Disclaimer

FINCAD makes no warranty either express or implied, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose regarding these materials, and makes such materials available solely on an “as-is” basis. In no event shall FINCAD be liable to anyone for special, collateral, incidental, or consequential damages in connection with or arising out of purchase or use of these materials. This information is subject to change without notice. FINCAD assumes no responsibility for any errors in this document or their consequences, and reserves the right to make improvements and changes to this document without notice.

Copyright

Copyright © FinancialCAD Corporation 2009–2014. All rights reserved.

Trademarks

FinancialCAD® and FINCAD® are registered trademarks of FinancialCAD Corporation. F3™ is a trademark of FinancialCAD Corporation. Other trademarks are the property of their respective holders.

Patents

Protected by U.S. Patent No. 8666867.
Revisions

Every effort has been made to ensure the accuracy of this document. FINCAD regrets any errors and omissions that may occur and would appreciate being informed of any errors found. FINCAD will correct any such errors and omissions in a subsequent version, as feasible. Please contact us at:

FINCAD
Central City, Suite 1750
13450 102nd Avenue
Surrey, BC V3T 5X3 Canada

or

Block 4, Blackrock Business Park
Carysfort Avenue, Blackrock
Dublin, Ireland

www.fincad.com

Document Information

Document Name: F3™ SDK Installation Guide
F3™ SDK Installation Guide

1 Welcome! ................................................................. 7

2 What is New in this Guide................................. 8
   2.1 Changes in version 4.2.................................................. 8

3 Overview ................................................................. 9

4 Supported Environments................................. 10
   4.1 Supported Platforms ........................................................... 10
   4.2 Minimum Hardware Requirements ........................................ 10
      4.2.1 Hardware Requirements for Windows.......................... 10
      4.2.2 Hardware Requirements for Linux............................... 11
   4.3 Minimum System Configuration for Development .................. 11
      4.3.1 Microsoft Windows .................................................... 11
      4.3.2 Red Hat Linux ............................................................ 12
   4.4 Supported Programming Languages ............................... 12
      4.4.1 Microsoft Windows .................................................... 12
      4.4.2 Red Hat Linux ............................................................ 12

5 Software Provided .................................................. 13
8.3 License activation .......................................................... 35
8.4 Instructing the application about licenses .............................. 36
1 Welcome!

About F3 SDK

The F3 SDK is a multi-platform software development kit that allows you to integrate the FINCAD Financial Framework analytics library with FINCAD’s unique "all risk all the time" architecture into your applications and environments.

The F3 SDK supports developers building financial valuation, risk calculation, and modeling into their applications using C++, Java, or .NET.

In order to enhance computational speed and efficiency, the F3 SDK supports multi-core and multi-CPU machines.

The F3 SDK also provides the ability to describe virtually any payoff without the need to add new functions to the FINCAD Financial Framework.

The F3 SDK allows you to:

- Value deals with "all risk all the time".
- Choose how to value your deals (which model, valuation method, and so on).
- Value deals with custom payoffs even if no "function" exists for it.
- Utilize the FINCAD Financial Framework high performance computational features.
2 What is New in this Guide

This section describes the changes in this guide in each release. For information on new features, bug fixes, interface changes, and deprecations, see the F3 SDK Release Notes.

2.1 Changes in version 4.2

A note was added in Visual Studio (.NET projects) to indicate that projects requiring the .NET Framework version 2.0 must reference `fincad_f3_dotNET2.6.6.dll` and `fincad_f3_dotNET2_explicit.6.6.dll` instead of `fincad_f3_dotNET.6.6.dll` and `fincad_f3_dotNET_explicit.6.6.dll`. 
3 Overview

Technical Components of F3 SDK

This document provides a high level overview of some of the technical information for F3 SDK. This manual and the following documentation included with the F3 SDK provide more detailed information on various aspects of the F3 SDK. The manuals are available in both html and pdf format.

• The F3 SDK Reference Manual describes the APIs that allow you to access F3 functionality in Java, C++, and C#.

• The FINCAD Financial Framework Reference Manual describes the financial analytics available in the F3 SDK.

• Read-me files describe the minimum system requirements to use the F3 SDK for all platforms.

• The F3 SDK License Agreement is a document that describes the conditions and restrictions from a legal perspective for customers using the F3 SDK.

Note: If you are reading this document as a Printable Manual, clear the Open cross-document links in same window checkbox in Adobe® Reader under the Edit (menu) > Preferences > Categories: > Documents > Open Settings to prevent this document from closing when linking to other printable (pdf) documents within the F3 SDK. Regardless of the settings, you can return to the same place in the original document by pressing ALT + LEFT ARROW.

Information about the F3 SDK technical components are divided into several chapters starting with the system requirements and the software provided with the product. A chapter is devoted to installing, licensing, and starting F3 SDK. The appendix describes additional licensing details specific to IT administrators.

Note: Throughout this document, notes are posted to provide extra or helpful information on the subject.
4 Supported Environments

This section presents the supported environments and the minimum system requirements for F3 SDK.

4.1 Supported Platforms

- Microsoft® Windows 8.1 Pro 32-bit and 64-bit
- Microsoft® Windows 8 Pro 32-bit and 64-bit
- Microsoft® Windows Server 2012 R2 Standard Edition 64-bit
- Microsoft® Windows 7 Professional and Ultimate 32-bit and 64-bit (SP1)
- Microsoft® Windows Server 2008 R2 Standard Edition 64-bit (SP1)
- Red Hat® Enterprise Linux 5.x 64-bit
- Red Hat® Enterprise Linux 6.x 64-bit

4.2 Minimum Hardware Requirements

4.2.1 Hardware Requirements for Windows

Requirements
Free hard drive space | 200 MB
---|---
Memory | 2 GB of RAM (More memory is strongly recommended.)
Processor | Intel Core i5 or equivalent

4.2.2 Hardware Requirements for Linux

<table>
<thead>
<tr>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free hard drive space</td>
</tr>
<tr>
<td>Memory</td>
</tr>
<tr>
<td>Processor</td>
</tr>
</tbody>
</table>

4.3 Minimum System Configuration for Development

4.3.1 Microsoft Windows

- Any of the following standards-compliant Web browsers:
  - Microsoft® Internet Explorer 10
  - Mozilla® Firefox 24.0
  - Google Chrome 30.0
- One of the following:
  - Microsoft® Visual Studio 2012 Update 3
  - Microsoft® Visual Studio 2010 SP2
- Microsoft® .NET Framework version 2.0 or 4.0
• Adobe® Acrobat Reader 10.0
• Java Development Kit (JDK) 5

4.3.2 Red Hat Linux
• gcc v4.1.2 (gcc 4.8.1 or later is recommended)
• Adobe® Acrobat Reader 10.0
• Java Development Kit (JDK) 5.0
• Standards-compliant Web browser (Mozilla® Firefox 24.0)

Note: The F3 SDK products have been validated against Red Hat Linux 5.6 and 6.1, 64-bit. The application will likely run on other distributions with kernel version 2.6.18 or later and glibc version 2.5 or later, but FINCAD is unable to provide technical support for these distributions.

4.4 Supported Programming Languages

4.4.1 Microsoft Windows
• C++
• CSharp (for .NET 4.0)
• Java (JRE 5.0 or later)

4.4.2 Red Hat Linux
• C++
• Java (JRE 5.0 or later)
5 Software Provided

Software that F3 SDK provides for all platforms

5.1 Microsoft Windows

- **F3 SDK Runtime Libraries**
- **FINCAD License Activator (GUI and command-line versions)**
- **Source Code Samples (C++, .NET and Java)**
  - Black Scholes and Monte Carlo European Option Pricer
  - Interest Rate Swap Pricer
- **Documentation**
  - F3 SDK Installation Guide (doc/f3_sdk_installation_guide/f3_sdk_installation_guide.pdf)
  - F3 SDK License Agreement (F3_SDK_License_Agreement.pdf)
  - Embedded Products Read-me file (Embedded_Products_read_me.pdf)
  - HTML Manuals
  - Searchable Manuals (single page HTML)
    - F3 SDK Installation Guide (doc/f3_sdk_installation_guide/index.html)
5.2 Red Hat Linux

- F3 SDK Runtime Libraries
- FINCAD License Activator (command line activator only)
- Source Code Samples (C++ and Java)
  - Black Scholes and Monte Carlo European Option Pricer
  - Interest Rate Swap Pricer
- Documentation
  - F3 SDK Installation Guide (doc/f3_sdk_installation_guide/f3_sdk_installation_guide.pdf)
  - F3 SDK License Agreement (f3_sdk_license_agreement.pdf)
  - HTML Manuals
- Searchable Manuals (single page HTML)
  - F3 SDK Installation Guide (doc/f3_sdk_installation_guide/index.html)

- Printable Manuals
6 Installing F3 SDK

Installation process

6.1 Installing F3 SDK on Windows Platforms

1. Download and run the F3 SDK installer.
2. Accept the license agreement.
3. To change the installation directory, click **Change**, then browse to a different directory. Otherwise, the appropriate default directory is used:
   - F3 SDK 32 bit with Microsoft Windows 32 bit: C:\Program Files\FINCAD\F3 SDK 4.3
   - F3 SDK 32 bit with Microsoft Windows 64 bit: C:\Program Files (x86)\FINCAD\F3 SDK 4.3
   - F3 SDK 64 bit with Microsoft Windows 64 bit: C:\Program Files\FINCAD\F3 SDK 4.3
4. Click **Next** to continue the installation, and click **Finish** when the installation is complete.

An F3 SDK Folder icon is installed on the desktop for easy access to F3 SDK documentation, samples, and language interfaces.

F3 SDK can be installed side-by-side with any other version of this product as well as with other FINCAD products.
6.2 Installing F3 SDK on Linux

Note: This procedure requires elevated privileges.

The product includes a gziped tarball named `f3sdk-linux-4.3-installer.tar.gz`.

1. Unpack the archive. For example, run:

```
  gunzip < f3sdk-linux-4.3-installer.tar.gz | tar x
```

2. Install the licensing package.

  Note: You can skip this step if you already have this version of the licensing package installed.

```
  sudo rpm -i f3license-linux-1.0-1.x86_64.rpm
```

3. Run `f3sdk-linux-4.3-installer.sh` script to install the F3 SDK product. For example, this script can be run by executing:

```
  /bin/bash f3sdk-linux-4.3-installer.sh
  <fincad_directory>
```

where `<fincad_directory>` is the absolute path of the installation directory. If none is specified, then /opt is used.

After installation, the file and directory permissions can be set to whatever values are preferred.
7 Getting Started

Steps to getting setup before using F3 SDK

This chapter covers the steps you need to take to start using F3 SDK.

7.1 F3 SDK Licensing

The FINCAD licensing system supports the following license types:

- **Single installation**
  
  The license file is placed on a computer and only applications on that computer can use it. If you need to use the product from your remote desktop, you must start up any applications built with F3 SDK from the computer where the product is installed prior to using it on the remote machine. You can open as many separate instances of applications built with F3 SDK on your machine with just one license.

- **Concurrent**
  
  The licenses are controlled by a licensing service, which distributes licenses to other computers. Concurrent licenses allow you to run an application built with F3 SDK via a remote desktop or on a virtual machine without first having to start the application from the computer where the product is installed. If you open more than one instance of an application built with F3 SDK, each open session uses one license, i.e., if you open ten sessions of the product on your machine, you will be using ten licenses.

  **Note:** If your license is concurrent, close the F3 applications when you are not using them. This is important because the license does not
This document describes the license activation process on end-user computers. The license activation on the license server is documented in the *FINCAD License Service User Guide*.

### 7.1.1 Activating your license as a single installation

- For Windows platforms, use the FINCAD License Activator (a part of F3 SDK) to activate your license.
- For non-Windows platforms, use the FINCAD command line licensing tool (fcclm
<subcommand> [options])

You can open multiple instances of the product on your machine with a single installation license.

**Note:** If you need to use the product from your remote desktop, you must start up the F3 SDK from the computer where the product is installed prior to using it on the remote machine.

#### 7.1.1.1 Steps for Windows Platform

When you purchase a license for an F3 product, FINCAD sends you a confirmation email.

**Note:** Important

*Do not delete your FINCAD activation email until you activate the product as it contains information needed for activation.*

1. Open the FINCAD License Activator. From the Start menu, point to FINCAD, and then click the **F3 SDK (4.3) License Activator** link under **F3 SDK 4.3**.
2. The **FINCAD License Activator** dialog box is displayed. Click **Next**.

3. Paste the contents from your activation email or your Product Serial Number into the text box and click **Next**.
A Verifying Connection progress indicator is displayed.

- If the green checkmark appears, click Next.

- An Internet Activation box is displayed; type in your contact information including your First and Last Names and your email address. The Phone number is optional. Click Next and go to the final step.

- If you cannot connect to the FINCAD license activation server:
  1. Notify your system administrator to allow you access to the server and start the procedure again or select the **Perform a manual activation** checkbox and click Next to continue with a manual activation.
2. On the **Activate Your License Manually** dialog box, click **Copy hardware ID** and contact FINCAD with this number. Click **Next**.
3. FINCAD will send an email message containing a license file. Copy the contents of the email and paste into the **Activate Your License** text box. Click **Next**. A confirmation dialog box is displayed.

- Finally, click **Finish** to successfully activate your F3 license.
7.1.1.2 Steps for non-Windows Platforms

You can also use the FINCAD Command-Line License Manager (FCCLM) which is a tool that allows you to activate a license via a command line for all platforms that FINCAD supports. Its primary use is to license the product on non-Windows machines; however, you can use the tool to license the product on the Windows platform too. In addition, FCCLM can also be used to activate a concurrent license on the client and server side.

Before starting to work with the FCCLM, change the directory to where it is installed, for example, `cd /opt/fincad/f3sdk-4.3/bin` or `cd %ProgramFiles%\FINCAD\F3 SDK 4.3\bin\licensing`. 
On Linux, the FCCLM that is a part of F3 SDK is located at
$FINCAD_INSTALLATION_TARGET_DIRECTORY/fincad/f3sdk-4.3/bin

where:

• $FINCAD_INSTALLATION_TARGET_DIRECTORY is the target installation directory
given to the f3sdk-install.sh script

• 4.3 is the F3 SDK version number

• 64 is the memory model of the F3 SDK binaries

The utility must be run as user fincad, or a user with elevated privileges.

**Example Activation With Product Serial Number**

Single installation license activation on the client side (Windows):

```
./fcclm activate -s "289E DM83 6288 YK5S 6HJA M0YB" -m all -p f3sdk -v 4.3 ^
  -i "John" -l "Doe" -e j_doe@fincad.com -g client -k f3
```

Single installation license activation on the client side (Linux):

```
./fcclm activate -s "289E DM83 6288 YK5S 6HJA M0YB" -m all -p f3sdk \
  -v 4.3 -i "John" -l "Doe" -e j_doe@fincad.com -g client -k f3
```

Run

```
./fcclm activate --help
```

to get the explanation of the above command line options.

Once a machine is licensed, you can query the license information by running the
following command for F3 products:

```
./fcclm license-info --product f3 -k f3
```

It will display all the licenses that have f3 in their names.

At any time you can get help by typing
• ./fcclm - Displays usage, version, and to get a list of available subcommands
• ./fcclm <subcommand> --help - To get help on a specific subcommand

**FCCLM Configuration File**

FCCLM includes a configuration file (fcclm.config) that lets you store default values for command arguments. This minimizes the amount of typing.

**Note: Important Notes**

- You will need to edit the configuration file before using it because the specified default values may not apply to the target machine environment.
- You must assign a value to all fields.
- All fields within the configuration file must not be removed; otherwise the FCCLM will generate an error when reading the file.

The values set in the configuration file are used if you do not supply them in the FCCLM command line. Please contact your service provider if you have any questions regarding this file or the FCCLM.

- Product id: Do not change this field unless instructed to do so by your service provider.
  
  Example: product=f3sdk

- Customer's first name
  
  Example: firstname=john

- Customer's last name
  
  Example: last=doe

- Customer's phone number
  
  Example: phone=6074085951

- Customer's email address
  
  Example: email=john.d@abc.com
• license service mode: Do not change this field unless instructed to do so by your service provider.
   Example: license service=REPRISE

• FINCAD License web service: Do not change this field unless instructed to do so by your service provider.
   Example: webservice=http://elmer.fincad.com/ELMERWebService/ELMERWebService.asmx

• license source folder: where intermediate files will be stored. Ensure the given folder has proper permissions for read and write
   Example: license-source=.

• license target folder: where the license files will be stored. Ensure that the given folder has proper read and write permissions. Do not change this value unless it is necessary. By default all license files will be placed in "/opt/fincad/core/lic".
   Example: license-target=/opt/fincad/core/lic

• proxy credentials: For Windows, Internet Explorer’s settings will be used automatically. For non-Windows, set the credentials where necessary.
   proxy-server=192.168.1.89
   proxy-port=8080
   proxy-userid=john
   proxy-password=john

• product division: Do not change this field unless instructed to do so by your service provider.
   Example: product-division=f3

• platform where the tool is used. The following are the supported platforms:
  platform=windows
  platform=linux

• license option. The following are the supported options:
license-options=server (for server side activation)
license-options=client (for client side activation)
Example: license-options=server

7.1.2 Activating your license as a concurrent installation

In this case licenses are controlled by a remote license service. You need to get the host name and network port for the license service from your system administrator.

Note: If you open multiple instances of the product on your machine, each instance uses up one license, for example, if you open ten instances of F3 SDK on your machine, ten licenses are used and are not available to other users.

7.1.2.1 Activating your license using Windows GUI

1. Open the FINCAD License Activator to connect to the FINCAD License Service. The FINCAD License Activator dialog box is displayed. Click Next.

2. Copy and paste the "port@host" information that your system administrator provides into the text box, click Next and Finish.

7.1.2.2 License Activation using the FINCAD Command-Line Licensing Manager

Assume your system administrator has told you that the license server is called harmony and the port is 5053. Then the license activation is as simple as this command line

```
./fcclm activate -j 5053@harmony -v 4.3
```
Before starting to work with the FCCLM, change the directory to where it is installed, for example, `cd /opt/fincad/f3sdk-4.3/bin` or `cd /D %ProgramFiles%\FINCAD\F3 SDK 4.3\bin`.

On Linux, the FCCLM that is a part of F3 SDK is located at

$FINCAD_INSTALLATION_TARGET_DIRECTORY/fincad/f3sdk-4.3/bin

where:

- $FINCAD_INSTALLATION_TARGET_DIRECTORY is the target installation directory given to the f3sdk-install.sh script
- 4.3 is the F3 SDK version number
- 64 is the memory model of the F3 SDK binaries

The utility must be run as user `fincad`, or a user with elevated privileges.

### 7.2 Environment Variables

This section describes the steps you must take to enable your environment so that you can start using the F3 SDK.

In a standard installation, only the variables pointing to the location of core library files need to be specified. However, you or your system administrator may want to modify the installation to adhere to your company's IT policies or to integrate the product with other software. In these cases you may need to set the environment variables to indicate the location of licenses and of static data.

#### 7.2.1 F3 Core Library Location

The variables indicating the library locations depend on the operating system.
### 7.2.1.1 Linux

The absolute file system path to the location of F3 shared objects has to be added to the `LD_LIBRARY_PATH` or registered with the `ldconfig` utility. For example, you can insert the following lines in `.bash_profile` in your home directory:

```
LD_LIBRARY_PATH=<f3_install_dir>/fincad/f3sdk-4.3/lib:$LD_LIBRARY_PATH
LD_LIBRARY_PATH=<f3_install_dir>/fincad/f3sdk-4.3/sys/lib:$LD_LIBRARY_PATH
LD_LIBRARY_PATH=<f3_install_dir>/fincad/f3sdk-4.3/lib/python:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH
```

where `<f3_install_dir>` is the directory where F3 SDK is installed (the absolute path). Check if `<f3_install_dir>/fincad/f3sdk-4.3/lib` is the directory containing `libfincad_f3_core.so`.

### 7.2.1.2 Microsoft Windows

Add the location of F3 dynamic libraries to the `PATH` environment variable.

```
set PATH=path_to_fincad_f3_core_dll;%PATH%
```

### 7.2.2 Licensing Setup

If your computer does not contain license files in the default location (`/opt/fincad/core/lic/` in Linux and `%ALLUSERSPROFILE%\Application Data\FINCAD\licenses` in Windows), you either need to run the FINCAD License Activator or set the environment variable pointing to the license server:

For UNIX operating systems, or

```
export fincad_LICENSE=5053@your-organization-license-server
```

For Windows operating systems, or

```
set fincad_LICENSE=5053@your-organization-license-server
```
for Windows. Ask your IT administrator for the name of the license server and what port number it uses (5053 in the example above). Licensing is described in more detail in Chap. 8.

7.2.3 Static Data Location

Whenever the F3 SDK core library is loaded, it creates object repositories and populates them with useful objects, for example, common holiday conventions. Users and developers may define their own objects to be automatically added to object repositories. These are called static data. You may place your static data files into a dedicated directory, and you can instruct the F3 core library to load those objects from there.

Set `FINCAD_STATIC_DATA_PATH` environment variable to the location of that directory:

```
export FINCAD_STATIC_DATA_PATH=/path/to/static/data  (Linux)
```

```
set FINCAD_STATIC_DATA_PATH=d:\StaticDataFolder  (Windows)
```

If the environment variable `FINCAD_STATIC_DATA_PATH` is not set, the F3 library looks for static data in the `.static` subdirectory (relative to the library location). See the documentation for the `StaticDataFiles` function in the FInCAD Financial Framework Reference Manual if you want to know more about static data and how to create your own static objects.

7.3 IDE Project Settings

7.3.1 Visual Studio (C++ projects)

To add directories containing F3 SDK and boost header files to the list of include directories

- Select your project in the Project Explorer and open the Project Properties dialog box by selecting the Project > Properties menu (or pressing ALT+F7).
• Navigate to the **Configuration Properties > C/C++ > General** branch and add the paths to F3 SDK and boost library header files in the **Additional Include Directories** input box. The addition may be similar to the following:

```
C:\Program Files\FINCAD\F3 SDK 4.3\interfaces\cpp\include;D:\boost_1_39_0
```

The path to boost is not required if you are not going to compile F3 SDK code examples and are not going to use the F3 SDK interface that is based on the boost library.

**To add the F3 SDK import library to your project's libraries**

• In the **Project Properties** dialog box, navigate to the **Configuration Properties > Linker > Input** branch and add the F3 SDK import library in the **Additional Dependencies** input box. If the F3 SDK is installed in the default location, you will need to add the following string (including quotes):

```
"C:\Program Files\FINCAD\F3 SDK 4.3\interfaces\cpp\lib\fincad_f3_dispatch_6_6.lib"
```

**Note:** Note: 6_6 in the file name above are major and minor version numbers of the core library which may be different in your case.

### 7.3.2 Visual Studio (.NET projects)

**To add the reference to F3 SDK .NET assemblies to your project**

1. Open your project and select the **Project > Add Reference** menu.
2. Go to the **Browse** tab and add `fincad_f3_dotNET_6_6.dll` and `fincad_f3_dotNET_explicit_6_6.dll` assemblies, which are typically located at `C:\Program Files\FINCAD\F3 SDK 4.3\lib\`

**Note:** 6_6 in the file names above are major and minor version numbers of the core library which may be different in your case.

**Note:** If your project requires using .NET Framework version 2.0, use the `fincad_f3_dotNET2_6_6.dll` and `fincad_f3_dotNET2_explicit_6_6.dll` assemblies instead.
7.3.3 Eclipse (Java development)

To add F3 jar files to your project’s libraries.

1. Select the **Project > Properties** menu, choose **Java Build Path** in the left pane and the **Libraries** tab in the right pane.

2. Press the **Add External JARs...** button, browse to the folder with the F3 jar files, and select `fincad_f3_java_6_6.jar` and `fincad_f3_java_explicit_6_6.jar`. If you are using the Windows operating system, the folder with the jar files is probably `C:\Program Files\FINCAD\F3 SDK 4.3\interfaces\java\lib`.

   At the end of this step, the two jar files will appear in the list in the **Libraries** tab.

3. To enable the autocompletion and help on the F3 libraries, click on the [+ ] sign next to them, select **Javadoc location: (None)** and press the **Edit...** button. In the dialog that appears, in the **Javadoc location path** box, browse and select the folder that contains the "javadoc" for the F3 Java libraries. In Windows installations the folder is likely `C:\Program Files\FINCAD\F3 SDK 4.3\interfaces\java\javadoc`.

---

F3™ SDK Installation Guide

33
This chapter provides additional licensing details specific to IT administrators.

F3 uses the RLM licensing system from Reprise Software as part of the overall FINCAD Licensing System. RLM provides advanced license management, which enables, for example, the following capabilities and usage scenarios:

- To install the 50-computer license you purchased, you can either:
  - Copy and paste the text of the confirmation email message you received from FINCAD into the FINCAD License Activator text box. Then, follow the instructions on the dialog boxes until your license is confirmed.
  - Issue one command using the FINCAD Command-Line License Manager.

- Your organization pools the available F3 licenses, so that, for example, they all can be used by one department when other departments do not use it. An application may use the licenses overnight to do number-crunching and release them for daytime human users doing financial modeling.

- Your organization can quickly grant or deny access to licenses for certain users or groups.

- To get a bug fix, install the newest F3 binary - this eliminates all the bugs fixed in that version. Afterwards, if your license does not enable the new features of that binary, you can just get the license(s) for the new version and do not need to re-install the binary.

**To License F3 SDK**

1. Purchase a license from FINCAD.
2. Install the FINCAD License Service if you are going to use concurrent licenses.

3. Activate your license using the FINCAD License Activator (Windows only) or the FINCAD Command-Line License Manager.

4. Optionally instruct the applications that use F3 how to find the FINCAD License Service.

8.1 Purchasing a license

1. Determine approximately how many licenses you may need for C++, Java, and .NET development.

2. Contact FINCAD: http://fincad.com/about-fincad/contact-us.aspx

8.2 Installing the license service

If you purchased a single installation license you do not need the license service, and you may skip this section.

If you want to use concurrent licensing, you need to install the license service. Run the FINCAD License Service installer included with the F3 SDK and follow the instructions in the FINCAD License Service User Guide to activate your licenses.

8.3 License activation

License activation on the computers running F3 applications is documented in the F3 SDK Licensing section.
8.4 Instructing the application about licenses

The applications that use F3 technology may specify additional information about licenses when constructing the Library and Context objects. This functionality is described in the F3 SDK Reference Manual.