AUTODESK UNIVERSITY

IT22174 - IT

IT Automation techniques for the CAD Manager

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Learning Objectives

- Benefits and pitfalls of automating
- Active Directory integration
- LMUTIL command line tool
- Desktop installations and license configurations
- Automating Uninstalls

Description

We all want to work smarter, not harder. If you are responsible for software licensing, software asset management or desktop delivery of Autodesk software this course will help you work smarter. Fred Babin of WSP | Parsons Brinckerhoff will share automation techniques he has implemented to streamline license administration and desktop management within his company's vast enterprise network. Jerry Milana from Autodesk Consulting will discuss success stories they have implemented and observed as they help enterprises around the globe implement Autodesk products. Successful automation requires investment in analysis, conceptual design, development and testing. With this in mind we will discuss avoiding automation projects that exceed the effort of the manual processes it replaces.

Your AU Experts

Fred Babin, known as "Tiny" among his colleagues, is the CADD Services technical lead for WSP | Parsons Brinckerhoff. Fred's responsibilities includes new technology & software implementation, training, delivery of software upgrades, custom development of automation services, and management of WSP | PB's engineering document management solutions. Fred has over 25 years of experience working for WSP | PB and SC Department of Transportation in providing support services for CADD & Engineering solutions.

Jerry Milana is a senior consultant for Autodesk Consulting, specializing in enterprise licensing and installation. Jerry has held positions at Autodesk in product support, Autodesk Consulting, and product management, as well as operating as an independent consultant offering enterprise software asset management services.. Prior to joining Autodesk, Jerry worked for an AutoCAD software dealer, where he was in charge of AutoCAD sales, services, support, and system integration services. Jerry served as president of an AutoCAD Users Group and participated on CAD advisory councils for local colleges. Jerry has accepted numerous invitations to lecture on network licensing and software distribution topics.

Benefits and Pitfalls of Automating

Automating a workflow process, or just the simplest “mundane” tasks, for most IT/CAD managers would be top of their list for money well spent. The instructors for this class agree, but automation can be a slippery slope ending up with a high cost little reward solution. With this in mind we will discuss avoiding automation projects that exceed the effort of the manual processes it replaces. From life experience Jerry and Fred will discuss some of the criteria we believe would help yield the higher benefits with no/minimal costs with automation. The discussion will provide general guidelines when and why automation makes sense, and some key points assess before starting the process. This class will be using Autodesk licensing management, reporting, installation as a focus topic, but the information provided would be applicable to other automatable practices.

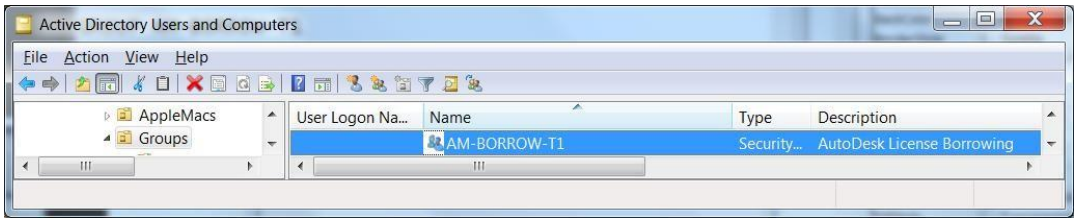
Active Directory Integration

If you need to limit or reserve access to managed software you may already have groups of users and/or machines defined in your network infrastructure’s Active Directory database, but FLEXnet technology is unable to directly leverage these databases.

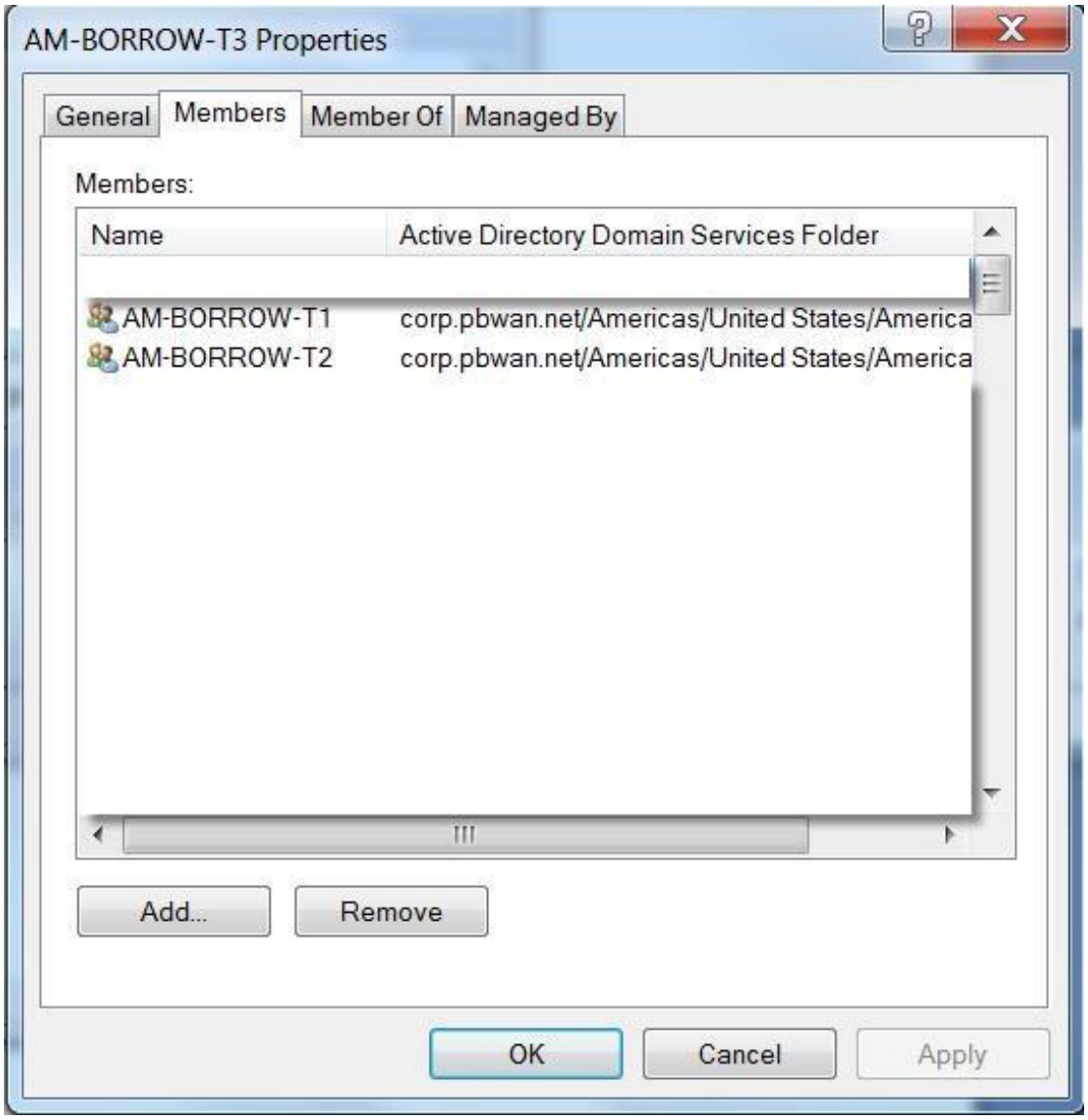
Fred Babin has developed a utility that can extract the group information from Active Directory and import it into your options file. The utility may be run as needed or automated using the Windows Task Scheduler. The tool is provided in the class download section. Keep in mind that this tool is being provided with no warranty or support, so use it at your own risk!

The UpdateOPT.exe tool is used to populate the FLEXlm License Server Options file with user/host names for a defined Options Group with member names that match an Active Directory Group. This is very useful for auto-synchronizing AD groups for license access, borrowing controls and other group based logic in the FLEXlm options file. .

Step 1: Create AD Group(s) that will be used in populating the Options file

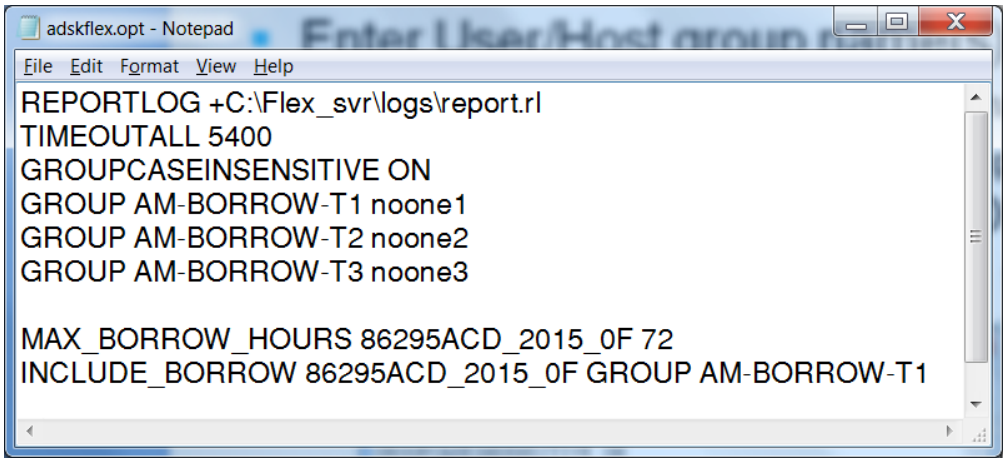


The name of this group must match exactly as entered in the Options file (not case-sensitive)



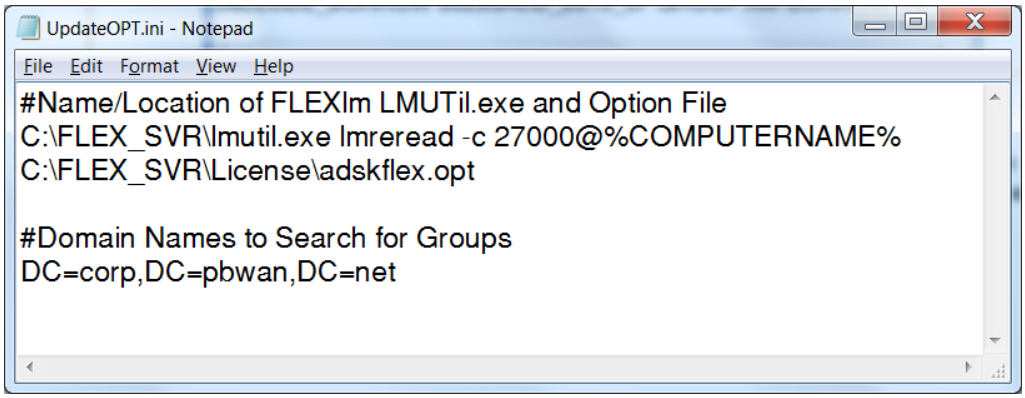
AD groups can also contain other groups as shown above, which this tool will handle. This is helpful if there is a need to have multiple administrators for AD groups; such as Region specific groups. It is also helpful creating multiple groups if there is a need to control features borrowed for different users

Step 2: Create Group(s) in the Options file and assign them to the proper features



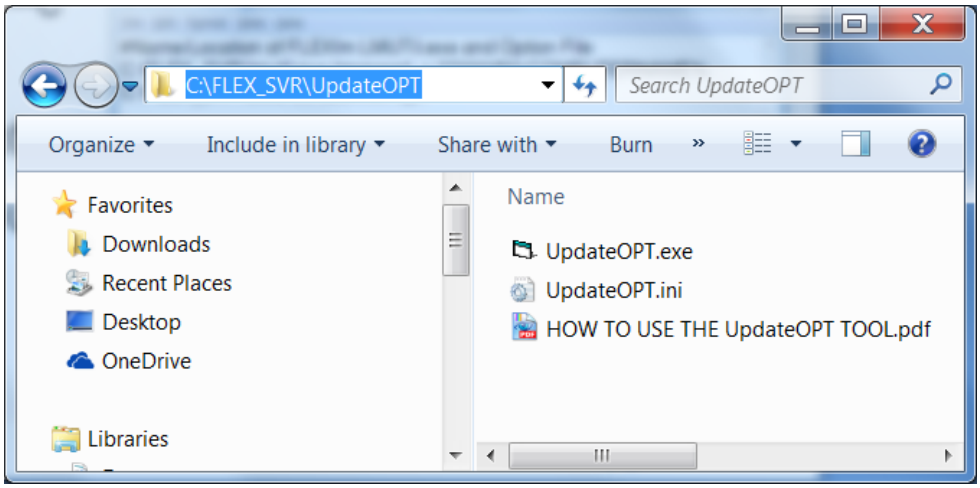
Populate a dummy entry for the GROUP like “noone” which will be replaced by the tool

Step 3: Update the UpdateOPT.ini control file with the required configuration information



Make sure the FULL PATH is called out in the LMREREAD command and location of the Options file. The domain depth can be nested to a specific OU or the top level can be used as shown above

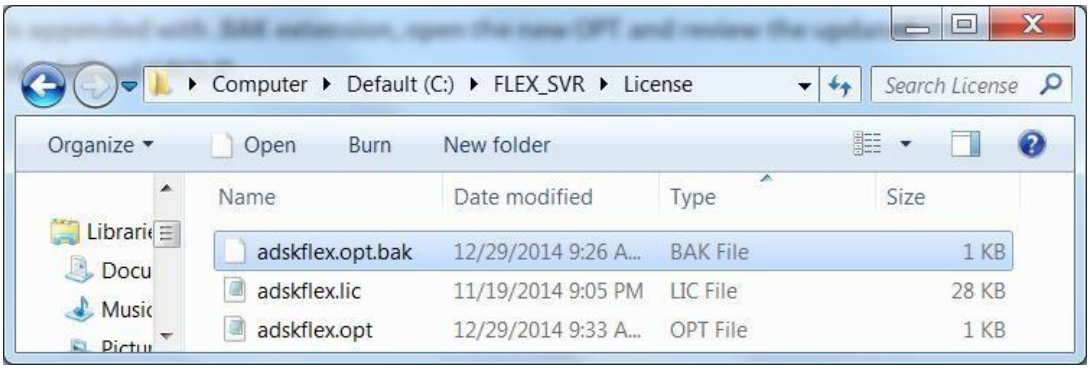
Step 4: Place the UpdateOPT EXE & INI files on the license server



The UpdateOPT tool does not have to be placed in the same folder where LMUTIL.EXE resides, but must be accessible by the scheduled task created in the next section.

Step 5: Create a scheduled task to run the UpdateOPT.exe with no parameters. The scheduled task should be set to run using an account (preferably a service account) that has WRITE permissions to the folder containing the Options file. The frequency is dependent on the needs of the organization. If your organization is fairly static on user changes this step can be skipped and the command run manually when needed by an administrator with sufficient permissions.

Step 6: Test run the scheduled task…see sample results below…



The old Options file is appended with .BAK extension. Open the new Options and review the updated members of the defined GROUP.

In additional to this highly customized VB application, Fred will demonstrate another method of performing this task using the LDIFED or CSVDE command line provided by Microsoft. These command line tools are support by Windows Server OS and is built into Windows Server 2008.

These tools can also be accessed if the AD DS or Active Directory Lightweight Directory Services (AD LDS) server role installed on any compatible Operating System. Fred will demonstrate how non-programmers can achieve similar level of automation using this tool for linking Active Directory objects to the Autodesk license server options file.

From the many options this tool offers this class with concentrate on the export of users of groups from Active Directory into a file using the following syntax.

LDIFDE/CSVDE -d {Domain or Specific OU} -r (&(objectClass=Group)(name={Group Name}) -l samAccountname -f adskuser.txt

LMUTIL command line tool

The LMUTIL command line tool comes with the installation of the Autodesk License Manager software. This is a very powerful tool that can be used to run commands that perform actions or return data from the Autodesk license servers. During this class we'll explorer the capabilities of the LMUTIL tool, the data generated and how to automate for support and business data consumption.

Key commands that will be demonstrated are:

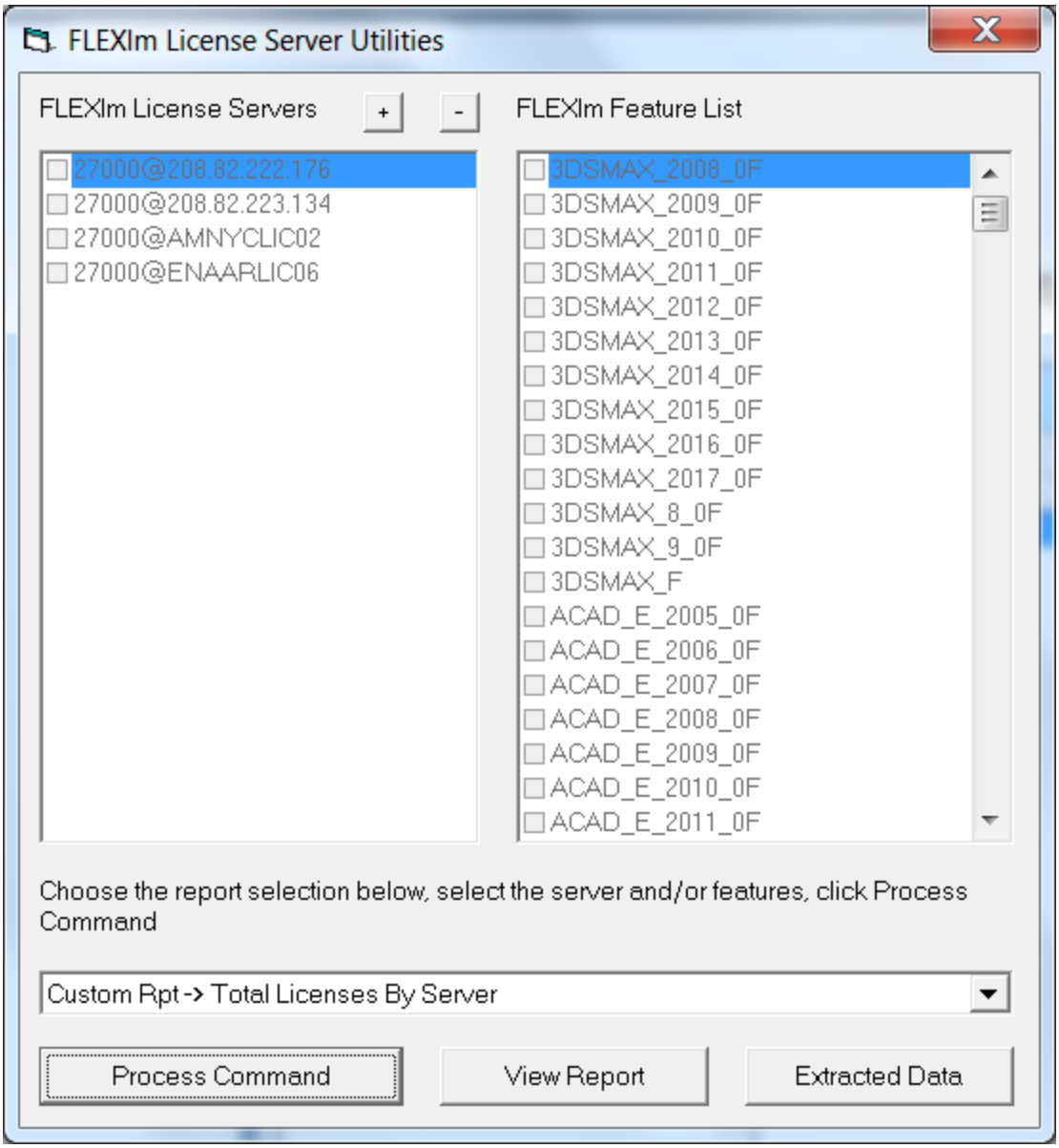
- Rotating report log files
- License server status
- Features and licenses counts
- Server & user based active usage

In addition Fred will provide a custom automated tool he uses within his company for daily reporting of license usage and availability. This custom automation tool is used to query Autodesk license servers on usage and/or status updates using the LMUTIL command. The tool has a list of custom and standard FLEXlm reports that will process on the servers/features hosted on the selected server.

The tool includes the following LMUTIL generated reports

Custom Rpt -> Total Licenses By Server	Lists total licenses of all features hosted on all servers by server name
Custom Rpt -> Total Licenses By Server (selected)	Lists total licenses of selected features hosted on selected server(s) by server name
Custom Rpt -> Total Licenses By Feature	Lists total licenses of all features hosted on all servers by feature name
Custom Rpt -> Total Licenses By Feature (selected)	Lists total licenses of selected features hosted on selected server(s) by feature name
Custom Rpt -> Licenses In Use By Server	Lists total licenses of all features in use on all servers by server name
Custom Rpt -> Licenses In Use By Server (selected)	Lists total licenses of selected features in use on selected server(s) by server name
Custom Rpt -> Licenses In Use By Feature	Lists total licenses of all features in use on all server by feature name

Custom Rpt -> Licenses In Use By Feature (selected)	Lists total licenses of selected features in use on selected server(s) by feature name
Custom Rpt -> Licenses In Use By UserName	Lists total licenses of all features in use on selected server by user name
Custom Rpt -> Licenses In Use By UserName (selected)	Lists total licenses of selected features in use on selected server(s) by user name
Custom Rpt -> Licenses Borrow By UserName	Lists total licenses of all features borrowed on all servers by user name
Custom Rpt -> Licenses Borrow By UserName (selected)	Lists total licenses of selected features borrowed on selected server(s) by user name
FLEXlm Rpt -> AutoDESK Feature List/Counts	Lists all feature license counts hosted on all servers
FLEXlm Rpt -> AutoDESK Feature List/Counts (selected)	Lists selected feature license counts hosted on selected server(s)
FLEXlm Rpt -> AutoDESK Feature Status/Usage	Lists all feature status & usages counts hosted on all servers
FLEXlm Rpt -> AutoDESK Feature Status/Usage (selected)	Lists all feature status & usages counts hosted on all servers




```
License In Use - By Feature [Listing all Current Users]
     * Indicates Borrowed with [Borrow Date Noted]

FEATURE NAME                    COUNT          IN USE       BORROWED      SERVERS
-------------------------------------------------------------------------------
86295ACD_2015_0F                  10               2              0      27000@SERVER1

           USER1                W-AMBOS-D-PC01
           Polishchuk           L-AMNYC-D-NB02

86350NAVMAN_2015_0F               2               0              0      27000@SERVER1


86354CIV3D_2015_0F                3               0              0      27000@SERVER1


-------------------------------------------------------------------------------
Total for Features                15               2              0
```

```
Total License Count - By Server

SERVER                FEATURE                                    COUNT
-------------------------------------------------------------------
27000@SERVER1         86350NAVMAN_2015_0F                            2
27000@SERVER1         86354CIV3D_2015_0F                             3
27000@SERVER1         86295ACD_2015_0F                              10
-------------------------------------------------------------------
27000@SERVER1                                                       15

Total for Servers                                                   15
```

```
FLEXlm SERVER:27000@SERVER1
...
lmutil - Copyright (c) 1989-2013 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Thu 9/10/2015 23:09

[Detecting lmgrd processes...]
NOTE: lmstat -i does not give information from the server,
      but only reads the license file.  For this reason,
      lmstat -a is recommended instead.

Feature                          Version     #licenses    Expires      Vendor
_______                          _________   _________    __________   ______
86295ACD_2015_0F                 1.000          10        31-oct-2017  adskflex
...
...
...
FLEXlm SERVER:27000@SERVER1
...
lmutil - Copyright (c) 1989-2013 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Thu 9/10/2015 23:09

[Detecting lmgrd processes...]
NOTE: lmstat -i does not give information from the server,
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      lmstat -a is recommended instead.

Feature                          Version     #licenses    Expires      Vendor
_______                          _________   _________    __________   ______
86354CIV3D_2015_0F               1.000          3         31-oct-2017  adskflex
...
...
...
FLEXlm SERVER:27000@SERVER1
```

Desktop installations and license configurations

Some of the challenges in a networked license environment is making sure the desktops have the correct license configurations and have been installed correctly. In this section we'll explore automated methods of publishing the desktop license configuration variables through the use of scripting and Global Policy Objects (GPO).

There three common Desktop environment variables used for Autodesk Licensing.

- ADSKFLEX_LICENSE_FILE
- FLEXLM_TIMEOUT

- LM_PROJECT

ADSKFLEX_LICENSE_FILE

ADSKFLEX_LICENSE_FILE is used to point Autodesk network licensed applications to one or more license managers. Although there are other methods of setting the license manager search list this variable has the highest priority and offers flexibility in post deployment management. The syntax of this variable is as follows:

ADSKFLEX_LICENSE_FILE=<optional port>@Server1; <optional port>@Server2;….

Example **27006@Paradise;27006@Tahoe;27006@Summit**

Setting the port number is desirable so long as you are forcing that port on the license manager by appending the SERVER line in the license file with the port number, for example: **SERVER paradise ab12cd34ef56 27006** forces 27006 usage. Managing port usage avoids conflicts and reduces startup time and traffic. If the license manager port is set outside of 27000-27009 setting ADSKFLEX_LICENSE_FILE on the desktops is required.

If you choose “Distributed Servers” during deployment creation or installation this variable will be created for you but you cannot set the port callout.

FLEXLM_TIMEOUT

FLEXLM_TIMEOUT is used to extra time for license acquisition on latent networks. The default period is one tenth of a second. To increase this period set this variable to a value in milliseconds. So, a value of 2000000 equals 2 seconds. It is recommended that this value be tuned to your infrastructure requirements for reliable license acquisition. Try starting with a value of 2000000 and increasing the value in two million increments until license acquisition is reliable for a particular site.

Example: **FLEXLM_TIMEOUT=2000000** sets a 2 second acquisition time limit.

LM_PROJECT

This variable is used with FLEXnet Manager to key usage data off the LM_PROJECT value and also to use to control feature usage in the options file. For example if you wanted to limit AutoCAD 2016 usage to drafting use only then you could set **LM_PROJECT=drafting** then add the following line in your options file**:**
INCLUDE 86445ACD_2016_0F PROJECT drafting.
Now only desktops with LM_PROJECT set to drafting will be able to obtain an AutoCAD 2016 license.

Setting the variables

The method you use to distribute desktop environment variables should be chosen to optimize utilization of your network management infrastructure. The following are brief descriptions of some of the more common methods.

Group Policies

Using Group Policies to set environment variables is often desirable due to the ease of implementation if your organization’s Active Directory infrastructure will support the process. Another advantage of using Group Policies is that they self-repair as they reapply periodically.

Setx.exe

Setx has been included with Microsoft Windows operating systems since Windows 7. Setx can be deployed as a bat file script that users with administrative credentials can execute to set environment variables on their desk tops. When setx is used to set a local variable the variable

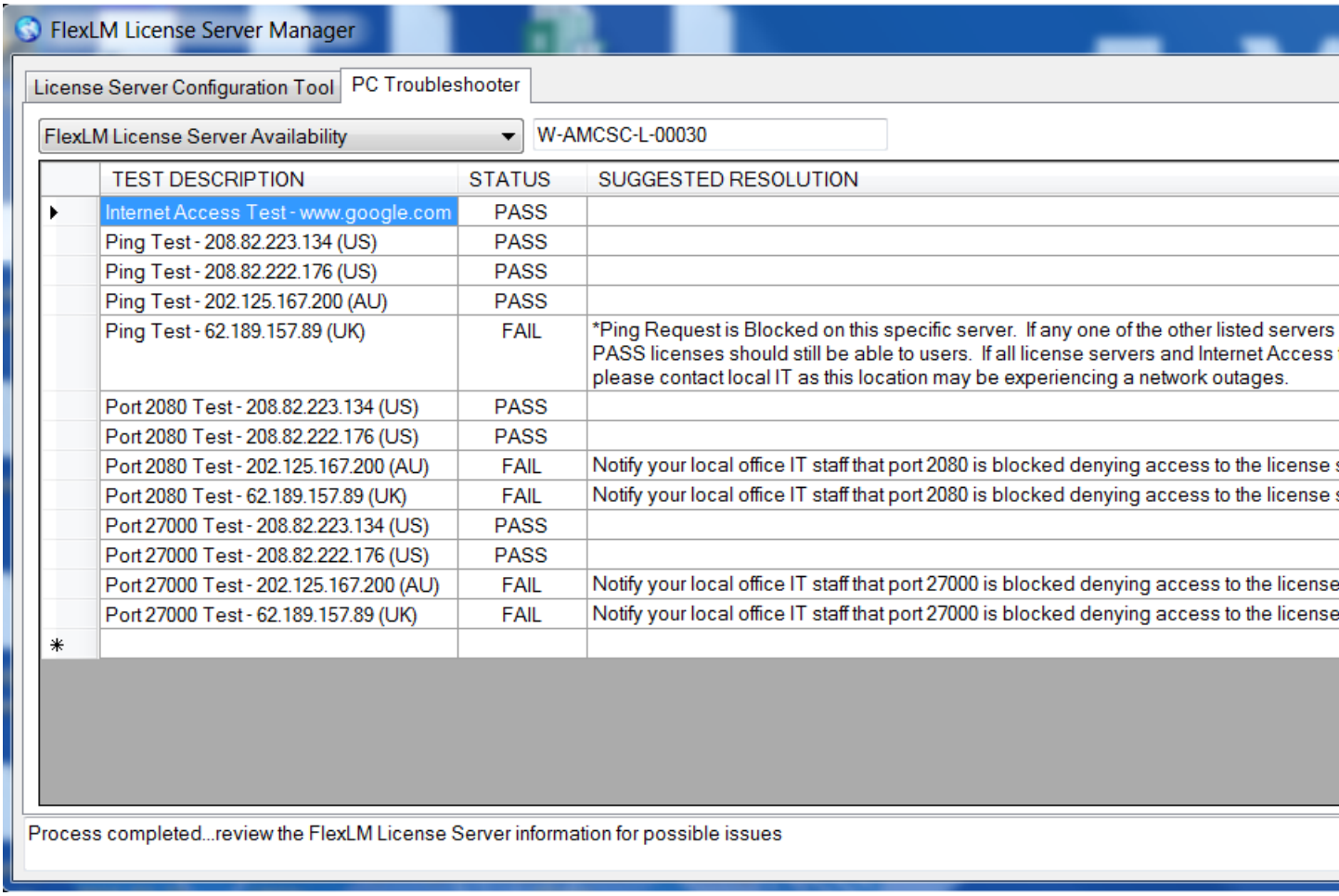
is available to subsequent program launches. Setx also has the ability to set environment variables on remote systems but the variables will not be live until the next local login on the remote system. Type SETX /? At a Windows Command prompt for a complete description of this command's syntax.

Importing Registry Files

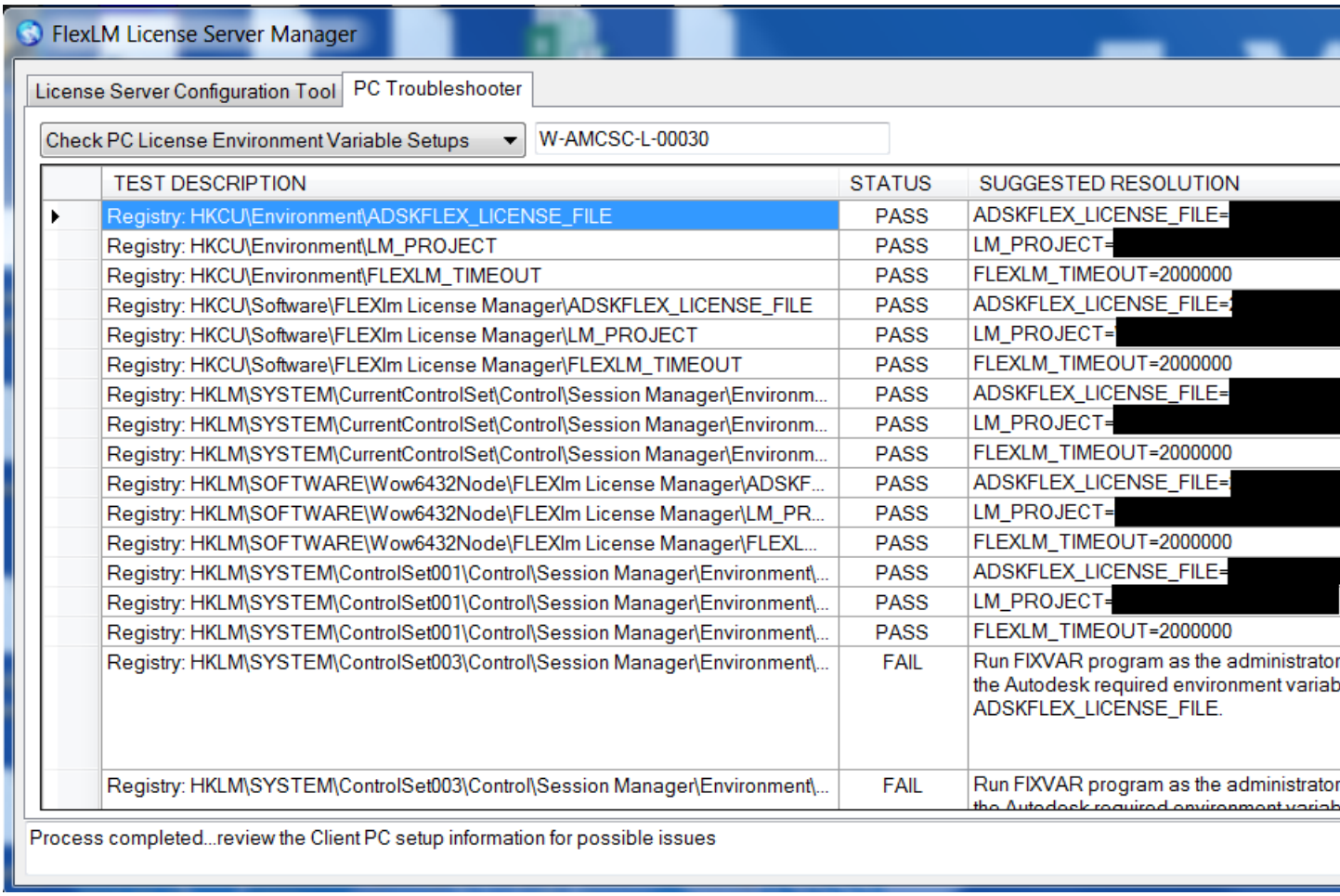
A registry file can be created by exporting the registry key for the desired environment variable. When the registry file is imported on a target computer the variable will not be live until the next login session. If the intent is to set the variable on each machine locally then setx is a cleaner choice and the variable is available immediately. If you are using delivery automation such as Microsoft's SCCM, then pushing the registry files is a method to consider.

Desktop Information Tool

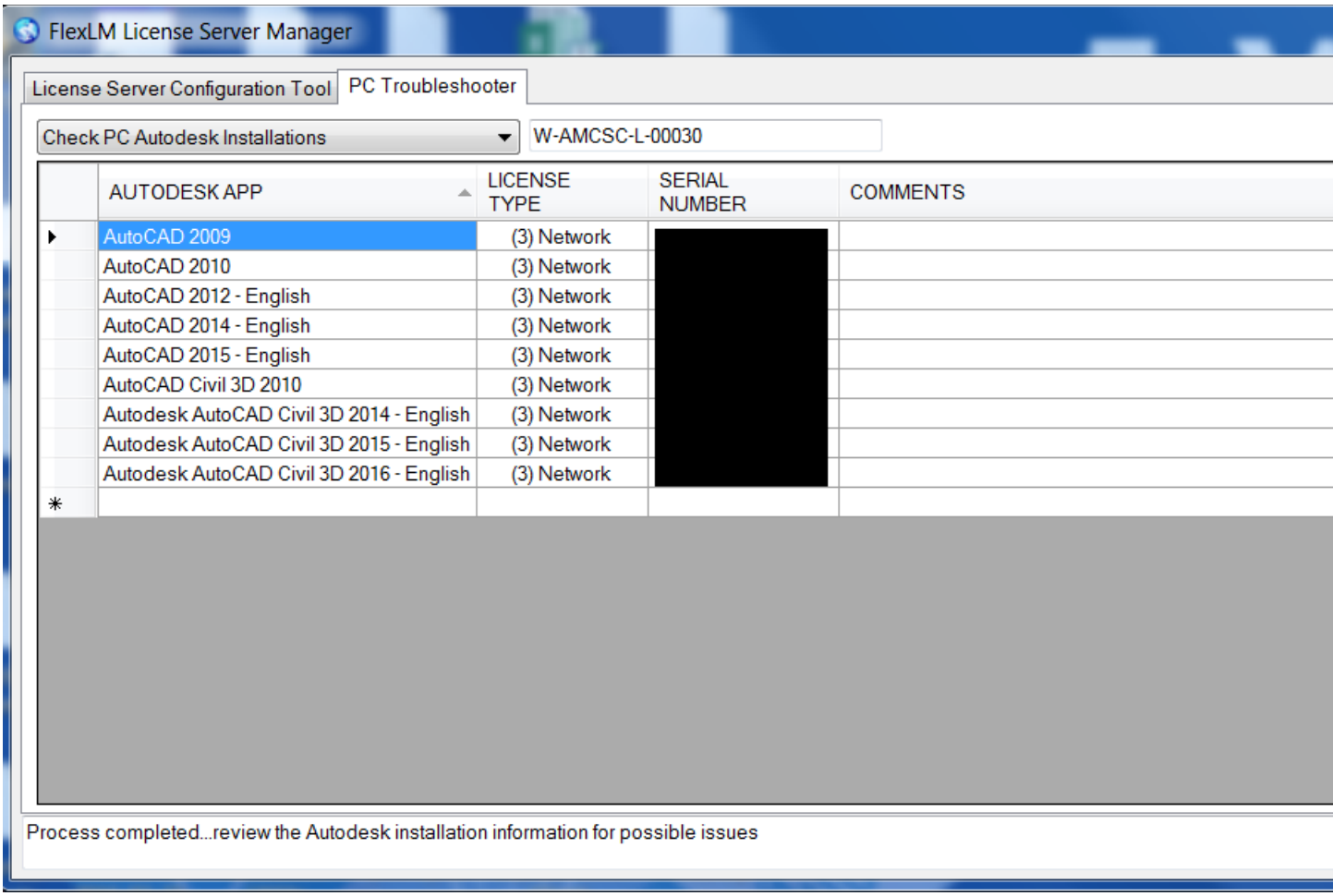
With use of the techniques we've covered Fred will demonstrate a tool he developed within his organization that provides information on remote desktops such as; License Server availability, Autodesk environment variables and installation type (standalone/networked). The same tool can be used to execute the correct information to the desktop for quick support resolutions.



Check to see if the servers are available and the assigned ports are opened for users to access Autodesk licenses.



Check to see if the proper Autodesk license environment variables are setup on the PC. This will check not only the proper System/User variable but also breadcrumb locations.



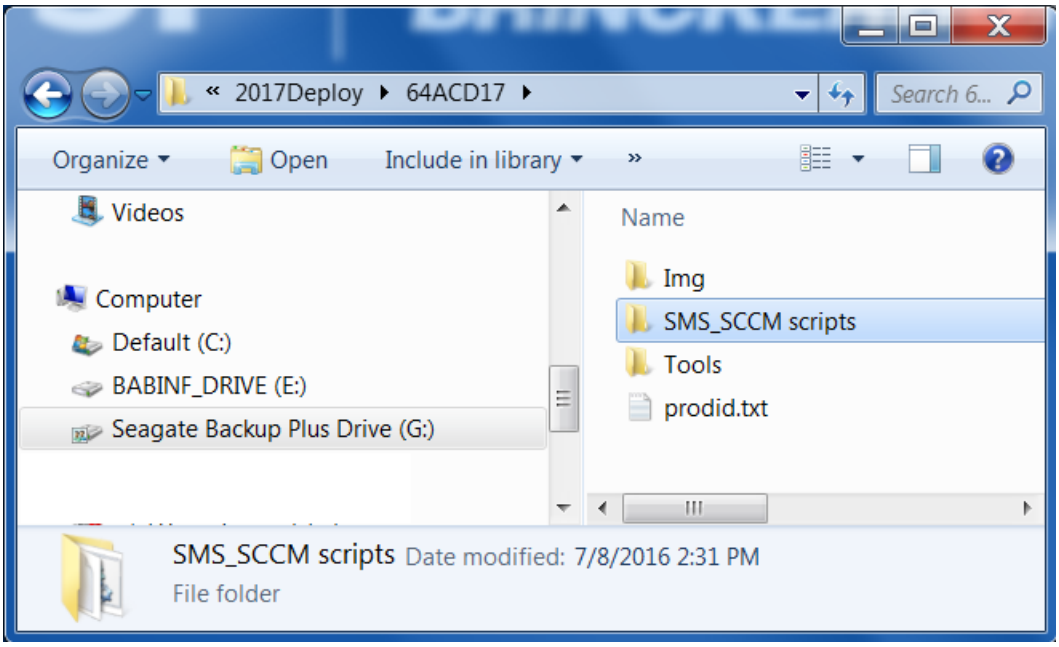
Check to see what Autodesk applications are installed on the PC, and determine what type of installation and serial number was used.

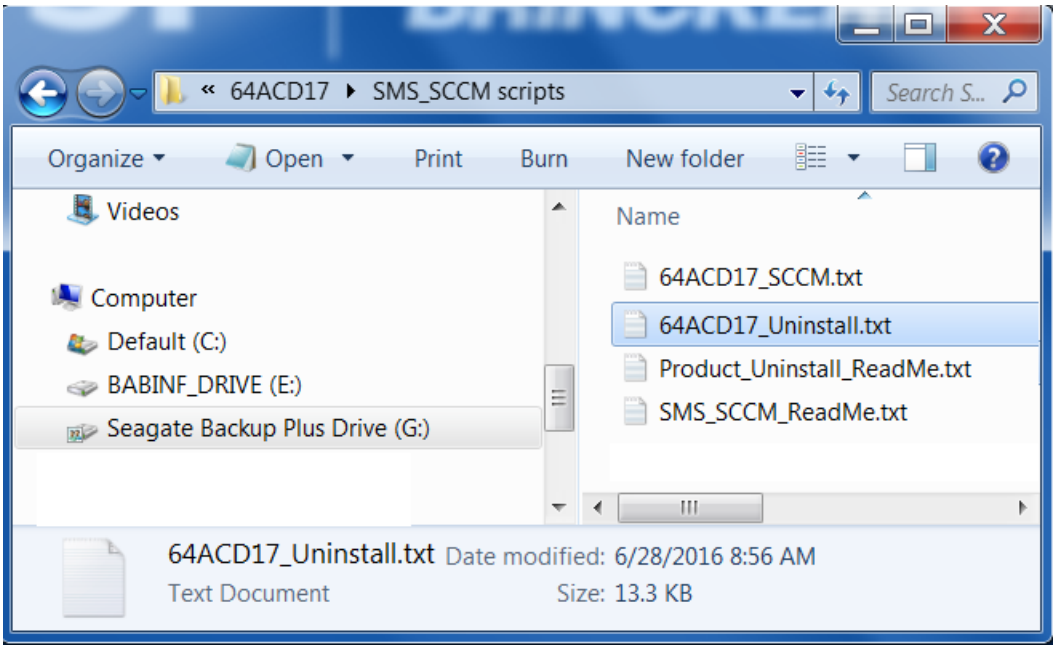
Automating Uninstalls

SCCM Uninstall BAT Files

Uninstalling the software is not uncommon for support and planned upgrade procedures. It isn't very efficient to visit each desktop and use the Windows Programs and Features to remove the applications. One reason is that process is manual and requires the administrator to "babysit" the process. Another reason is that in the Windows tool it isn't easy to distinguish which components were installed for which application.

Autodesk provides a solution if you are creating deployment images. After creating an image there will be a sub-folder called SMS_SCCM scripts containing a file called {IMAGE_NAME}_Uninstall.txt.





This file can be used to uninstall all and/or specific components of deployment package. To use this file follow the steps listed in the Product_Uninstall_ReadMe.txt file:

- opened the file with notepad (or basic ASCII editor)
- save the file
  - change the file type to ANSII
  - change the file extension to BAT
- locate the uninstall command for each component to uninstall
- to uninstall remove the **::** in front of the **::call :funcUninstall**

- save the edits to the file

There are a couple things to consider when using the uninstall BAT files; which components to remove and how to automate uninstalls using the BAT files. Fred will discuss some of the lessons learned on which components are best left alone and which would be key to uninstall.

Such as:

- This BAT file can uninstall the application and add-ons that the delivered deployment provided.
  - It will not uninstall any updates, add-ins, hot fixes or any other post install actions performed.
- Components listed can be uninstalled but may be used by other Autodesk applications such as Libraries, Content and Object Enablers.
  - So be sure to only uninstall what is necessary.
- Some components may be actively in use. Including them in the uninstall may make the Windows Explorer process unstable requiring a reboot.