IT Automation techniques for the CAD Manager

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Class summary

Automating manual processes can provide great benefits for all size organizations. However, overly complex or extensive automation can negate those benefits.

Learn how to gage benefits vs development costs, and explorer simple automated functions that repeatedly saves time and money.

Key Learning Objectives

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

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

General Guidelines On When Automation Makes Sense

Commercial vs In-House

- Rule of thumb is to lean toward Commercial for complex solutions
- Costs can be justified considering…
  - Skilled labor needed for development
  - Time/Materials for development and maintenance
  - Production staff taken away from producing earning
  - Support, training, communication for users
  - Compatibility/Recoding in changing environment

Key Steps to Successful Automation

- **Goal**: identify the specific goal(s) to automate and don't develop as ideas surface.
  - This will keep the automation from becoming incoherent, and difficult for future dev/maint
- **Plan**: thoroughly plan (in advance) to stay on target to avoid the infamous rabbit hole
  - Lack of planning leads to re-coding and re-development

Key Steps to Successful Automation

- **Time**: calculate the time to production then compare that to actual time automation will save
- **Cost**: calculate the ROI
  - Labor
  - Purchases
  - Maintenance

Key Steps to Successful Automation

- **Simple**: know the difference between automating vs software development
- **Flexible**: universalize the technique for growth

Key Steps to Successful Automation

- **Reusability**: automation makes best sense when it repeatedly provides a replacement for manual (mundane) tasks.
  - Automation that has longer life yield the greater benefits
  - Simple automated tasks for one solution can be easily applied to other solutions with minimal tweaking

Key Steps to Successful Automation

- **Sources**: use credible sources when developing automated routines
  - Automation dependent on unmaintained sources can fail and become unusable in short timeframe
  - Freeware can become Expensiveware

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Don't Reinvent The Wheel

- Utilize existing industry standard tools
  - LMUTIL
  - PING
  - IPCONFIG /ALL
  - SET / SETX
  - REG QUERY
  - FIND
- Don't forget BAT files

INTEGRATE ACTIVE DIRECTORY WITH AUTODESK OPT FILE

Active Directory Integration

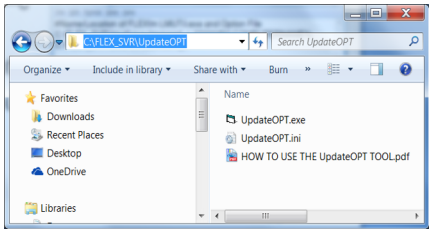
- VB 2010 compiled application
- Integrate Option File with Active Directory
  - User or Host Groups
  - Borrowing, Restrictions, etc
- Setup
  - Create Groups in Active Directory
  - Update UpdateOPT.ini and Vendor OPT file
  - Create Schedule Task on License Server(s)

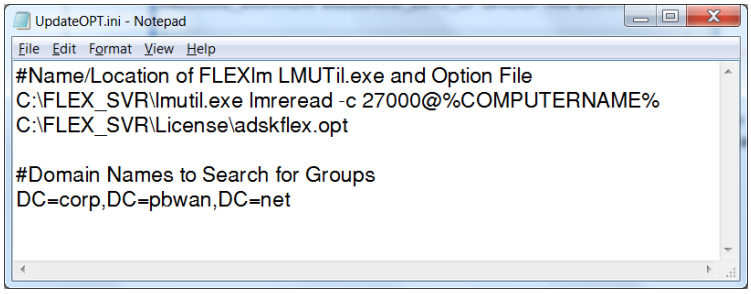
Active Directory Integration

- Steps to implement
  - Identify or create AD Group(s)
  - Create Mirror Group(s) in the Options File
  - Update the UpdateOPT.ini Control File
  - Test Run UpdateOPT.exe
  - Create a Scheduled Task to Automate

Active Directory Integration: Update INI File

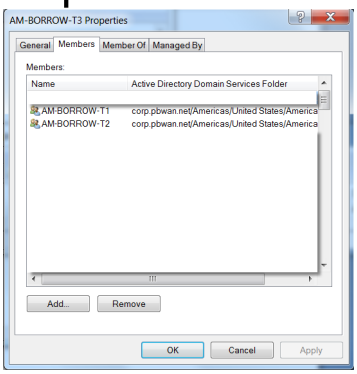
- Place files on license server(s)
- Edit the UpdateOPT.ini

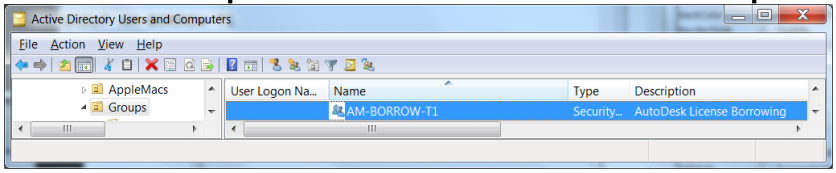




Active Directory Integration: Setup AD Groups

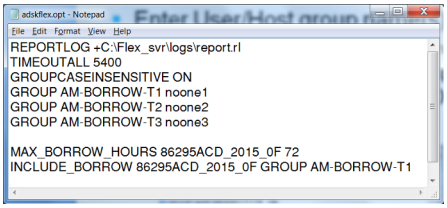
- Create Group in Active Directory
  - AD name must match User/Host group name
- Add members to AD Group
  - Group can contain other Groups



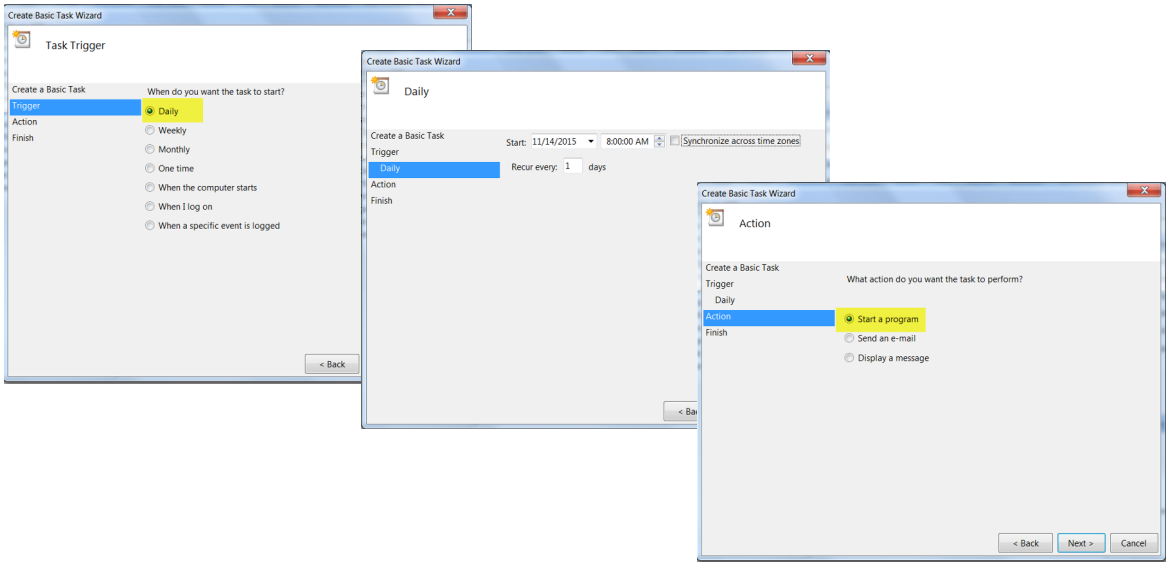


Active Directory Integration: Update OPT File

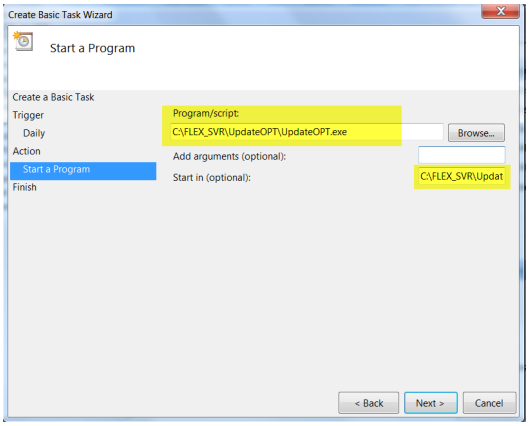
- Enter User/Host group name in OPT file
  - OPT file & AD group names must match
  - Set “noone” as a member of the OPT group
- Assign group to option settings
  - Adds AM-BORROW-T1 to AutoCAD 2015 borrowing

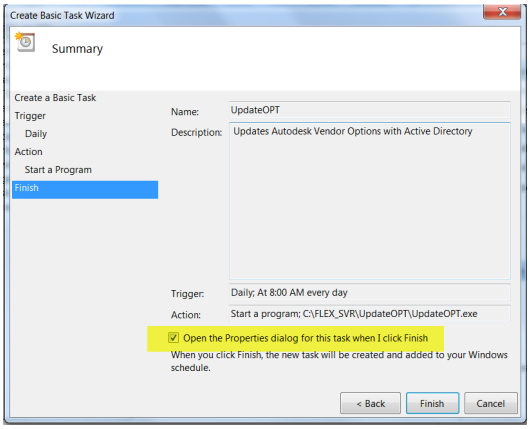


Active Directory Integration: Create Schedule Task

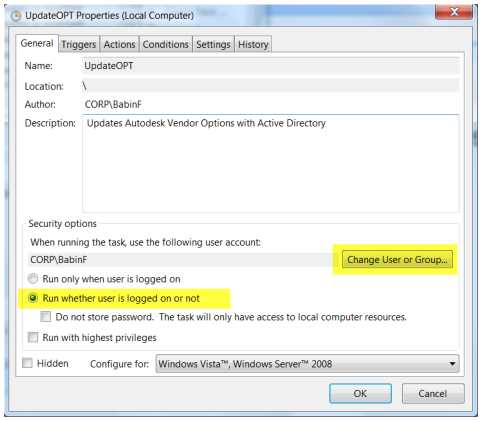


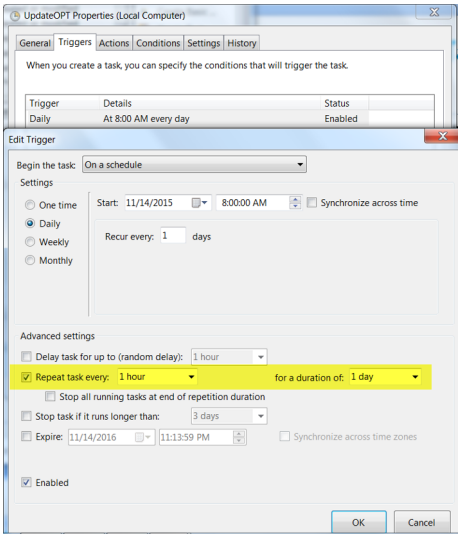
Active Directory Integration: Create Schedule Task





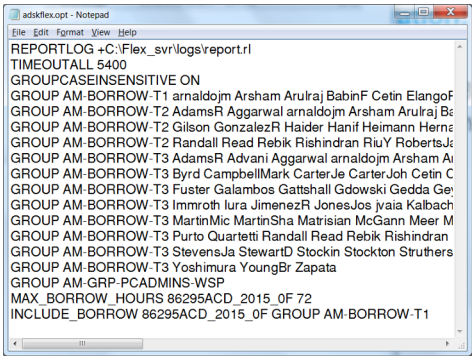
Active Directory Integration: Create Schedule Task





Active Directory Integration: Test Schedule Task

- Open Task Library and Create Basic Task
  - Suggested run once and repeat every 1-2 hours
- Test run the task…
  - Max 2000 chars/line
  - Updates only on changes
  - Creates BAK



An Alternate Way Of Getting AD Group Members

- Not a programmer…don't worry!
- There are many tools to export AD information
  - LDIFDE: Lightweight Data Interchange Format, Data Exchange
  - CSVDE: Comma Separated Value Data Exchange
  - DSQUERY: directory service command line
- The goal is simple, export a list of user names that can be added to the adskflex options file

An Alternate Way Of Getting AD Group Members

- A simple and easy method having only the AD group name
  - dsquery group -samid {GroupName} | dsget group -members | dsget user -samid
- Output will be rows of user names
- Use secondary process to transform this file into a space delimited list of user names

POWER OF THE LMUTIL COMMAND LINE TOOL

What is LMUTIL

- LMUtil.exe is located in the NLM install directory
- Executable command line tool included in Autodesk Network License Manager
- LicenseAdministration.PDF in the NLM install directory
  - Chapter 12: Command-Line Utilities
- We'll review these common switches
  - lmnewlog, lmreread, lmstat

LMNEWLOG Switch

- Used for rotating growing usage logs (RL files)
- Keeps RL files at manageable sizes
- Schedule task on license server
- Frequency depends on activity of service
- Example BAT file:

```
lmutil lmnewlog -c @127.0.0.1 adskflex .\%COMPUTERNAME%_%date:~10,4%-%date:~4,2%-%date:~7,2%.rl
```

LMREREAD Switch

- Used for re-reading new license or updated options file
- Example BAT file:

```
lmutil lmreread -c @server1 adskflex
lmutil lmreread -c @server2 adskflex
lmutil lmreread -c @server3 adskflex
pause
```

- Confirm success using LMSTAT or Debug log

LMSTAT Switch

- Used for reporting activity/status license server
- Useful for real-time usage reporting
- Key features we will focus on are:
  - -a: Displays all information
  - -S: Displays all information for vendor's features
  - -f: Displays avail/usage for all or specific feature
  - -i: Displays information for all or specific feature

LMSTAT -a

- Displays all information (regardless of vendor)
- Can create lot of network activity
- Verbose and lots of detail
  - Vendor, server, port, status, versions
  - Feature Avail/Used, User, PC, Date/Time, Borrow
- Can be difficult to parse but worth the data
- Syntax: lmutil lmstat -c @server -a

LMSTAT -S

- Displays all usage of vendor's features
- Capitalized (lowercase -s is server status)
- Contains same verbose data as -a
- However, vendor specific
- Syntax: lmutil lmstat -c @server -S adskflex

LMSTAT -f

- Displays avail/usage of all or specific features
- Contains same verbose data as -a & -S
- Feature specific output
- Syntax: lmutil lmstat -c @server -f
- Or, limit to a specific feature
  - lmutil lmstat -c @server -f feature

LMSTAT -a, -f, -S Sample Output

```
Flexible License Manager status on Sat 10/29/2016 13:28

[Detecting lmgrd processes...]
License server status: 27000@AUTODSK1
    License file(s) on AUTODSK1: C:\FLEX_SVR\license\adskflex.lic:

  AUTODSK1: license server UP (MASTER) v11.13.1

Vendor daemon status (on AUTODSK1):

  adskflex: UP v11.13.1
Feature usage info:
Users of 64300ACD_F:  (Total of 9999 licenses issued;  Total of 13 licenses in use)

  "64300ACD_F" v1.000, vendor: adskflex
  floating license

    AMBOS-D-STR01 W-AMBOS-D-STR01 (v1.000) (AUTODSK1/27000 167362), start Sat 10/29 13:26
    ZW0364NYC1US ZW0364NYC1US (v1.000) (AUTODSK1/27000 26226), start Sat 10/29 13:25
    ZW0024DAL1US ZW0024DAL1US (v1.000) (AUTODSK1/27000 210706), start Fri 10/28 18:44
    02 W-AMNYC-L-ITL57 W-AMNYC-L-ITL57 (v1.000) (AUTODSK1/27000 45953), start Thu 10/27 20:32 (linger: 617220)
    distasio W-AMBOS-L-STR16 W-AMBOS-L-STR16 (v1.000) (AUTODSK1/27000 39567), start Sat 10/29 13:13
    harrisac W-AMBOS-L-STR
    jessican ZL0019DAL
    markt ZW0
    mikej ZW0019
    reddenj W-AMCOL-D-C
    uscs02136 ZW0219NYC1US ZW0219NYC1US (v1.000) (AUTODSK1/27000 223708), start Sat 10/29 13:25
    usxw01612 ZL0044BRI1US ZL0044BRI1US (v1.000) (AUTODSK1/27000 33591), start Sat 10/29 10:46
    williamsq W-AMMNP-L-TRF02 W-AMMNP-L-TRF02 (v1.000) (AUTODSK1/27000 185966), start Sat 10/29 11:52
```

vendor version

Borrowed License (seconds) Expires in 7.14 days

feature

Space delimited: user, pc, server, port, date/time

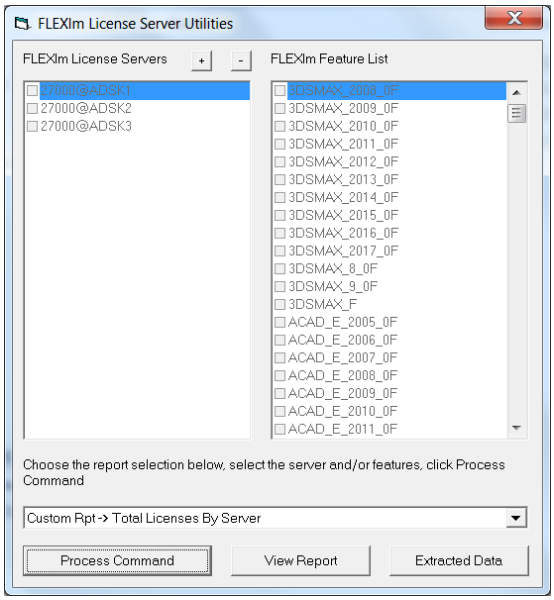
LMSTAT -i

- Displays feature information or all features
- Contains a fixed width list showing
  - Feature, Version, # Available, Expiration, Vendor
- Syntax: lmutil lmstat -c @server -i
- Or, limit to a specific feature
  - lmutil lmstat -c @server -i feature

LMSTAT -i Sample Output

Feature	Version	#licenses	Expires	Vendor
86199FDU_F	1.000	9999	31-oct-2017	adskflex
85829ALSK_F	1.000	9999	31-oct-2017	adskflex
86420BRDGMD_F	1.000	9999	31-oct-2017	adskflex
86422GEOMOD_F	1.000	9999	31-oct-2017	adskflex
86424RFAMOD_F	1.000	9999	31-oct-2017	adskflex
86204SBPNL_F	1.000	9999	31-oct-2017	adskflex
70300MBXPRO_F	1.000	9999	31-oct-2017	adskflex
85869MBXPRO_2013_0F	1.000	9999	31-oct-2017	adskflex
85696MBXPRO_2012_0F	1.000	9999	31-oct-2017	adskflex
85580MBXPRO_2011_0F	1.000	500	31-oct-2017	adskflex
83900MBXPRO_2010_0F	1.000	500	31-oct-2017	adskflex
86330TSPRHN_4_0F	1.000	9999	31-oct-2017	adskflex
86645PCOFFI_2017_0F	1.000	9999	31-oct-2017	adskflex
86562PCOFFI_2016_0F	1.000	9999	31-oct-2017	adskflex
66100INVLT_F	1.000	9999	31-oct-2017	adskflex
86004INVLT_2013_0F	1.000	9999	31-oct-2017	adskflex
85765INVLT_2012_0F	1.000	9999	31-oct-2017	adskflex
85649INVLT_2011_0F	1.000	500	31-oct-2017	adskflex
84700ACDLT_F	1.000	9999	31-oct-2017	adskflex
85872ACDLT_2013_0F	1.000	9999	31-oct-2017	adskflex
85732ACDLT_2012_0F	1.000	9999	31-oct-2017	adskflex
85555ACDLT_2011_0F	1.000	500	31-oct-2017	adskflex
86020ACDLTM_F	1.000	9999	31-oct-2017	adskflex
86021ACDLTM_2013_0F	1.000	9999	31-oct-2017	adskflex
85951RVTLT_F	1.000	9999	31-oct-2017	adskflex
85951RVTLT_2013_0F	1.000	9999	31-oct-2017	adskflex
85835SHOWCASE_F	1.000	9999	31-oct-2017	adskflex
85956SHOWCASE_2013_0F	1.000	9999	31-oct-2017	adskflex
85704SHOWCASE_2012_0F	1.000	9999	31-oct-2017	adskflex
85607SHOWCASE_2011_0F	1.000	500	31-oct-2017	adskflex
86310ADKVRD_F	1.000	9999	31-oct-2017	adskflex
86311VRDPRS_F	1.000	9999	31-oct-2017	adskflex
86646VLTM_2017_0F	1.000	9999	31-oct-2017	adskflex
86563VLTM_2016_0F	1.000	9999	31-oct-2017	adskflex
86305VLTM_2015_0F	1.000	645	31-oct-2017	adskflex
86170VLTM_2014_0F	1.000	645	31-oct-2017	adskflex
85987VLTM_2013_0F	1.000	645	31-oct-2017	adskflex
85753VLTM_2012_0F	1.000	645	31-oct-2017	adskflex
85588VLTM_2011_0F	1.000	645	31-oct-2017	adskflex
70800VLTM_2010_0F	1.000	645	31-oct-2017	adskflex

WSP | PB Use of LMUTIL



Custom Rpt -> Total Licenses By Server
Custom Rpt -> Total Licenses By Server (selected)
Custom Rpt -> Total Licenses By Feature
Custom Rpt -> Total Licenses By Feature (selected)
Custom Rpt -> Licenses In Use By Server
Custom Rpt -> Licenses In Use By Server (selected)
Custom Rpt -> Licenses In Use By Feature
Custom Rpt -> Licenses In Use By Feature (selected)
Custom Rpt -> Licenses In Use By UserName
Custom Rpt -> Licenses In Use By UserName (selected)
Custom Rpt -> Licenses Borrow By UserName
Custom Rpt -> Licenses Borrow By UserName (selected)
Custom Rpt -> UPDATE Feature List
Custom Rpt -> EXPORT Feature List

FLEXlm Rpt -> AutoDESK Feature List/Counts
FLEXlm Rpt -> AutoDESK Feature List/Counts (selected)
FLEXlm Rpt -> AutoDESK Feature Status/Usage
FLEXlm Rpt -> AutoDESK Feature Status/Usage (selected)

FLEXlm Rpt -> AutoDESK DAEMON Version
FLEXlm Rpt -> VB Tool LMUTIL Version

WSP | PB Use of LMUTIL

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

FEATURE NAME                        COUNT         IN USE       BORROWED     SERVERS
-------------------------------------------------------------------------------------
64300ACD_F                           69993           20              1     27000@ADSK1,27000@ADSK2,27000@ADSK3
|          Fuster              W-AMNYC-D-TVD20     27000@ADSK1
           Longa              W-AMBOS-D-STR01     27000@ADSK1
           Sandhu             W-AMNYC-D-FAC67     27000@ADSK1
           USLS01999          ZW0364NYC1US        27000@ADSK1
           USUL02718          ZW0024DAL1US        27000@ADSK1
          *USVD01502          W-AMNYC-L-ITL57     27000@ADSK1          [Thu 10/27 20:32 ]
           distasio           W-AMBOS-L-STR16     27000@ADSK1
           harrisac           W-AMBOS-L-STR18     27000@ADSK1
           jessican           ZL0019DAL1US        27000@ADSK1
           markt              ZW0016DAL1US        27000@ADSK1
           mcmanuspm          W-AMGLL-L-PMMCM     27000@ADSK1
           mikej              ZW0019RCD1US        27000@ADSK1
           olugbenleoa        W-AMWDC-L-00134     27000@ADSK1
           reddenj            W-AMCOL-D-CSG01     27000@ADSK1
           uscs02136          ZW0219NYC1US        27000@ADSK1
           usxw01612          ZL0044BRI1US        27000@ADSK1
           zhangm1            W-AMNYC-L-OP006     27000@ADSK1
           CAE                W00126909CA         27000@ADSK2
           Qu.Robert          W-ASSZN-D-14009     27000@ADSK3
           sun.jie            W-ASSNH-L-50604     27000@ADSK3
```

AUTOMATE DESKTOP QUERIES FOR LICENSE SUPPORT ANALYST

Key Desktop Data

- License environment variable information
  - adskflex_license_file and flexlm_timeout
  - breadcrumbs
- Communication to license server
  - ping test, lmstat command, port test
- Autodesk installation type
  - Standalone or Network

License Environment Variable Information

- adskflex_license_file: server search order
- flexlm_timeout: milliseconds before timeout
- Only set System environment variables
  - Avoid setting User environment variable
- Breadcrumbs can be a pain

Locating Breadcrumb

- HKCU\Software\FLEXlm License Manager
- HKLM\Software…
  - FLEXlm License Manager
  - Wow6432Node\FLEXlm License Manager
- HKLM\SYSTEM…
  - CurrentControlSet\Control\Session Manager\Environment
  - ControlSet001,ControlSet002

License Server Ports

- FLEXlm default ports: 27000-27009
- Adskflex Vendor Port: 2080
- Troubleshooting
  - ping command to see if server is online
  - telnet server port
  - lmutil lmstat -c @server -a

Setting Autodesk License Environment Variables

- Deployment doesn't set all variables and doesn't handle ADSKFLEX_LICENSE_FILE very well
- Global Policy Objects (GPO) best for this task
- Use techniques such as setx.exe, BAT/VBS, REG, SCCM
- Consider deleting breadcrumbs

Automate The Desktop Queries Using Simple Tools

- Set adskflex_license_file > pcinfo.txt
- Set flexlm_timeout >> pcinfo.txt
- REG.exe query “HKLM\Software\Autodesk" /v StandaloneNetworkType /s >> pcinfo.txt
- REG.exe query "HKLM\Software\Autodesk" /v SerialNumber /s >> pcinfo.txt
- portqry -n server -p tcp -e 2080 >> pcinfo.txt

Microsoft download

Sample Portqry Output

```
Querying target system called:

 adsk1

Attempting to resolve name to IP address...

Name resolved to 208.82.222.176

querying...

TCP port 2080 (unknown service): LISTENING
```

```
Querying target system called:

 adsk1

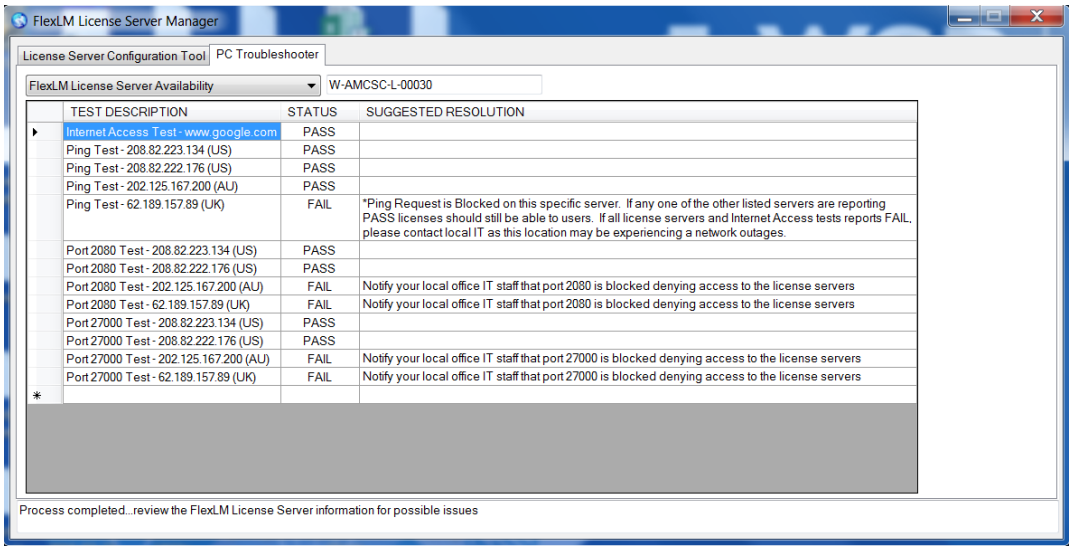
Attempting to resolve name to IP address...

Name resolved to 208.82.222.176

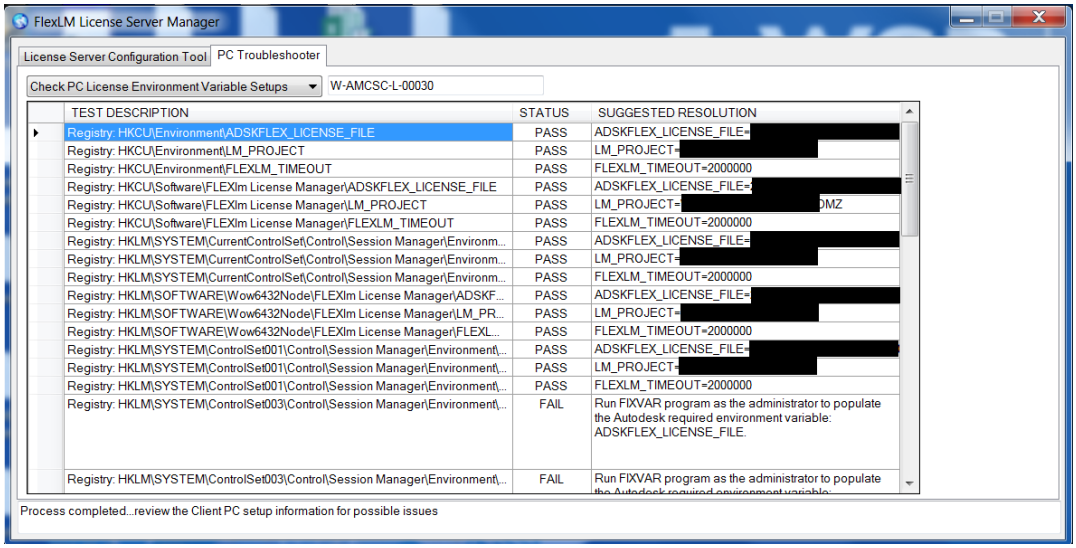
querying...

TCP port 27000 (unknown service): LISTENING
```

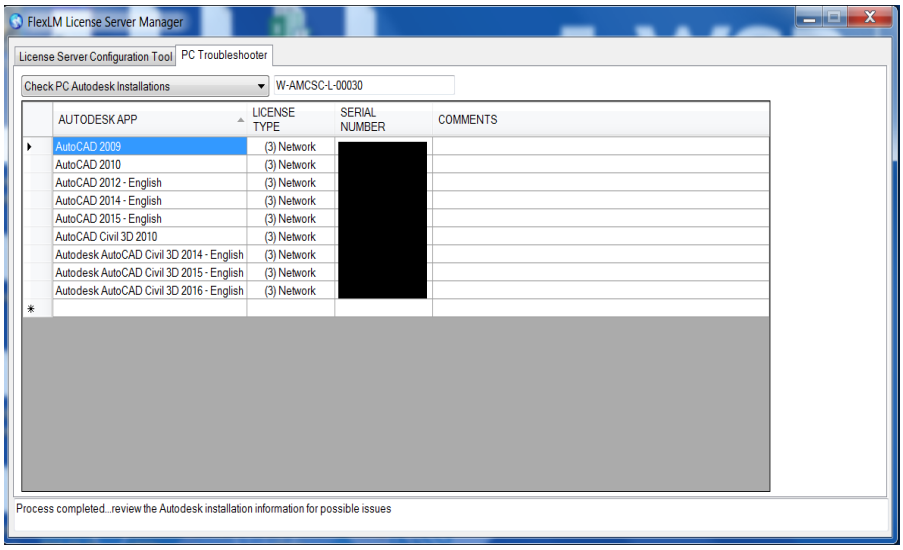
WSP | PB Use Of Desktop Query Information



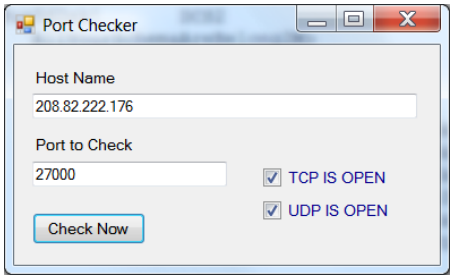
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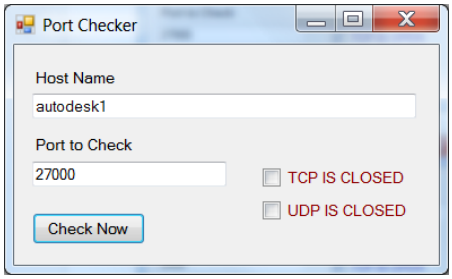


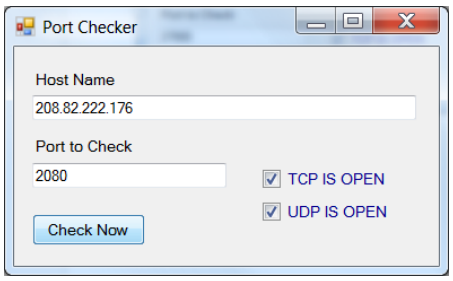
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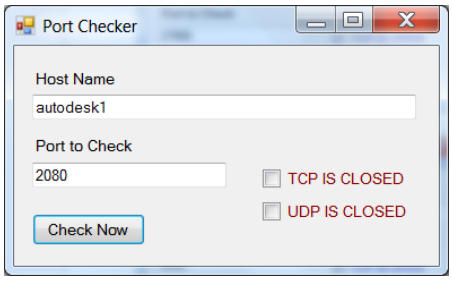


WSP | PB Use Of Desktop Query Information







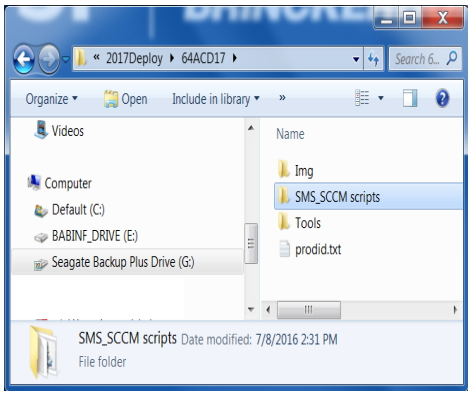


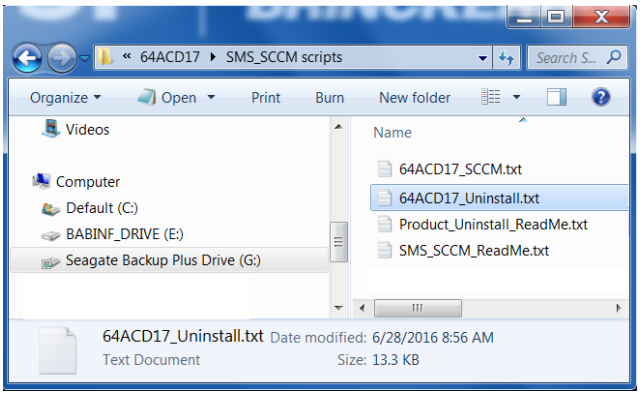
AUTOMATING UNINSTALL OF AUTODESK APPLICATIONS

Deployment Image SCCM Scripts

- Deployment wizard will create SCCM scripts for install and uninstall of product
- Scripts are application/version specific for use with SCCM or other push technology
- {IMAGE_NAME}_Uninstall.txt
- Product_Uninstall_ReadMe.txt

Where To Find The SCCM Scripts

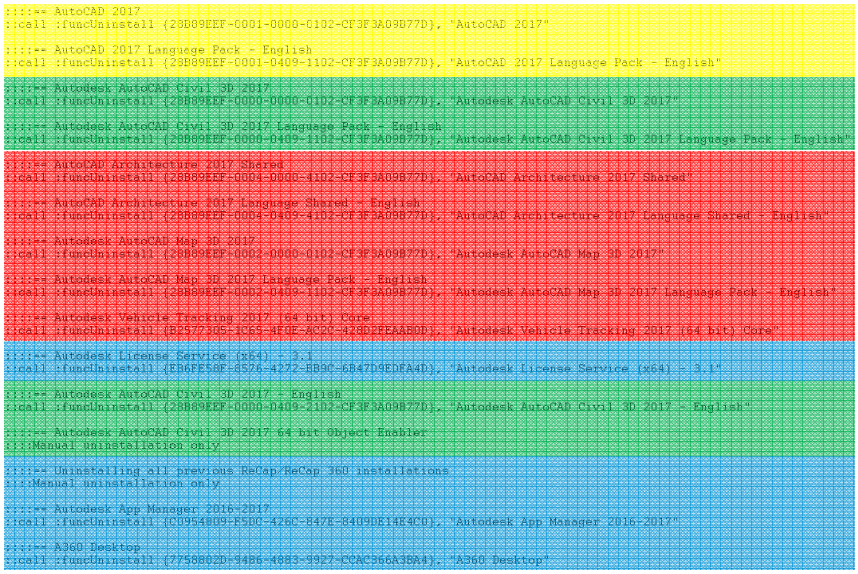


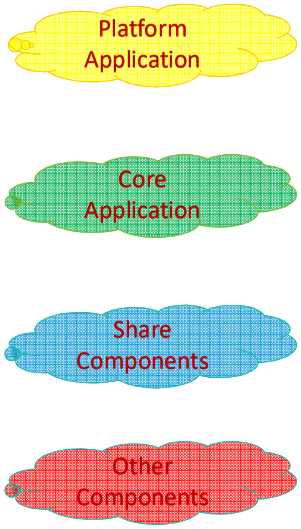


Uninstall Script - Creation

- Open in Notepad/ASCII Editor
- Save As {IMAGE_NAME}_Uninstall.bat (or .cmd)
- Change Encoding Type to ANSI
- Locate the component to uninstall
- Remove :: in front of the ::call :funcUninstall
- Use caution on what components are uninstalled
- Save and Test

Uninstall Script – Civil 3D Sample File





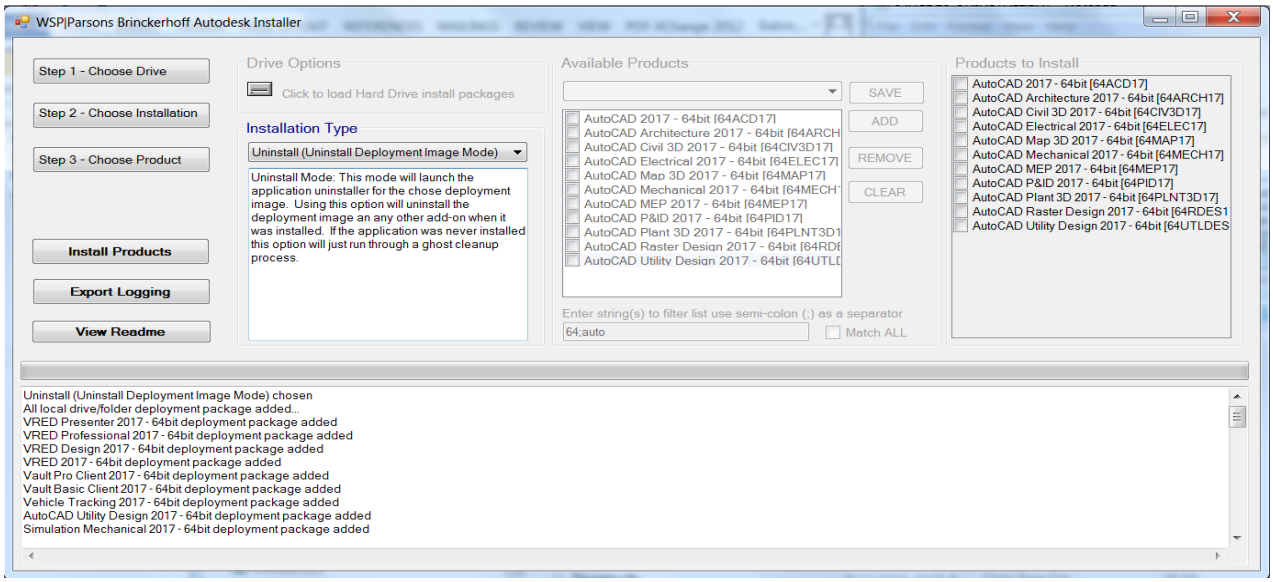
Uninstall Script – Things To Consider

- Uninstall the application, add-ons or everything
- 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
- Some components may be in use uninstalling may make the Windows Explorer unstable

Uninstall Script – Using The Script

- After creating the script apply it in various ways
  - Use with SCCM advertisements/task sequence
  - Use with other push tools
  - Use prior to reinstall of application
  - Double-click instead of hunting through Programs and Features

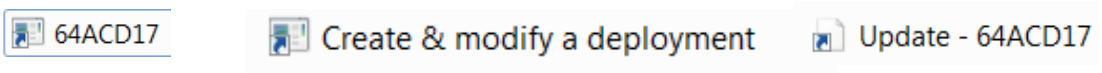
WSP | PB Use Of The Uninstall BAT



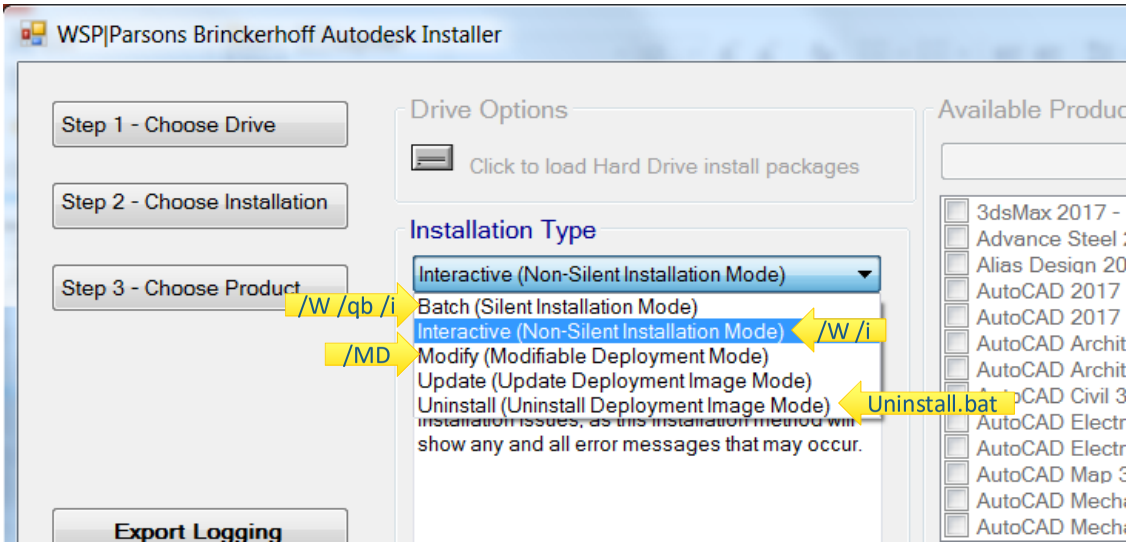
AUTODESK DEPLOYMENT MSI SWITCHES

Know The MSI Switches

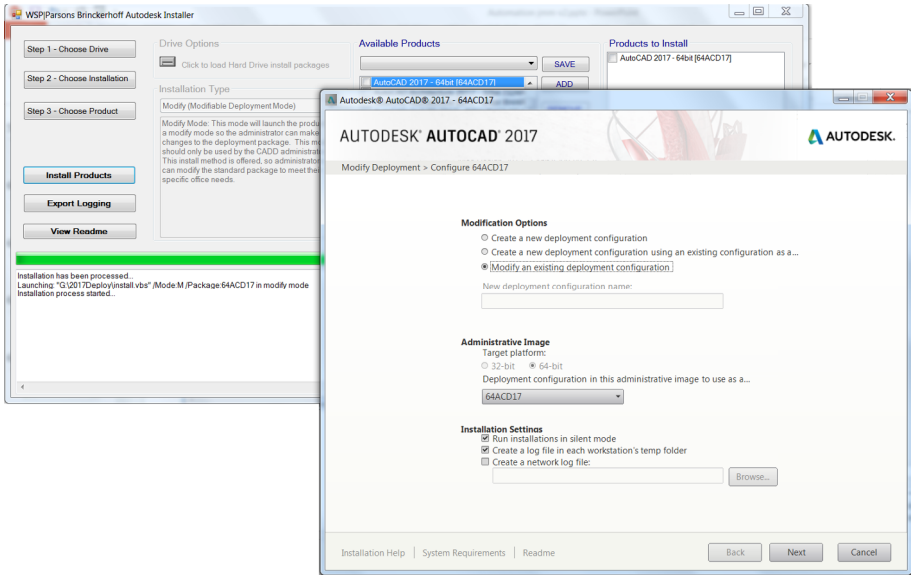
- Quiet: Setup.exe /W /qb /i .\Img\{Name}.ini
- Debug: Setup.exe /W /i .\Img\{Name}.ini
- Modify: Setup.exe /MD .\Img\{Name}.ini
- Update: .\Img\Setup\AdAppMgr\AdAppMgr.exe -deployment .\Img\{Name}.ini
- Delete: .\SMS_SCCM scripts\{Name}_Uninstall.bat
- Why know these? Shortcuts break when images move



WSP | PB Use Of The MSI Switches



WSP | PB Use Of The MSI Switches - Modify



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