Xpress Installation & Licensing User Guide: Release 7.0 and later

FICO, June 2009

Introduction

For the purposes of this guide, Type_1 (Personal) and Type_2 (Remote) licenses will be referred to as "**static**" licenses. Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses will be referred to as "**distributed**" licenses.

If you have any problems with your Xpress license, please refer to the sections on frequently asked questions, troubleshooting advice, and error messages and resolutions. These sections also tell you what information you will need to supply to FICO Support if you cannot resolve the problem on your own.

Obtaining a license file

You must obtain a license file, `xpauth.xpr`, from FICO Support (or your Xpress supplier) before you can use Xpress. This applies to both new users and users upgrading from earlier releases.

To request a license file, for each license required please send the output of the Xpress Host ID tool to your supplier. (When obtaining a distributed licenses, you should run `xphostid` on the server machine rather than the client.) Under Windows this tool can be run from the Start menu, or alternatively, by browsing in Windows Explorer to the `Xpress\bin` folder and double clicking `xphostid.exe`. Under Unix the tool is installed in the `xpress/bin` folder as `xphostid`.

Users upgrading from an earlier release must also supply their ASSC (support) reference number.

A license file is good for all minor releases within a major release, e.g. a license file for Xpress 2007 will authorize all 2007 minor releases (2007A, 2007B, etc). A new license file is required for a new major release, e.g., Xpress 2008.

Installing Xpress

If you are comfortable with standard computer installation procedures then you may wish to skip this section or merely use it as a reference rather than a step-by-step guide.

Downloading the Installation Packages

Xpress is installed via the installer packages available from the downloads area of the FICO Xpress website. Please make sure when downloading that you pick the correct installer for your system and license (i.e. if you wish to use a Solaris Sparc 64-bit Xpress then make sure this is the package you download and not, say, Solaris x86 64-bit or Solaris Sparc 32-bit).

There are two types of installer, an InstallShield Windows version (Windows 32-bit, 64-bit and Itanium 64-bit) and an install script version for all the Linux and Unix installers.

Should you wish to install an Xpress patch rather than a full Xpress installation then please refer to the Patch Installation appendix at the back of this document.

Installation on Windows

Installation on Windows is via the InstallShield installers. These installers are contained and run from the self-extracting zip files downloaded from the FICO Xpress website. To install the software simply double click the left mouse button on the file you've downloaded, this will cause the self-extracting zip file to present the following box (this example uses the 7.0 Windows 32-bit installer):
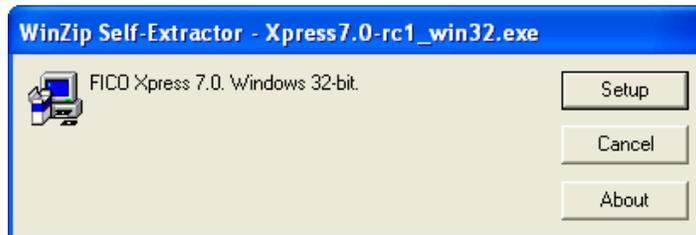
Click "Setup" and wait a few moments for the files to be prepared and the installer to begin running. Once the files have been extracted from the package the InstallShield installer will start and present the following screen.
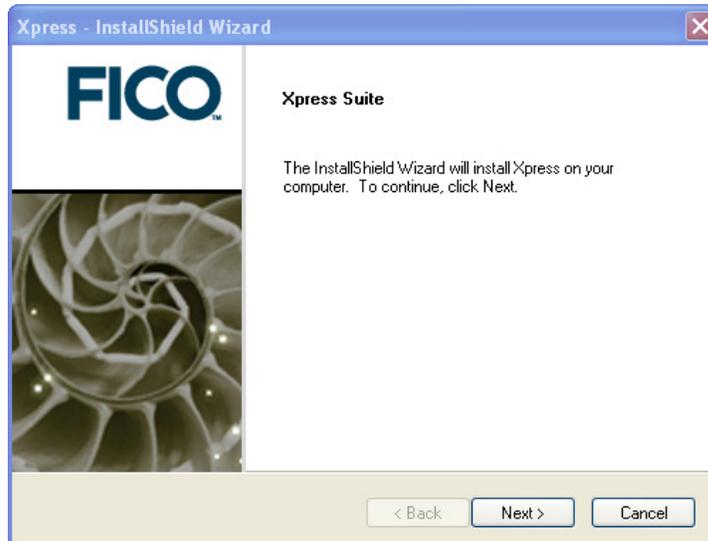
As stated in the window if you wish to continue with the installation then click "Next". At any point if you wish to return to a previous window to alter the choices or re-read the options then simply click "Back". In some cases, as above where we are looking at the first screen, the back option will not be available and in these cases is greyed out.

Next you will be presented with the Xpress licensing agreement. It is important that you read this and make sure that you agree to its terms and conditions. You may scroll up and down the full agreement by using the scroll bar to the right of the text (highlighted in green in the figure below) or print the agreement by clicking the "Print" button. If you agree with the terms then click the "Yes" button. If you do not agree then click "No" and the installer will close.

Once you've accepted the license agreement you will need to choose what type of installation to perform. If you are installing on one machine* and don't require other machines to use Xpress, or if you are evaluating Xpress, then select the Static Licensing option. This corresponds to type_1 and type_2 licenses. By default this option is selected as it is the most commonly used method of licensing.

*If you are using a dongle to license then you will be able to move this between machines, but you will only have one machine at a time which is able to use the software.

If you will be licensing over a network and require a client/server (type_3 or type_4) installation then select the Distributed Licensing option. If you select this option and click "Next" you will be presented with a screen asking whether this installation is for the client (the machine which runs the Xpress software and requests licenses from elsewhere), or the server (the machine which runs the license manager and grants or refuses licenses to client machines). You can read more about distributed licensing options in the "Licensing Xpress" section of this guide.

If you are performing a distributed installation then you will later be asked if you wish the XPserver license manager to be run as a Windows service. This means that the license server will be started automatically in the background and is often the easiest and best way to run the license manager. By default this will select "Yes". The license manager can be started as a standard program, using runlmgr.bat; more information concerning this is available in the licensing section of this guide.

Next, in the static install process, you will be asked where you would like to install the software. The default location of "C:\xpressmp" is suitable for most installations, although you may wish to alter this (by clicking on the "Browse" button) if you already have a folder on the C drive (which is usually the primary hard-drive in a Windows system) called "xpressmp", or if you do not have permission to install software to the default location.

Once you've entered the installation folder you wish to use and clicked "Next" you will be presented with different screens depending on the type of installation you are performing. If you have selected a distributed client license installation then read the next sub-section, otherwise skip ahead to "Other Installations".

Distributed Client License Installation

In order for the installer to fully setup your configuration it will need to know from which server to make license requests. If you do not know what the server is called then ask your system administrator what the name of the FICO Xpress license server is. If they do not know then ask them to find out which machine is running the XPserver service, this is the name of the Xpress license manager.
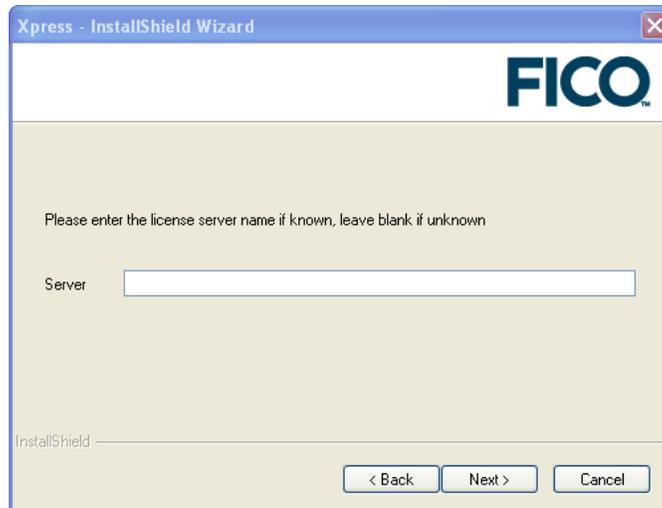
If you still don't know, but would like to continue installation, then simply leave the "Server" box empty and click "Next". This will create a license file with an empty field for the server name. Once you know what the server name is you can open the license file (which is called xpauth.xpr and is found in the bin folder under your installation directory) with any text file editor and type the server name between the quotes in the line `use_server server=""`.

Continue the installation as per the "Other Installations" sub-section.

Other Installations

You will now be asked if you intend to use dongles as your licensing key. These are small USB objects that look similar to a USB memory stick. These are used if you wish to use Xpress on multiple machines, but with only one machine at a time able to make use of the software. Instead of the license locking to one particular computer, it locks to one particular dongle.

Select "Yes" and click "Next" if you wish to use dongles. This step ensures that the driver software, required by Windows so that it can understand the dongle, is installed during the Xpress installation process.

If you select "No" and then at a later date decide you do need the dongle drivers then please see the section Appendix A: Dongle licenses.
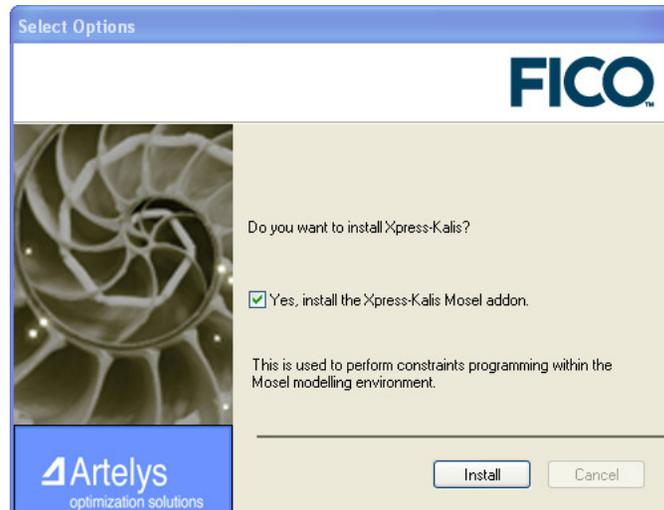
The next screen asks if you wish to install the Xpress-Kalis constraints programming add-on. This can be used within the Mosel modelling environment. The default option is to install this, but you will need to have a license which allows its use in order to utilize Kalis functionality. If you do select to install this option you will need to agree to the Artelys Kalis terms and conditions as you did previously for the Xpress license agreement.

The software will now install. This may take a few minutes so please be patient.

Once the software has installed there are still a few items to be arranged. The installation should be pointed towards the license file, the environment variables will be set and, if requested, the software will be added to the Start menu.

If you have a license file from FICO Support then click on the "Browse" button and enter the folder in which the license file, xpauth.xpr, is located. Once this is done, click "Next". If you do not yet have a license file from FICO Support then you will be able to continue, but the license file created in the Xpress installation directory will not be a valid file, just a temporary place-holder until you have a valid license.
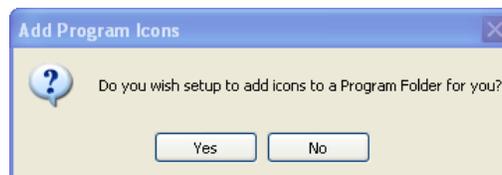
The next box asks if you would like to add icons to the Xpress program folder. Select "Yes" if you would like the Xpress software to be added as an option on the Windows Start menu.

Congratulations! You've now installed Xpress.

Should the installer fail to function correctly then the software may be installed manually. An in-depth guide to manual installation can be found in appendix D of this document.

Installation on Linux or Unix variants

Installation on Linux and Unix variants is performed via an install script contained within the downloaded tar archive file. You will need to untar a few files required for the installation from the downloaded file and so it is recommended that this is not done in your base directory. Before you begin, if you have a Xpress license, it is recommended that you make a note of the full directory path which contains the file (xpauth.xpr).

To extract the files from the tar archive and start the installation script enter the following commands (in this instance the installation is for a 7.0 Linux 32-bit version, your tar file may have a slightly different name depending on the Xpress version and system you are installing on).

```
tar xf xp7.0_linuxrh9_x86_setup.tar
./install.sh
```

You will now be asked to enter a series of answers in order to setup the installation. You can exit the installation process at any time by pressing the *Ctrl* and *c* buttons at the same time.

Firstly you will be asked which type of licensing you wish to use, static (one computer, or a dongle for a non-server installation) or distributed. In this and all of the installation questions the valid options will be visible in the question text surrounded by square brackets. As you can see in this instance there are two options: [s]tatic or [d]istributed, so enter either "s" or "d" (without the quotes) and press enter. Where the questions require a yes/no answer you will need to type "y" or "n", and where they require a directory path you will need to type in the full path or press *Enter* to accept the offered default path.

If you selected to perform a distributed installation then you will now be asked whether you want a [s]erver or a [c]lient installation. If you will be connecting to another computer (or another XPserver Xpress license manager on the same machine) then select "c"; if you wish to make this machine the license server then select "s".

The next question asks where you wish to install the software. This defaults to "/opt/xpressmp", but you may wish to change this. If you are happy to install it in the default location then you can simply press *Enter* at this point. If, however, you wish to install to a different location then enter the full path, making sure to use forward slashes "/". You may enter the relative path if you wish, but this may affect how the environment variables are set later in the installation process. The supported method is to enter the full path.

The Xpress-Kalis constraints programming engine, as you are now being asked about, is an optional component for use in the Mosel modelling environment. It requires the relevant licensing option in order to authorize its use, however anyone can install the add-on provided they accept the terms and conditions. If you do select the default option (to install Kalis) the Kalis licensing agreement will be displayed. This can be scrolled through quickly using the *Space* key, or scrolled more slowly using the up and down arrow keys or *Enter*. Pressing "q" will stop the display of the licensing agreement and ask if you agree to its terms, press "n" if you do not, or the default answer of "y" if you are happy with the terms.

If you have received your Xpress license file from FICO Support then now is the time to tell the installation where to find it. The first question simply asks whether you have the license file (xpauth.xpr), don't worry if you don't yet have it, just enter "n". This will present you with the details necessary for Support to create a license file for the machine. If you wish you can stop the installation here, get a license file from Support and then perform the installation once you have it. Alternatively you can continue the installation and get the license file at a later date. If you do choose to do this then you will need to place the license file in the "bin" directory of your Xpress installation. For instance, in the example above, "/opt/xpressmp", you would need to copy the xpauth.xpr license file in to the "/opt/xpressmp/bin" directory.

Provided you selected "y" and entered a valid location for the license file then the installer will now ask whether you want to copy the license file to the default directory ("/opt/xpress/bin" in the example previously used). The default option is to do this and most Xpress installations will contain the license file within the "bin" directory of the Xpress installation. If you decide not to move the license file in to the default location then this will still work correctly, but you should make a careful note of where you are storing the license file incase it requires updating at a later date (once installation is complete the location you've set for the license file should be pointed to by the "XPRESS" environment variable).

The files will now be extracted from the tar archive. Depending on the speed of the computer the installation is being done on this may take only a few seconds or it may take as long as a few minutes.

If you had earlier selected to perform a distributed client installation then you will now be asked for the name of your license server. If you know this enter it now, if you are not sure then simply press *Enter* and make a note of the onscreen instructions for entering the server name at a later date (you can alter the server name in the xpauth.xpr license file using any text editor, such as Emacs or Vi).

On completion the installer will output the names of two script files, one for the Bourne shell (Bash) and another for the C shell. These should be run, as detailed in the installer output, to setup the computer environment so that Xpress will run correctly. If you did not have your license file whilst performing the installation then you will need to set the "XPRESS" environment variable to point to it once you do have it; the instructions for doing this on the command line are contained within the installer output. Should you wish to add the change to "XPRESS" to a more permanent script which can be run whenever the shell is opened then the best option would be to edit the relevant "xpvars" script in the "bin" directory of your Xpress installation. You can edit these files with any Linux/Unix text editor, just altering the line relating to the "XPRESS" environment variable as this is the location of the license file.

If you earlier selected to perform a distributed server installation then the install script will attempt to start the XPserver license manager. If you do not have a server license then this will display an error message. If it starts successfully then any log messages from it will be output in to the xpress.log file. By default the xpress.log file is written to "/var/tmp/xpress.log". Further instructions for using the Xpress license manager can be found in the "Licensing Xpress" section of this guide.

Once the environment variables have been set via the script and a valid license file is present then the Xpress software is ready to use.

Licensing Xpress

Using a static license

(This section applies to Type_1 (Personal) and Type_2 (Remote) licenses)

To start using Xpress with a static license, you must first install the license file, `xpauth.xpr`, which you will have received from FICO Support. Save/copy the file into your `xpressmp\bin` directory.

Under UNIX copy the `xpauth.xpr` file into a convenient directory, such as `xpress/bin`, and set the `XPRESS` environment variable to this directory:

```
bash$ export XPRESS=/opt/xpressmp/bin

csh% setenv XPRESS /opt/xpressmp/bin
```

You can now start the Xpress product of your choice.

Using a distributed license

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

A distributed license requires a license manager to be run on a designated machine that is called the **license server**. Any instance of Xpress that is started on any machine contacts the license server over the network for authorization before continuing. This guide refers to those machines running Xpress as **client machines.**

Setting up the server

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

To use a distributed license you must designate a machine on your network to be the license server. This machine must be on the same IP subnet as the client machines, and must allow incoming connections on TCP port 27100 (or another of your choice – see the section **Additional configuration**).

You must now run the Xpress installer on the server machine. The installer is a wizard which will ask you a sequence of questions; simply follow the prompts on the screen. On Unix machines you will be prompted for a license file; enter the path to the folder containing the file xpauth.xpr you received from FICO Support and it will automatically be copied into the server installation.

If you are using Windows NT/2000 or later you will be asked whether to install the license manager as a Windows service. To install the license manager as a service you must have Administrator privileges, so if you do not have Administrator privileges choose "no" when the installer presents this option.

For Microsoft Windows installations, you must now copy the server license file you received from Xpress Support, called xpauth.xpr, into the bin sub-folder of Xpress installation directory.

Before you run Xpress on any of the client machines, start the license manager on the server, which you can do on Windows using the shortcut on the Start menu. If you installed the license manager as a Windows service you can also start and stop it using the 'Services' control panel applet. You can also start the license manager from a Unix shell or Windows command prompt (or DOS box) using one of the following commands:

`runlmgr start`	(for the standalone license manager and the Unix license manager)
`runlmgr starts`	(for the license manager Windows service)

The license manager will remain running until you stop it manually or restart the computer, in which case it will need to be re-started before Xpress can be used again.

Setting up the clients

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

To set up a client machine to use a distributed license you must first install Xpress on the client machine. When the installer asks you whether this is a server machine or a client, choose client. Enter the path where you want to install Xpress.

During installation you will be prompted to enter the hostname of your chosen license server; enter the hostname of your machine, together with any qualifying domain if necessary, e.g.:

```
uranos.ficdash.co.uk
```

It is not necessary to run the license manager on the client machines.

Using client and server on same machine

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

Many people will also wish to run the Xpress software on their server machine; in this case, we recommend installing client & server into different folders. Firstly perform a client install, as described above, and then perform a server installation and when prompted for an install path, enter something different.

If you wish to install client & server into the same folder, you should install client first, and then server. You may also have to edit the `use_server` line of your license file to point the client at your local machine, as in this configuration both client and server will use the same license file.

Stopping the license manager

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

At times you may wish to take your license server process offline, perhaps for maintenance or upgrade purposes. On Windows, you can stop (and start) the license server using the links placed in the Xpress area of the Start menu. If you don't or can't access this, or are using a Unix machine, you can control the license server using the 'runlmgr' script manager from a Unix shell or Windows command prompt (or DOS box):

```
runlmgr stop        (for the standalone license manager and the Unix license manager)

runlmgr stops       (for the license manager Windows service)
```


Additional Configuration

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

Some users may need to configure the license manager to use a particular TCP port. You may need to do this if you are running another service on your server machine which is conflicting with the Xpress license manager, or if you want to make a rule in your firewall to allow incoming connections on this port. To do this, edit the license file on the server and add a "server" line specifying the port number, e.g.:

```
server port="12840"
```

Then edit the license file on the client and add this port directive to the "use_server" line, e.g.:

```
use_server server="our_server_machine" port="12840"
```

You will need to restart the license server application in order for it to re-read the license file.

Logging

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

By default the license server process will create a log file called xprl_server.log in a temporary folder on the server machine.

- On Windows machines, the server logfile will by default be created in the temporary folder – this is often the folder `Local Settings\Temp` within the profile of the user account used to run the server, but in some circumstances it may also appear in `C:\Windows\Temp`.

- On Unix machines the server logfile is generally found in either `/tmp` or `/var/tmp`

You can fine-tune the server's logging by editing the server license file and adding a "logging" line. For example, you can change the location of the logfile thus:

```
logging file="C:\logs\xprl_server.log"
```

or on Unix:

```
logging file="/var/log/xprl_server.log"
```

You can also change the level of detail that will be placed in the log file:

```
logging level="verbose"
```

The default detail level is "normal". Other levels are "quiet" (log only serious errors), "verbose" (log more detail than 'normal') and "debug" (which should only be used under the direction of FICO support).

By default the log file shouldn't get much larger than 128 kilobytes; if you find this isn't enough and want to store more logging data you can set the maxsize directive to the number of kilobytes you want to retain, e.g.:

```
logging maxsize="256"
```

License Status

(This section applies to Type_3 (Distributed) and Type_4 (Distributed + Remote) licenses)

When using a server license, often you will want to quickly review the current state of all the licenses, for example to find out who is using a license that you want to use yourself.

You can use the supplied command-line tool `xplicstat` to summarise which licenses are in use, and for how long, and which machine checked them out, as well as which tokens can still be checked out. `xplicstat` requires a client `xpauth.xpr` file with at least one `use_server` line – on Windows it will look for this in the same folder as the executable, or on Unix it will use the `XPRESS` environment variable. You can also specify an alternate location using the `-xpress` command-line flag, e.g.:

```
xplicstat -xpress C:\xpressmp\bin\xpauth.xpr
```

Replacing the license file

You may wish to upgrade or renew your license. FICO Support will send you a new xpauth.xpr; you must place it in the same place as the original xpauth.xpr. For Type_1 (Personal) or Type_2 (Remote) licenses this is in the 'bin' sub-folder of the Xpress installation; for Type_3 (Distributed) or Type_4 (Distributed + Remote) licenses you must place it in the 'bin' subfolder of the Xpress server installation on the server machine and then restart the server process in order to force it to reread the license file.

Troubleshooting licensing problems

If there is a problem with your Xpress license, the error message will tell you what the problem is. For distributed licenses, also check the `xprl_server.log` log file for any recent error messages. If the license server is failing to start up, you should also check the Windows event log (or `/var/log/messages` on Unix systems) for any errors.

Please refer to the following section **Licensing error messages and suggested resolutions** for common errors and probable causes and/or resolutions.

If this fails to resolve the problem, then please try the following steps which in our experience resolve almost all of the reported problems.

- Upgrade to the latest version of Xpress.

- If you have a portable Windows machine with a license tied to your Ethernet address and you are having problems when the machine is not connected to a network, it may have "Media Sense" enabled. This disables the Ethernet card when no network is connected to save power. Try disabling Media Sense by following the instructions on Microsoft's website: http://support.microsoft.com/default.aspx?scid=kb;EN-US;q239924.

- If you are running Windows XP and the Xpress host ID tool does not show up any host IDs your network adapters may be bridged. To fix this, run Control Panel and click Network and Internet Connections, and then click Network Connections [1]. If the window contains a section entitled Network Bridge, right click the Network Bridge icon and choose Delete. Now re-run the Xpress host ID tool to find out the host ID of your computer.

If you still have problems, please contact FICO Support, giving full details about the error number and message obtained, along with a description of the circumstances under which it occurred.

Licensing error messages and suggested resolutions

These error messages will be displayed by executable software, including IVE, Optimizer console, and Mosel console. If you are using any of the Xpress libraries, the error message can be obtained using the `XPRSgetlicerrmsg` (Optimizer and BCL) or `XPRMgetlicerrmsg` (Mosel) functions. For distributed licenses they may also be seen in the `xprl_server.log` log file.

If you obtain an error number not listed here, it cannot easily be resolved by the end-user. Please report the error number and message to FICO Support, along with a description of the circumstances under which it occurred.

1: The license file (xpauth.xpr) could not be found.

Make sure you have put the correct license file in the correct location. Under Windows, the `xpauth.xpr` file must be placed in the Xpress bin directory (the directory on the Path containing the Xpress DLLs). Under Unix, the `XPRESS` environment variable must be set to the directory containing the `xpauth.xpr` file. Note that the `XPRESS` environment variable has no effect under Windows.

2: There is an error in your license file…

or

8: Your license file has not been signed by Xpress Support / has an incorrect signature.

or

11: Your license is invalid as it specifies an invalid / no expiry date.

Your license file is corrupt – please try replacing it with the license file originally sent to you by FICO Support. If the original license file sent to you is invalid then request a new license file. Please attach the corrupted license file and quote the error code number – this indicates to FICO Support exactly what is wrong with the file.

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[1] Depending on your set-up, you may instead have to double-click Network Connections as soon as you open Control Panel.

4: The maximum number of simultaneous users has been reached.

Your license file specifies a limit on the number of copies of Xpress that can be used simultaneously and that limit has been reached. Close one of the copies of Xpress, wait until another user has finished with Xpress, or upgrade your license.

9: The license file only supports host ID(s) [id1,…]

Your license is locked to a different host from that which you are trying to run Xpress (or for distributed licenses, the license is locked to a different server machine from the one you are using). If you need a license for this machine, please contact Xpress Support.

If you receive error #9 and you are sure your license is locked to your machine's hostid, it may be that Xpress can't detect your hostid. If you have an Ethernet license try disabling Media Sense, as described in the Troubleshooting section of this Document. If you have a dongle make sure that it is plugged in, then try manually installing the dongle drivers from your latest Xpress installation, as described below in the section **Installing the HASP dongle device driver**.

10: Your license expired on [date].

Your license has expired. Please contact FICO Support to renew it or to obtain an upgrade.

14: Could not connect to server…

Check that the server computer is visible over the network – perhaps try:

```
ping <name_of_license_server>
```

Also, verify that the license server application, `xpserver`, is currently running on the server machine. Check the logfile for errors. If you have a firewall, ensure that it isn't blocking communications to/from the Xpress license server application.

20: License could not be checked out on redundant servers.

A quorum (two out of three) of redundant license servers could not be obtained for this license. Either insufficient redundant license servers are active, or the license is already checked out on the other two redundant license servers. *(This error can only occur when using a redundant server license.)*

21: Your license only supports release [rel].

Your license is for a previous release of Xpress. First ensure that you are not using an old license – make sure that Xpress is finding the correct license file by following the suggested resolution in (2) above.

If your license does only cover a previous release, contact FICO Support to upgrade it.

32: Not within local subnet

Your license only permits you to connect to the license server from machines within the same subnet as the license server machine. If you attempt to connection from a machine outside of your subnet this error will be triggered.

89: Your license only supports platform(s) [plat1,…].

Your license file does not support the platform that you are trying to run Xpress on. Contact FICO Support if you want to upgrade.

103: Your license does not allow Xpress to be run on a Terminal Services server

You can only use Xpress on a Terminal Services server with a Type_2 or Type_4 license; if you require a license upgrade, please contact your supplier

259: This is an OEM license and you have incorrectly specified the OEM number.

You have either called an initialization function without first calling the OEM licensing function or you specified the wrong OEM number in your call to the licensing function. Please check your OEM documentation to check that you are using the correct initialization sequence. Please note that OEM numbers issued for releases earlier than Xpress-MP 2003 are not valid with Xpress-MP 2003 and beyond. If in any doubt, please confirm your OEM number with FICO Support.

Appendix A: Dongle licenses (for Windows machines)

Under Windows, licenses are available that are locked to a dongle rather than to the host ID or ethernet address of the computer. A license file is still required: this will contain the four digit dongle number in place of the computer's host ID or ethernet address.

Starting from Xpress 2003, the dongle is used only to provide a unique four-digit dongle number to which the license file is locked. The license is only valid when run on the machine to which the dongle is currently attached. All license details, including the Xpress features authorized, whether the license is static or distributed, the release of Xpress authorized, etc, are contained in the license file.

Displaying the dongle number

The dongle number can be obtained by running the Xpress Host ID tool (see the above section **Obtaining a license file**). Note that the dongle must be connected to your computer and the dongle device driver must be installed and running (see below).

Installing the HASP dongle device driver

When installing any Xpress software for Windows 98, NT4, 2000 and XP, the Xpress installation will try to install the dongle device driver automatically. However, you **must** have Administrator privileges in order for the installation to be successful.

To install the HASP dongle device driver manually, run

```
c:\Xpressmp\tools\dongle\hasp\hinstall -i -criticalmsg
```

Notes for Xpress release 13 (and earlier) users with dongles

Releases of Xpress prior to Xpress-MP 2003 used a different mechanism: the license information was included in the dongle itself, and different types of dongle were supplied depending on whether the license was static or distributed. When using your existing dongle with Xpress-MP 2003 or later, all information on the dongle, apart from the four-digit dongle number, is ignored. Since your dongle does not need to be updated to work with 2003 or later, it will still support previous releases of Xpress.

If you have a NetHASP dongle (red plastic casing), for use with a distributed license, the NetHASP license manager is no longer used, and can be disabled. Distributed licenses are now administered by the `lmgrd` license manager described in the Xpress Distributed License Guide document. The NetHASP dongle acts as an ordinary dongle and must be attached to the license server.

Aladdin HASP diagnostic utility

We have included the Aladdin HASP diagnostic utility in the Xpress installation in the `c:\Xpress\tools\dongle\hasp\utility\haspdiag` directory. This may be useful for diagnosing problems with your HASP dongle. The latest Aladdin HASP utilities may be obtained online at http://www.aladdin.com/support/hasp/hasp4/enduser.asp

Appendix B: Dongle licenses (for Linux machines)

Under x86 32-bit and 64-bit x86 Linux, licenses are available that are locked to a dongle rather than to the host ID or ethernet address of the computer. A license file is still required: this will contain the four digit dongle number in place of the computer's host ID or ethernet address.

The dongle is used to provide a unique four-digit dongle number to which the license file is locked. The license is only valid when run on the machine to which the dongle is currently attached. All license details, including the Xpress features authorized, whether the license is static or distributed, the release of Xpress authorized, etc, are contained in the license file.

Displaying the dongle number

The dongle number can be obtained by running the Xpress Host ID tool (see the above section **Obtaining a license file**). Note that the dongle must be connected to your computer and the dongle device driver must be installed and running (see below).

Installing the HASP dongle device driver

The dongle driver is not automatically installed when installing Xpress on a Linux machine. In order for your dongle to be recognised, you must download the Linux dongle drivers from the FICO Xpress client download page. You must login with your root account, extract all the files from the `HDD_Linux_dinst.tar`.gz archive and run the `dinst` script which will install the HASP dongle driver daemon. After this, the Xpress software should recognize the dongle you plug in. (Try running the `xphostid` tool to check this – if it reports a hostid starting 'di' then it can see your dongle and the driver is correctly installed.)

Appendix C: Redundant Server Licenses

A redundant server license is a special type of license for use in mission-critical environments. It relies on not one license server but three, of which at least two must be active to authorise Xpress. This way, if one license server machine happens to fail your applications can still use Xpress through the remaining two servers until the problem is corrected.

To obtain a redundant server license, contact your supplier.

You must install the license server application on all three license server machines. Edit your server license file and ensure the machine names in the use_server lines match up with the names of your three license server machines, e.g.:

```
use_server server="main_server" hostid="mx001731e8216c"

use_server server="backup_server_1" hostid="mx002831e8216d"

use_server server="backup_server_2" hostid="mx0017ff88216e"
```

Install the same server license file on all three redundant server machines.

In the client license, you'll also need to list the three redundant license servers, marked as redundant license servers as follows:

```
use_server server="main_server" redundant="1"

use_server server="backup_server_1" redundant="1"

use_server server="backup_server_2" redundant="1"
```

Xpress will try to connect to each of the redundant license servers in turn, until it successfully establishes a connection with one of them.

Remember that you won't be able to use Xpress when only one redundant license server is active. Xpress will only license if two or three of the redundant license servers are available.

Appendix D: Manual Xpress Installation

In the unlikely event that the provided installers fail to function correctly the software can be extracted manually. This will, once configured, produce an installation which will function in the same manner as that provided by the automatic installation.

In order to perform a manual installation on Windows requires a program capable of uncompressing "zip" files. WinZip or WinRar are suitable, although any program with unzipping capabilities should work.

Unix and Linux variants should by default contain the necessary programs to unzip and extract from the "tar" archives. Should suitable programs not be present for any reason then they will need to be installed. If this is the case and your previous attempt at automatic installation via the install script failed then that is probably the reason why. Install the required tools and attempt an automatic installation again.

The resultant differences between the automatic and manual installation methods are:

- Files are not installed selectively as the whole archive will be uncompressed.

- Not all environment variables are automatically set.

- The dongle driver installation will not be run automatically (Windows).

- The file shortcuts will not automatically be added to the Start menu (Windows).

- The XPserver license manager will not be automatically configured to run as a service.

Manual Windows Installation

Should the InstallShield installation fail then the files may be extracted using any program capable of reading and extracting from "zip" files. The process to do so on Windows machines is detailed below:

1. Rename the downloaded installation file extension from ".exe" to ".zip".

2. Extract the files from the zip file to the folder you wish to install in to.

3. Copy your license file in to the "bin" folder of the installation directory.

4. Read the license.txt file in your installation folder and make sure you agree with the terms and conditions, if you do not agree then please stop the installation and delete the software.

5. Add the XPRESS environment variable and have it point towards the "bin" folder of the installation directory. You can set this by going to the Start menu → Settings → Control Panel → System → Advanced → Environment Variables, and by creating a new environment variable. Use the full path.

6. Add the path to the "bin" directory to the "PATH" environment variable (this allows the system to find the relevant Xpress libraries and executables).

7. If you will be using Mosel then it's a good idea to also add the "MOSEL_DSO" environment variable. This allows Mosel to find the correct modules to load. You should set this to the "dso" folder of the installation directory and any further folders which contain ".dso" files you wish to use. Use the full path.

8. If you wish to add links to the programs on the Start menu then you will need to do this via Start menu → Settings → Taskbar and Start Menu; then clicking on the "Start Menu" tab and clicking the "Customise" button. Click "Add" and then use the Windows wizard displayed to add the programs to the Start menu. You may want to add "Optimizer.exe" and "IVE.exe" as basic links, although a number of other executables are available (see the "bin" folder in the installation directory). If you were just hoping to perform a distributed server install then you may wish to only add in links to "XPserver.exe", or the configuration batch file "runlmgr.bat".

9. If you were hoping to perform a distributed server install only then you may want to remove any extra files. You should be able to delete everything except the following files/folders:

- xpserver.exe in the "bin" folder.

- xphostid.exe in the "bin" folder.

- xplicstat.exe in the "bin" folder.

- xprl.dll in the "bin" folder.

- runlmgr.bat in the "bin" folder.

- The "tools" folder, if you require dongle licensing, from the main Xpress folder.

- License.txt from the main Xpress folder.

- The "licensing" folder from the "docs" folder.

10. If you require the use of dongles for licensing then you will need to install the dongle drivers found in the "tools\dongle\hasp" directory of your Xpress folder. This is best done using a Windows console as it requires the addition of command-line arguments. You can open a Windows console by running "cmd" via the Start → Run menu. Details for installing the dongle drivers can be found in Appendix A, above.

11. Finally, if you wish to setup the XPserver license manager you should follow the instructions in the Licensing Xpress section of this document.

Manual Linux/Unix Installation

As mentioned previously, if this has failed then it is likely that there was some kind of problem using the standard zip and tar programs. Assuming that this was not the case then you may manually install the software by following these steps:

1. If you have not done so already then untar the downloaded installer (if you've attempted to install via the automated install script then you have already performed this step). The command below will extract the files from the tar archive:

       tar xf *name_of_downloaded_installer*.gz.tar

2. The extracted files, which will include the installation script install.sh, should now be extracted. Move the ".gz" file, which has just been extracted, in to the directory you wish to install the software in.

3. "gunzip" the ".gz" file using the following command:

       gunzip *name_of_gz_file*.gz

4. This will have extracted another tar archive which itself contains the installation files and may be unarchived using the following:

       tar xf *name_of_new_tar_file*.tar

5. The installation directory should now contain several directories of files and several license and html files. At this point you should read the license files and make sure you agree with the terms and conditions; if you do not agree then please delete the software and cease the installation.

6. Copy your xpauth.xpr license file in to the "bin" directory of the Xpress installation.

7. You will now need to set the relevant environment variables in order for the software to function correctly. You may do this by setting the "XPRESSDIR" environment variable and then running the xpvars script in the "bin" directory of the Xpress installation (assuming you are currently in the Xpress installation directory):

       setenv XPRESSDIR *your_xpress_install_directory*
       cd bin

       ./xpvars.sh   *for the **Bash** Shell*

             or

       source xpvars.csh   *for the **C** Shell*

8. You may also wish to set the "MOSEL_DSO" environment variable if you are attempting to install Mosel "dso" files in multiple places. This is set in exactly the same way as the "XPRESSDIR" environment variable in point 7 above, but should be set to the "dso" directory (and any other directories, separated by a colon) of the Xpress installation directory.

9. If you are performing a Linux install and require the use of dongles for licensing then you should install the dongle drivers now. See Appendix B for the Linux dongle driver download and installation guide.

10. If you were hoping to perform a distributed server install then you will only need a few of the files and you may wish to remove the rest. You will need to keep the following files in order for the XPserver license manager to function correctly:

    - xpserver in the "bin" directory.

    - xplicstat in the "bin" directory.

    - runlmgr in the "bin" directory.

    - The xpvars script files in the "bin" directory may be useful so that environment variables can be quickly set. Keep these if you wish.

    - All files which begin with "libxprl" in the "lib" directory.

    - The "licensing" directory in the "docs" directory.

    - xphostid in the "utils" directory.

    - license.txt from the main Xpress installation directory.

11. Finally, if you wish to setup the XPserver license manager you should follow the instructions in the Licensing Xpress section of this document.

Appendix E: Patch Installation

Patch, or maintenance, releases are releases which only include updated files for parts of the Xpress software. These may be released to fix a particular bug, improve performance or to add a new feature. The larger maintenance releases can be downloaded from the FICO Xpress website and the patch releases (which are often individual files or programs) are usually found on the FICO Xpress ftp site. If you have reported an issue with the software and a fix is now available you will usually be notified via email (through the support system) that the fix is available to download via the ftp site and where on the site the fix is located.

Windows Patch Installation

Using your usual zip file extraction program (i.e. WinZip or WinRar) extract the patch files. In most cases these will be replacements for library or executable files found in the "bin" folder of the Xpress installation, or ".dso" files found in the "dso" folder of the installation.

If you know where the replacement file(s) should be copied then simply copy them to the correct destination, over-writing the older file (you can always rename the older file if you want to be sure to still have access to it). If you are uncertain where the new file should go then simply perform a search on the Xpress installation directory for the name of the file. To do this right click on the Xpress installation folder and select "Search" from the menu. Now enter the name of the file you wish to replace in the "All or part of the file name" box and click "Search". The resulting list will tell you where in the Xpress installation the file can be found.

Once the patch is placed in the correct place in the installation the software may be run as normal and the updated files will be automatically used.

If you are attempting to install multiple copies of Xpress on one system then please make sure that the folder you are applying the patch to is the correct one and that the XPRESS, PATH and MOSEL_DSO environment variables point towards the correct folders.

Linux/Unix Patch Installation

Using your usual gunzip file extraction and tar archive programs extract the patch files. On most systems this can be achieved using:

```
gunzip patchfilename.tar.gz
tar xf patchfilename.tar
```

In most cases these will be replacements for library or executable files found in the "lib" and "bin" folders of the Xpress installation, or ".dso" files found in the "dso" folder of the installation.

The best way to extract the patch is to do so in the Xpress installation directory as this should over-write the old files and symbolic links correctly.

If you know where the replacement file(s) should be copied then simply copy them to the correct destination, over-writing the older file (you can always rename the older file if you want to be sure to still have access to it). If you are uncertain where the new file should go then simply perform a search on the Xpress installation directory for the name of the file. You can do this using the "find" command from the Xpress installation directory:

```
find . -name name_of_file_to_be_replaced
```

Which should output a list of files with matching names. You may find that if you are searching for a particular minor revision of a file, such as `libxprs.so.18.10.05`, that no matching name is found. This is to be expected as the Linux/Unix library files are named as per their revision and contain symbolic links (`libxprs.so` and `libxprs.so.18.10` in this case) which point to the actual library file.

Once the patch is placed in the correct place in the installation the software may be run as normal and the updated files will be automatically used.

If you are attempting to install multiple copies of Xpress on one system then please make sure that the folder you are applying the patch to is the correct one and that the XPRESS, XPRESSDIR, PATH, LIBPATH (or SHLIB_PATH or LD_LIBRARY_PATH, depending on the system used) and MOSEL_DSO environment variables point towards the correct folders.