Autodesk University 2012

Understanding and Managing Your Autodesk Licenses

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CM2960

Sometimes the process of managing your Autodesk licenses can seem overwhelming because there is so much to understand: cascading licensing, package licenses, license borrowing, controlling your license usage—the list goes on. This class will provide an overview of stand-alone and network licenses, unique licensing behaviors and how to better understand and manage your Autodesk licenses. We will discuss what is in a license and how to read it, cascading and package licenses, merging license files, managing license borrowing, online license transfer, controlling your license usage with an Options file, and much more. The concepts we will cover in this class apply to all of the current versions of Autodesk products, so join us for a deeper look at Autodesk licensing and ways to manage it.

Learning Objectives

At the end of this class, you will be able to:

- Read and edit Autodesk license files
- Control license usage using Options files
- Manage license borrowing
- Explain online license transfer

About the Speaker

Tom is a content manager for Autodesk® product support. Prior to that, Tom spent three years as a global technical lead for product support, and 10 years before that as an Autodesk software developer working on the AutoCAD® Development Team. His AutoCAD experience spans more than 20 years, and includes production drafting, developing custom and commercial third-party AutoCAD add-on applications, and of course, implementing new features for AutoCAD. Tom has worked on many aspects of AutoCAD, and is a frequent presenter at Autodesk University.

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Overview of Stand-alone License Operation

When a stand-alone (or multi-seat stand-alone) license is installed and activated, the licensing process stores information in a FlexNet® trusted storage file on the machine and makes other minor changes to the computer's file system. These changes remain on your computer when you uninstall your product. If you reinstall the same Autodesk product and serial number on the same computer, the license remains valid and you should not have to reactivate.

The trusted storage file for Autodesk products is typically named something like, *adskflex_00691b00_tsf.data*, and it contains *all* activated licenses for all stand-alone Autodesk products on the computer. If this file is deleted, the user will be required to reactivate all installed stand-alone products. The FlexNet trusted storage file is also used by other software manufacturers, such as Adobe, so you may see other, similarly named files in the same location. Trusted storage files for Autodesk products will have the prefix, *adskflex*.

When the stand-alone Autodesk product is launched, the trusted storage file is accessed to validate and check out the license. Each time the trusted storage is accessed, the following binding identities are checked and compared with the values held in the trusted storage. For Windows, these include (but are not limited to) the following:

- Hard disk or file system
- Display or graphics card
- Bios serial number and version
- CPU information
- RAM size
- Network card address
- IP address
- Machine serial number (FlexNet specific)

The binding identities are assigned a percentage value (only known by Flexera). Whenever changes occur with the machine identities, these values are summed and compared with what could be defined as a tolerance level. If it is over the tolerance, it constitutes a break whilst less than the tolerance level does not. This is why some changes to your computer, such as a new hard drive or network card, can cause your stand-alone licenses to break and request activation again.

To prevent a break in your product license when changing hardware, use the License Transfer Utility to export your license *before* making the change. After the hardware change, use the License Transfer Utility again to import the license file back to the machine. Refer to the following topic for more information on using the License Transfer Utility.

Online License Transfer (OLT)

Starting with the 2010 releases, most stand-alone licensed Autodesk products include a License Transfer Utility that enables online transfer of stand-alone licenses from one machine to another. This feature is also referred to as Online License Transfer (OLT) and it replaced the Portable License Utility (PLU) offered with 2009 and earlier Autodesk products.

Online License Transfer allows stand-alone licenses to be moved between machines. You may want to use OLT to transfer a license to a laptop that you are taking into the field, or when permanently switching machines (such as when you have bought a new computer and will be retiring an older one), or when needing to make hardware changes to a computer that might compromise the activated license.

As the name indicates, OLT requires an Internet connection in order to export or import a license; there is no alternative method for transferring a license without an online connection. In addition, you'll need an Autodesk user ID and password, available from the Autodesk Register Once website (https://registeronce.autodesk.com), as the export/import process requires you to log in.

Online license transfer is handled using the License Transfer Utility (LTU) installed with your stand-alone licensed product. The LTU is product-specific and you must use the one installed with the product in order to transfer the license for that product. The License Transfer Utility exports your Autodesk product license over the Internet and "parks" the license on Autodesk servers. Once a license has been exported, the product is disabled on the exporting computer. You can then move to another machine with a non-activated installation of the same product and import that license to activate it. To transfer a license, the same Autodesk product must be installed on both computers.

The LTU can only transfer stand-alone and multi-seat stand-alone licenses and cannot be used to transfer network licenses; for network licenses, you must use borrowing. OLT will only work to transfer licenses between installations of the same Autodesk product and serial number. For example, you can't export a license from Revit Architecture 2012 and import that license into AutoCAD 2012. Similarly, you can't export a license from one serial number of AutoCAD 2012 and import it into a different serial number of AutoCAD 2012.

When exporting a license you can choose to export it publicly or privately. The method you choose will affect who can access that license.

Public Export

A publicly exported license may be imported to any computer with the same Autodesk product and serial number as yours *and* by any person who has an Autodesk Login name and password. Use this option when you want to move the license from one user to another in the same company.

Private Export

A privately exported license may only be imported to a computer with the same Autodesk product and serial number as yours *and* when using the exact same login name and password as was used to export the license. Private exports assure that your license will not be inadvertently transferred to another person. A privately exported license automatically becomes public if not imported within 14 days.

Online License Transfer FAQ

Here is a list of the most commonly asked questions regarding Online License Transfer (OLT):

Q: I can't find the License Transfer Utility in my Autodesk in-product menus. Where is it?
A: The License Transfer Utility is a standalone application and cannot be run from within your product. The LTU can be found in the Start menu for your Autodesk product.

Q: How often may I use the License Transfer Utility?
A: There is no limit on how many times you can export and import your license.

Q: When you do a public export of a license so someone else can import it, can you impose a time limit like you can when borrowing network versions?
A: No, it is not possible to set a time limit for an exported license. Once an exported license has been imported to another machine, it remains there until exported again.

Q: My company has a multi-seat stand-alone license, can we use the License Transfer Utility?
A: Yes, you may have as many licenses as your own in an exported state at any time.

Q: I have a single seat of a product installed and activated on two machines (home and work). Can I export a license from each of those machines?
A: No, you cannot have more licenses exported than you actually own.

Q: Can I use the License Transfer Utility to export licenses from a network product?
A: No, the LTU is only for export and import of standalone licenses. Network licenses continue to use the license borrowing feature.

Q: What would happen if the person who did a private export of a license leaves the company prior to importing the license?
A: Privately exported licenses will automatically convert to public export status if they are not imported within 14 days of export. This is a fixed time period and cannot be adjusted.

Q: I don't want my users to export licenses, can I prevent this?
A: You may choose not to install the License Transfer Utility. You may also omit the License Transfer Utility from deployments. If you are running Windows you can also remove the License Transfer Utility by choosing to modify your installation in Control Panel.

Q: Is there an off line method of transferring my license?
A: No, an Internet connection is required to export or import a license. There is no alternative for transferring stand-alone licenses.

Q: What port used by the OLT for transfer communication
A: Port 443 (SSL); the same port as used by Register Today.

Overview of Network Licenses / License Operation

The Network License Manager is used to configure and manage your license servers. It acts as a central repository for the product licenses your company owns. For example, when you buy 10 seats of AutoCAD you'll receive a license for 10 seats. As you add more, and varied, Autodesk products to your environment you receive additional licenses for those products.

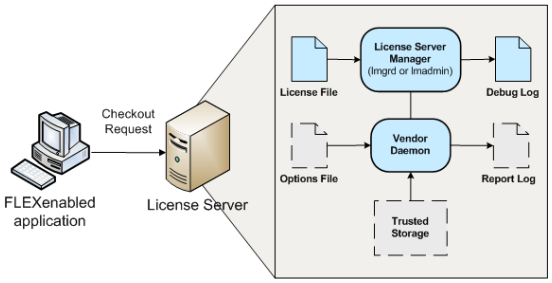
The Network License Manager acts as a controller and handles the license requests that come in when users launch Autodesk products. Let's look at the basic workflow:

1. A user launches a network-licensed product and that product makes a request to the license manager for a license.
2. The license manager checks the available number of licenses for that product. If the license is available (and not otherwise restricted by the options file) it is granted to the requesting client.
3. During normal operation, the Autodesk product periodically notifies the license manager that the license is still in use.
4. When the product is closed on the users machine, the license is returned to the license pool and is now available to others.

When an Autodesk product is running, it communicates with the license server at regular intervals using a method known as the “heartbeat” signal. If the heartbeat signal is lost, the server tries to reconnect. If the server cannot reconnect, the user receives a license error. If the product stops working because it has lost a connection to the server, you must shut down the product, and then restart it. Most Autodesk products give you the opportunity to save open documents before shutting down. If the problem causing the original loss of the heartbeat signal is resolved and licenses are available on the server, you can restart your Autodesk product.

As long as a product is running, that license is being used (unless an automatic timeout returns the license after a period of inactivity). Closing the product when it isn’t going to be used for a while returns that license to the license pool making it available to others if need be. This can be a good practice when working with a limited number of licenses in the pool.

Whenever possible, you should avoid having users pull licenses from license servers in remote offices. If you have users in different offices, it is always best to have individual servers in those offices serving those users, rather than pulling a license remotely. This helps avoid the potential for connection, bandwidth or latency issues which can results in the inability to pull or retain a license.



(Image from FlexNet Publisher Licensing Toolkit 11.7: License Administration Guide)

What's in a License File?

The network license file you receive from Autodesk contains licensing information required for a network installation. The license file contains information about network server nodes, vendor daemons, and very specific information about what products are licensed.

SERVER TOMSERVO 001F5B398D08

The first line is the SERVER line and contains information about the machines running the license server:

SERVER	Server information will follow
TOMSERVO	Host name of the server running the Network License Manager
0011855170BE	Physical address of the server running the Network License Manager

License files for distributed server models will typically include multiple SERVER lines (one for each server specified) followed by the licenses for that particular server. These will be in a single license file and you will need to separate them for placement on the respective servers.

```
# ************************
# License file for Server: TOMSERVO
# ************************
SERVER TOMSERVO 001F5B398C08
…

# ************************
# License file for Server: CROW
# ************************
SERVER CROW 005056b5600a
…
```

License files for redundant server models will have three SERVER lines:

```
SERVER TOMSERVO 001F5B398C08
SERVER CROW 00264A1C93AC
SERVER GYPSY 00FFC0D3BD0E
```

If, for whatever reason, the host name in the license file does not match the host name of the server, it can be corrected by editing the license file. On the other hand, if the physical address in the license file does not match the physical address of the server, the license file won't work and you will have to request a new license file using the correct information. This means you typically can't just move a license file from one server to another without requesting a new license from Autodesk.

USE_SERVER

Forces the product to access servers in the preceding SERVER lines for licenses.

VENDOR adskflex port=2080

Specifies the vendor daemon that is running on the license server and the port that it uses.

The master daemon (LMGRD.EXE) running on the license server directs applications to the vendor daemon. The vendor daemon (adskflex) grants or denies client license requests and contains Autodesk authentication information. *adskflex* is the most common vendor daemon however some older versions of Autodesk M&E applications also used *sgiawd*.

Most FlexNet vendors don't specify a port so Autodesk has registered port 2080 with the IANA (Internet Assigned Numbers Authority). That port is reserved and assigned for use only by Autodesk products running the Autodesk vendor daemon.

PACKAGE

Specifies–by feature codes–the product, version and previous versions that are permitted to run using the package license. This is a Subscription benefit that enables access to the current product version plus three previous versions of the same product. The following PACKAGE is for AutoCAD Architecture 2012-2009:

```
PACKAGE 65300ARCHDESK_F adskflex 4.000 \
     COMPONENTS="85731ARCHDESK_2012_0F 85561ARCHDESK_2011_0F \
     72200ARCHDESK_2010_0F 60100ARCHDESK_2009_0F" OPTIONS=SUITE \
     SUPERSEDE ISSUED=27-Mar-2011 SIGN="00FB 1B9F 63EC E948 8A2E \
     DD79 2FE8 969E D2B3 5E4A A035 BB7A BA67 D648 5D2F 1908 7CFA \
     15C1 5E94 BC5C 3760 CEC7 F978 8454 0830 7884 F84B D49A 92A0 \
     9AB8" SIGN2="1E92 BC32 781E 2ABC 7DF0 D6B0 B486 BC71 4499 D6A5 \
     B404 C57C C9C6 3AB2 8A9A 0B36 E053 1211 087A 0849 DE21 66FA \
     1C8C 60F1 152F F2EC 7E84 2F43 9D16 7E74"
```

A PACKAGE parameter is always accompanied by an INCREMENT parameter that contains specifics about the product licensing. A license file for a non-Subscription customer will only have the INCREMENT parameter.

INCREMENT

Specifies the product that is licensed, the license type, number of seats, and the serial number.

```
INCREMENT 65300ARCHDESK_F adskflex 4.000 permanent 15 \
     VENDOR_STRING=commercial:permanent SUPERSEDE DUP_GROUP=UH \
     SUITE_DUP_GROUP=UHV ISSUED=27-Mar-2011 BORROW=4320 \
     SN=392-012345678 SIGN="0542 E72D 5429 19A2 5EFF E273 497E FB89 \
     01D1 F889 EA57 F032 C27B C4DB 0DD5 1685 24D1 ED75 ACDE 4E0D \
     BE70 1EED 34AF 21E1 6191 1B94 CBA4 981E 3E34 7CDF" SIGN2="1ADE \
     2EA4 2E4E BFE8 3437 B545 0D4B 3882 CB9D A3DB A6AF 5A00 8B3D \
     EA43 FE39 04F6 D7DF 789D 6A8F 4385 76B4 1E37 46FA F656 FB7A \
     8553 5036 AB43 2362 9CC0"
```

The SIGN value includes an encrypted signature that is used to authenticate the attributes of the license file.

INCREMENT PLIST

Defines the cascading order for requesting licenses in a mixed product environment where the license manager is servicing a pool of licenses from more than one product.

Note: PLIST increments are only used for 2009 products and older. Starting with 2010, cascade order is stored in the ProductInformation.pit file and won't appear in the license file.

Feature Codes

When you start the network version of an Autodesk product, a request is made to the network for a license. The Network License Manager controls the licenses that are issued and handles license requests using feature codes. Feature codes are specific to the networked applications and any network version of an Autodesk product will have a specific feature code.

There are typically two types of feature codes: product-specific (Subscription) and product version-specific. For example, 64300ACD_F, always indicates an AutoCAD Subscription package, however, 85730ACD_2012_0F, indicates a specific product and version: AutoCAD 2012. The former won't change from one release to the next, however the latter will be a unique feature code for every new product release.

Feature codes are necessary because the Network License Manager is designed to administer licenses for hundreds of different Autodesk applications. Each product needs unique identifiers and simple product naming conventions are not adequate. You will see Autodesk product feature codes used in license files, debug log files, options files, technical solutions and more.

With every new release year, Autodesk publishes a list of the product feature codes for that year. Those lists can be found at the following links:

2013: FlexNet® feature codes for Autodesk products
http://usa.autodesk.com/getdoc/id=TS18708301

2012: FlexNet® feature codes for Autodesk products
http://usa.autodesk.com/getdoc/id=TS17288427

2011: FlexNet® feature codes for Autodesk products
http://usa.autodesk.com/getdoc/id=TS15224763

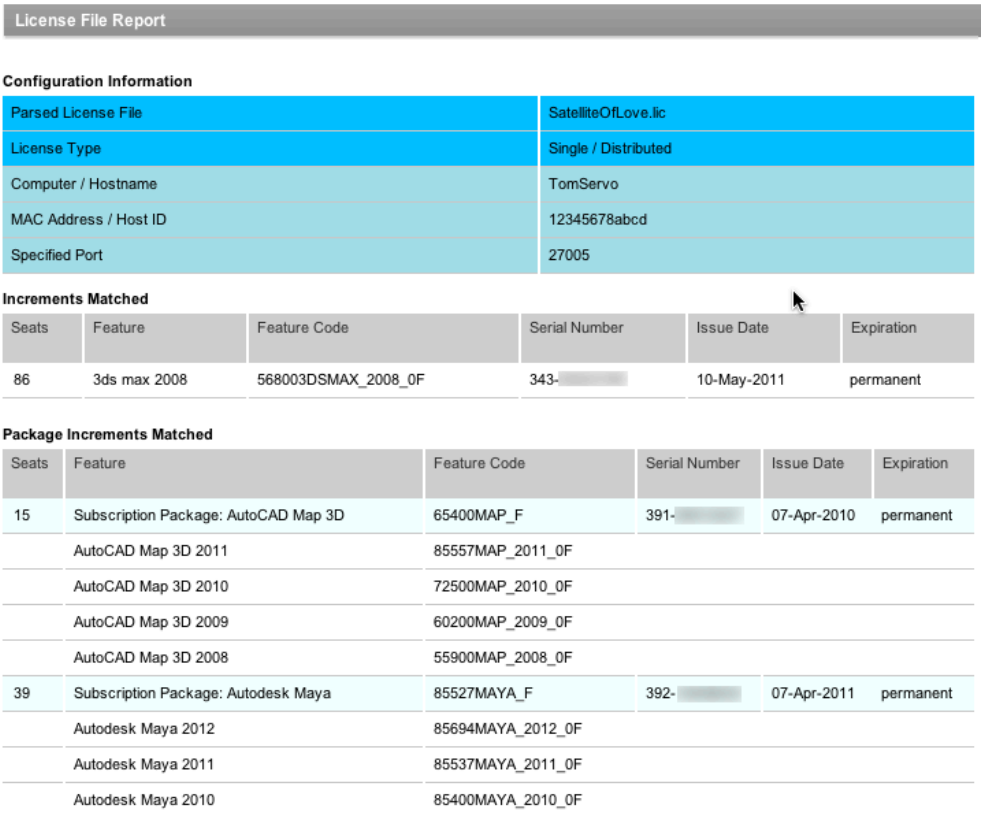
2010: FlexNet® feature codes for Autodesk products
http://usa.autodesk.com/getdoc/id=TS1106747

Although very necessary, feature codes are one of the things that makes licenses so hard to read and understand. At a glance, it's hard to know exactly what products you have licensed in your license file. Most times this may not be a big deal but when you start working with an options file, it becomes important to understand which feature code equates to which product. Fortunately, there is a tool to help simplify that understanding: the License File Parser.

The License File Parser

The License File Parser is an online tool that reads the cryptic contents of your Autodesk product licenses and serves them back to you in a more readable format. Using your web browser, go to www.licenseparser.com, select a license file and hit the "Submit License File" button.

Here is an example of a parsed license file (real information has been either changed in the license file or blurred in the image):



License File Report

Configuration Information

Parsed License File	SatelliteOfLove.lic
License Type	Single / Distributed
Computer / Hostname	TomServo
MAC Address / Host ID	12345678abcd
Specified Port	27005

Increments Matched

Seats	Feature	Feature Code	Serial Number	Issue Date	Expiration
86	3ds max 2008	568003DSMAX_2008_0F	343-	10-May-2011	permanent

Package Increments Matched

Seats	Feature	Feature Code	Serial Number	Issue Date	Expiration
15	Subscription Package: AutoCAD Map 3D	65400MAP_F	391-	07-Apr-2010	permanent
	AutoCAD Map 3D 2011	85557MAP_2011_0F			
	AutoCAD Map 3D 2010	72500MAP_2010_0F			
	AutoCAD Map 3D 2009	60200MAP_2009_0F			
	AutoCAD Map 3D 2008	55900MAP_2008_0F			
39	Subscription Package: Autodesk Maya	85527MAYA_F	392-	07-Apr-2011	permanent
	Autodesk Maya 2012	85694MAYA_2012_0F			
	Autodesk Maya 2011	85537MAYA_2011_0F			
	Autodesk Maya 2010	85400MAYA_2010_0F			

The License File Parser reports the server configuration (single/distributed or redundant) and the server and port information stored in the license file. It then reads through the individual product increments and Subscription package increments and shows you all the pertinent details of your product licenses. This is much easier than doing feature code translation in your head or referring to a lookup table in a technical solution.

Another great use for the License File Parser is to help you when creating an options file for your license servers. Many of the parameters you will set in an options file require you to specify a products feature code. For example:

```
MAX_BORROW_HOURS 85730ACD_2012_0F 72
RESERVE 1 85557MAP_2011_0F USER smithj
MAX 5 85678ACAD_E_2012_0F GROUP Engineering
```

Using the License File Parser, you can easily read your license and know which feature codes to use when editing your options file. Thanks to the guys at the Up and Ready blog for this tip.

Previous Version Support / Package Licenses

Previous Version support is an exclusive benefit to Subscription customers that allows you to run the current version plus three previous versions of an Autodesk Point product or products include in a Suite. For network products, Previous Version support is provided via PACKAGE increments in the Autodesk license files; if you're not on Subscription, you won't receive a license file that contains a package increment.

A package allows a single license increment to respond to multiple feature code requests. Each unique product version you run still consumes one license each, however you are allowed to run, not only the current version, but the three previous versions of the same product. For example, if you had a package license for AutoCAD 2012, you would also be allowed to install and run AutoCAD 2011, 2010, and 2009.

As previously stated, although Previous Version support allows Subscription customers to run the current plus three previous versions of the same network product, it does not grant additional licenses. Each unique product version still consumes a single license when launched. For example, if you have a package license for AutoCAD 2012; running AutoCAD 2012 and AutoCAD 2011 simultaneously, will consume two licenses. On the other hand, running three concurrent copies of AutoCAD 2011 only consumes one license.

Here is an example of a PACKAGE increment for AutoCAD 2012, which includes the feature codes for AutoCAD 2012 through AutoCAD 2009:

```
PACKAGE 64300ACD_F adskflex 1.000 COMPONENTS="85730ACD_2012_0F \
    85536ACD_2011_0F 71200ACD_2010_0F 57600ACD_2009_0F" \
    OPTIONS=SUITE SUPERSEDE ISSUED=11-Mar-2011 SIGN="0A16 AA48 D7D7 3F0F
6725 B01B 2E1B B7DB CC2E B13B 57C6 4069 F07A 8B10 D066 015C B7B7 F254 23B8
8C90 2B05 95D8 6977 4573 9FE8 3778 E2B0 3E3C 37D7 9A25" SIGN2="0941 23D1
7440 CFA3 FEAF A59F FF0A 991D 9B96 7828 E4D9 4599 EFED 67AB 64AF 1E5C C7F8
25F0 31E5 C80F 1F34 EEE6 8482 8FB8 3D4A 9C7A 4E76 5EDA 0257 37D9"
…
```

Here is an example of a PACKAGE increment for Autodesk Design Suite Ultimate 2012:

```
PACKAGE 85691DSADV_F adskflex 1.000 COMPONENTS="85801DSADV_2012_0F \
    85654DSADV_2011_0F 71200ACD_2010_0F 83900MBXPRO_2010_0F \
    70000MAXDES_2010_0F 57600ACD_2009_0F 612003DSMAX_2009_0F \
    70200MBXPRO_2009_0F" OPTIONS=SUITE SUPERSEDE \
    ISSUED=06-Jul-2011 SIGN="02C4 8E48 6695 A67D 5278 DA42 2F93 \
…
```

In this case, Autodesk Design Suite didn’t exist until the 2011 release (named, Autodesk Design Suite Advanced 2011) so the package includes feature codes for the current release (85801DSADV_2012_0F) and previous release (85654DSADV_2011_0F) and Previous Version automatically applies to all products *within* those Suites without having to provide separate product feature codes. Since the 2011 version of the Suite was the initial release, separate feature codes are also provided for those 2010-2009 products that existed before the Suite. This ensures Previous Version access to the current plus three previous versions for all products in the Suite.

With regard to borrowing or cascading, package licenses work the same way as regular licenses.

Previous Version Support for Suites

The difference between Previous Version for Suites versus Point products lies in how licenses are consumed.

Point product licenses consume a single license for every product and version that is run. For example: If you have a network license of AutoCAD 2012 and a network license of 3ds Max Design 2012, running any version of AutoCAD and 3ds Max Design concurrently will always consume two licenses – even if they are from the same release year, e.g., AutoCAD 2010 and 3ds Max Design 2010.

In contrast, Previous Version support allows Suite licenses to only consume a single license for every application from the same release year of the Suite. For example, if you have a package license for Autodesk Design Suite Premium 2012, the following scenarios can be expected:

- Running AutoCAD 2012, 3ds Max Design 2012, and Mudbox 2012, on the same workstation and at the same time, only consumes one license.
- Running Showcase 2011 and Mudbox 2011, on the same workstation and at the same time, also only consumes one license because there is a 2011 version of Autodesk Design Suite Premium.
- Running AutoCAD 2010 and 3ds Max Design 2010, on the same workstation at the same time, consumes two licenses (one for each product) because there was no 2010 version of Autodesk Design Suite Premium.

More Information

The following technical solutions provide can provide additional information on package licenses and Previous Version support.

Understanding Previous Version support for Autodesk Point products
http://usa.autodesk.com/getdoc/id=TS1085008

Understanding Previous Version support for Autodesk Suite products
http://usa.autodesk.com/getdoc/id=TS16961119

Not all Previous Version licenses are available after activating an Autodesk Design Suite
http://usa.autodesk.com/getdoc/id=TS15255311

FAQ: Autodesk Subscription Use of Previous Version
http://download.autodesk.com/us/subctr/pdfs/previous_versions/faq/PV_FAQ_eng.pdf

Cascade Licensing

Cascade Licensing is a technology implemented for mixed-product environments where a single license manager is servicing multiple Autodesk products. Cascade Licensing allows one Autodesk product to obtain a license that belongs to another Autodesk product in the same license pool. With Cascade Licensing, lower ranking product licenses get used before higher ranking product licenses and when all lower ranking product licenses are in use, a product will cascade up to use the license of a higher ranking product.

Confused yet?

The Basics

Let's say you have a 10-seat license of AutoCAD 2012 and no other Autodesk products on your network. When you launch a copy of AutoCAD, it requests a license from the Network License Manager using the products feature code (85730ACD_2012_0F). If there is an available license for that feature code, the Network License Manager grants it and the product can run. If no licenses are available, the product can't continue; end of story.

When you have *multiple* Autodesk product licenses in the same license file, the Network License Manager not only manages individual product feature code requests but it also "understands" how those feature codes relate to each other with regard to Cascade Licensing.

Now let's say you have added licenses for AutoCAD Revit Architecture Suite 2012 to your license pool. You launch a copy of AutoCAD but all 10 licenses are in use. Now, instead of being refused an AutoCAD license, the Network License Manager pulls an available AutoCAD Revit Architecture Suite license (85791REVITS_2012_0F) instead. You are now able to run your copy of AutoCAD even though there are **no** free AutoCAD licenses to grant.

Product Ranking

The key to understanding how a product will cascade lies in knowing the cascade order (or ranking) of one product to another. The ranking of a product is determined by its place in the cascading sequence for a given product. Cascading sequences—the order in which one product cascades to another—is pre-determined by individual product groups at Autodesk and cannot be changed or configured. For example, here is an abbreviated list of the cascade order for AutoCAD 2012:

AutoCAD 2012
AutoCAD Mechanical 2012
AutoCAD P&ID 2012
AutoCAD Plant 3D 2012
Autodesk Design Suite Standard 2012
Autodesk Infrastructure Design Suite Standard 2012
Autodesk Plant Design Suite Standard 2012
Autodesk Design Suite Premium 2012
AutoCAD Revit Architecture Suite 2012
…

How (and if) a product cascades will depend on what product licenses you have in your license pool. If

you launch AutoCAD and there are no free AutoCAD licenses, the Network License Manager starts looking for an available license from other products in this list. If a product doesn't exist or doesn't have a free license, it moves to the next one. This process continues up (down) the list until an available license is found and granted or the Network License Manager determines there are no licenses available from any product.

Since knowing how a product will cascade lies in knowing the cascade order for the product, Autodesk publishes cascading sequences for each new release year:

2013: Cascading Sequences for Autodesk Products
http://usa.autodesk.com/getdoc/id=TS18708338

2012: Cascading Sequences for Autodesk Products
http://usa.autodesk.com/getdoc/id=TS16981643

2011: Cascading Sequences for Autodesk Products
http://usa.autodesk.com/getdoc/id=TS14885918

2010: Cascading Sequences for Autodesk Products
http://usa.autodesk.com/getdoc/id=TS1106828

Cascade Licensing and Suites

These are some tips for how Cascade Licensing works with Autodesk Suite products.

#1: Once there is a Suite license on a users machine, any lower ranking product licenses in use on the same machine will automatically be returned.

A user launches AutoCAD and pulls an AutoCAD license. The *same* user then launches Revit Architecture but there is no free license for Revit Architecture so it cascades up and pulls an available Revit Architecture Suite license. At this point, the user is consuming two licenses: an AutoCAD license and a Revit Architecture Suite license.

Within a couple minutes, the Cascade Licensing logic will detect the presence of the Suite license and will automatically return the AutoCAD license to the license pool, leaving the user running two products but consuming only one license.

When possible, licenses are shared to minimize total license usage however the order in which products are launched affects the way licenses are initially allocated.

#2: All products included in a Suite can run using a single Suite license on the same machine.

A customer has one AutoCAD 2012 license, and one Autodesk Design Suite Premium 2012 license, for a total of two licenses in the network license pool. A user runs AutoCAD and pulls the one AutoCAD license. The same user then runs Autodesk Showcase, pulling the one Design Suite Premium license. Because both products are part of Autodesk Design Suite Premium, AutoCAD switches over to using the Design Suite Premium license. The AutoCAD license is returned to the pool and is available for another user (see #1).

The same user then starts Autodesk 3ds Max Design on the same machine. Since Autodesk 3ds Max Design is also part of the Autodesk Design Suite Premium, it also uses the Design Suite Premium license. No new license is required; it shares the license with AutoCAD and Autodesk Showcase, and there is still an AutoCAD license available in the pool.

#3: If multiple Suite licenses on a server share a common product, the first license that will be used will be the one listed first (lowest ranking) in the cascading sequence for that product. When those licenses are all consumed, cascading will move to the next highest ranking product available in the license pool.

A customer has 10 Autodesk Design Suite Premium licenses, one Autodesk Design Suite Ultimate license, and two Autodesk Building Design Suite Ultimate licenses, for a total of 13 licenses.

11 users launch 3ds Max Design simultaneously. The first 10 users consume all the Design Suite Premium licenses; the 11th user takes the sole Design Suite Ultimate license.

Two more users launch 3ds Max Design, for a total of 13 licenses needed. These two users consume the two Building Design Suite Ultimate licenses. At this point, all 13 licenses are in use.

The common product across the three Suites is Autodesk 3ds Max Design so the first license that will be used will be the one listed first (lowest ranking) in the cascading sequence for that product. When those licenses are all consumed, cascading will move to the next highest ranking product available in the license pool.

Again, the only way any of this makes sense is if you understand the cascading order for the product itself:

Autodesk 3ds Max Design 2012
Autodesk Design Suite Premium 2012
Autodesk Product Design Suite Premium 2012
Autodesk Factory Design Suite Premium 2012
Autodesk Building Design Suite Premium 2012
Autodesk Infrastructure Design Suite Premium 2012
Autodesk Design Suite Ultimate 2012
Autodesk Product Design Suite Ultimate 2012
Autodesk Factory Design Suite Ultimate 2012
Autodesk Building Design Suite Ultimate 2012
…

Cascade Licensing and Borrowing

Cascade Licensing working behind the scenes to grant you licenses whenever possible so if the time comes to borrow a network license, you should verify which license you are actually taking. The borrowing operation will take the license (feature code) that is currently being used. Thus, if you ran AutoCAD but Cascade Licensing gave you a Revit Architecture Suite license instead (because it was the only one available), you would be borrowing the Revit Architecture Suite feature code and not the AutoCAD feature code.

You can use the Product Information dialog to verify which particular feature code is currently in use. The license ID in the dialog will change to reflect the license that is currently checked out.

Combining Licenses

For every network-licensed Autodesk product that you register, you will receive a separate license file. If you only have one Autodesk product–a Suite is also considered a single product–you can use the license you receive without modification. If you have multiple Autodesk products, you will need to combine the contents of the separate license files into a single license file so it can be run from one license server.

Note: A single server model requires a single license file, a redundant server model requires the *same* license file on all three machines, and a distributed server model requires a unique license file on each server. Distributed licenses are typically delivered as a single license file containing multiple SERVER lines (one for each server specified) followed by the license information dedicated to that particular server. You will need to separate those sections into separate license files for placement on the respective distributed servers.

Combining licenses involves editing one license file and copying into it the lines from another license file. There are some restrictions on which licenses can and cannot be combined in a single file:

Licenses that can be combined in a license file:

- Licenses for different releases of the same product, e.g., AutoCAD 2011 and AutoCAD 2012.
- Licenses for different Autodesk products, e.g., AutoCAD 2012 and Autodesk 3ds Max Design 2012.

Licenses that should not be combined in a license file

- Multiple licenses for the same product and version, e.g., five licenses of AutoCAD 2012 and four licenses of AutoCAD 2012. Unless they were issued with the same date stamp, a newer license will supersede an older license for the same product and version.
- New package license files and non-package license files for versions contained in the package. A package license enables usage of the current version plus three previous versions of a product so you shouldn't combine a new AutoCAD 2012 package license file with existing, non-package, license increments for Autodesk 2011, 2010, or 2009. Combining these license types in the same file will automatically disable the older license increments for the product and only the package license count will be available.

  Note: This *only* applies if the package license is new. If the package license was an upgrade from the previous version licenses, you *can* combine them however the newer AutoCAD 2012 package will simply take precedence over the licenses for the individual increments for the previous product versions.

  If the AutoCAD 2012 package license is *not* an upgrade from a previous version license (and therefore cannot be combined with the older non-package license increments) you can either, a) manage the package and non-package licenses on different license servers, or b) contact Autodesk Customer Service and request the generation of a new, consolidated license file that contains the AutoCAD 2012 and the previous AutoCAD version licenses issued on the same day. If those licenses are issued on the same day, the seats will be additive, giving you the full seat entitlement.

Adding More Licenses of the Same Product

As previously stated, if you need to add additional licenses for the same product, e.g., you already have five licenses for AutoCAD 2012 and you need another five licenses for AutoCAD 2012, you should **not** combine multiple licenses for the same product and release. What you need to do is request a new license file from Autodesk that contains the new total number of licenses for the product.

For example, let's say you have six licenses of AutoCAD 2012 and you need four more. The incorrect method is to request a license for four additional seats of AutoCAD 2012 and then try and combine them in the license file. What will happen is the newer license (which will have a more recent date stamp) will supersede the old one and you'll be left with only four licenses. The correct method is to request a new license for 10 seats of AutoCAD 2012 and then replace the previous license information for six seats with the new license information for 10 seats.

You can request new licenses using the License Registration and Activation Assistance Form (http://usa.autodesk.com/adsk/servlet/pc/item?id=18424632&siteID=123112) or by using http://www.autodesk.com/register.

Tips for Editing your License File

1. Make a backup copy of your existing license file before you begin editing…just in case.
2. If you are adding to an existing environment, edit your existing license file and add lines to it from the newly issued license file. This way you are starting from a working license (and an existing service) and it will be easier to troubleshoot issues if they arise after editing.
3. ONLY edit license files using an ASCII editor such as Notepad. Word processors, such as Word, can add formatting and unnecessary noise in your license file.
4. Copy all of the lines from the new license file starting after the VENDOR line. You do not need to copy the SERVER, USE_SERVER or VENDOR lines from the new license as these only need to appear once in a license file. Do not alter the contents of the license information; only copy and paste from one file to another.
5. Be sure to include any INCREMENT PLIST statements that may be in the file for older (pre-2010 products). FlexNet will automatically determine which PLIST is the most current and use that increment accordingly. Failing to include PLIST increments (if they exist) may cause certain Autodesk products to not acquire a network license.
6. Once your editing is finished, test the edited license file using the License File Parser at www.licenseparser.com. The License File Parser will display the contents in a more readable format and you should be able to quickly verify that your license file has everything you expect.

Once the new license information has been added to the existing license file, use LMTOOLS to stop and restart the Network License Manager, and perform a status enquiry to ensure the revised license file is being properly read.

Note: Newer Autodesk product licenses often require a newer version of the Network License Manager. If you are adding new product release licenses to an existing license file, you should also determine if there is an updated Autodesk Network License Manager and upgrade your license server accordingly.

Managing License Borrowing

You can borrow a license from a license server in order to use a program for a specified amount of time when your computer is not connected to the network. For example, if you need to take your laptop out of the office and still have access to a product, you could borrow a license for that product and have that license on your laptop while you're disconnected from the network. Borrowing may also be beneficial in situations where the connection to your license server may not be consistent or the license server needs to be taken down for maintenance during work hours.

Note: Borrowing only applies to Network licenses. For stand-alone licenses, you may be able to use the License Transfer Utility to transfer a license from one machine to another.

When a license is borrowed, it reduces the count of available licenses in the network license pool. If you have a pool of 10 licenses and someone borrows one, you then have a remaining pool of nine licenses available for others to use. As long as that license is borrowed, it is not available on the license server.

Borrowing is handled on a per-user and per-computer basis and requires being on the network to do the borrowing. Only machines that can make a connection to your license server are able to borrow a license. Once a license has been borrowed, the Network License Manager will keep track of that license, for the machine that borrowed it, and for the specified period of time.

Unless returned early, borrowed licenses are automatically returned when the borrow period expires. If the defined borrow period was seven days, the borrowed license will automatically be returned to the license pool when seven days have passed.

Borrowed licenses can be returned early but requires being connected to the network license server. Just as you connected to borrow a license in the first place, you have to connect to the same license server to return it early.

The default borrow period is 180 days (6 months). I strongly recommend resetting the default borrow period to a much shorter amount of time. This helps prevent licenses from being orphaned; for example, if someone borrows a license onto a laptop and the laptop is later stolen or destroyed in a car accident. However long that license was borrowed for, it's going to be that long before the license is returned. There is no way to return a license without having the laptop, so an orphaned license will remain borrowed and missing from the license pool until the borrow period expires. You can probably see how a borrow period of six months could be a problem. Setting the default borrow window to a shorter time length minimizes the potential for losing a license for an extended period of time.

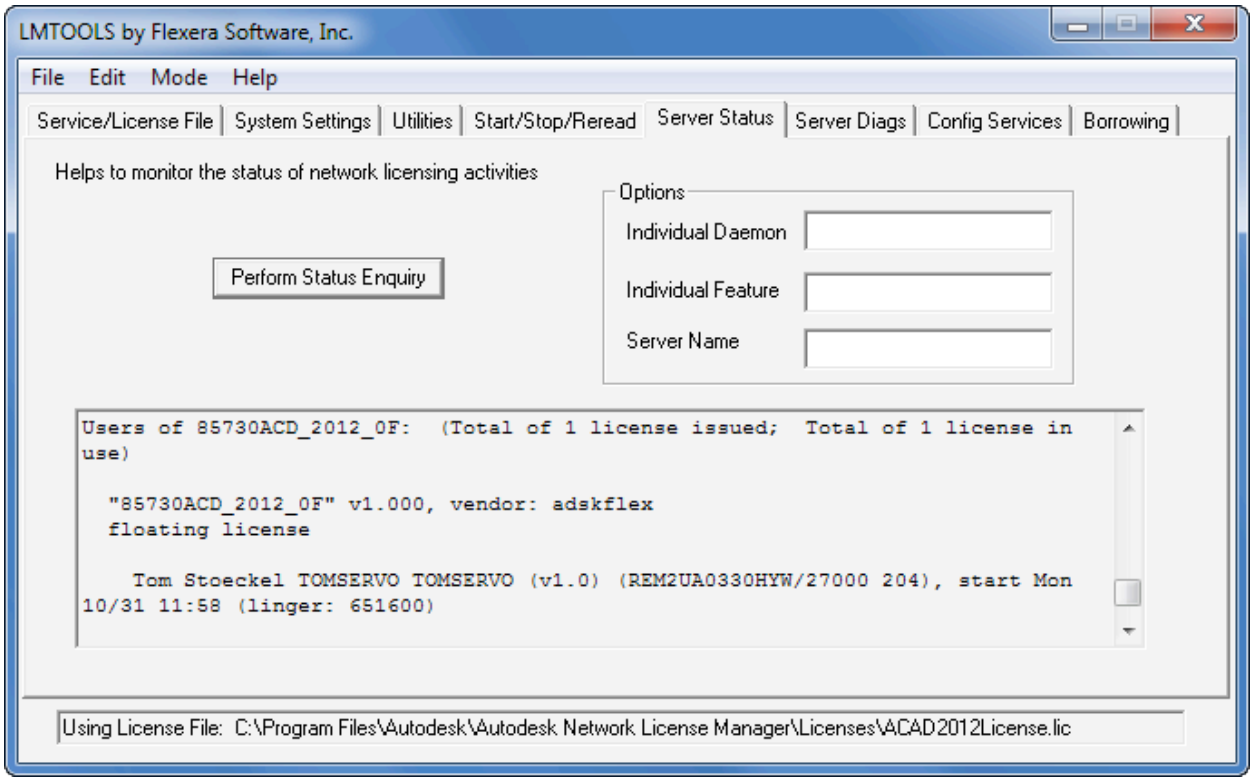
Borrowing behavior can be controlled using an options file. Within the options file you can restrict the number of licenses that can be borrowed, specify a default borrow period, and explicitly include or exclude specific users for borrowing a license. More on this later.

Tracking Borrowed Licenses

There are a couple different methods for finding out which users are currently borrowing licenses from your Autodesk Network License Manager.

The easiest way is to run LMTOOLS on your license server, go to the “Server Status” tab, and click the “Perform Status Enquiry” button. This will list the licenses currently being served by the license server and all of the users who currently have a license in use. Users with borrowed licenses will show an additional *linger* value associated with their license. The number following the *linger* statement indicates the amount of time (in seconds) that the license will be in a borrowed state before it is automatically returned to the license pool.

In the following example, (linger: 651600) indicates that the license was borrowed for 651,600 seconds or roughly 7.5 days (convert the value to days by dividing the *linger* value by 86,400):



It is not possible to tell from the Server Status how much time remains in the borrow period for any user, only the duration of the initial borrow period. The actual remaining borrow period can only be seen on the client machine when starting the software or when trying to return the license early.

Note: The start date and time shown for borrowed licenses is always reset when the license server is restarted (although the *linger* value remains unchanged). For this reason, you should not rely on the start date and time in the server status to try and calculate the borrow period.

lmutil lmstat

You can also use the *lmutil* tool to obtain the same information. Open a Command window on the license server (or a computer on the network that has the Autodesk Network License Manager installed) and issue the following command:

```
lmutil lmstat -a -c @YOUR_SERVER_NAME
```

This will list the same information you would see when performing a status enquiry in LMTOOLS. You can also check the usage of a specific Autodesk product by specifying the feature code of that product. For example, the following syntax instructs *lmutil* to check a specific license server and specifies the feature code for AutoCAD 2012:

```
lmutil lmstat -c @REM2UA0330HYW -f 85730ACD_2012_0F
```

Unlike the previous *lmutil* statement, the resulting information will be limited to only the specified product:

```
C:\>lmutil lmstat -c @REM2UA0330HYW -f 85730ACD_2012_0F

lmutil - Copyright (c) 1989-2010 Flexera Software, Inc. All Rights Reserved.

Flexible License Manager status on Mon 10/31/2011 15:32

[Detecting lmgrd processes...]

License server status: 27000@REM2UA0330HYW

    License file(s) on REM2UA0330HYW: C:\Program Files\Autodesk\Autodesk
Network License Manager\Licenses\ACAD2012License.lic:

REM2UA0330HYW: license server UP (MASTER) v11.9

Vendor daemon status (on REM2UA0330HYW):

  adskflex: UP v11.9

Feature usage info:

Users of 85730ACD_2012_0F:  (Total of 1 license issued;  Total of 1 license
in use)

  "85730ACD_2012_0F" v1.000, vendor: adskflex floating license

    Tom Stoeckel TOMSERVO TOMSERVO (v1.0) (REM2UA0330HYW/27000 103), start
Mon 10/31 15:03 (linger: 32100)
```

If there is one recurring theme that I see when discussing license borrowing, it is the necessity of controlling the borrow period for licenses. This is done by creating an options file for your license servers.

Errors running a product after borrowing a license

If you borrowed a license for your Autodesk product but later receive errors when trying to launch the product, it may be that something has significantly changed on the computer to which you borrowed the license.

License locked to the User

A borrowed license is stored in such a way that it is only available to the exact same user that originally borrowed it. Ensure that your login credentials match those used at the time the license was borrowed. Pay attention to the username and login domain to ensure that you are logging in as the same user. If the user profile is removed or significantly altered while a license is borrowed, you may lose access to the license for the duration of the borrow period.

License locked to the Computer

A borrowed license is also locked to the network card that was active when the license was borrowed. If a removable (PCMCIA, USB, etc.) network adapter was used to borrow the license, that same device may need to be present when you run the Autodesk application with that license.

We've seen an example of this when borrowing licenses on Windows 7 laptop. The customer borrows a license and then disconnects from the network only to find that the Autodesk product is still looking for the license server and not using the borrowed license. In this case, when Windows 7 was disconnected from the network it would go into power saver mode and basically disconnect the network card. Since the license was bound to the disconnected network card, it didn't see that a license had been borrowed. The solution was to not allow the network card to be disabled. See the following post for more information:

Up and Ready: Autodesk License Borrowing + Laptops + Windows 7 + Power Saving

http://upandready.typepad.com/up_and_ready/2012/10/autodesk-license-borrowing-laptops-windows-7-power-saving.html

Errors attempting to return a borrowed license

On occasion, users have tried to return a borrowed license from a client workstation and received the following error message:

License Return Error - Your license cannot be returned. For more information, contact your system administrator. Note: you can still use your borrowed license until (midnight): <Date>. Error: [1.5.-124]

This error usually indicates that the client and/or license server have changed in some way since the license was originally borrowed. Since there is no way to force the early return of a borrowed license you would typically have to just wait out the borrow period until the license gets automatically returned to the license pool (hopefully you borrowed for a reasonable period of time, i.e, something shorter than the default 180 days).

An alternate method to waiting out the borrow period is to erase the knowledge of the borrowed license from the client machine, borrow it again, and then try to return it as normal. The following procedure resets all borrowed licenses for the user/computer:

1. Using the client computer, connect to the same network from which you borrowed the license and log in as the user who borrowed the license.
2. Run the Registry Editor (regedit) and navigate to the registry key, HKEY_CURRENT_USER \Software\FLEXlm License Manager\Borrow.
3. For safety, use the File ➤ Export… option to create a backup the Borrow key.
4. Delete all subkeys except the (Default) key and close the Registry Editor.
5. Borrow the license again for the product and version that you could not return.
6. Return the license as normal.

Another method that may work is to change the date on your computer to some time in the future after which your license would have automatically expired. Launch your Autodesk product to ensure that it is no longer using a borrowed license, borrow it again, return it, and then reset the system date to the correct day and time.

Note: In both these examples, the Autodesk Network License Manager will still show the license as being borrowed even though you may have tricked the client machine into believing the license is not borrowed. For this reason, it is imperative that you follow those steps with a normal borrow and return of the product license so that the Network License Manager has an accurate accounting of license availability.

Controlling License Usage with an Options File

An options files allows you to set configuration options for managing licenses on each of your license servers. Using an options file you can:

- Create a report log
- Control license borrowing behavior
- Regulate how long a license can be in use
- Reserve licenses for specific users or systems
- Restrict access to certain licenses
- Control license recovery for idle products

An options files is not mandatory and is not required for normal license operation however I strongly recommend creating one even if it's just to control license timeouts and borrowing time. If you want the same license behavior on some or all license servers, you need to save the same options file to each of those license servers. If you want different license behavior on different license servers, you need to create a separate options file for each unique license behavior and save each options file to the server where you want that behavior.

Creating an Options File

To create an options files, create a new text file named ***adskflex.opt*** in the same directory as your Autodesk license (.lic) file. Edit this file using an ASCII text editor like Notepad–never use something like Microsoft Word–and add the statements you require. The recommended practice is to name the file the same as the vendor daemon (adskflex) and put it in the same location. This avoids you having to do any editing of your license file just to introduce an options file to the network.

If you prefer to specify a different name and location for your options file, you can do this by editing your license file and adding an additional parameter to the VENDOR line. Open your license file in a text editor and, at the end of the VENDOR line, add an *options="xxx"* parameter specifying the name and location of your options file. For example:

```
VENDOR adskflex port=2080 options="C:\Options\Server1_Options.opt"
```

Either way, once the options file is ready, launch LMTOOLS, go to the "Start/Stop/Reread" tab, stop and then restart the Network License Manager. Sometimes a simple reread of the license file doesn't work correctly when adding an options file for the first time (as opposed to making edits to an existing options file) so it is usually best to stop and then restart the server.

You can verify that the options file was properly read by examining the debug log file. In LMTOOLS, go to the "Config Services" tab and click the "View Log…" button. Within the log you should see a separate line entry for each of the parameters in your options file. For example, if you added *MAX_BORROW_HOURS 85730ACD_2012_0F 240* to the options file, you should see a corresponding entry in the debug log file, such as this:

```
10:24:16 (adskflex) Max borrow interval for feature, 85730ACD_2012_0F, set to
240 hours
```

Now let's look at some commonly used options file parameters.

Setting a License Inactivity Timeout

The TIMEOUT and TIMEOUTALL options force the Network License Manager to automatically reclaim inactive licenses after a designated period of time. The timeout value is specified in seconds and the lowest acceptable value you can set is 900 seconds (15 minutes). Any of the following activities can prevent an Autodesk product from being seen as idle:

- Any keystroke
- Any mouse click
- Any command, Lisp expression, menu macro or script in progress
- Any Modal dialog box (a dialog box which needs to close before continuing to other tasks) that is open.

Another activity that can prevent automatic timeout is a products autosave function. If set lower than the TIMEOUT period, each autosave operation can be seen as activity, effectively resetting the TIMEOUT clock. Setting your autosave to a longer time period than the TIMEOUT value can avoid this from happening.

If a license is revoked by the license manager for inactivity, the product will attempt to claim a new license once you access it again. If a license is available, the client will pull a new license and continue the session. If no license is available, you will be prompted to save your work before the product shuts down.

Examples:

```
TIMEOUT 71200ACD_2010_0F 1800
```

This sets the timeout for a specific product feature code. In this example, all AutoCAD 2010 licenses will automatically timeout after 30 minutes (1800 seconds = 30 minutes) of inactivity.

```
TIMEOUTALL 1800
```

This sets a 30-minute timeout for *all* products managed by the Network License Manager. This can be a more convenient statement to use as it applies to all products and you aren't required to specify them one feature code at a time.

Why You Should Set a TIMEOUT

Without a TIMEOUT option in place, there is no automatic retrieval of a license if a client session dies, e.g., during a crash or loss of power. If that happens, the license that was being used at the time of the client failure may not be returned to the license server and won't be available for other users. In that case, you will need to use the LMREMOVE program from the license server to manually revoke and reclaim the lost license. Setting a TIMEOUT in the options file will help avoid this situation.

Note: You should **not** try to use LMREMOVE to revoke licenses on active sessions. Revoking a license that is currently in use will just force the Autodesk product to immediately pull another license.

Defining Groups of Users or Computers

As you begin managing your licenses and specifying who can and cannot access them, it's convenient to define groups of users or computers. You will find groups to be very useful when you starting reserving or restricting license usage.

Examples:

```
GROUP Engineering smithj jonesb whitef
```

This defines a group named Engineering, consisting of three users.

```
HOST_GROUP DraftingDept computer1 computer2 computer3
```

This defines a group named DraftingDept, consisting of three computers.

```
GROUPCASEINSENSITIVE ON
```

This disables case sensitivity for user and computer names. Without this statement, the default is that user and computer names are case-sensitive.

To create a group with a large number of users, define multiple GROUP lines with the same group name, each containing up to the maximum of 4,000 characters. Multiple GROUP lines with the same group name will add all the specified users into a single group.

Now that you've defined some groups you can use them to reserve licenses.

Reserving Licenses

Using an options file you can reserve a specific number of licenses for a user, computer, or defined group. This helps ensure there are product licenses available when needed as licenses that are reserved are not available to other users. An example of this would be if you had some people working on a very time-sensitive project and you didn't want to worry about whether or not there would be licenses available for them when they needed to work. In that case, you could reserve licenses for those people.

Examples:

```
RESERVE 1 85730ACD_2012_0F USER smithj
```

Reserves one license of AutoCAD 2012 for a specific user.

```
RESERVE 1 85730ACD_2012_0F HOST computer1
```

Reserves one license of AutoCAD 2012 for a specific computer.

```
RESERVE 5 85730ACD_2012_0F GROUP Engineering
```

Reserves five licenses of AutoCAD 2012 for users in the Engineering group.

```
RESERVE 5 85730ACD_2012_0F HOST_GROUP DraftingDept
```

Reserves 5 licenses of AutoCAD 2012 for computers in the DraftingDept group.

You can also reserve licenses based on IP address, IP address range or by using an LM_PROJECT variable.

Restricting Maximum License Usage

Restricting maximum license usage limits the number of license that can be used by a user, computer, or group. This helps ensure maximum license availability by limiting access to those licenses.

Examples:

```
MAX 1 71200ACD_2010_0F USER smithj
```

Limits user, smithj, to only one license of AutoCAD 2010. If smithj were to try and pull an additional license, the request would be refused.

```
MAX 5 71200ACD_2010_0F GROUP Engineering
```

Limits members of the Engineering group to only five licenses of AutoCAD 2010. A request for a sixth license would be refused.

By now, I hope you can see how the use of defined groups and host groups makes it easier to manage access to your licenses.

Excluding License Usage

You can block access to specific licenses for a user, computer, group, IP address, or IP address range. Any users, computers, groups, or IP addresses not explicitly excluded will continue to have access to these licenses.

The following examples block access to AutoCAD 2012 licenses for a variety of access methods:

```
EXCLUDE 85730ACD_2012_0F USER smithj

EXCLUDE 85730ACD_2012_0F HOST computer1

EXCLUDE 85730ACD_2012_0F GROUP EngineeringGroup

EXCLUDE 85730ACD_2012_0F HOST_GROUP DraftingDept

EXCLUDE 85730ACD_2012_0F INTERNET 192.168.0.100

EXCLUDE 85730ACD_2012_0F INTERNET 192.168.0.*
```

Note: EXCLUDE statements always supersede conflicting INCLUDE statements; conflicts between an EXCLUDE list and the INCLUDE list are resolved by the EXCLUDE taking precedence.

Including License Usage

Including license usage defines access to specific licenses by a user, computer, or group. It sounds like something we've already covered but the difference here is that any user or computer *not* in the INCLUDE statement is automatically blocked.

Examples:

```
INCLUDE 71200ACD_2010_0F USER smithj
```

This allows the user, smithj, to pull a license for AutoCAD 2010; no other users would be able to pull this license.

```
INCLUDE 71200ACD_2010_0F GROUP Engineering
```

This allows anyone in the Engineering group to pull a license for AutoCAD 2010.

I recommend you use either INCLUDE or EXCLUDE statements. Since EXCLUDE always takes precedence over a conflicting INCLUDE statement, you can minimize confusion by not using both.

Controlling License Borrowing

There are a handful of options that are specific to managing the borrowing of licenses.

MAX_BORROW_HOURS lets you establish how long a license can be borrowed. I've mentioned this several times already but you should always control the default borrow period for your licenses by using an options files to reduce it to something far less than 6 months.

```
MAX_BORROW_HOURS 85730ACD_2012_0F 72
```

This limits the borrow period for AutoCAD 2012 licenses to 3 days (72 hours).

BORROW_LOWWATER specifies how many licenses *cannot* be borrowed. This helps ensure that a specified number of licenses always remain in the license pool. This way, your pool of available licenses does not get depleted by allowing all licenses to be borrowed.

```
BORROW_LOWWATER 85730ACD_2012_0F 5
```

This specifies that five licenses of AutoCAD 2012 cannot be borrowed thus ensuring that at least five licenses are still in the network pool.

EXCLUDE_BORROW restricts specific users or groups from borrowing a license for a product.

```
EXCLUDE_BORROW 85730ACD_2012_0F USER smithj
```

This prevents user, smithj, from borrowing a license of AutoCAD 2012.

INCLUDE_BORROW designates users or groups that are allowed to borrow a license.

```
INCLUDE_BORROW 85730ACD_2012_0F GROUP Engineering
```

This allows for anyone in the Engineering group to borrow a license of AutoCAD 2012. Any users, hosts or IP addresses not explicitly included will not have the ability to borrow the specified licenses. If you want to block license borrowing for only a few users, you should consider using the EXCLUDE_BORROW.

Note: Similar to EXCLUDE and INCLUDE, EXCLUDE_BORROW takes precedence over conflicting INCLUDE_BORROW statements.

A Sample Options File

Now that I've covered some of more commonly used options file parameters, I'll show how these would look in an actual options file:

```
#Let me tell you about this file.

REPORTLOG +"C:\adsk_flexnet\logs\adskflex_report.log"

GROUPCASEINSENSITIVE ON

GROUP Engineering smithj jonesb whitef

INCLUDE_BORROW 71200ACD_2010_0F GROUP Engineering

MAX_BORROW_HOURS 71200ACD_2010_0F 240

EXCLUDE 71200ACD_2010_0F USER slackp

TIMEOUTALL 5400
```

The first line is a comment. Anything preceded by a hashtag is treated like a comment and ignored. This is a nice way to add comments to your options file if you feel like you need to explain why you made certain choices about some of the options used.

REPORTLOG creates an activity report log for use with SAMreport-Lite and specifies the name and location for that report. The "+" syntax forces entries to the log file to be appended rather than replacing the log file contents each time the Network License Manager is restarted. It is recommended that you use this option to retain a history of log entries.

GROUPCASEINSENSITIVE ON means that the defined User and Host names in the GROUP list will be case insensitive.

The GROUP line defines a new group called Engineering consisting of three users: smithj, jonesb, and whitef.

INCLUDE_BORROW specifies that only members of the Engineering group are allowed to borrow AutoCAD 2010 licenses. Users or hosts not in the Engineering group are blocked from borrowing those licenses.

MAX_BORROW_HOURS overrides the default borrow time of 6 months, setting a maximum borrow time of 10 days for all licenses of AutoCAD 2010.

The EXCLUDE line locks out one specific user (slackp) from being able to access an AutoCAD 2010 license.

The final line sets an idle timeout for all Autodesk products to 90 minutes (5400 seconds). This forces the Network License Manager to automatically reclaim inactive licenses after they have been idle for 90 minutes.

Note: I have covered some of more commonly used options file parameters but there are many others. For more detailed information on options file settings, refer to the FlexNet License Administration Guide, typically installed in the "Autodesk Network License Manager" folder where the Autodesk Network License Manager is installed.

References and Resources

For more information on Autodesk licensing and troubleshooting licensing issues, I strongly recommend the following resources:

Autodesk Licensing Guide
http://exchange.autodesk.com/autocad/sites/default/files/autocad_pdf_lic_guide_enu_v2.pdf

Network Administrator's Guide
http://exchange.autodesk.com/autocad/sites/default/files/autocad_pdf_nag_v2.pdf

FlexNet License Administration Guide
Typically found installed at:
"C:\Program Files\Autodesk\Autodesk Network License Manager\LicenseAdministration.pdf"

Autodesk Installation and Licensing Discussion Forum
http://forums.autodesk.com/t5/Installation-Licensing/bd-p/24

Autodesk Services & Support
http://www.autodesk.com/support

Autodesk Licensing, Registration & Activation
http://www.autodesk.com/licensing

Autodesk Licensing Support
http://www.autodesk.com/licensingsupport

Up and Ready Blog
http://upandready.typepad.com

JTB World Blog
http://blog.jtbworld.com