tecplot 360 ex

Installation Guide

Tecplot 360 EX 2019 R1

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Introduction

Overview

Welcome to Tecplot 360 EX! This guide contains instructions to help you successfully install Tecplot 360 EX and enter your licenses. To complete the installation process, a basic understanding of file editing, folder navigation, path names, environment variables, and shortcuts/aliases is useful.

The Tecplot 360 EX installation is available primarily as a download. Download the setup file corresponding to your operating system from My Tecplot to begin. If you have difficulty downloading the installation file, contact Technical Support for help.

> Tecplot 360 EX uses the Reprise License Manager. If you are upgrading from Tecplot 360 2009 R1 or earlier, we suggest uninstalling older versions of Tecplot 360 after your new installation is fully operational.

Tecplot 360 EX uses the Reprise License Manager to manage licensed use of the product. The first time you run Tecplot 360 EX after a fresh installation, you must provide an activation key or valid license file (for a **Single-User** license), or the address of a Reprise License Manager server (for a **Network** license).

If you have a **Network** license of Tecplot 360 EX, one machine on your network will need to have the Reprise License Manager server installed. Refer to the RLM Installation Guide for instructions on installing and configuring the Reprise License Manager server for a **Network** license.

Getting Started

This chapter includes information you need to know before beginning your installation. Refer to the following chapters for platform-specific installation instructions.

My Tecplot

My Tecplot is Tecplot's one-stop portal that allows you to download software, manage your license keys, and more. Visit it at https://my.tecplot.com/.

Technical Support

If you have difficulty performing the installation, review the "Useful Information" on page 43, then visit our detailed, searchable knowledge base online at https://kb.tecplot.com/. You can also contact our responsive Technical Support Team by the following methods:

- Internet: https://www.tecplot.com/support/
- E-mail: support@tecplot.com
- Telephone: +1-425-653-9393

Please include your license number when contacting Support.

License Number

If you need to obtain a license file for Tecplot 360 EX, you will need your license number. This number identifies you as a Tecplot customer and is different from the activation code or license key file you receive to activate a single-user license. If you do not have a license number, this may be because someone else in your organization purchased the license. If you purchased a single-user license or are the listed contact on your account, Technical Support can help you find your license number.

System Recommendations

We recommend, at a minimum:

- **Processor -** 2 GHz, 64-bit
- **Storage -** 850 MB free disk space and 4 GB RAM[1]
- **Graphics -** An OpenGL-accelerated graphics card
- **Display -** Resolution of 1600x1200 or more suggested

If you work with larger data sets, more RAM, more disk space, and additional processor cores will help.

Please make sure that you are using the latest graphics drivers compatible with your hardware and operating system. These can be obtained from your graphics adapter vendor's Web site. Old versions may have issues with Tecplot 360 EX, especially with larger data sets.

- **NVIDIA:** https://www.nvidia.com/Download/index.aspx
- **ATI:** https://www.amd.com/en/support
- **Intel:** https://downloadcenter.intel.com/Default.aspx

Supported Platforms

Tecplot 360 EX is built, tested, and fully supported only on the following operating systems and platforms. The software may also run on operating systems similar to the ones listed here, especially later releases of the same platforms, but our

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1. On Windows systems, some components will be installed on C: even if the product is installed on another drive. Additionally, the installation components are always unpacked to C:, although these are removed after installation. Of the total disk space requirements, 500 MB are required on C and 350 MB on the installation drive, for a total of 850 on C: if the product is installed to C:.

ability to provide support for such installations may be limited.

Windows
64-bit (x86-64)
Windows 7, 8.1, 10 Note: Windows 8.1 will be dropped as supported platform in 2019 R1.

Mac
64-bit (x86-64)
10.12 (Sierra) 10.13 (High Sierra) 10.14 (Mojave) Tecplot Chorus is not available for Mac.

Linux
64-bit (x86-64)
Red Hat Enterprise Linux (RHEL) 6.7+, 7.3+; CentOS 6.7+, 7.3+
SUSE Linux Enterprise Desktop (SLED) 11.4, 12.2+
Ubuntu 14.04 LTS, 16.04 LTS, 18.04 LTS

Windows Installation

1. **Download Setup** Download the setup file from [My Tecplot](#). The setup file includes both Tecplot 360 EX and Tecplot Chorus.

SYSTEM ADMINISTRATORS

To silently install Tecplot 360 EX on a workstation, open a command line using an Administrator account and navigate to the folder that contains your saved setup file. Then type:

`tecplot360ex2019r1_win64.exe /S`

Tecplot 360 EX is installed with default options.

If you will be using Tecplot 360 EX with a **Network** license, you must install the RLM license manager on a network server. See the [RLM Installation Guide](#) for details.

2. **Launch Setup** Navigate to the location of your downloaded setup file. Then right-click the *.exe* file and choose "Run as Administrator" from the context menu. (You will be asked to provide an administrator account and password if your account does not have the necessary privileges.)

   After the setup program starts, click **Next** to begin.

3. **Products to Install** By default, both Tecplot 360 EX and Tecplot Chorus will be installed. If you do not wish to install Tecplot Chorus, you can uncheck it here.

4. **License Agreement** Read and agree to the license agreement.

5. **System Path** Indicate whether you want the Tecplot 360 EX executable added to the PATH variable for all users or for just the current user, or not at all. Doing this allows you to easily launch Tecplot 360 EX from

the command line without having to specify the full path of the executable. (If you will not be doing this, it technically doesn't matter which you choose.)

On this page, you can also indicate whether to create a shortcut on the Windows desktop to launch Tecplot 360 EX.

6. **Destination Folder** Tecplot 360 EX and Tecplot Chorus (if selected) will install into separate subdirectories in this folder. Accept the default destination folder, or browse to set a new folder (by using the Change button).

7. **Start Menu Folder** Indicate what folder Tecplot 360 EX should appear in under the Windows Start menu. For most users, the default is appropriate.

8. **Install the Program** Click the **Install** button. Installation will take a few moments. After installation completes, click **Finish** to close the setup program.

The first time you run Tecplot 360 EX or Tecplot Chorus after a fresh installation, you will be prompted to set up your license . See <u>"Licensing"</u> on page 35 for further instructions.

To install PyTecplot, see <u>"Installing PyTecplot"</u> on page 21.

Mac Installation

Follow the instructions below to install Tecplot 360 EX on a Macintosh system. Refer to the [Release Notes](#) for further information on running Tecplot 360 EX under Mac.

To install Tecplot 360 EX on Mac, double-click the *.dmg* file you have downloaded. This is a disk image file which will be mounted as a drive; this drive then automatically opens in Finder.

In the Finder window, simply drag the Tecplot 360 EX folder on top of the Applications folder in the same window, then release the mouse button. (The actual name of the folder will include a version number, which is not shown above.)

Tecplot Chorus, which is available to Tecplot 360 EX users via the TecPLUS subscription service, is not available for Mac. You will need to run Tecplot 360 EX on Windows or Linux if you need access to Tecplot Chorus.

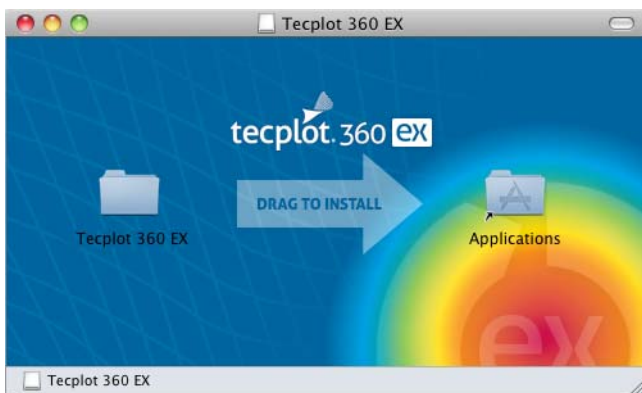To run Tecplot 360 EX after installation, double-click the Tecplot 360 EX application icon in the installation folder, /*Applications*/*Tecplot 360 EX 2019 R1*.

The first time you run Tecplot 360 EX after a fresh installation, you will be prompted to set up your license. See "Licensing" on page 35 for further instructions.

On Mac, the Host ID file needed to obtain a license key file is generated only when you click Request License in the license dialog. You must launch Tecplot 360 EX and click Request License to generate the Host ID file before you can request a license key. If you are using an activation code, this is not necessary.

To install PyTecplot, see "Installing PyTecplot" on page 21.

Using Tecplot 360 EX from the Command Line

You may run Tecplot 360 EX from the command line; for example:

```
open "/Applications/Tecplot 360 EX 2019 R1/Tecplot 360
EX 2019 R1.app"
```

You may follow this command with the paths of any Tecplot-format layout, macro, or data files to open. Tecplot 360 EX will launch and then open the specified files, if any.

However, to run in batch mode, Tecplot requires the full path to the executable followed by the -b flag:

```
"/Applications/Tecplot 360 EX 2019 R1/Tecplot 360 EX 2019
R1.app/Contents/MacOS/Tecplot 360 EX 2019 R1" -b
mymacro.mcr
```

If you often use Tecplot 360 EX from the command line, it is convenient to add an alias of the full executable path like the following in ~/.*bashrc*:

```
alias tec360='"/Applications/Tecplot 360 EX 2019 R1/
Tecplot 360 EX 2019 R1.app/Contents/MacOS/Tecplot 360 EX
2019 R1"'
```

With this alias defined, you can open Tecplot 360 EX from a terminal by typing tec360 followed optionally by the files to be opened.

If you set the file associations for Tecplot-format files as described in the following section, you can open such files from the command line more simply. For example:

```
open /path/to/mylayout.lay
open mylayout.lay
```

This opens the specified file in the default application, Tecplot 360 EX. In this case, the tec360 alias is not needed.

Keyboard and Mouse Shortcuts

Keyboard shortcuts described in the Tecplot 360 EX User's Manual often use the Control key (for example, Control-C to copy text to the clipboard). Mac users should use the Mac-standard Command key for these shortcuts instead.

If a keyboard shortcut calls for the Alt key, use the Option key. Many Macs have the word Alt on the Option key already, but some keyboards may only have Option.

If your mouse has only a single button, hold down Control while clicking to generate a right-click.

Multiple Instances

Right-click the Tecplot 360 EX icon in the Mac dock to access a menu that lets you launch an additional instance in its own window. Note that for a network license, each new instance consumes an additional license seat.

Linux Installation

To install Tecplot 360 EX on a Linux operating system, we suggest that you run as root (using the su or sudo command). Running as root allows you to complete the installation in a system directory, such as in /usr, so it can be used by all users of the system. Follow the steps in this chapter to install Tecplot 360 EX on a Linux operating system.

Linux Installation Instructions

To install Tecplot 360 EX on a Linux system, perform these steps:

1. **Download Setup** To download your installation, save the setup script from the download site to a temporary folder on your hard drive. The setup file's name varies based on the version of the product being installed, but it starts with *tecplot360* and ends with *.sh*.

   The setup file includes both Tecplot 360 EX and Tecplot Chorus.

2. **Navigate to Setup** Use the command line to navigate into the directory where you downloaded the setup script.

3. **Launch Setup** Type:

   sh tecplot360*.sh

4. **License Agreement** Read and accept the license agreement.

5. **Home Directory** Enter the full path to the folder in which you wish to install. Products are installed in subdirectories under this folder.

Installation will require just a few moments.

The first time you run Tecplot 360 EX or Tecplot Chorus after a fresh installation, you will be prompted to set up your license. See "Licensing" on page 35 for further instructions.

To install PyTecplot, see

Optional Variable Setup

It may be useful to add Tecplot 360 EX to your PATH variable so you can easily run it from the command line without having to specify the full path to the executable file. To do this:

1. Add the following to your *.profile*[1] file (for Bourne or Korn) or to your *.bash_profile* file (for Bash) in your login home directory:

   ```
   export PATH=/path/to/360/bin:$PATH
   ```

   > These procedures assume you are using the Bash shell, which is the default in most Linux installations. If you do not know what type of shell you are using, type the following command: echo $SHELL. A response of /bin/ksh means you are using the Korn shell, /bin/sh indicates the Bourne shell, and /bin/bash means you are using the Bash shell.

2. Activate the change to your *.profile* file by typing the following (choose the commands appropriate to your shell):

• <u>For the Korn or Bourne shells</u>, run the following command:

   ```
   . ./.profile
   ```

• <u>For the Bash shell</u>, run the following command:

   ```
   . ./.bash_profile
   ```

When invoked as a login shell, Bash looks in these files in your home directory (in order) for initialization commands:

   ```
   profile
   ```

---

1. If you do not have a *.bash_profile* or *.profile* file, you can create this file.

```
.bash_profile
.bash_login
.profile
```

Some systems may not contain a .bash_profile file. If this is the case, you may create the file, or put the Tecplot PATH commands in one of the other files above. Use the syntax already described.

Adding Tecplot Chorus to your Path

If you have installed Tecplot Chorus, you may wish to be able to easily access it from the command line as well. Simply add both products' *bin* directories to your PATH by adding the following lines to your profile as directed above:

```
export TEC_360_2019=/path/to/360
export TEC_CHORUS_2019=/path/to/chorus
...{pre-existing code}...
export PATH=$TEC_360_2019 R1/bin:$TEC_CHORUS_2019/
bin:$PATH
```

Starting Tecplot 360 EX

To run Tecplot 360 EX, navigate to the *bin* folder of the Tecplot 360 EX installation and type ./tec360. If you have set the PATH variable to include the Tecplot 360 EX *bin* folder, as described previously, you do not need to change the directory before typing tec360. In this case, it is often more convenient to change to the directory containing the data files you will be working with before starting Tecplot 360 EX.

Running Tecplot 360 EX Remotely

If you purchased a **Network** license, you can run Tecplot 360 EX remotely using the X Window System. By default, X Window System programs send their output to the display identified by the DISPLAY environment variable.

• If your login shell is the Bourne or Korn shell, type:

```
export DISPLAY=hostnameofclientmachine:0
```

• Or, use the `-display` flag on the command line. For example:

```
tec360 -display computername:0
```

If you purchased a **Single-User** license, Tecplot 360 EX must run and display on the same computer.

If you choose to work remotely with complex geometries[1], using the `-mesa` option will force graphics rendering to occur in software on the computer running Tecplot 360 EX rather than at the workstation displaying it. This may result in better display performance. At least two clients, VNC and ThinAnywhere, automatically use this option. However, with other clients, like Exceed, Reflection, or Cygwin, you will need to specify the `-mesa` flag to enable software rendering. This diagram illustrates the difference in where rendering is done during remote access:
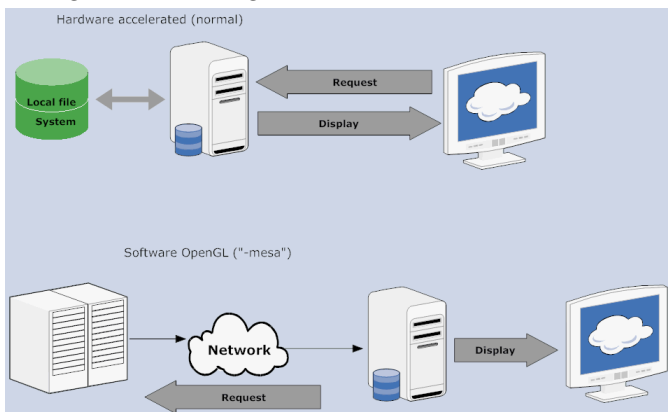
Running Tecplot 360 EX in batch mode (using the `-b` flag) also runs with software graphics rendering, just as the `-mesa` mode does. In batch mode, Tecplot 360 EX does not display the graphics.

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1. On the order of 50M polygons or elements

Installing PyTecplot

PyTecplot is a library that brings the power of Tecplot 360 EX to the Python programming language. It is compatible with most Python environments, and plays well with other widely-used Python tools such as NumPy, SciPy, and Jupyter/IPython. If you are familiar with the Python support previously provided with legacy versions of Tecplot 360 (prior to the introduction of 360 EX), you will be particularly pleased with the improvements that PyTecplot provides.

The installation guide for PyTecplot can be found online at https://www.tecplot.com/docs/pytecplot/install.html.

Installing the SZL Server

The Tecplot SZL Server is a file server that allows you to remotely open data files and visualize them using a local copy of Tecplot 360 EX. It is intended for users of computing clusters where the data is not easily or quickly accessible from the visualization workstation, and where it is impractical to run Tecplot 360 EX at the cluster using a remote desktop solution.

The Tecplot SZL Server works only with Tecplot subzone (SZL or *.szplt)* files. This file format is optimized to load as little data as possible and can provide better performance than most other file formats over networks.

Some solvers can already produce SZL output, and others are in the process of adding support for the format. If your solver does not output in SZL format, you can convert your data files using Tecplot 360 EX in a special batch mode that does not require a license. See Section 27 - 5, "Batch Converting to SZL Format," in the Tecplot 360 EX User's Manual.

Requirements

The Tecplot SZL Server runs only on 64-bit (Intel x64) Linux systems and is officially supported only on the specific distributions listed under "Supported Platforms" on page 8. However, in practice, the Tecplot SZL Server should run on more distributions than does Tecplot 360 EX itself, because the server does not have any graphics requirements. We encourage you to try the SZL server even if your Linux distribution is not officially supported by Tecplot 360 EX.

Although the server must run on Linux, the client can be any platform supported by Tecplot 360 EX.

If you require support for a server platform other than Linux, please contact <u>Technical Support</u>.

> Installing and configuring the Tecplot SZL Server may require assistance from (or need to be done by) your system and network administrators.

Networking

Make sure that the workstations that you intend to use as clients can connect to the desired server over the network via ssh. This may require some configuration on the remote host, the workstation, or at the firewall or router.

> Network Administrators: the Tecplot SZL Server runs only when in use. Tecplot 360 EX can connect to the server using three connection modes: SSH Tunneled, Direct, and Manual.
>
> In the SSH Tunneled connection mode, the client workstation connects to the remote host via ssh, then launches the server, which connects back to the client workstation over the ssh connection.
>
> Direct mode does not use encryption and requires the remote host to be able to connect to arbitrary ports on the client workstation.
>
> Manual mode by default establishes a direct ssh connection, but the user may optionally set up a tunnel.
>
> A direct connection may provide better end-user performance than the other modes, but may have security implications. However, if your users are on an encrypted network (e.g. VPN or WAN), the SSH encryption may be redundant.

Licensing

The Tecplot SZL Server does not itself require a license and can be run on any compatible system without restriction. All licensing is on the client side: the Tecplot 360 EX client must have an active TecPLUS subscription to open remote files from the Tecplot SZL Server.

Your initial Tecplot 360 EX purchase includes one year of TecPLUS; thereafter, you must renew TecPLUS annually to continue to be able to access files via the Tecplot SZL Server with Tecplot 360 EX, along with other premium features.

If you do not renew TecPLUS, you will still be able to run any version of Tecplot 360 EX released during your subscription period, but you will not have access to TecPLUS features.

Installation

An installation script for the Tecplot SZL Server, *tecplotszlserver_2019r1_linux64.sh*, can be found in the *szlserver* folder in your Tecplot 360 EX installation. Installing it is similar to installing the Linux version of Tecplot 360 EX.

1. Copy the installation script to the remote host on which you want to install the Tecplot SZL Server (perhaps using file sharing or `scp`).

   Ex: `scp /path/to/360/szlserver/tecplotszlserver*.sh username@host.example.com:/path/to/copy/into`

2. Connect to the remote host using `ssh`.

   Ex: `ssh username@host.example.com`

3. Change to the directory containing the installation script.

   Ex: `cd /path/to/installation/script`

4. Execute the installation script using `bash`. If you want to install the Tecplot SZL Server in a system directory (such as `/usr/local`) so it is available to all users, use the `sudo` command to run the installation as root.

Ex: sudo bash tecplotszlserver*.sh

5. Follow the on-screen prompts to do the following:

- Read and accept the Tecplot License Agreement
- Specify the installation directory (the default is /usr/local/tecplotszlserver2019r1)

  Note that if not installing as root, you should probably install to a subdirectory of your home directory, such as /home/bob/tecplotszlserver.

The installation will take only a moment.

Setting Up the Path

Add the *bin* subdirectory in the Tecplot SZL Server installation directory to your PATH environment variable. On most Linux systems, this is done by adding a line like one of the following to your ~/.*bash_profile* file:

```
export PATH=/path/to/tecplotszlserver/bin:$PATH
```

This allows the Tecplot SZL Server to be invoked by entering szlserver on the command line, which is needed to allow the client to launch it after establishing a connection.

To make sure it worked, log out and back in, then type which szlserver. You should see the path of the Tecplot SZL Server executable, not an error message.

Connecting to the Tecplot SZL Server

Tecplot 360 EX can establish an SSH connection to the Tecplot SZL Server using a password or a key pair. A key pair, if used, may be protected by a passphrase. If a password is used, this may be stored in a keychain managed by Pageant (Windows) or SSH Agent (Linux/Mac).

If an SSH authentication method that require user interaction is used (such as a password, a passphrase-protected key pair, or a locked keychain), the user is prompted for the necessary information when it is needed, either using a dialog, or, if Tecplot 360 EX is running in batch mode, by prompting for

the information in the terminal window. (Windows does not support prompting for information in batch mode.)

If you want to run completely unattended processes on Tecplot SZL Server data using Tecplot 360 EX's batch mode, you should use key pairs that do not require a passphrase to avoid the requirement that a user be present.

Creating SSH Key Pairs

If you are already authenticating to a given remote host via ssh using a key pair, you can reuse OpenSSH-format keys with Tecplot 360 EX and do not need to generate new ones. These instructions will help you set up ssh authentication via key pairs if you are not already using this feature.

The public key is installed on the remote host, and the private key is installed on the client workstation. This allows the client workstation to prove the user account's identity to the server without the user entering credentials, allowing Tecplot 360 EX to connect transparently to the Tecplot SZL Server.

You should take steps to prevent the private key from being accessed by other users of your machine or network, for example using filesystem permissions, because they can use the private key to impersonate the specified user to the remote server. You might add an IP address restriction for the key (in the remote host's *authorized_keys* file) if the user workstation has an assigned address.

Creating key pairs can be done on any platform. On Linux and Mac, you can use command-line tools that come with the operating system. On Windows, you will need to install the necessary utilities if you do not already have them.

Since the Tecplot SZL Server runs only on Linux, you already have access to a Linux system which you can use to generate key pairs. However, we have also included instructions for generating the keys on Windows.

Generating a Key Pair on Linux or Mac

To create a key pair on Linux or Mac, log in as the user for whom you want to generate a key pair, and issue the following command lines:

1. Create the *.ssh* subdirectory in your home directory.

   ```
   mkdir -m 700 ~/.ssh
   ```

   This command results in an error message if the *.ssh* subdirectory already exists. This is expected and may be ignored.

2. Generate the key pair. For example:

   ```
   ssh-keygen -t rsa -f ~/.ssh/id_rsa_tecplot
   ```

   You may enter a passphrase if desired, or press Enter twice to create a key without a passphrase.

The resulting private key is in *~/.ssh/id_rsa_tecplot* and the corresponding public key is in *~/.ssh/id_rsa_tecplot.pub*. Now you must put the private and public keys in the right place on both the client workstation and the remote host.

- If you have generated the key pair on the remote host, copy the file *~/.ssh/id_rsa_tecplot* (the private key) to the client workstation. It should be stored in the same location on the client machine: *~/.ssh/id_rsa_tecplot* (or, on Windows, *%USERPROFILE\.ssh\id_rsa_tecplot)*. Delete the file from the remote host, ideally using srm or another secure deletion tool.

- If you have generated the key pair on your local workstation, copy *~/.ssh/id_rsa_tecplot.pub* (the public key) to the remote host, again in the same location. It is not necessary to delete the public key from the local workstation.

Finally, on the remote host, append the public key to *~/.ssh/ authorized_keys* using the following commands:

```
cd ~/.ssh
cat id_rsa_tecplot.pub >> authorized_keys
```

```
chmod 600 authorized_keys
```

Generating a Key Pair on Windows

Windows does not come with ssh and its associated utilities. We recommend [PuTTY](#), as it has a convenient graphical user interface that simplifies connecting to remote hosts using ssh.

You can also use Cygwin or, on Windows 10, the Windows Subsystem for Linux (WSL). In this case, key generation will proceed much as on Linux using the command line. However, as most Windows users use PuTTY as an ssh client, we suggest using the PuTTYgen tool that comes with PuTTY.

To generate the public key using PuTTYgen:

1. Install PuTTY from https://www.putty.org/.

   If you already have PuTTY installed, but it is not the latest version, we recommend updating if possible.

2. In your user profile folder, create a folder named *.ssh* (note the leading period on the folder name). This can be done in Explorer, or by issuing the following command in the Run dialog or at the command line:

   ```
   mkdir %USERPROFILE%\.ssh
   ```

   If this directory already exists, you will receive an error message. This is expected and may be ignored.

3. Launch PuTTYgen and click the **Generate** button.

4. As prompted, move the mouse around in the blank area in the PuTTYgen window until the thermometer fills to generate random data.

   After you have generated sufficient random data, the thermometer will fill again as PuTTYgen generates the key pairs.

5. If you want to use a passphrase with this key pair, enter it in the Key Passphrase and Confirm Passphrase fields.

6. Click the **Save Private Key** button and, if you have not entered a passphrase, confirm that you want to save

the key without one. Save the key as
%USERPROFILE%\.ssh\id_rsa_tecplot.ppk.

This saves the private key in a PuTTY-specific format,
which will be useful when connecting to the server
using PuTTY. Tecplot 360 EX requires the key in
OpenSSH format, however.

7. From the PuTTYgen **Conversions** menu, choose
Export OpenSSH Key. Again confirm saving the key
without a passphrase if you have not entered one.
Save this key without a filename extension as
%USERPROFILE%\.ssh\id_rsa_tecplot.

This is the OpenSSH-format private key that Tecplot
360 EX will use.

8. Right-click the text field below the label "Public key
for pasting into OpenSSH authorized_keys file" and
choose **Select All** from the context menu. Right-click
again and choose **Copy** to copy the public key to the
clipboard.

9. Finally, open Notepad (or another text editor), paste in
the copied public key, and save it next to your other
key files as *%USERPROFILE%\.ssh\id_rsa_tecplot.pub*.

The resulting private key is in your user profile folder as
.ssh\id_rsa_tecplot and *.ssh\id_rsa_tecplot.ppk* (in the two
formats required by PuTTY and Tecplot 360 EX), and the
corresponding public key is in *.ssh/id_rsa_tecplot.pub*.

Now install the public key on the remote Linux host:

• Copy the public key, *id_rsa_tecplot.pub*, to the file *~/.ssh/
id_rsa_tecplot.pub* on the remote Linux host using file
sharing or scp.

If you do not have a scp client, PuTTY SCP, pscp, is
available from https://www.putty.org/. A Windows
command line session using pscp might look like this:

```
cd %USERPROFILE%/.ssh
pscp id_rsa_tecplot.pub username@remote.host:~/.scp/
id_rsa_tecplot.pub
```

The second command (shown here as the second and third lines) should be entered as a single line and should include your user name and the remote host's DNS name in place of *username@remote.host*.

• Log on to the remote host via ssh and add the public key to the *authorized_keys* file:

```
cd ~/.ssh
cat id_rsa_tecplot.pub >> authorized_keys
chmod 600 authorized_keys
```

Testing the Key Pair

Linux and Mac

From a Linux or Mac workstation, you can use the following command to test the key pair:

```
ssh -i ~/.ssh/id_rsa_tecplot username@remote.host
```

(substituting your username on the remote host and its DNS name for *username@remote.host*)

Assuming you did not enter a passphrase, you should be logged into the remote host and receive its logon banner and shell prompt without being asked for a password.

Windows

On Windows, you can use PuTTY to make sure the key pair works. PuTTY requires a different key format than the OpenSSH library that Tecplot 360 EX uses, which is why, if you generated keys using PuTTYgen, you needed to save the private key in two different formats.

However, if you generated your keys on a Linux system, you do not have the *.ppk* key file that PuTTY requires. In this case, you can convert the private key using PuTTYgen:

- Launch PuTTYgen (in the PuTTY folder)
- From the **Conversions** menu, choose **Import Key**.
- Choose the file *id_rsa_tecplot* containing the private key.
- Enter your passphrase in the provided fields if you wish to use one.
- Click the **Save Private Key** button, acknowledge that you are saving the key without a passphrase if you are, and save it as *id_rsa_tecplot.ppk*.

Now you can try logging in with PuTTY to the remote host using the private key.
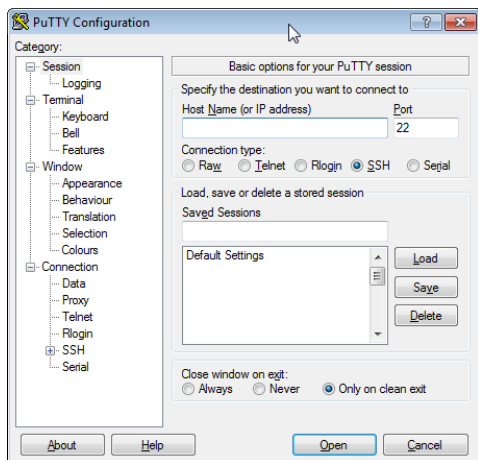
1. Launch PuTTY.

2. In the Host Name (or IP Address) field, enter
   `username@remote.host`, substituting the address of the remote host and your user name on that host.

3. In the Category tree, expand Connection, then SSH, then click Auth.

4. Click **Browse** and choose your private key file *(.ppk)*

5. Click the **Open** button at the bottom of the window.

Assuming you did not create the private key with a passphrase, you should be logged into the remote host and receive its logon banner and shell prompt without being asked for a password.

Setting Up Key Pairs for Multiple Remote Hosts

We have used the name *id_rsa_tecplot* as the base name for our key pairs in the instructions here. This will avoid name conflicts with key pairs you may already have established for other purposes. If you will be using the Tecplot SZL Server on multiple remote hosts, you have two options:

- Use the same key pair for all remote hosts. In this case, simply install the same public key in the *authorized_keys* file of all the remote hosts you use. This has the advantage of not needing to choose a different key file in Tecplot 360 EX when choosing a different server.

- Use a unique key pair for each remote host. This way, even if one key is compromised, it only allows an attacker access to one host.

  In this case, using the name *id_rsa_tecplot* is not sufficient to identify each key; it is easy to confuse them or accidentally overwrite them. Use a more complete base name when generating key files, for example including the DNS name of the remote host, as in *id_rsa_tecplot_hostname*. Repeat the instructions to generate and install the additional key pairs, substituting the host-specific name where appropriate.
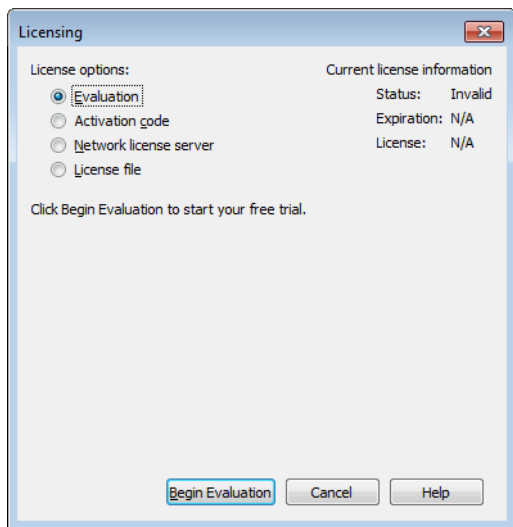
Loading Files from the Tecplot SZL Server

See Chapter 4 of the [User's Manual](#) for information on loading files from the Tecplot SZL Server.

Installing the SZL Server

Licensing

Entering Your License

The first time you launch Tecplot 360 EX after a fresh installation, you will be prompted to enter your license information:

You will also see this dialog if Tecplot 360 EX cannot validate your license information (for example, because your evaluation license has expired, or because the network license server is not available). Additionally, you may change your license information at any time from the **Help** menu.

How you install your license information depends on what type of license you have.

- If you wish to evaluate the product before purchasing, you may obtain an **Evaluation** license with a single click.

- If you have an Activation Code for a **Single-User** license and have Internet access, you enter the activation code.

- If you have a License File for a **Single-User** license, you select the license file, or paste the key text into the license field.

- If you have a **Network** license, you specify the server name and port number of the RLM license server on your network.

Evaluation License Setup
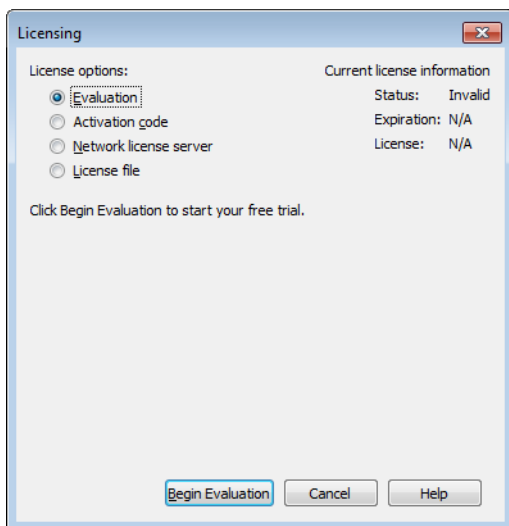
To obtain a time-limited evaluation license key so you can try the product before purchasing, make sure the "Evaluation" license type is selected in the Licensing dialog, then click **Begin Evaluation**. The product evaluation period begins. You will see a notice on the product's Welcome Screen indicating when your evaluation license will expire.

This procedure requires an active Internet connection. If for some reason you cannot fully evaluate Tecplot 360 EX on an Internet-connected computer, or if you need additional time to complete your evaluation, contact Tecplot Support for a time-limited single-user license file, which may then be installed using the instructions in the following section.

Single-User License Setup Using An Activation Code

If you received an activation code for your product, allowing it to be activated over the Internet, follow the instructions below. If you received a license key file, or if the workstation you have installed the product on does not have Internet access, see "Single-User License Setup Using A License File" on page 38.
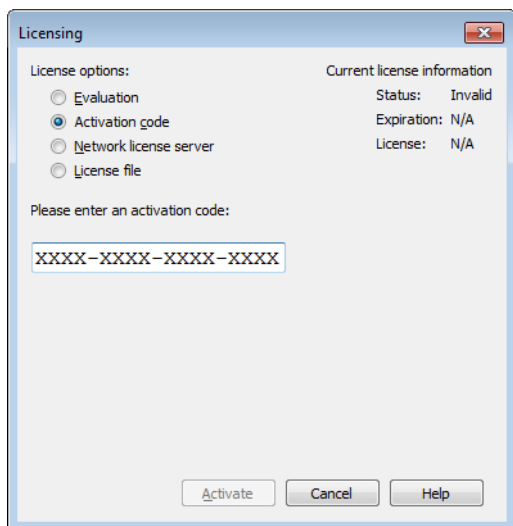
To activate the product, simply enter or paste your activation code in the field provided. Then click **Activate**.

The license key corresponding to your activation code is downloaded to your computer, and Tecplot 360 EX uses that license.

Single-User License Setup Using A License File

You will need the license file sent to you by Tecplot, Inc. If it was provided to you as an e-mail attachment, please save it

to a file on your computer in an easy-to-find location, such as the Desktop.
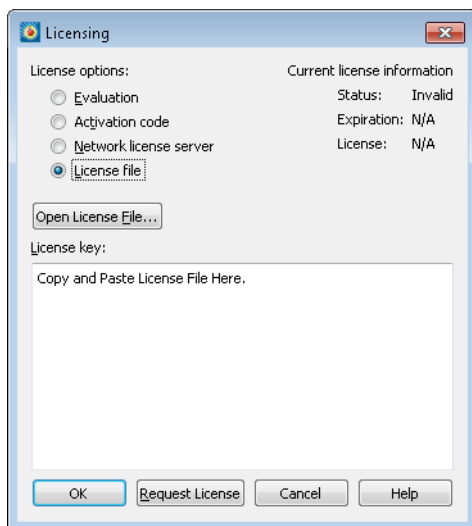
If you do not have your license file, or have lost it, click **Request License** in the Tecplot Licensing dialog for instructions on how to obtain it.

1. Make sure the "License File" option is selected in the Licensing dialog.

2. If you received the text of the license file as text in an e-mail, copy the text from the e-mail (Control-C) and paste it into the License Key field (Control-V).

   If you received the license as a file attachment, click **Open License File**. A file browser appears. Select the license file you were e-mailed, then click **Open**.

   Either way, the message "Status: Valid" appears in the Current License Information panel at the upper right.

3. Click **OK** to save the license information.

Tecplot 360 EX now uses the chosen license.

If your license requires a USB license security key ("dongle"), make sure it is connected to your computer before launching Tecplot 360 EX. It must remain connected while the product is running.

Network License Setup
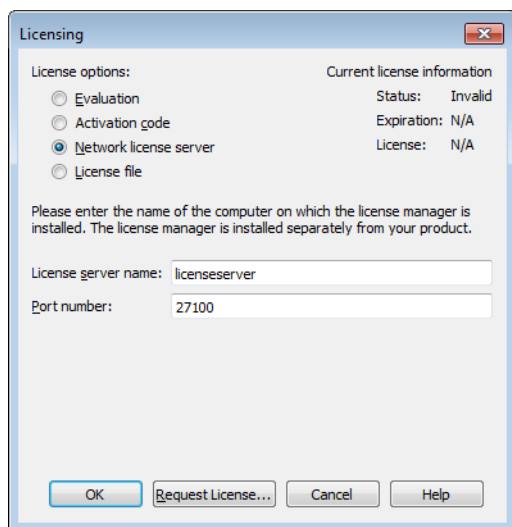
To use a network license, you or your system administrator must first install the Reprise License Manager (RLM) and the license key for your product on a network server. (See the installation instructions included with the RLM download.) Once this has been accomplished, follow these steps:

1. Make sure the "Network" license type is selected in the Tecplot Licensing dialog.

2. Enter the server name (you may use a hostname or IP address) and port number of the license server in the fields provided. In most cases, the default port number

will work; only change it if your administrator tells you to.

3. Click **OK** to save the license information.

Tecplot 360 EX will now use a license obtained from the license server.

If the product is unable to obtain a license key, an error message will appear, and you should verify that you have specified the correct network license information.

Licensing

Useful Information

This chapter includes handy tips for running Tecplot 360 EX on your machine(s). Topics include the following:

- User Documentation Sources
- License Type Definitions
- Using Licenses Over a Network
- Licensing Issues
- Obtaining License Key Files
- Running Tecplot Products on a Notebook

User Documentation Sources

Where can I get help understanding Tecplot 360 EX?

Tecplot 360 EX includes access to the following manuals, HTML Help, and an online forum to help you explore all of Tecplot 360 EX's features. Your installation includes these manuals in the *doc* folder within your installation folder.

- Installation Guide - The instructions you're reading now to learn how to install Tecplot 360 EX on your machine.
- Getting Started Manual - New users are encouraged to work through the tutorial provided in the Getting Started Manual to learn how to use key features.
- User's Manual - This manual provides a complete description of working with Tecplot 360 EX features.
- Scripting Guide - This guide provides Macro command syntax and information on working with Macro files and commands.
- Quick Reference Guide - This guide provides syntax for zone header files, macro variables, keyboard shortcuts, and more.

- [Data Format Guide](#) - This guide provides information on outputting simulator data to Tecplot file formats.
- [Release Notes](#) - These notes provide information about new and/or updated Tecplot 360 EX features.
- Integrated Help This indexed, searchable form of information about Tecplot 360 EX is accessible by choosing "Tecplot 360 EX Help" from the **Help** menu.

License Type Definitions

What license options do I have?

Three basic license types govern usage of Tecplot 360 EX on supported platforms: **Evaluation** licenses, **Single-User** licenses, and **Network** licenses. Your license number is provided on a yellow sticker inside your product case. If you would like to upgrade your license, please contact Tecplot, Inc. or your distributor.

- **Evaluation License** - An **Evaluation** license allows a user to fully experience the software's features and functionality for a limited time. It is essentially a **Single-User** license that expires on a specific date.
- **Single-User License** - A **Single-User** license allows a single user to install the software on some number of computers: for example, one work computer, one home computer, and one portable computer. The user agrees that only one installation will be used at a time.

  For some **Single-User** licenses, the software may be installed on any number of computers, again as long as only one installation is used at a time. This latter condition is enforced using a USB hardware key ("dongle") that must be physically connected to the computer that the software is being used on.

A **Single-User** license also allows the installation of Tecplot 360 EX on a single computer for use by multiple users, for example in a laboratory environment, as long as only one user can use it at as a time.

Single-User licenses cannot be used with remote displays.

• **Network License** - A **Network** license allows a specified number of users to run the software anywhere within a local area network (LAN) domain. The software may be installed on as many computers as desired. However, only the number of copies specified in your license can be in use at any one time. For this license type, you must also run the Reprise License Manager (RLM) on your network.

Your organization designates one person as the official contact for your **Network** license. That contact will act as liaison with Tecplot, Inc. and will receive a license key file from Tecplot, Inc., which should be placed in the RLM server installation folder.

Using Licenses Over a Network

How does a network license work?

When you open Tecplot 360 EX from a local machine on the network, it contacts the license server via TCP/IP and "checks out" a key from the license manager. When you exit the program, Tecplot 360 EX returns the key. The license manager limits the number of Tecplot 360 EX sessions currently active to the number of users allowed by the license.

Licensing Issues

I cannot get my license key to work!

An error message appears if the license configuration file cannot be located, or if it does not contain a valid license key

(for a **Single-User** license) or license server address (for a **Network** license) from which a valid license can be obtained.

If you have a **Network** license, obtain the address of the license server you should use. If you have a **Single-User** license, contact support@tecplot.com to obtain a valid license key file. After obtaining either the address or the license key, install it following the procedure described in "Licensing" on page 35.

Obtaining License Key Files

How do I get a license key?

The easiest way to activate a single-user license is to use an activation code. Tecplot 360 EX obtains the actual license key and installs it for you. If this is not possible, you may request a license key file using one of these methods:

- **Internet:** https://my.tecplot.com/portal/licenses-keys/

  Sign in to My Tecplot, choose your product, and follow the instructions to receive your license file. It is usually the fastest way to receive your license key.

- **E-mail:** support@tecplot.com.

- **Telephone:** +1-425-653-9393

Remember to specify your license number and include your Host ID information from *myhostids.txt* when requesting a license key file. You can find *myhostids.txt* in your Tecplot 360 EX installation folder.

On most platforms, *myhostids.txt* is generated during installation. On Mac, it is generated when you open the license dialog and click Request License. After a fresh install, then, Mac users must launch Tecplot 360 EX and click Request License in the license dialog to generate *myhostids.txt*. This file is needed to request a license key. It is not needed if you have an activation code, however.

Running Tecplot Products on a Notebook

Can I run Tecplot products on my notebook?

If you use Tecplot products on a notebook, you must have your network card enabled (though not necessarily connected).