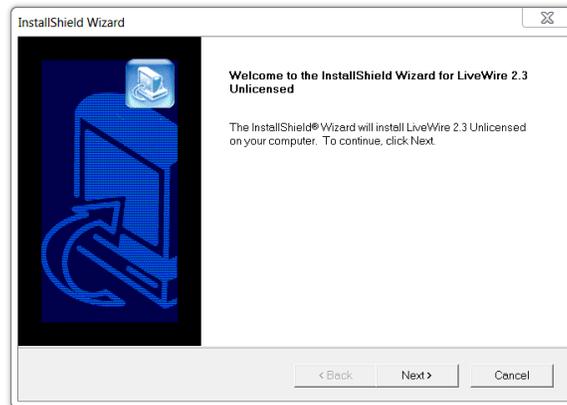


- g. If you elected to install LiveWire, proceed to [Section 5](#) for the installation.
- h. If you did not elect to install LiveWire, proceed as follows:
- To [Step 2.4\(d\)](#) to finalize the installation on the Server (Multi-User licence).
  - To [Step 2.6\(m\)](#) to finalize the installation on the Client computer (Multi-User licence).
  - To [Step 3.1\(o\)](#) to finalize the installation (Single-User licence).

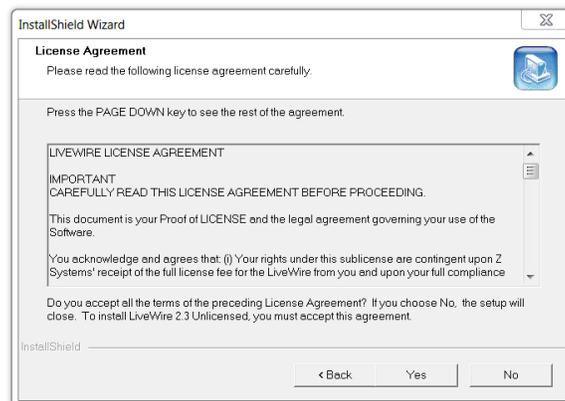
## 5. Installing LiveWire

This section contains instructions for installing LiveWire, and is a continuation (from [Section 2](#), [Section 3](#), or [Section 4](#) as applicable). Install LiveWire as follows:

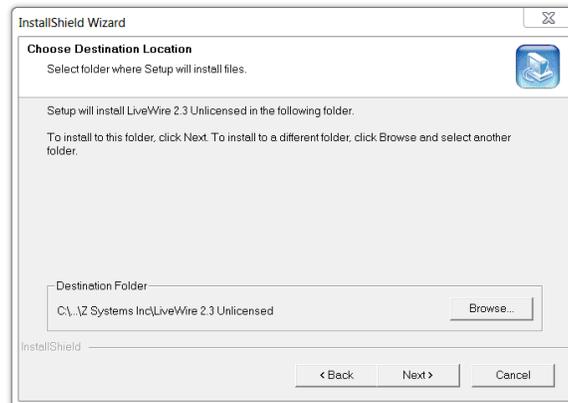
- a. If selected for installation, the InstallShield Wizard will automatically begin the installation of LiveWire. Select "Next".



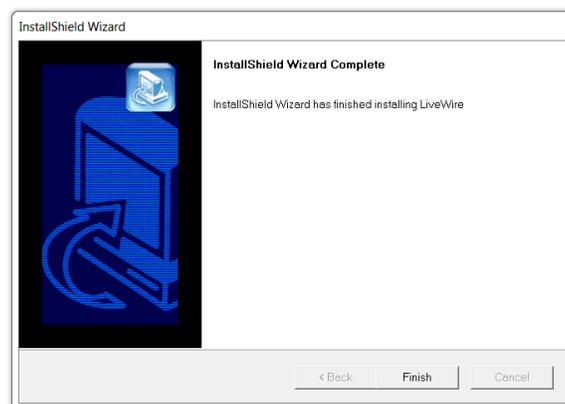
- b. If you agree with the software licence agreement, select "Yes".



- c. Review the default destination folder for the software files. To install to a different folder, set the file path with the "Browse" button. Select "Next".



- d. LiveWire will be installed. When the installation is complete, select "Finish".



- e. Proceed as follows:

**Note**

LiveWire may be licensed once the software installation has been complete.

- To [Step 2.4\(d\)](#) to finalize the installation on the Server (Multi-User licence).
- To [Step 2.6\(m\)](#) to finalize the installation on the Client computer (Multi-User licence).
- To [Step 3.1\(o\)](#) to finalize the installation (Single-User licence).

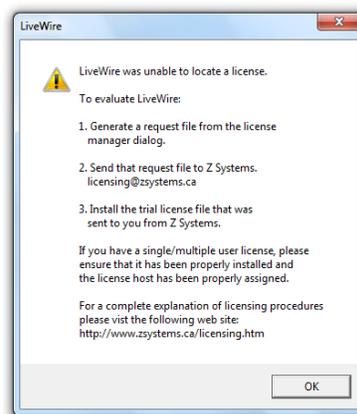
## 6. Licensing LiveWire

This section provides instructions for configuring the LiveWire licensing, using either a permanent or trial license. Proceed as follows:

- a. **Activating a Permanent LiveWire License:** This step provides instructions for activating a full and permanent LiveWire license:

### Notes

1. The LiveWire licence is typically bundled with the PSCAD licence ("License.txt"), which was provided by our sales desk.
  2. This licence will normally already have been installed ([Section 2.3](#) for a Multi-User licence, or [Section 3.2](#) for a Single-User licence). If it has not already been installed, installation instructions are also included.
  3. If you encounter any licensing issues, refer to [Section 9.5](#).
- Launch LiveWire. A warning dialog box will display. Select "OK".

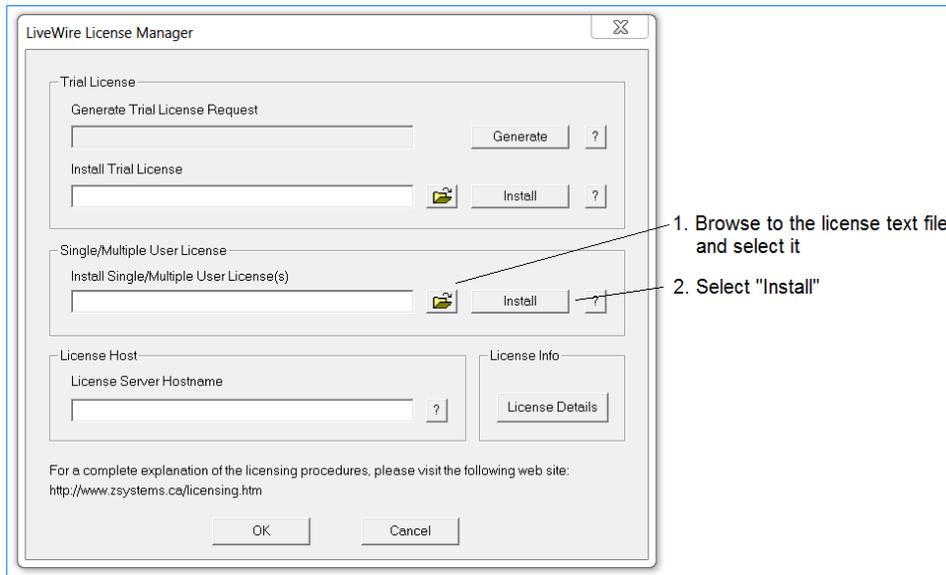


- The "LiveWire Licence Manager" will display (or display it by selecting "License Manager" from the "Edit" menu).

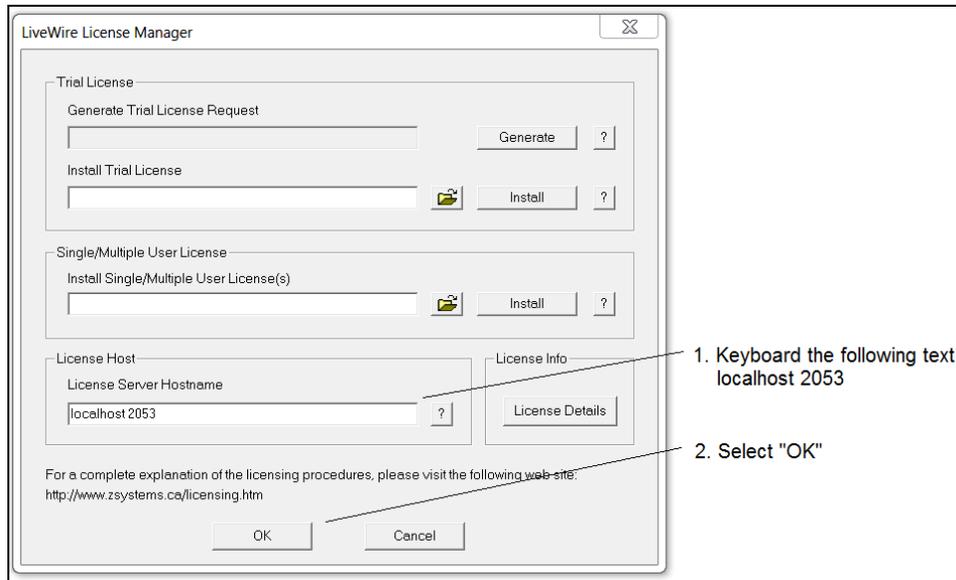
- If the LiveWire license was not previously installed, install it as follows:

**Note**

This step is applicable for both the Multi-User licence (installation on the Server) and the Single-User licence (installation on a local machine).



- Configure the licence as follows:
  - For a Single-User licence, activate the licence on the local machine as shown:

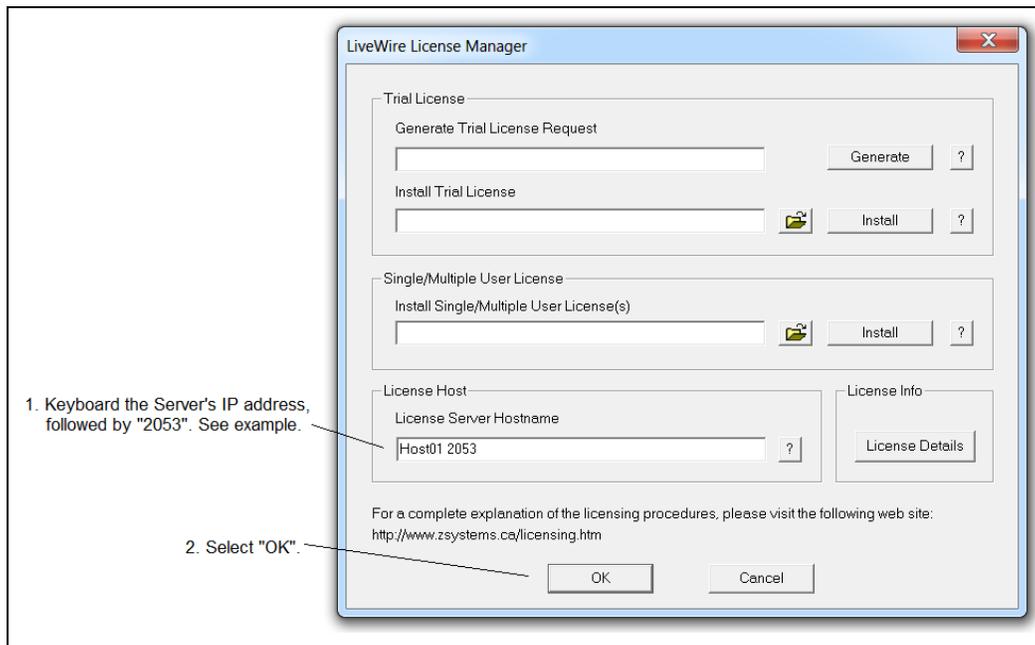


- For a Multi-User licence, activate the license on the Server using instructions from the previous step.

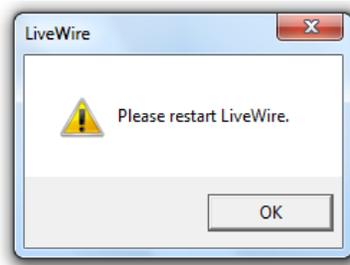
**Note**

Servers do not typically run LiveWire (nor PSCAD).

- For a Multi-User licence, activate the licence on the Client machine as shown:

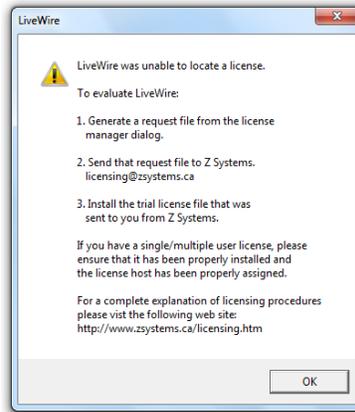


- You may use LiveWire once you restart it. Select "OK".

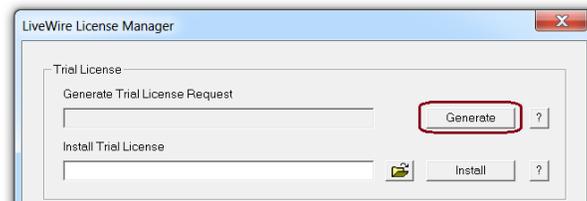


b. **Obtaining a Trial License:** Proceed as follows:

- Launch LiveWire. A warning dialog box will display. Select "OK".



- The "LiveWire Licence Manager" will display (or display it by selecting "License Manager" from the "Edit" menu). Select "Generate".

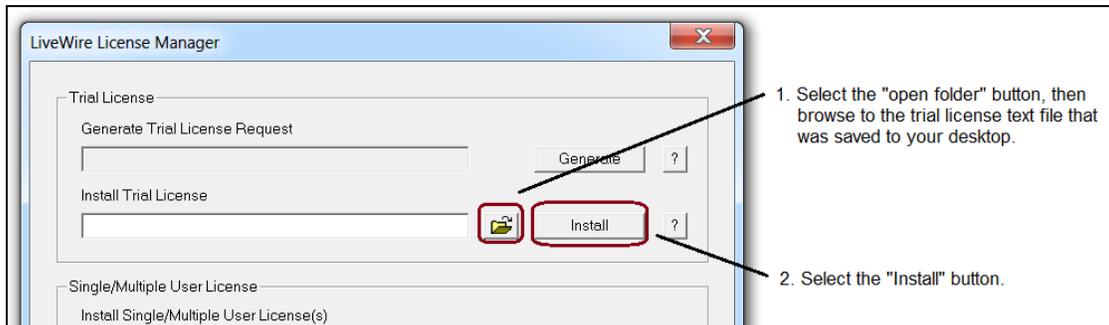


- When prompted, enter a file name and select a folder in which to save the file.
- When the "Trial Request" dialog box displays, enter information in all fields, then select "Send". An email with your request and system information will be forwarded to ZSystems.

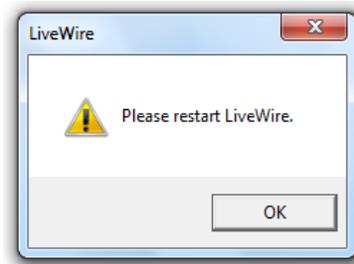
**Note**

Do not upgrade your operating system, change your system clock, or change any hardware configuration (e.g. hard drives, motherboard, etc.) while awaiting your trial license.

- You will receive an email with the trial license text file. Save the file to your desktop, then configure the licensing as shown:



- The trial license will be installed, and LiveWire will be ready to use for the trial period.
- You may use LiveWire once you restart it. Select "OK".



## 7. Adding or Removing Software

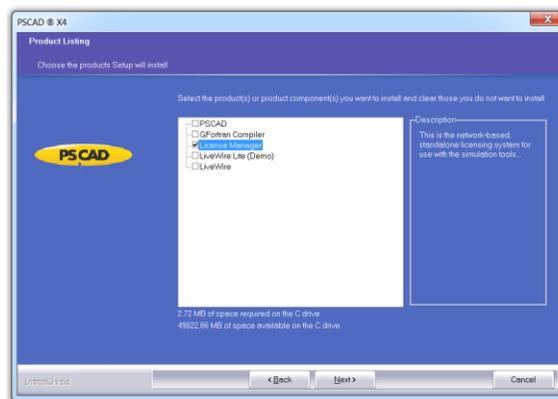
Once the initial installation has been complete, software may be added or removed at any time, as follows:

- a. Run the “setup.exe” file from the installation files.

### Note

If you downloaded the installation files, ensure that they are saved to a local drive rather than to a network drive.

- b. During the installation, use the following dialog box to determine the software to be retained, added, or removed, as follows:



- To retain previously installed software, place a checkmark next to the product.

### WARNING

Ensure that all software to be retained is selected. All software that is deselected will be uninstalled.

- To add software, place a checkmark next to the product.
- To remove software, remove the checkmark next to the product.

- c. Log out then log in to your computer.

## 8. Moving the PSCAD Licence to another Computer

This section provides instructions for moving a licence from one computer (Computer A) to another computer (Computer B). These instructions assume software installation and licensing have been finalized previously ([Section 2](#) or [Section 3](#)).

This section encompasses instructions for both a Professional and Educational licence, and for both a Multi-User and Single-User licence. Proceed as follows:

- a. For a Multi-User licence (either a Professional or Educational licence), proceed as follows:
  - Configure the installation of the Licence Manager (and PSCAD, GFortran and LiveWire as applicable) on Computer B in accordance with [Steps 2.1\(c\)](#) to (z).
  - Configure the Licence Manager on Computer B in accordance with [Steps 2.2\(a\)](#) to (d).
  - At [Step 2.2\(e\)](#), select “No – don’t install/update my licenses”.
  - Finalize the software installation on Computer B in accordance with [Section 2.4](#).
  - Copy the following file from Computer A to Computer B. This is the licence for PSCAD (and LiveWire and Expanded Licensing if applicable).  
  
C:\Windows\Imgr-hvdc
  - On all Client computers that will be obtaining a licence from Computer B, configure the network licensing to point to Computer B in accordance with [Section 2.5](#).

b. For a Single-User licence (either a Professional or Educational licence), proceed as follows:

- Configure the software installation (PSCAD, GFortran and LiveWire as applicable) on Computer B in accordance with [Steps 3.1\(c\)](#) to (r).
- Copy the following file from Computer A to Computer B. This is the licence for PSCAD (and LiveWire if applicable).

C:\Windows\Imgr-hvdc

- Activate the licence on Computer B in accordance with [Section 3.2](#).

**Note**

At [Step 3.2\(e\)](#), omit steps (3) and (4) in the snapshot.

## 9. Resolving Issues

Refer to the following sections if you encounter any issues:

- See [Section 9.1](#) for issues when installing the software
- See [Section 9.2](#) for issues when configuring the Licence Manager
- See [Section 9.3](#) for issues when installing a licence
- See [Section 9.4](#) for issues when activating a licence for PSCAD
- See [Section 9.5](#) for issues when activating a licence for LiveWire
- See [Section 9.6](#) to contact our support desk

### 9.1 Issues with the Software Installation

If you encounter any issues during the software installation, you may troubleshoot the issues using our “PSCAD Installation Errors” document, available at the following link:

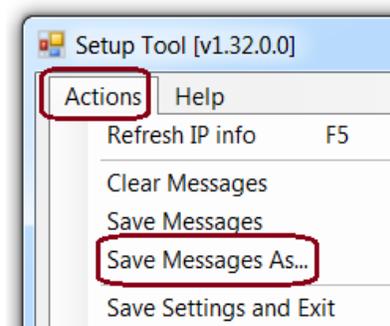
<http://updater.pscad.com/docs/PSCAD%20Installation%20Errors.pdf>

If you are still unable to resolve the problem, please contact our support desk ([Section 9.6](#)). Ensure to include as much information as possible to describe when the problem occurred and snapshots of any error messages, as well as a “Get Info” log file, which is generated as described in [Step 9.4\(a\)](#).

## 9.2 Issues with Configuring the Licence Manager

If you encounter any issues with configuring the Licence Manager, proceed as follows:

- a. In the "Actions" menu of the "Setup Tool", select "Save Messages As".



### Note

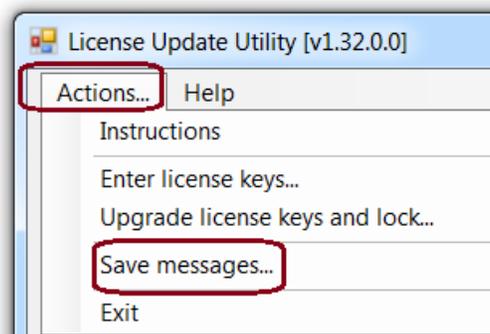
The messages will be saved as a log file to the location you specify, and named "Setup Tool", followed by the date and time.

- b. Forward the saved log file to our support desk ([Section 9.6](#)).

### 9.3 Issues with Installing a Network Licence

If you encounter any issues with installing a network licence ([Section 2.3](#)), proceed as follows:

- a. In the "Actions" menu of the "License Update Utility", select "Save Messages".



- b. When prompted, enter a file name and browse to a folder in which to save the messages. The messages will be saved as a log file.
- c. Forward the log file to our support desk ([Section 9.6](#)).

## 9.4 Issues with Activating a PSCAD Licence

If you encounter any issues with activating a PSCAD licence, please forward the following log files as applicable to our support desk ([Section 9.6](#)) to determine the reason:

a. **GetInfo.txt file:** This file is available on computers running the Licence Manager or PSCAD, as follows:

- Download the Get Info utility from the following link and save to your computer:

<http://updater.pscad.com/utilities/GetInfo32.zip>

- Select the "GetInfo32.exe" file to run the utility.
- The generated file will be saved to your computer and opened on your desktop; the file location will be listed within the file, towards the bottom.

b. **PscadLmgr.txt file:** This file is available on computers running the PSCAD application, and is located according to the Windows operating system and PSCAD version, as follows:

PSCAD Version	Windows Operating System	
	Windows XP	Windows Vista and Windows 7
PSCAD v4.2.1	<ul style="list-style-type: none"> <li>• C:\Windows\PscadLmgr.txt</li> </ul>	<ul style="list-style-type: none"> <li>• C:\Windows\PscadLmgr.txt</li> </ul>
PSCAD v4.3, v4.4, v4.5	<ul style="list-style-type: none"> <li>• C:\Documents and Settings\All Users\Application Data\Manitoba HVDC Research Centre\LicenseManager\PscadLmgr.txt</li> </ul>	<ul style="list-style-type: none"> <li>• C:\Users\All Users\Manitoba HVDC Research Centre\LicenseManager\PscadLmgr.txt</li> <li>• C:\Users\YOUR-USER-ID\AppData\Local\Manitoba HVDC Research Centre\LicenseManager\PscadLmgr.txt</li> <li>• C:\ProgramData\Manitoba HVDC Research Centre\LicenseManager\PscadLmgrd.txt</li> </ul> <p style="text-align: right;"><b>(send all available files)</b></p>

- c. **Lmgrd-log.txt file:** This file is available on computers running the Licence Manager, and is located according to the Windows operating system and version of Licence Manager, as follows:

Version of Licence Manager (LM)	Windows Operating System	
	Windows XP	Windows Vista and Windows 7
LM 1.27 (or earlier)	<ul style="list-style-type: none"> <li>C:\Windows\Lmgrd-log.txt</li> </ul>	<ul style="list-style-type: none"> <li>C:\Windows\Lmgrd-log.txt</li> </ul>
LM 1.28 (or later)	<ul style="list-style-type: none"> <li>C:\Documents and Settings\All Users\Application Data\Manitoba HVDC Research Centre\LicenseManager\Lmgrd-log.txt</li> </ul>	<ul style="list-style-type: none"> <li>C:\Users\All Users\Manitoba HVDC Research Centre\LicenseManager\Lmgrd-log.txt</li> <li>C:\Users\YOUR-USER-ID\AppData\Local\Manitoba HVDC Research Centre\LicenseManager\Lmgrd-log.txt</li> <li>C:\ProgramData\Manitoba HVDC Research Centre\LicenseManager\Lmgrd-log.txt</li> </ul> <p>(send all available files)</p>

## 9.5 Issues with Activating a LiveWire Licence

If you are unable to activate a permanent or trial LiveWire licence, please forward the following log files as applicable to our support desk ([Section 9.6](#)) to determine the reason:

- a. **GetInfo.txt file:** Obtain this log file in accordance with [Step 9.4\(a\)](#).
- b. **ZSystemsLmgr.txt file:** This file is available on computers running the LiveWire application, and is located as follows:

C:\Windows\ZSystemsLmgr.txt

- c. **Lmgrd-log.txt file:** Obtain this log file in accordance with [Step 9.4\(c\)](#).

## **9.6 Contacting the Support Desk**

There are two methods for contacting the support desk if you encounter any issues with installation or licensing. In each case, the necessary log files as described in [Sections 9.2 to 9.4](#) may be attached. Contact the support desk as follows:

- Submit a support request in an e-mail to [support@pscad.com](mailto:support@pscad.com).
- Register in our “MyCentre” website utility, and submit a support request from within this utility. Refer to the following document for instructions:

[https://mycentre.hvdc.ca/\\_Downloads/ManagingMyCentre.pdf](https://mycentre.hvdc.ca/_Downloads/ManagingMyCentre.pdf)

## Appendix A Licensing Across Networks

This appendix provides information about licensing software across networks, and is used to determine the appropriate configuration for your networking system.

For Multi-User licences (MULs), the Licence Manager resides on a Server computer and issues licences remotely to Client computers across the networking system. There are two kinds of remote-licensing, briefly described as follows:

- **Legacy Licensing:** Legacy Licensing is the traditional configuration, in which the Client computers are on the same network as the Server.
- **Expanded Licensing:** Expanded Licensing occurs more infrequently, when the Client computers are not on the same network as the Server.

Legacy Licensing is the recommended method for licensing across networks as it is simple to configure within the Licence Manager. Conversely, the Expanded Licensing is only recommended if absolutely essential due to the following limitations:

- It requires prior approval
- It is limited to two networks
- Updated maintenance is required on a Professional license
- It expires, and must be re-applied for.

### Legacy Licensing

This section provides the background on network classes, and how the Licence Manager applies them for issuing licences. This information may be used to determine whether your networking system supports Legacy Licensing. If it does not support Legacy Licensing, proceed to the section on [Expanded Licensing](#) to support your networking requirements.

The Licence Manager adheres to networks as defined according to RFC-960. Classes and class levels of networks are shown in Table 1.

<b>Network Class</b>	<b>Start Address</b>	<b>End Address</b>	<b>Class Level</b>
A	1.0.0.0	126. 0. 0.0	↑ Higher class
B	128.0.0.0	191.255. 0.0	
C	192.0.0.0	223.255.255.0	
D	224.0.0.0	239.255.255.0	↓ Lower class

**Table 1. Network Classes and Class Levels**  
**(Source: Internet Protocol Standards, page 2)**

Four network classes, from A to D, are listed in Table 1. Each network class possesses a range of network addresses, as listed in the "Start Address" and "End Address" columns. Each network address consists of four sets of digits separated by periods.

The four network classes are ranked according to their networking restrictions, as shown in the "Class Level" column. The higher the class level, the lower the networking restrictions.

Networking restrictions are more fully explained using Table 2. This is the same table as Table 1, with the addition of the "IP Mask" column.

Network Class	Start Address	End Address	Class Level	IP Mask
A	1.0.0.0	126. 0. 0.0	↑ Higher class	255. *. *. *
B	128.0.0.0	191.255. 0.0		255.255. *. *
C	192.0.0.0	223.255.255.0		255.255.255. *
D	224.0.0.0	239.255.255.0	↓ Lower class	255.255.255.255

**Table 2. Network Classes and IP Masks**

For each network class, the "IP Mask" column specifies the IP address configuration that is required for a computer to reside on a particular network. The digits "255" represent those digits in the Client computer's IP address that must be exactly the same as the corresponding digits on the Server's IP address in order for the Client computer to reside on the same network as the Server. The "\*" is a wild card, and represents the digits in the Client computer's IP address that do not have to match the corresponding digits on the Server's IP address in order for the Client computer to reside on the same network as the Server.

Table 2 demonstrates the limitations of a Class D network. A Class D network requires all four sets of digits to be the same for the Server and Client computer. Therefore, a Class D network may only network to itself, and thus may only issue a licence to itself. This network is typically not used, except in a very uncommon situation, in which a Multi-User licence with two or more seats is installed, with the result that multiple instances of PSCAD may be run on a single computer.

The Licence Manager may be configured to alter the IP Mask restrictions in Table 2. In this manner, certain network classes may be artificially elevated to a higher class, and certain network classes may be artificially lowered to a lower class.

Elevating a class is useful for lowering the restriction, thereby permitting more computers to network to that Server. Lowering a class is useful for increasing restriction, thereby restricting the access of Client computers.

Table 3 lists all of the available re-configurations for classes A to C. Table 3 assumes a Licence Manager version 1.30 or later and NET Framework 4.0 (or better). The latest version of Licence Manager may be obtained by contacting the support desk ([Section 9.6](#)).

Original Configuration			Re-Configuration	After Re-Configuration	
Network Class	Example of IP Address	IP Mask		IP Address	Network Class
A	12.11.21.31	12. *. *.*	No Change	12. *. *.*	A
			Increase Restriction	12.11. *.*	B
			Increase Restriction	12.11.21.*	C
B	132.11.21.31	132.11. *.*	Lower Restriction	132. *. *.*	A
			No Change	132.11. *.*	B
			Increase Restriction	132.11.21.*	C
C	192.11.21.31	192.11.21.*	Lower Restriction	192.11. *.*	B
			No Change	192.11.21.*	C

**Table 3. Re-Configuring Network Classes**

The following may be observed from this table:

- In all classes, the first set of digits must always match.
- Class A may remain Class A, or be lowered to Class B or Class C.
- Class B may remain Class B, or be either raised to Class A or lowered to Class C.
- Class C may remain Class C, or be raised to Class B.

If you have determined that the Server and Client computers are on different networks after reviewing your configuration against Table 3, then the Licence Manager will refuse to issue a licence if it is configured for Legacy Licensing. In this case, [Expanded Licensing](#) may be required.

## **Expanded Licensing**

Expanded Licensing must be obtained if the PSCAD Client computer is on a different network than the Server. This is determined by reviewing the section on [Legacy Licensing](#).

Expanded Licensing permits the Licence Manager to be configured to issue licences to Client computers that reside on different networks than the Server. To request approval for this licence, please forward the following information to our support desk ([Section 9.6](#)):

- Your licence number.
- Your networking configuration (the networks on which the Server and Client computers reside).

If approved, we will provide a licence containing the time-limited Expanded Licensing along with installation and configuration instructions.

DOCUMENT TRACKING

Rev.	Description	Date
<b>0</b>	Initial	07/Dec/2012
<b>1</b>	Generalized to cover v4.5.0 to v4.5.2; Amalgamated licence activation for Server/Client computers; Revised support desk contact information; General corrections and improvements	26/Apr/2013
<b>2</b>	Minor updates and improvements for v4.5.2	14/Jun/2013
<b>3</b>	Removed an outdated installation screenshot	03/Jul/2013
<b>4</b>	Minor updates for v4.5.3 release and Intel 13 support, minor corrections, updated title page	22/Nov/2013