Deployments and AutoLISP: Strategies for Easy Installations and Maintenance

R.K. McSwain

CAD Manager, LJA Engineering | Owner, CAD Panacea | Contributing Expert, Cadalyst Magazine

@cadpanacea | rkmcswain@cadpanacea.com

About

- CAD Manager, LJA Engineering. A civil engineering firm of ~550 employees based in Houston, Texas. ~150 AutoCAD/Civil 3D users.
- Previously with IDS Engineering for ~17 years. 100 employees, 35 Civil 3D users.
- Creator and operator of cadpanacea.com – AutoCAD, AutoCAD Map, Raster Design, Civil 3D, & Revit tips, tricks, news, etc.
- Contributing Expert for Cadalyst magazine (cadalyst.com) – Tips & Tricks, Hot Tip Harry.
- Charter member of the Autodesk Expert Elite

- Active in the Autodesk, AUGI, & CADTutor forums for 17+ years.
- @cadpanacea
- This is my 11th Autodesk University – first in which to instruct.

Class summary

Many organizations do not have standard methods of deploying AutoCAD software, and consequently spend a significant amount of time and energy trying to make sure all users are configured to company standards. Even organizations that do have some standard methodologies in place should review their practices in an effort to improve. Are you struggling with the installation, configuration, and management of multiple AutoCAD software users, even in multiple offices? Learn how to use your common network to store minimal sets of configuration files and automatically push your company standards out at application startup, while still enabling users to keep many of their own custom settings.

Key learning objectives

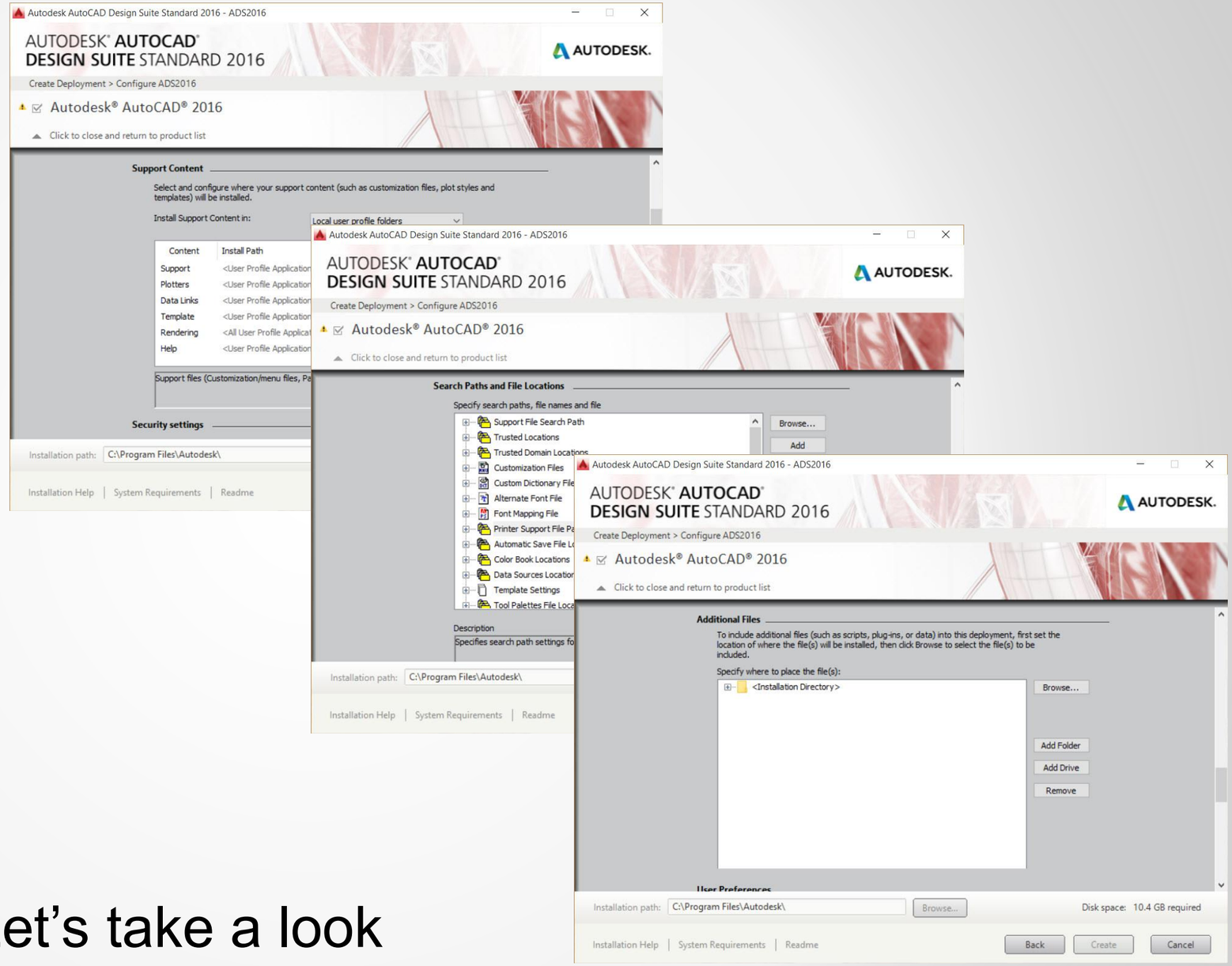
At the end of this class, you will be able to:

- Learn how to post process an application deployment to minimize the number of deployments needed
- Discover the purpose and order of application of the AutoCAD startup files
- Learn how to control the AutoCAD environment of multiple users from a central location
- Learn how to keep your custom files separate from AutoCAD for ease of future migration

Post Process application deployments

What does this mean?

In most cases you can build a deployment right out of the box and not make any custom additions or deletions.



Let's take a look

AutoCAD Startup Files

- What are startup files?
  - Certain files are loaded automatically at application startup.
  - Some startup files come with AutoCAD, others are user created.
- Who owns the startup files?
  - The user owns most of the files
  - Two exceptions: Acad20xx.lsp and Acad20xxDoc.lsp

AutoCAD Startup Files

- What are they and when do they load?
  - Acad.rx (for loading ARX files)
  - Acad20xx.lsp *(AutoCAD owned)*
  - Acad.lsp – *Only loads at Application Startup while AcadLspAsDoc=0*
  - Acad20xxDoc.lsp *(AutoCAD owned)*
  - AcadDoc.lsp
  - [MainMenu].mnl
  - [MainMenu] – CUI loaded lisp files
  - [PartialMenu].mnl
  - [PartialMenu] – CUI loaded lisp files
  - Startup Suite
  - (S::Startup) function – loads after the drawing is initialized

AutoCAD Startup Files

(S::Startup Function)

acaddoc.lsp

```
;;;============================================================
;;; MYSTARTUP function
;;; Define a function to be appended to S::STARTUP
(defun-q mystartup ()
  (command "._layer" "_S" "0" "")
  (vl-cmdf "._purge" "_r" "*" "_n")
)

(setq S::STARTUP (append S::STARTUP mystartup))
```

- This is a special function that will execute after the drawing is initialized.
- It can be defined in multiple locations and appended together. Use (Defun-Q)!
- If you want to use the (command) function, it needs to go inside of S::Startup
- Create your own function with (Defun-Q) then append it.

Controlling AutoCAD from a central location

Why?

- Ensure consistent resources are available to your users.
- Control system variables from one location.
- Load custom routines without requiring user interaction.
- Define consistency among the users (Shortcuts, menus, etc.)
- Easy to make changes for many users at once.
- You can do all of this and still allow individual user differences.

Important note: Nothing in this class deals with AutoCAD Profiles.
We are not exporting, importing, or saving them.

Controlling AutoCAD from a central location

ACAD.LSP

- Virtually everything else is dependent upon setting the Support File Search Path.
- The top path should point to your centralized server location.
- Set other paths here such as printers, plot styles, and tool palettes.
- Set unsaved and registry saved system variables.
- Use variables as much as you are comfortable with. This will ease transitions to other servers, when upgrading to new versions, etc.
- Test, test, and test some more. Don’t wreck your system by pushing out untested code.

Controlling AutoCAD from a central location

ACAD.LSP

Part 1

```
(setq *acad-ver* "2016")
(setq *server* "\\\\Server")
;(setq *server* (strcat "\\\\" (getenv "UserDomain") "\\Adsk"))
(setq *acad-object* (vlax-get-acad-object))
(setq *acad-pref* (vla-get-preferences *acad-object*))
(setq *myfiles* (vla-get-Files *acad-pref*))
(setq acadloc
   (vl-registry-read
      (strcat "HKEY_LOCAL_MACHINE\\" (vlax-product-key)) "ACADLOCATION"
   )
)
(setq sfsp
       (strcat
        *server* "\\CAD\\" *acad-ver* "ACD\\SUPPORT;"
        *server* "\\CAD\\LISP;"
        *server* "\\CAD\\LIBRARY;"
        *server* "\\CAD\\FONTS;"
        (getvar "ROAMABLEROOTPREFIX") "SUPPORT;"
        acadloc "\\SUPPORT;"
        acadloc "\\SUPPORT\\en-us;"
        acadloc "\\HELP;"
        acadloc "\\EXPRESS;"
        acadloc "\\SUPPORT\\COLOR;"
        (getenv "programfiles(x86)")
        "\\Autodesk\\applicationplugins\\autodesk importskp.bundle\\contents\\resources;"
       )
)
(vla-put-SupportPath *myFiles* sfsp)
```

Controlling AutoCAD from a central location

ACAD.LSP

Part 2

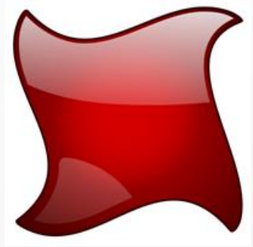
acad.lsp

```
; set the path to plot styles
(vla-put-PrinterStyleSheetPath *myFiles* (strcat *server* "\\CAD\\PLOT STYLES"))

; set the path to the printers
(vla-put-PrinterConfigPath *myFiles* (strcat *server* "\\CAD\\PRINTERS"))

; set the path to the printer description files
(vla-put-PrinterDescPath *myFiles* (strcat *server* "\\CAD\\PRINTERS\\PMP FILES"))

(vlax-release-object *myfiles*)


(setvar "backgroundplot" 0)
(setvar "expert" 0)
(setvar "filedia" 1)
(setvar "isavebak" 1)
(setvar "isavepercent" 0)
(setvar "mtjigstring" (strcase (getvar "loginname")))
(setvar "pickadd" 1)
(setvar "pickbox" 5)
(setvar "pickfirst" 1)
(setvar "savefidelity" 0)

(princ (strcat "\n" *server* "\\CAD\\" *acad-ver* "C3D\\Support\\ACAD.LSP loaded. "))
(princ)
```

Controlling AutoCAD from a central location

ACADDOC.LSP

- Load or autoload autolisp files.
- Define shortcut functions.
- Define other functions (they don’t have to live in a separate file).
- Create and/or append the (S::Startup) function.
- Load user startup files.



20:00

Controlling AutoCAD from a central location

ACADDOC.LSP

```
;;; ACADDOC.LSP - COMPANY NAME - DEC 2015 - AUTOCAD 2016
;;;
;;; THIS FILE LOADS ONCE PER DRAWING SESSION
(setq *acad-ver* "2016")
(setq *server* (strcat "\\\\" (getenv "UserDomain") "\\Adsk"))

;;;=============================================================
;;; LOAD or AUTOLOAD external lisp routines.
(autoload "10" '("10"))
(autoload "myplan" '("myplan"))
(autoload "umt" '("umt"))

;;;=============================================================
;;; SHORTCUT FUNCTIONS
(defun c:b ()(princ "Macro: Break ")(command "._break")(princ))
(defun c:clc ()(princ "Macro: Change Layer Current ")(command "._laycur")(princ))
(defun c:e ()(princ "Macro: Erase ")(command "._erase")(princ))
(defun c:ep ()(princ "Macro: Explode ")(command "._explode")(princ))
(defun c:ex ()(princ "Macro: Extend ")(command "._extend")(princ))

;;;=============================================================
;;; MYSTARTUP function
;;; Put anything in here that you want appended to S::STARTUP
(defun-q mystartup ()
  (command "redraw")
  (if (zerop (getvar "savetime"))(setvar "savetime" 5))
  (princ)
)
(setq S::STARTUP (append S::STARTUP mystartup))

(if (findfile (setq perlsp (strcat (getvar "loginname") "-STARTUP.lsp")))
 (load perlsp)
)
(setq perlsp nil)

(princ (strcat "\n" *server* "\\CAD\\" *acad-ver* "ACD\\Support\\ACADDOC.LSP loaded. "))
(princ)
```

Controlling AutoCAD from a central location

Allowing User Customization

- It is all about the timing. Whatever loads last takes precedence.
- Allow users to define and maintain their own code?
- Maintain it all yourself?
- Discuss options for storing user defined code.

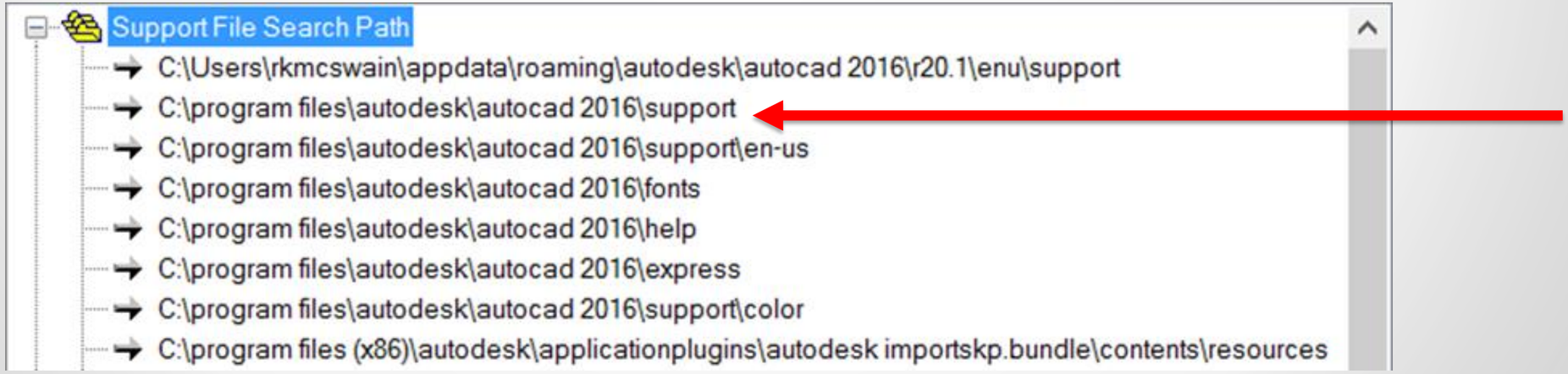
acaddoc.lsp

```
(setq userhome (strcat *server* "\\CAD\\USER\\" (getvar "loginname")))
(if (setq lstoffiles (vl-directory-files userhome "*.lsp" 1))
  (mapcar '(lambda (x)
             (load (strcat userhome "\\" x))
           )
          lstoffiles
  )
)
```

Controlling AutoCAD from a central location

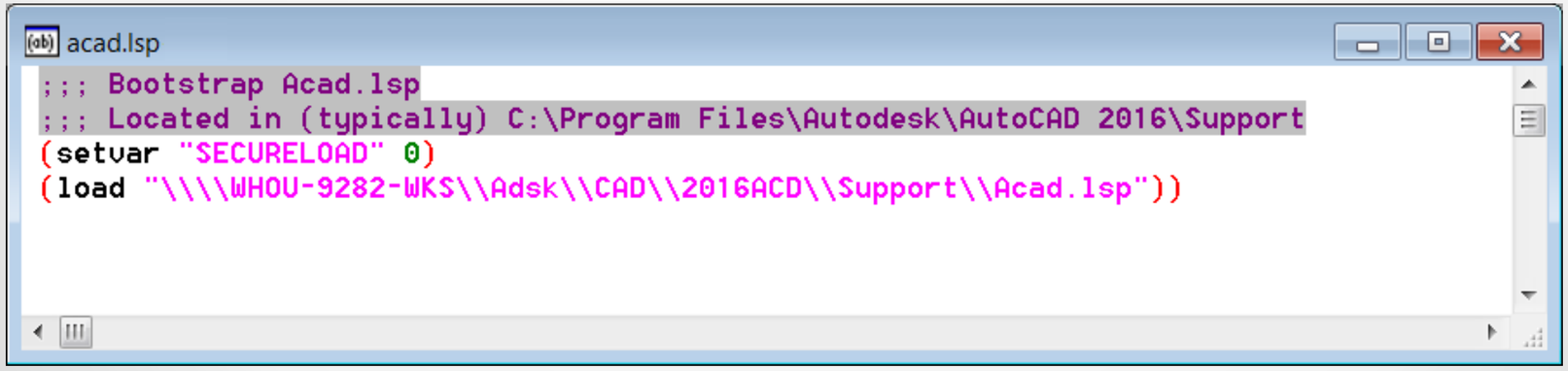
Getting it all started

- AutoCAD is installed with its \Support folder in the Support File Search Path.
- Place your bootstrap ACAD.LSP here at machine setup time.
- Will work for all users.
- Be aware of SECURELOAD.

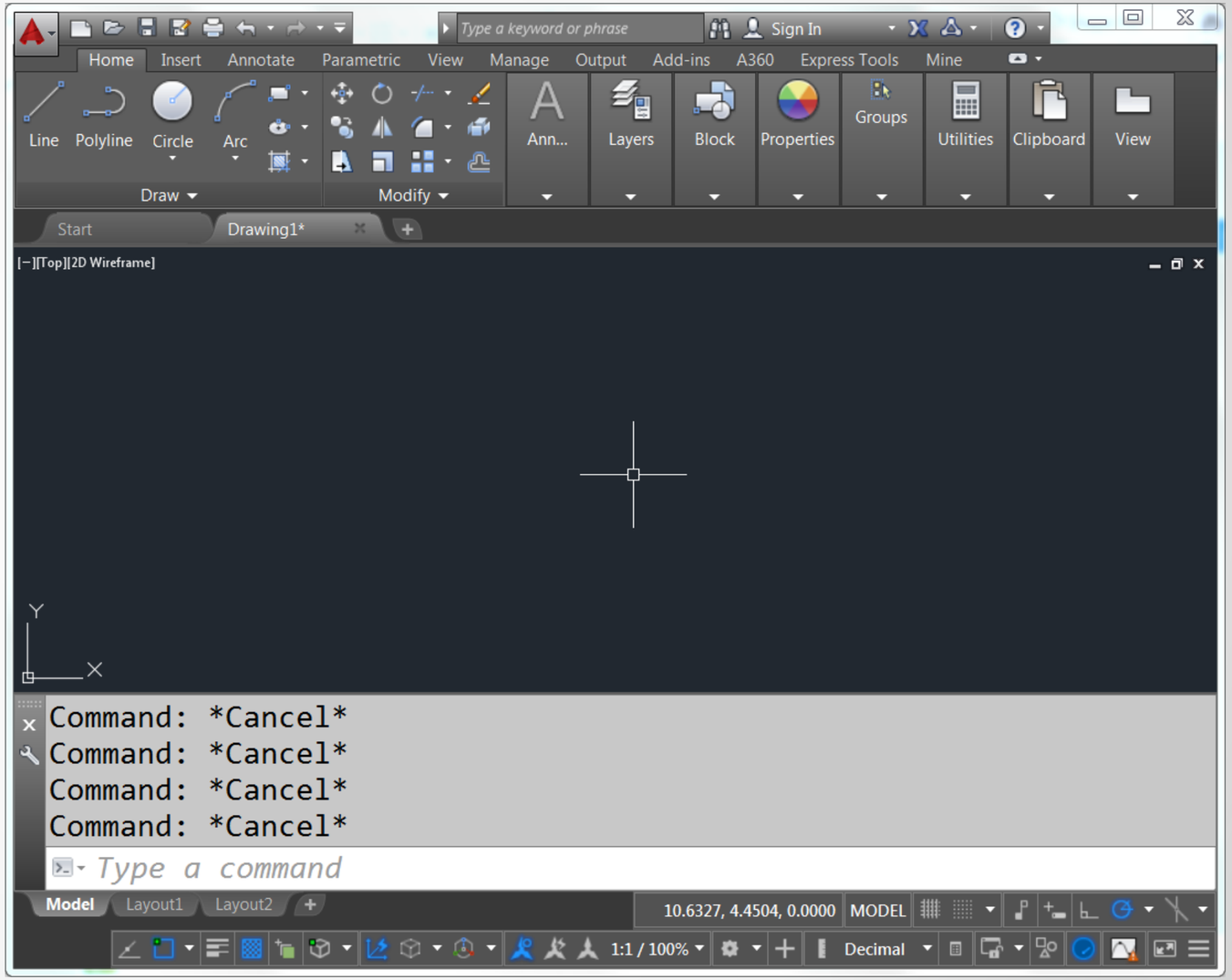


Controlling AutoCAD from a central location

- Once the local bootstrap ACAD.LSP is in place and AutoCAD is launched, the local bootstrap ACAD.LSP will load and in turn load the network version of ACAD.LSP.
- The network version of ACAD.LSP will set the support file search paths, and other paths as you define.
- The local bootstrap ACAD.LSP will not be found again, unless the user resets his/her profile or the pathing is otherwise lost due to error.



Let’s jump into AutoCAD and see some of this in action.



Be heard! Provide AU session feedback.

- Via the Survey Stations, email or mobile device.
- AU 2016 passes awarded daily!
- Give your feedback after each session.
- Give instructors feedback in real-time.

Forget to take notes? No problem!

After AU visit:

AutodeskUniversity.com

Click on **My AU** to find:

- Class Recordings
- Presentations
- Handouts

All of your sessions will be there to enjoy again and again.

Autodesk is a registered trademark of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document. © 2015 Autodesk, Inc. All rights reserved.