Instructions to Download & Install FRANC3D Version 9.2

Oct 2026

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Section 1: Downloading

This document assumes that you will download files to your "downloads" folder.

If not already at: https://fracanalysis.com/software.html in your web browser, go there now and click on the **Download FRANC3D** button, Fig 1.

This will prompt you to enter a Username and Password, Fig 2, which you should have received already (via email). The username and password should be obtained from Process Optimization, or from the other distributors listed on the FAC website.

Once you enter the username and password, click Sign In and you will see a list of folders, Fig 3.

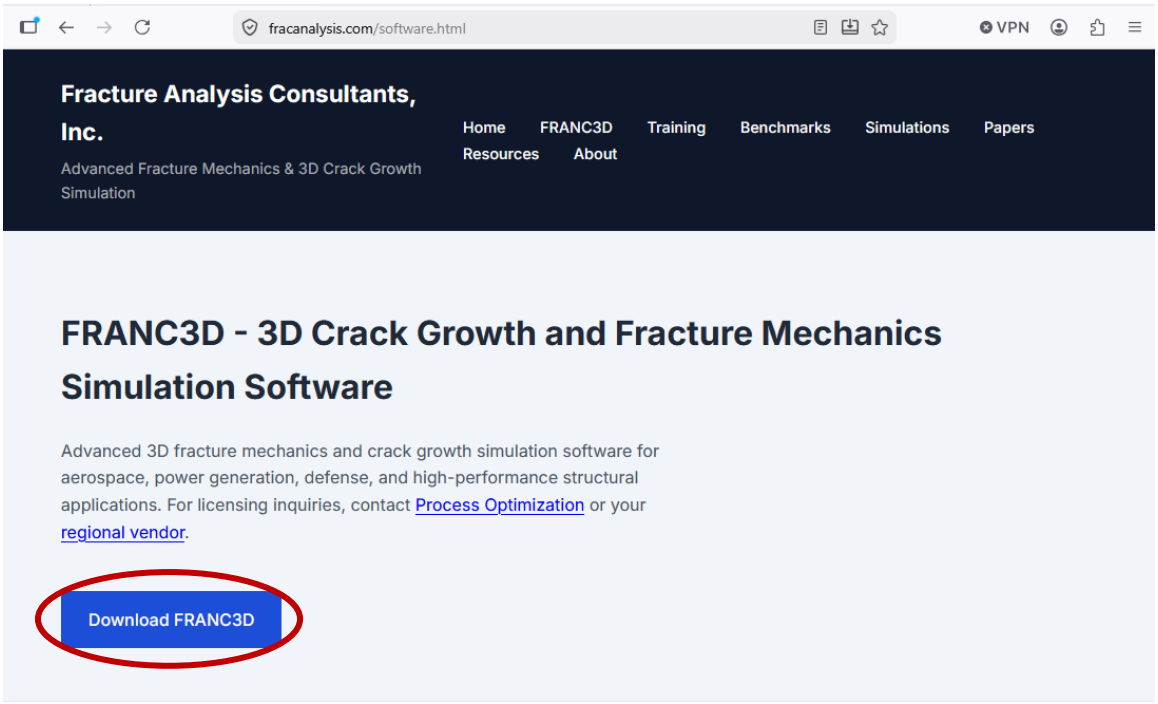

Figure 1 FAC software web page

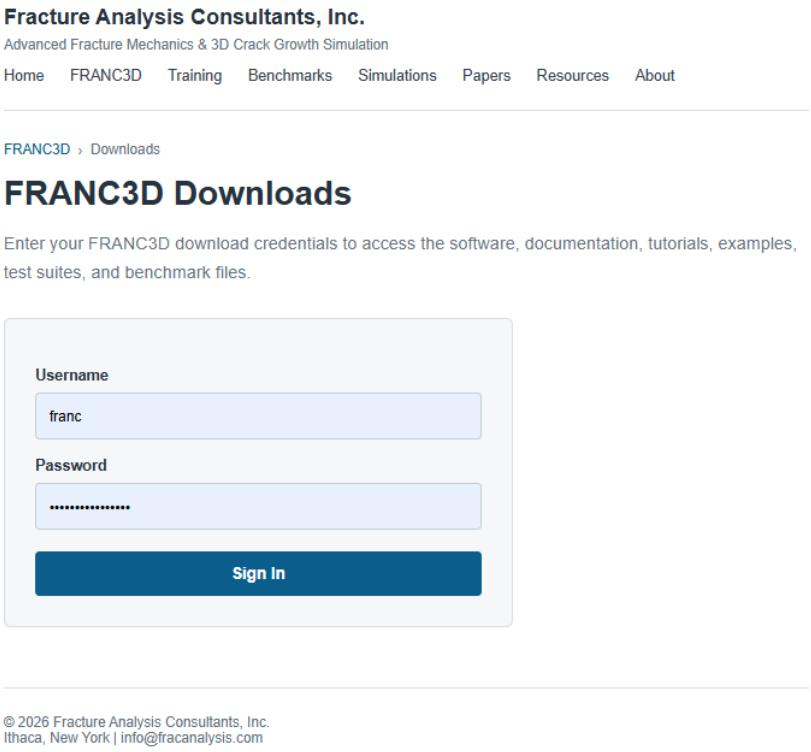

Figure 2 Download FRANC3D username and password page

Step 1: Click on the **Executable** folder. You can read the *readme.txt* file if you are not familiar with it; this file gives a summary of the operating systems that are supported.

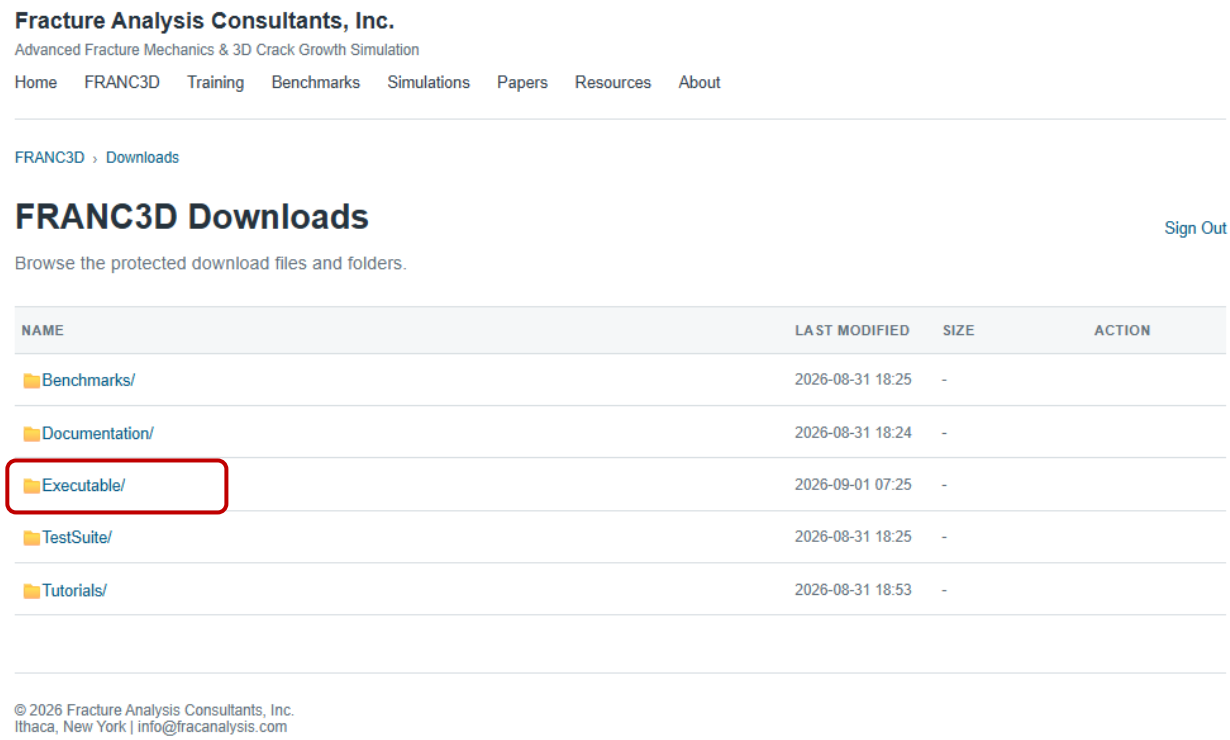

Figure 3 List of folders in downloads

Click on the folder for the latest FRANC3D version, Fig 4. This will give you a list of file names, Fig 5. The *.zip and .exe* files are for MS Windows, and the *tar.gz* (or *.tgz*) files are for Linux. We support only 64bit operating systems. If there are questions about which file to download, send us email.

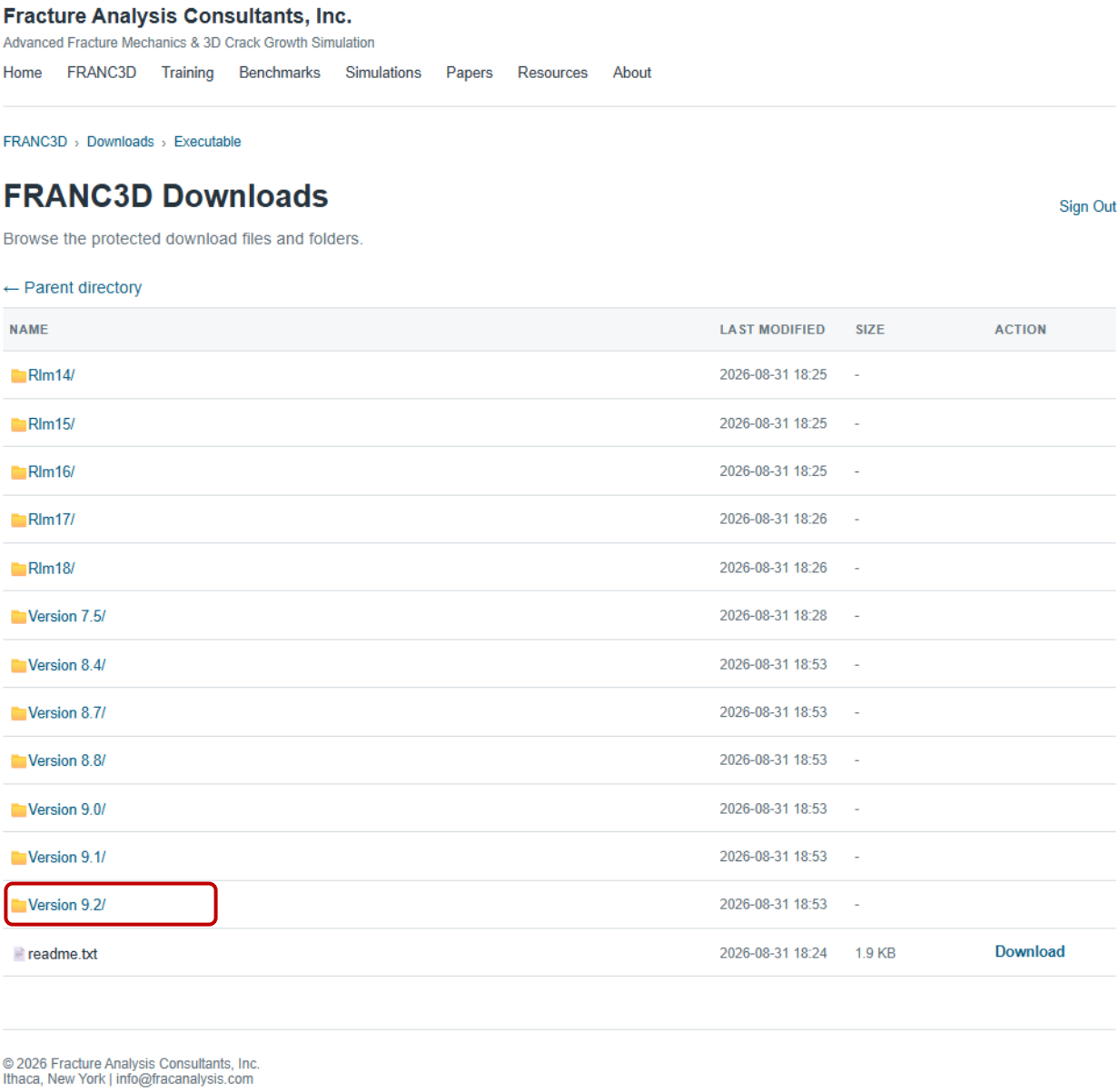

Figure 4 List of FRANC3D version folders

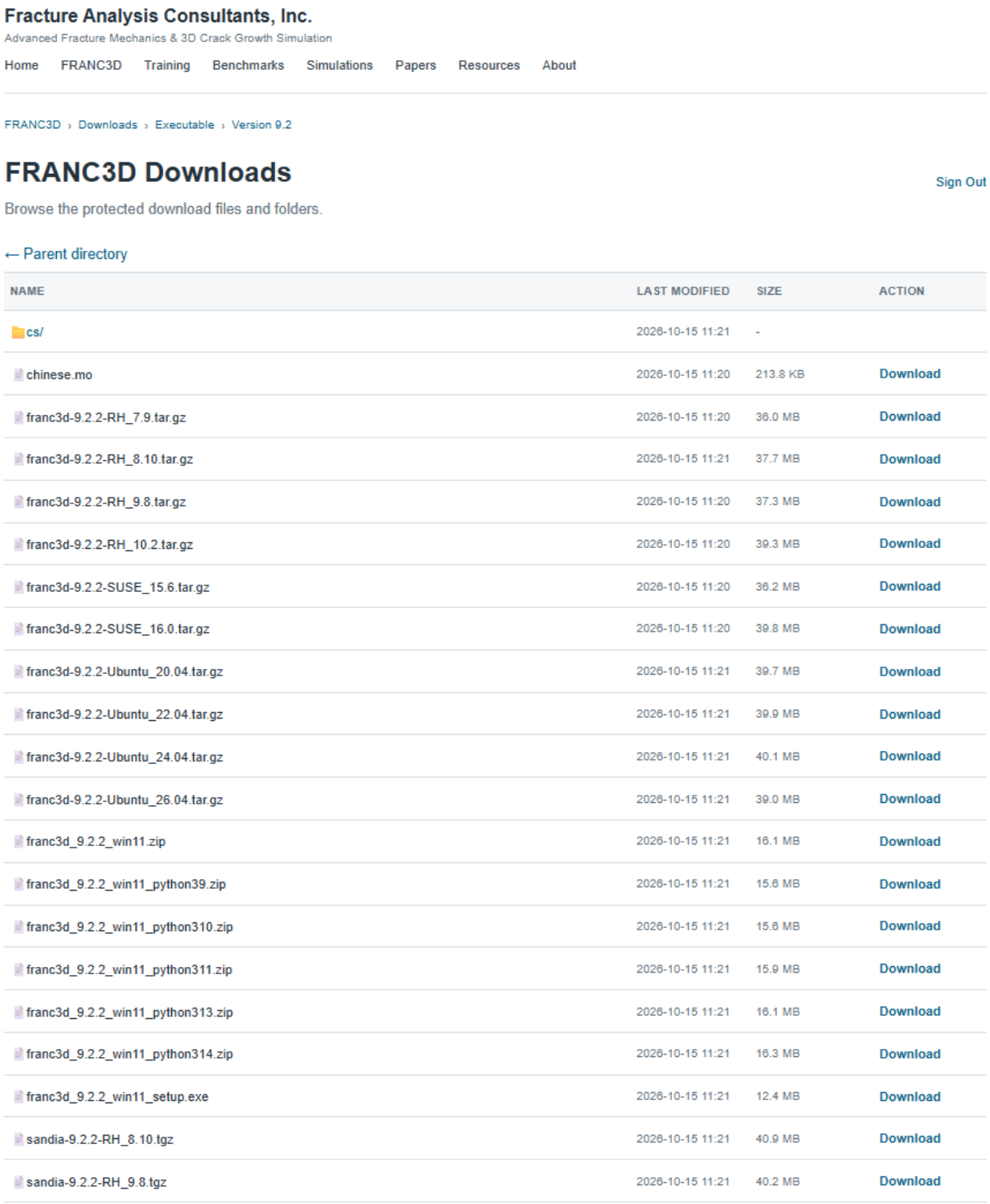

Figure 5 List of FRANC3D executable packages

Step 2: Click **Download** for the file for your OS to save the file to your "downloads" folder.

Note that if you download a *tar.gz* (or .tgz) using a Windows PC, the extension (file type) might be changed automatically; compare the size of the downloaded file to the size on the FAC site.

You can use the sha512 checksum in the cs subfolder to verify the download file is okay. For example, the Linux command to check franc3d-9.0.1-RH_8.10.tar.gz is:

- sha512sum -c franc3d-9.0.1-RH_8.10_CSUM.txt

Step 3: If you are using a floating license with a license server, download the fracanalys.set file from the Rlm folder. Choose the Rlm folder that is appropriate for your RLM server version. Right-click on the file name and then click Save as…

You can download the latest version of the RLM server software directly from: https://reprisesoftware.com/support/admin/

Section 2: License Installation

FRANC3D can be used with a node-locked license or with a server-based floating license.

A node-locked license is configured for a single client PC based on its MAC hardware or IP address.

A floating license is installed on a server that is running the RLM executable. Client PCs are configured to use the license server to check out a license. This allows multiple PCs to access a single license as opposed to a node-locked license where the license is tied to a single PC.

The license file (*franc3d.lic*) will be sent (via email) after you send us the relevant information as described below.

Section 2.1: Node-lock License

A node-lock license file can be placed in the same folder as the franc3d executable.

Note that our temporary trial license file can serve as a generic node-lock or floating license.

Step 1: Choose the client PC where franc3d will be installed and determine the MAC or IP address. One way to do this is to start a command or terminal window and execute "ipconfig /all" for MS Windows or "ifconfig -a" for Linux. Then send us the Physical Address (for MS Windows) or the ether/hwaddr (for Linux) information.

You can also use the rlmhostid.exe (or rlmutil) executable. You can download this from the Rlm(17) folder (see Step 3 of Section 1).

Run rlmhostid from a MS Windows command line using:

- .\rlmhostid.exe ether
- .\rlmhostid.exe internet

to obtain the MAC or IP address, respectively.

For Linux, run rlmutil from a bash command line using:

- ./rlmutil rlmhostid ether
- ./rlmutil rlmhostid internet

Step 2: Send the information from Step 1 to us so that we can generate a *franc3d.lic* file that is locked to the client PC.

Step 3: Place the *franc3d.lic* file that we send into the folder that contains the franc3d executable (see Section 3).

Section 2.2: Floating License

In Step 3 of Section 1, you downloaded the fracanalys.set file.

Note that most servers will have dedicated folders for licensing software. If not, you can create a folder for the RLM executable. You will need to place the *fracanalys.set* file with rlm.exe, or you can configure RLM to find the *.set* file.

You should review the RLM license administration guide:
https://reprisesoftware.com/docs/admin/basics-admin.html

This document describes how to run RLM as a service (that will run in the background and automatically start on reboot) and how to configure log files.

Step 1: Choose the server where RLM will be installed and determine the server's name, the MAC or IP address, and the tcp/ip port. Review the **License File** portion of the **RLM** guide. You can use the same commands as described in Step 1 of Section 2.1.

Step 2: Send us the server name, ID and tcp/ip port #. Note that we will use the default port 5053 if none is specified. We will generate a *franc3d.lic*, which is required for Step 3.

We will also need to know if the server is virtual and if a roll-over server is required.

A separate port # for the ISV fracanalys line in the *.lic* file might also be required.

Step 3: Place the *rlm.exe*, *fracanalys.set* and *franc3d.lic* file (that we will send via email) in a folder and start RLM.

For MS Windows, from a CMD line:

- rlm.exe –c franc3d.lic

For Linux, from a terminal/bash window:

- rlm –c franc3d.lic

This starts RLM interactively. RLM reads the *franc3d.lic* and *fracanalys.set* files, and starts the service, Fig 6.

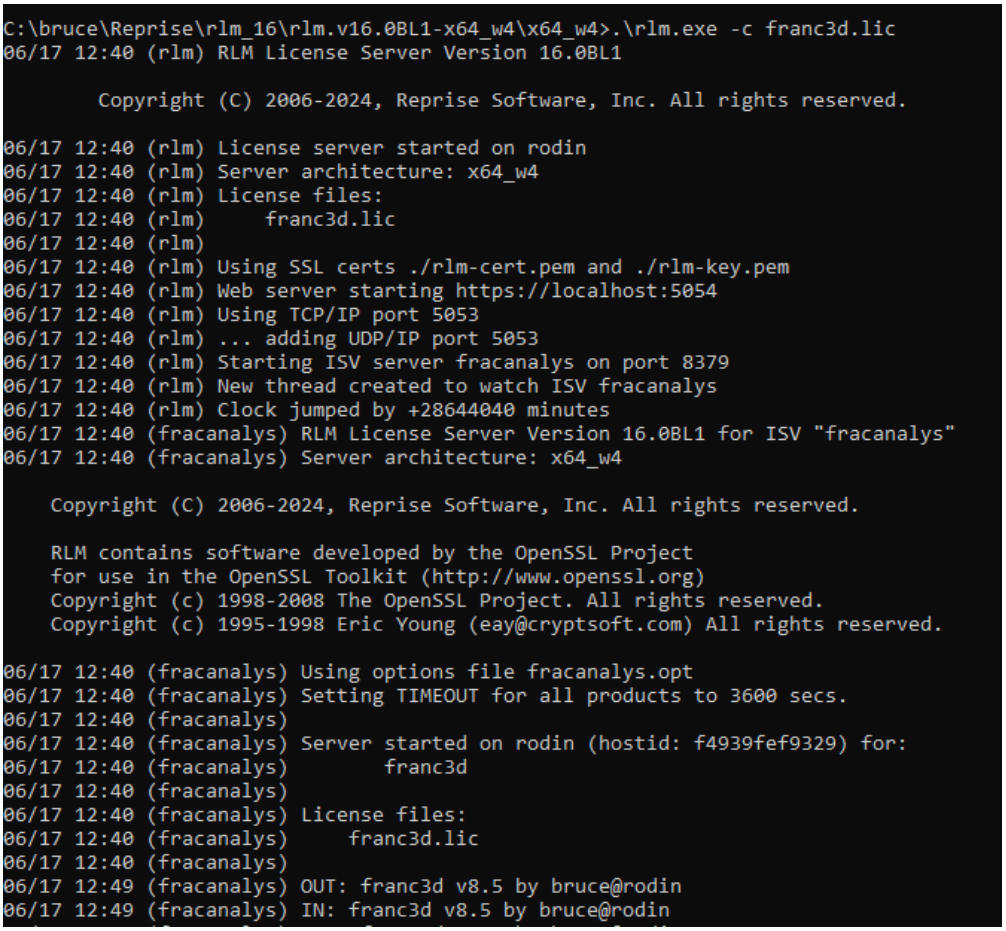

Figure 6 RLM service started for FRANC3D

Step 4: Test the RLM server by starting a web browser and entering your "server_name":5054 in the URL. Fig 7 shows the webpage with the license status displayed. Note that 5054 is the default port, but this can be changed also. For RLM 16, the web service uses https://server name:5054 and the interface is different, Fig 8.

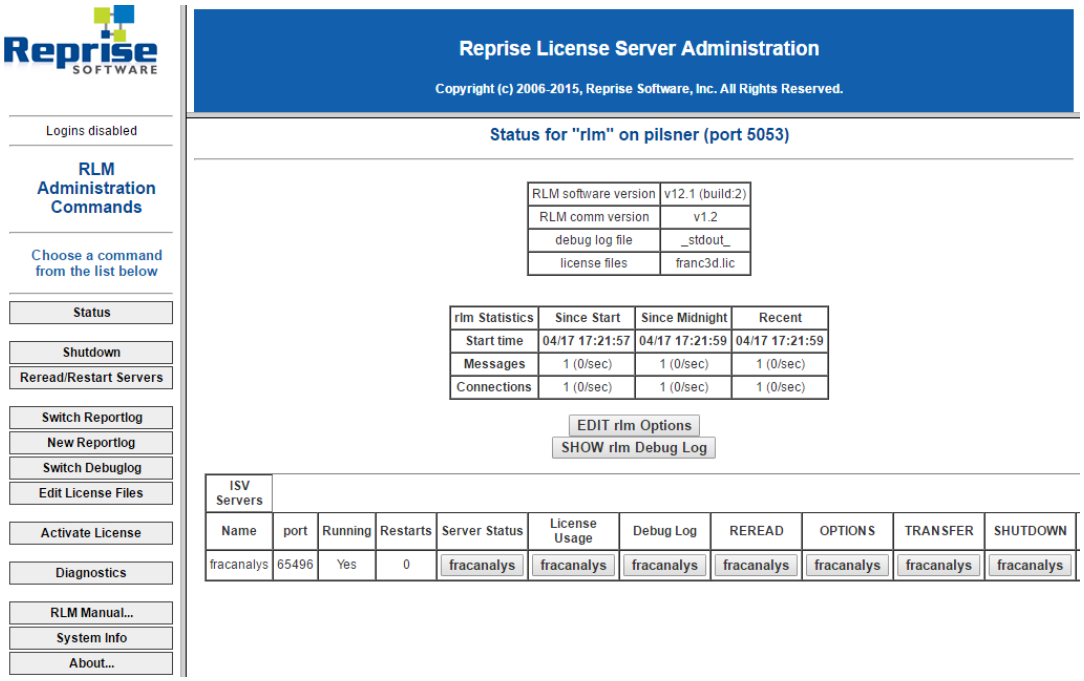

Figure 7 RLM 15 server web page

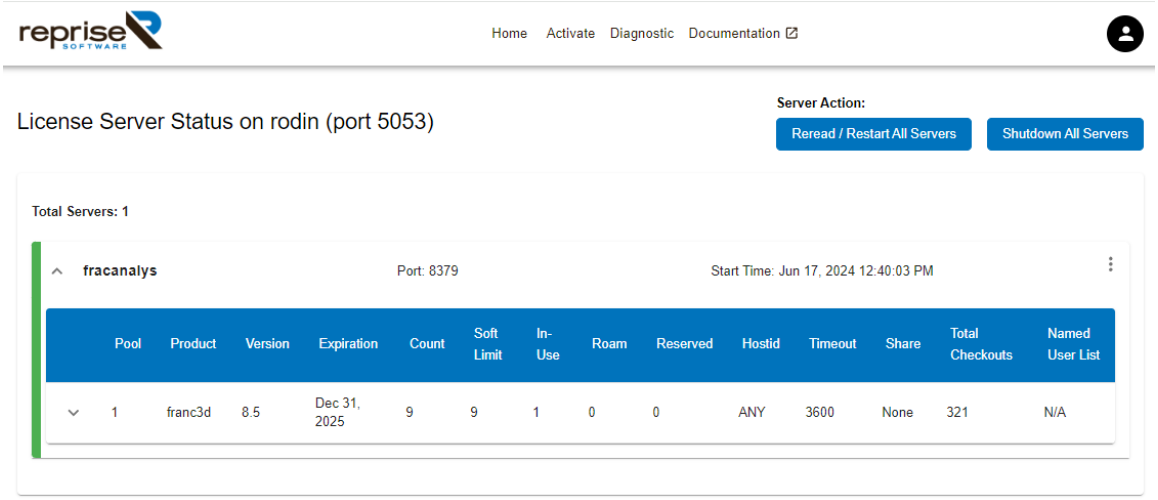

Figure 8 RLM 16 server web page

Step 5: To have RLM start automatically on restart/reboot, read **The License Server** portion of the **RLM** guide.

Section 3: FRANC3D Installation

You should have already downloaded the appropriate file for the client PC where FRANC3D will be installed (see Section 1). If you have not already, unzip the files into a folder. The folder location will depend on the installation process at your site.

For this document, we have created a folder on the C: drive for MS Windows called "C:\f3d". The folder should contain the files shown in Fig 9. If you use the Windows installer, the default folder location is "C:\Program Files (x86)\franc3d".

Note that for MS Windows, you can create a shortcut for the *franc3d.exe* file and pin it to the taskbar or desktop. If you use the Windows installer, this can be done during the installation.

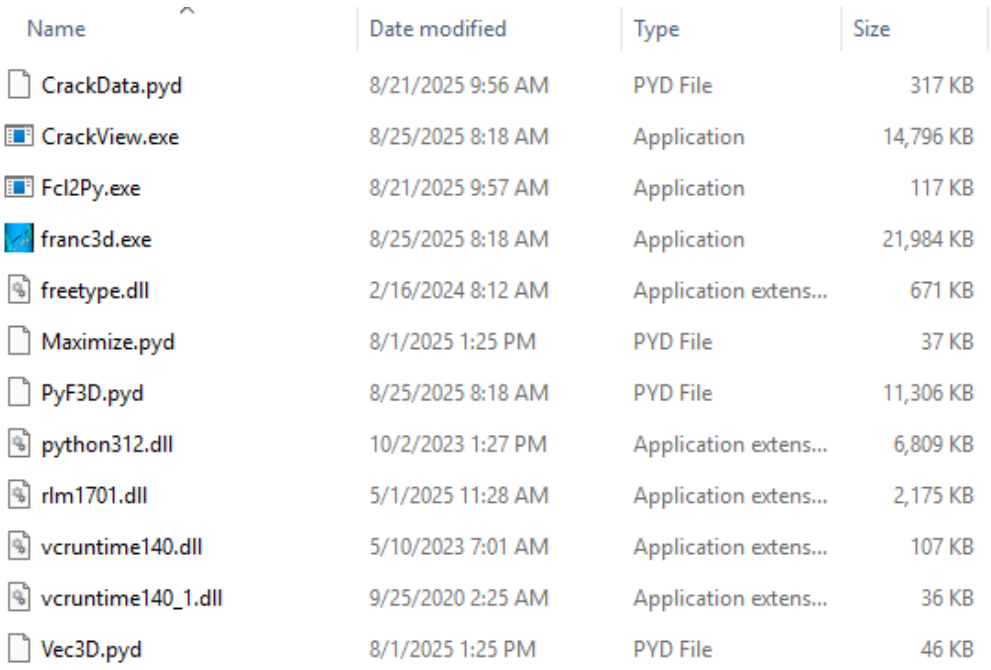

Figure 9 List of files for MS Windows.

For Linux, we have created a folder in the user's home folder called "/home/bruce/f3d". The folder should contain the files shown in Fig 10; some of the .so files are optional.

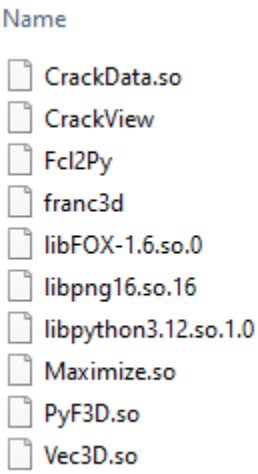

Figure 10 List of files for Linux.

Section 3.1: FRANC3D with a Node-lock License

Step 1: Define the environment variable: **FRANC3D_PATH**
This must point to the folder that contains the franc3d executable.

- For MS Windows, this must be defined as a system-wide environment variable. Right-click on MyComputer (or ThisPC), select Properties, select the Advanced tab, and then select the Environment Variables button. Select the New button under System Variables and fill in the dialog, Fig 11.

  Replace the folder in Variable value: with your folder name.

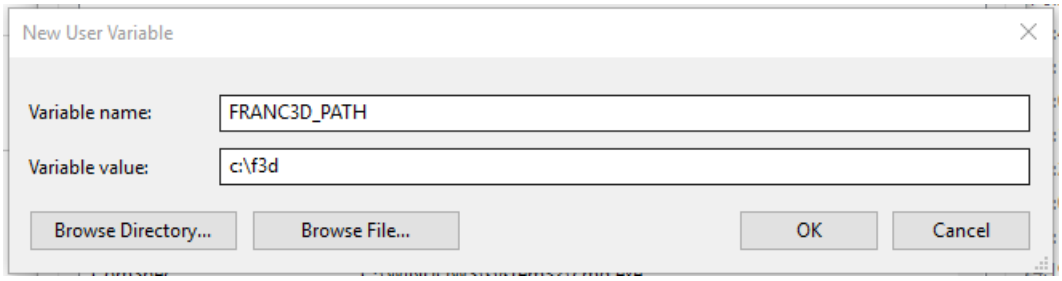

Figure 11 MS Windows FRANC3D_PATH environment variable

- For Linux, the environment variable can be defined in a system-wide or user-specific resource/profile file (i.e., /etc/bash.bashrc or $HOME/.bashrc). You can also define

this from the command line from a terminal window; using the bash shell, this would be:
export FRANC3D_PATH=/home/user/f3d
For persistence, it should be added to your .profile or .bashrc file.

Step 2: Start the franc3d executable to verify that the license is checked out and that FRANC3D starts.

- For MS Windows, double click on the *franc3d.exe* icon (or start it from the command line in a CMD window).

- For Linux, start franc3d from a terminal window; in the folder where franc3d is located, type "./franc3d".

Section 3.2: FRANC3D with a Floating License

Step 1: Define the environment variable: **fracanalys_LICENSE.**

- For MS Windows, this must be defined as a system-wide environment variable. Right-click on MyComputer (or ThisPC), select Properties, select the Advanced tab, and then select the Environment Variables button. Select the New button under System Variables and fill in the dialog, Fig 12.

  Replace the server_name and port # with your server information (see Section 2.2).

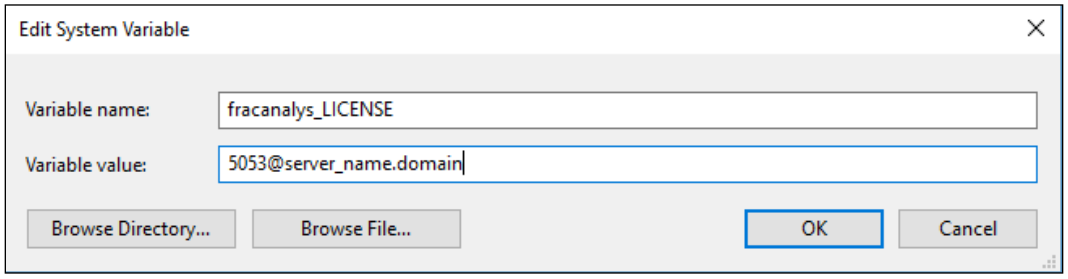

Figure 12 MS Windows fracanalys_LICENSE environment variable

- For Linux, the environment variable can be defined in a system-wide or user-specific resource/profile file (i.e., /etc/bash.bashrc or $HOME/.bashrc). You can also define

this from the command line from a terminal window; using the bash shell, this would be:

```
export fracanalys_LICENSE=5053@server_name.domain
```

For persistence, it should be added to your .profile or .bashrc (or similar resource settings) file.

Step 2: Define the environment variable: **FRANC3D_PATH**
This must point to the folder that contains the franc3d executable.

- For MS Windows, you need to create the environment variable in the Advanced System Properties (see Step 1 of Section 3.1); this should point to C:\f3d.

- For Linux, you can add the environment variable to your .profile or .bashrc file (see Step 1 of Section 3.1); this should point to /home/user/f3d.

Step 3: Start the franc3d executable to verify that the license is checked out and that FRANC3D starts.

- For MS Windows, double click on the *franc3d.exe* icon (or start it from the command line in a CMD window).

- For Linux, start franc3d from a terminal window; in the folder where franc3d is located, type "./franc3d".

Special Note for Linux installation:

You can move the FOX (and any other) *.so* file, which is included in the packaged *.tar.gz* file, from the /home/user/f3d folder to a system folder, such as /usr/local/lib.

You might need to export the LD_LIBRARY_PATH to include the folder location of the FOX *.so* file.

You will need to have Python 3.6 (or later) if you use the PyF3D module or the Python user-extensions.

FRANC3D is built using many "system" libraries, in addition to Python. You might need to install packages that are required but missing from your system. You can determine which libraries are required by running the ldd command, type "ldd ./franc3d".

Section 4: Extra Downloads

The FRANC3D documentation is available from:
https://fracanalysis.com/software.html
You can click on the menu buttons on the left side (see Fig 1) to view the pdf file; the pdf file can be saved to your PC. The files can also be downloaded from the "pdfs" folder (see Fig 3).

Tutorial and Benchmark example files are available from the "downloads" folder also.

You can click on the **Tutorials** or **Benchmarks** folder (see Fig 3) to get to the sub-folders for each Tutorial or Benchmark example. Inside the various subfolders, you can right-click and select "Save link (or target) as…" to download a file; choose the files corresponding to the FE analysis code that you will be using. You can also download all files as a single .zip file.

The **TestSuite** folder contains a *readme.txt* file that describes the folder contents. There are Windows *.bat* files that will extract all the Tutorial and Benchmark models from the .zip and run the analyses.

Section 5: Switching From an Earlier Version

There are often differences in the GUI preferences between versions. One should check (and set) preferences when first starting FRANC3D or when switching versions. The Preference tabs are described in Section 5 of the Reference document.

Versions after 8.5 include support for OpenGL 4.5. See Section 2.2 of the Reference document for details. OpenGL 1.1 can be used if 4.5 causes display issues in the GUI.

Version 8.7 includes a new parameter in the *franc3d.ini* or *.franc3d.rc* file:

```
[SETTINGS]
glbestvisual=121
```

This can decrease the startup time, but if the graphics hardware or software change, you might see an error:

X Error: code 2 major 149 minor 3: BadValue (integer parameter out of range for operation).

terminate called after throwing an instance of 'FX::FXWindowException'

```
Edit the franc3d.ini or .franc3d.rc file, and delete the line
with glbestvisual=121, and then restart franc3d.
```