

Networking AutoCAD for Control and Speed



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Quick bio ...

- Mechanical engineer turned computer geek
- Private consultant since 1991
- Focusing on CAD standardization, customization and management
- Cadalyst Magazine contributing editor
- 14 year AU speaker

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Users like speed and flexibility

Who doesn't? But flexibility can yield anarchy.



**Yet CAD managers need to
control CAD applications**
But hyper rigid control handcuffs users.



**Can we find a win-win scenario
where both are happy?**

With a little though, yes.

**Solution: Hybrid
C and Network Drives
with Synchronization and
AutoLISP for control.**



Synchronizing

- Maintaining a master file set on the network
- Copying the masters to the user's C drive
- The user then works off of the C drive
- The user can not corrupt the network files
- I'll show you a ROBOCOPY example for synchronizing later ...

AutoLISP

- Gives us an easy way to control commands
- Adding
- Subtracting
- Redefining
- Gives us a way to control profiles
- You don't have to know much to do a lot with it ...

What about laptops?

Travelling workers can't always connect to the network.

Solution: C Drive Synch from Network Drive

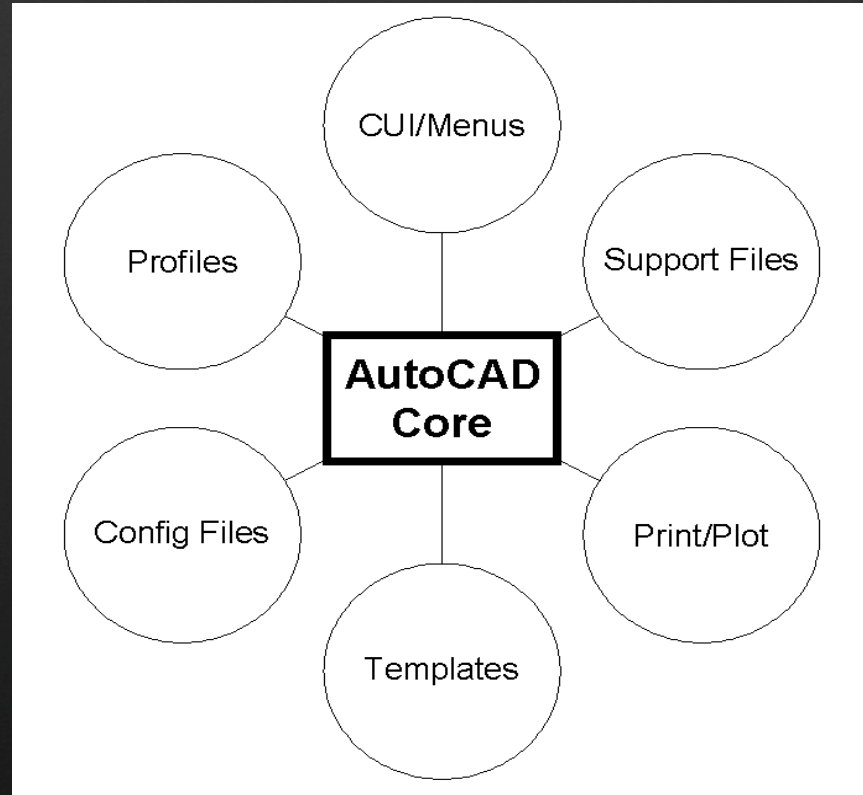


First Let's Look at the Application

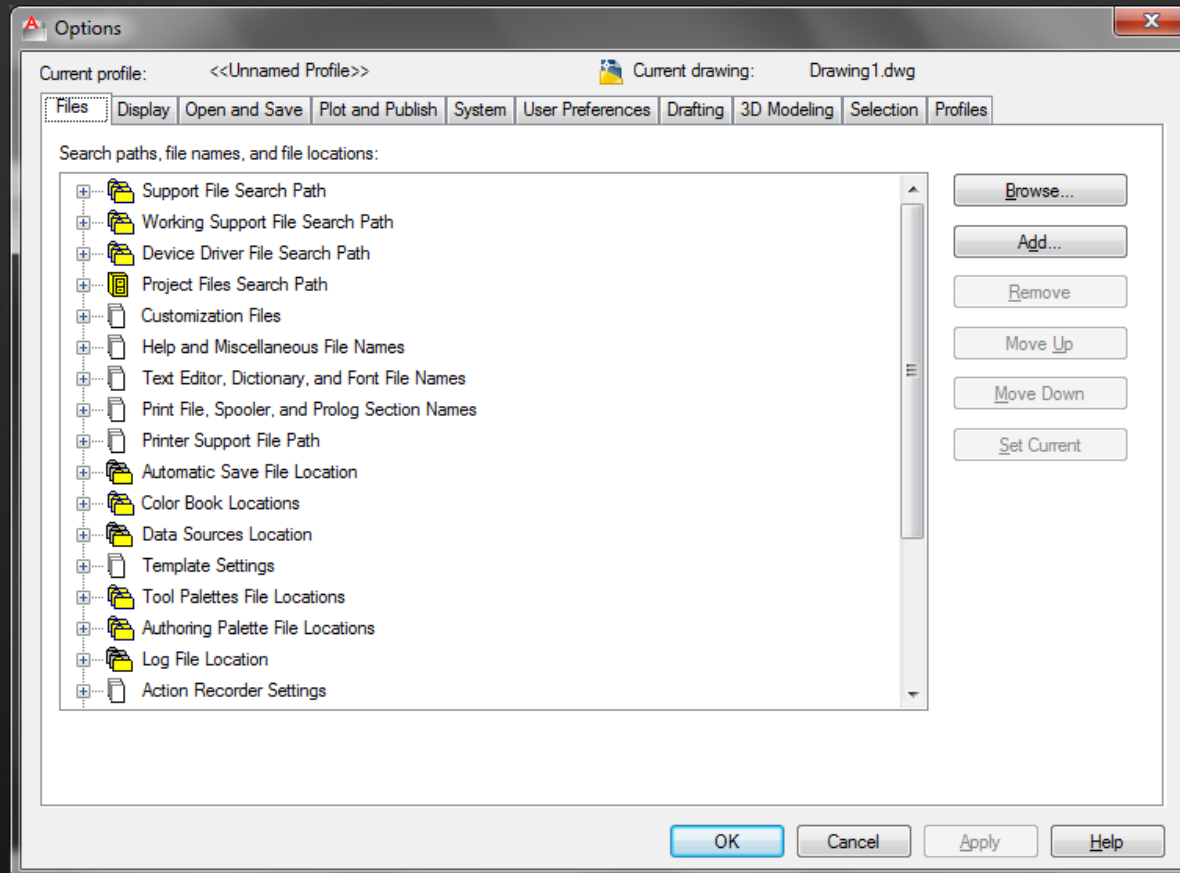
It is a collection of components



Think of it like a spoked wheel ...

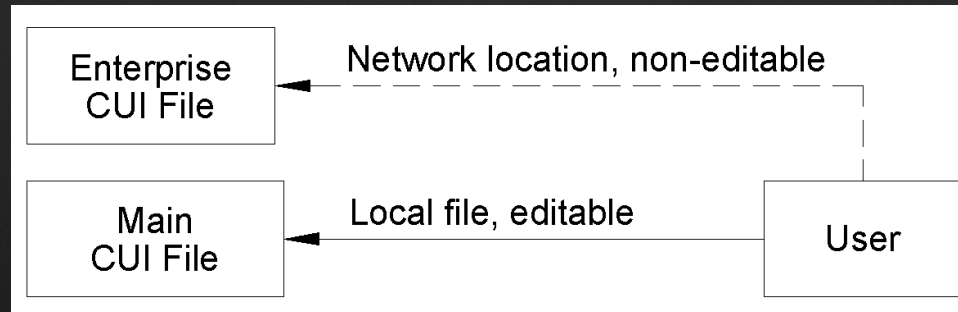


The answers lie in the options



CUI files

- Users can change them
- Yet you want standardization
- These files are problematic to control ...



Support files

- Users should not change them!
- Blocks
- Palettes
- Palette content
- These files usually live on the network
- But laptop users may need them as well ...

Printing/plotting files

- You need standardization
- But you need standardization
- Yet users can create a lot of extraneous plotting files
- These files are problematic as well ...

Template files

- Users should not change them
- These files live on the network ...

Profiles

- Users really shouldn't change them
- But they do
- They live on the C drive by default
- We need a better way to manage these ...

The Three Cases

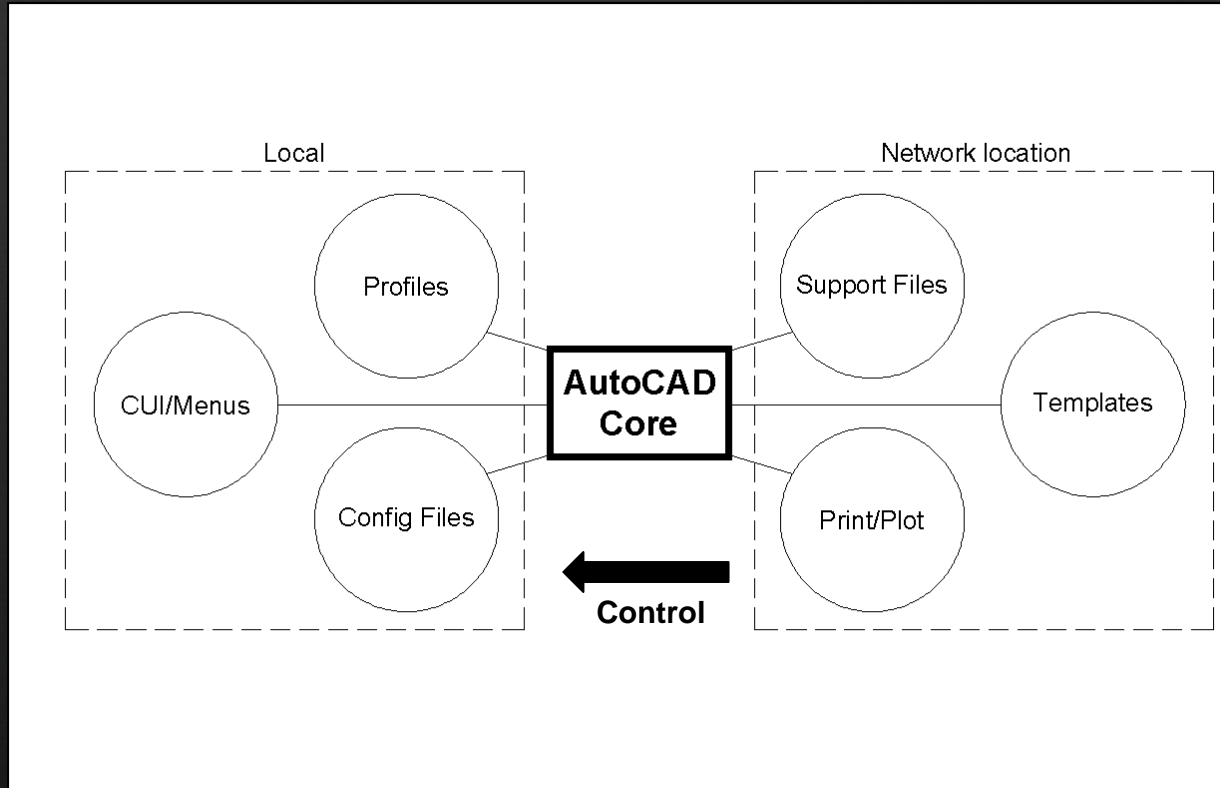
My suggested approach



The three file cases

- AutoCAD Core files – on the C drive for speed
- Support files – on the network for locked down control
- Plot/CUI files – synched from network to C:
 - Maximizes user speed (local drive)
 - Max user control (no permissions headaches)
 - Minimum chance for users to mess up master files ...

Pictorially



Understand your Topology and Permissions

Your environment can alter your approach



Topology

- One office, one fast network:
Everything will be fast – all your options are open
- Branch offices, slow WAN topology:
Speed suffers – you'll be more likely to synch from network to C
- Mobile workforce with laptops and occasional login:
C drive rules but synch can keep machines up to date ...

Network permissions approach

- Totally locked down:
Users can do nothing on network drives – synch to give control
- Wide open:
Users can do too much on network drives - bad
- Most companies:
Somewhere in between – synch for speed and user convenience ...

Taking control

- Set up a network CAD folder that you control
- You place your key files there (no one else has permissions)
- Now point AutoCAD to this folder
- But what happens if over aggressive permissions hamper users ...

Synch folders

- Set up a network CAD folder that you control
- You place your key files there (no one else has permissions)
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- But what happens if over aggressive permissions hamper users ...

Licensing

Does it change the equation?



Not really ...

- Standalone machines are fast
- Multi-seat standalone machines are fast
- Network licensed machines are fast with core files installed on C drive.
- Network licensing should, in my opinion, be on a local server though ...

Building a Sample Profile

Consider the following



Set options taking these factors into account

- C drive for core files
- Network for files that won't change
- C drive for synched files (keep track of these)

- I suggest the following for synched files:

C:\TEMP\ACAD\Plotters

Prepare for synch

- Copy all the files from folders like these:

C:\TEMP\ACAD\Plotters

To a folder you create on the server just for your synched files

- Make sure the synch folder on the network is read-only for users
- Now you're ready to synch (more a bit later) ...

Synch Using RoboCopy

A very slick utility



Here's what we'll do

- Copy everything from the network synch folder
- To the local machine
- Bringing along all subdirectories
- Writing over old files (auto-update)
- Leaving user generated files alone ...

Syncing manually

From the command line we'll say:

```
robocopy \\server\folder c:\temp /e
```

or

```
robocopy drive:\folder c:\temp /e
```

Where

\\server is your server location

\\server \folder is the full path to the files

C:\temp is the folder on the user's machine

Using SUBST

The “fake network drive” concept



The Fake Network Drive

- How can we modify and adapt our network files in private?
- How can we test network files without changing the default installation?
- Use an old DOS command SUBST to create a fake drive.

- Here are the steps:
 - Create a folder on your C drive to hold the modified files.
 - Disconnect the network drive.
 - Use SUBST to assign a network drive to the C drive folder.
 - Use the fake network drive to test and develop ...

The Fake Network Drive

Make a fake network Z drive like this:

```
SUBST Z: C:\Z
```



```
C:\>subst z: c:\z_
```

A screenshot of a Windows Command Prompt window. The title bar is blue and contains the text "C:\ Command Prompt" along with standard window control buttons (minimize, maximize, close). The main area is black with white text. The command prompt shows "C:\>subst z: c:\z_" with a cursor at the end of the line. The window has a scroll bar on the right and a status bar at the bottom.

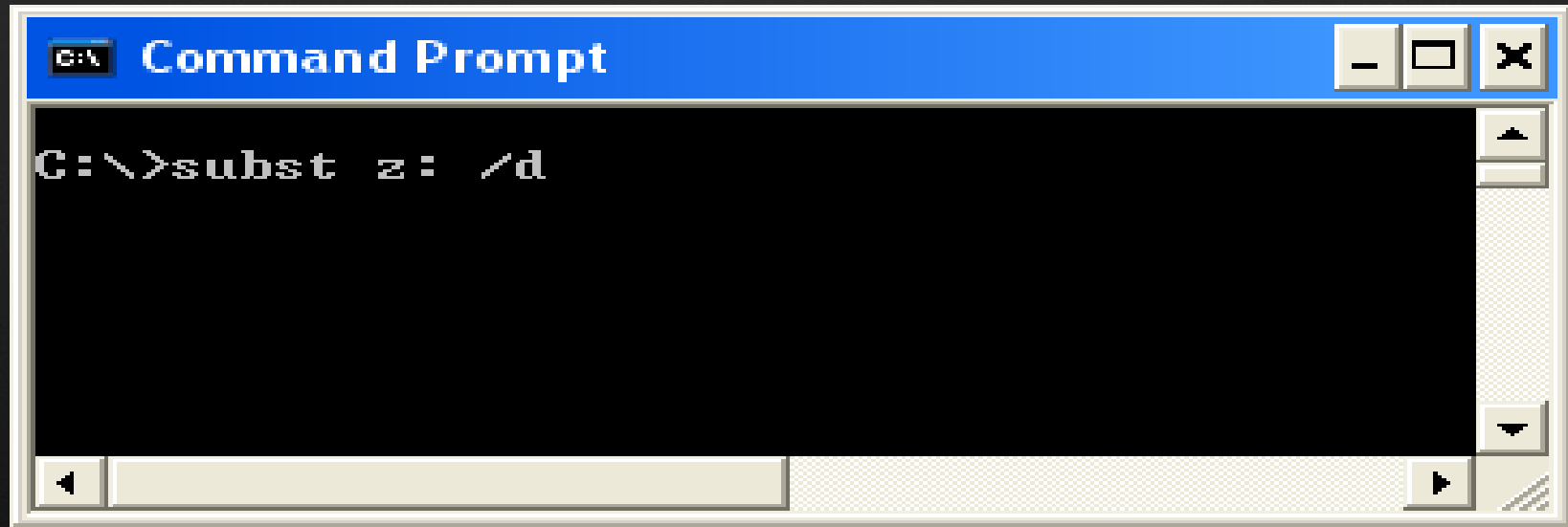
The Fake Network Drive

- Now simply unSUBST the fake drive
- Reattach the real network drive
- Copy the modified files to the real network drive
- You're done ...

The Fake Network Drive

When done just delete the fake drive like this:

```
SUBST Z: /D
```



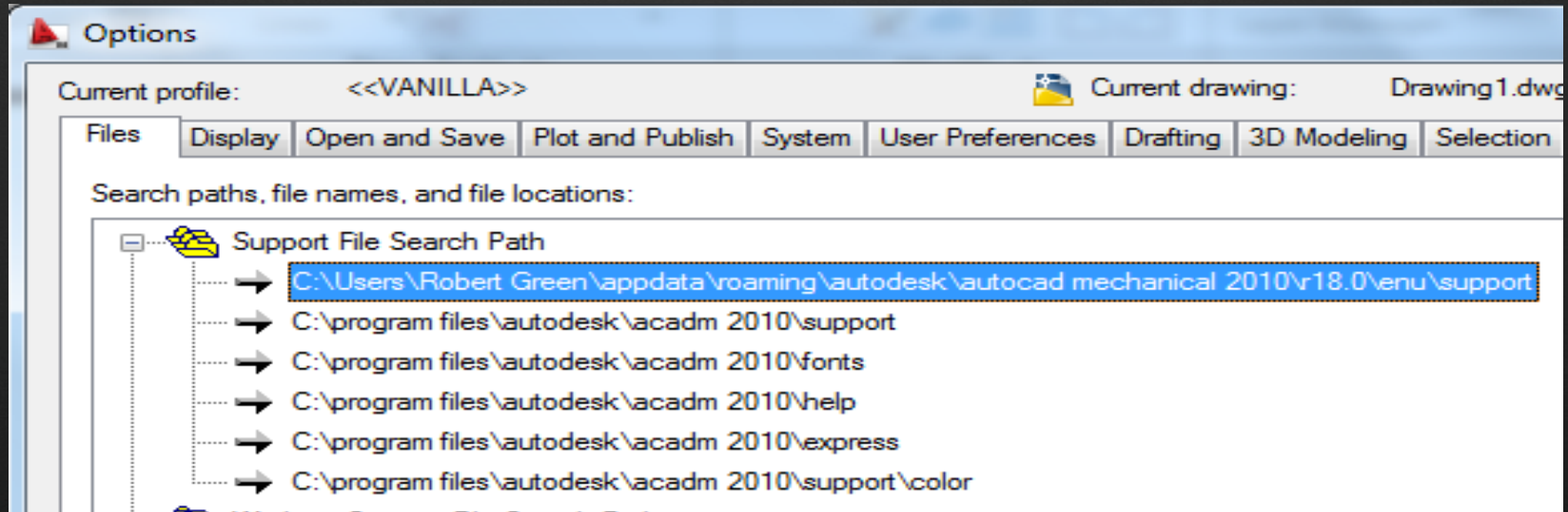
AutoLISP

Enabling command and registry management



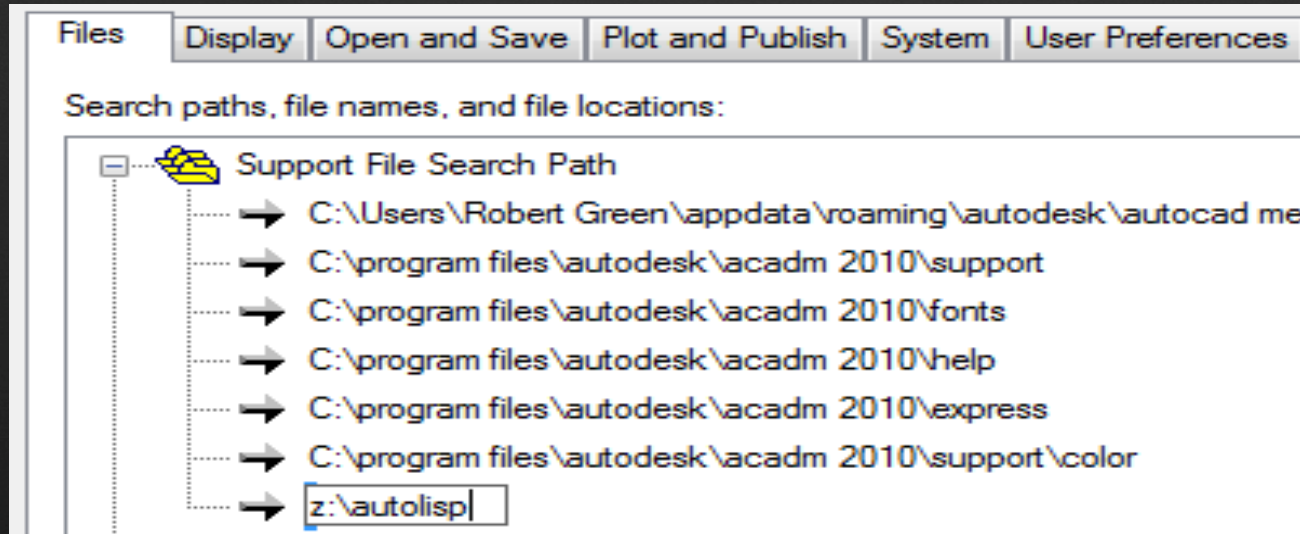
Find the support folder ...

- Use OPTIONS to find the folders ...



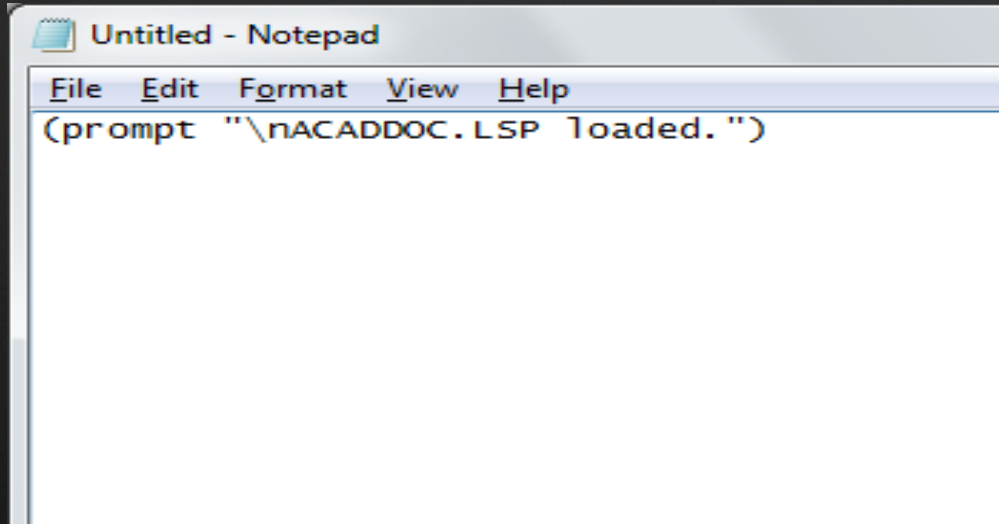
Add a network folder ...

- Use **OPTIONS** to add it ...



Create an ACADDOC.LSP file in the network folder

- Use Notepad – not Word!
- Use (prompt "\nACADDOC.LSP loaded.") as text to make sure it'll load



The image shows a screenshot of a Notepad window titled "Untitled - Notepad". The window has a menu bar with "File", "Edit", "Format", "View", and "Help". The text "(prompt "\nACADDOC.LSP loaded.")" is entered into the text area.

Synch Using RoboCopy

But automate it this time



Add this to ACADDOC.LSP

(command "shell" "robocopy \\server\folder c:\temp /e")

Where

\\server is your server location

\\server \folder is the full path to the files

C:\temp is the folder on the user's machine

Manipulate the Command Set

Via central automation



Take Control of the Command Set ...

- **Undefine commands**
- **Add commands**
- **Redefine commands**

- **All code goes in the ACADDOC.LSP**

New commands ...

- (defun c:zw ()
 - (command “.zoom” “w”)
 - (princ)
 -)
-
- This is an easy way to make a powerful command shortcut.

▶ Now you can ADD to the AutoCAD Command set in your ACADDOC.LSP file.

Undefining ...

- (command “.undefine” “LINE”)
- (command “.undefine” “TORUS”)

- Don't want them messing with a command? Just undefine it ...

▶ Now you can SUBTRACT from the AutoCAD Command set in your ACADDOC.LSP file.

Redefining ...

- You can undefine a command and redefine it like this:

```
(command “.undefine” “TORUS”)
```

```
(defun C:TORUS ()  
  (alert “Don’t use that command!”)  
  (princ)  
)
```

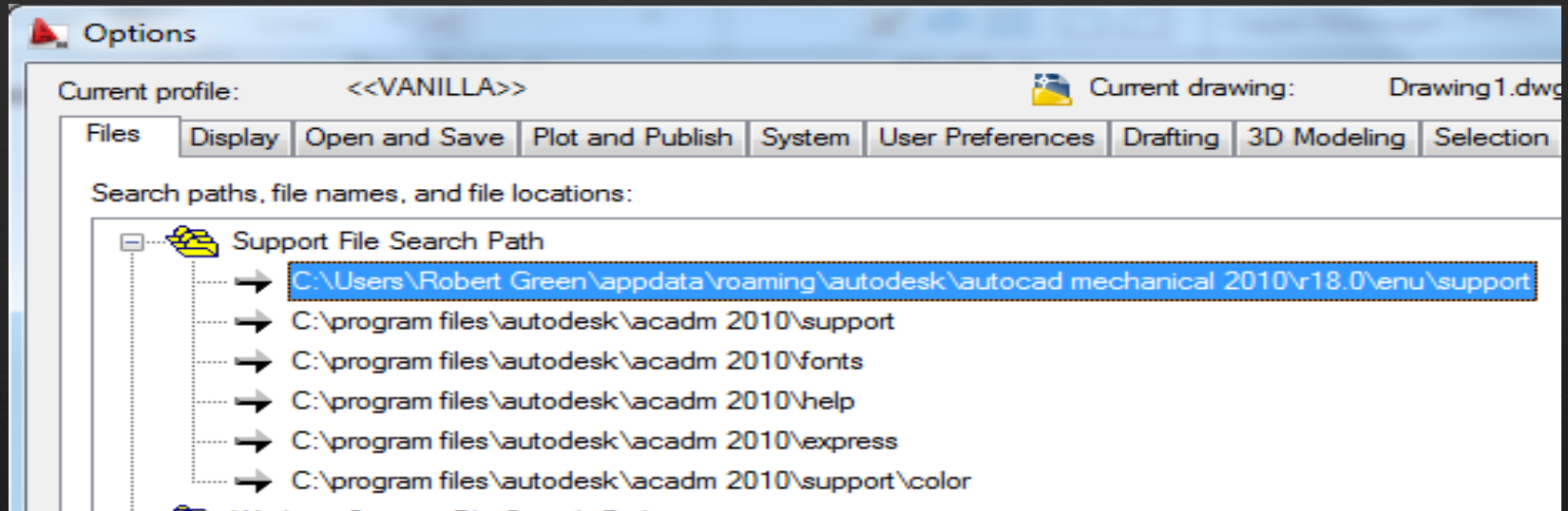
▶ Now you do whatever you want!

Profiles

Make sure users have the correct folder assignments no matter what profile they are in.



Find a parameter in your options screen ...



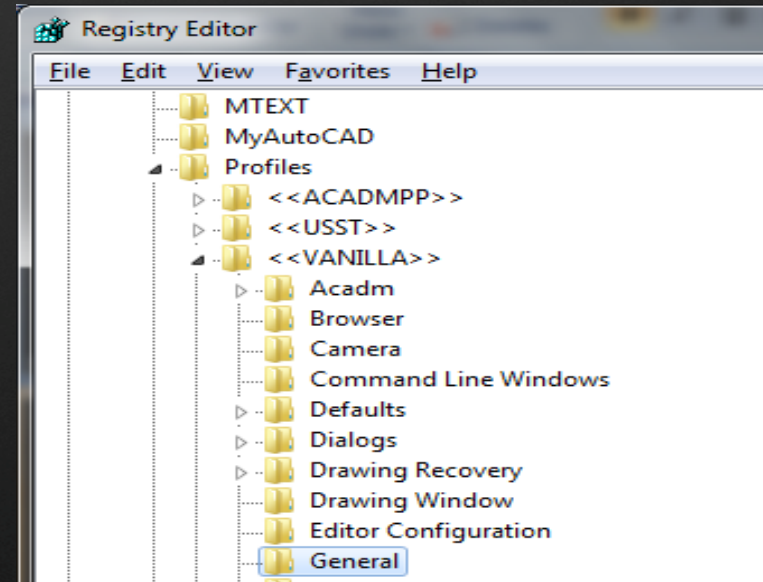
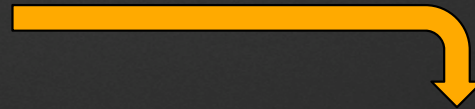
Locate the corresponding registry key

Use REGEDIT

Find the version

Find the profile

Look in the **GENERAL** folder



Locate the registry keys

Find the key



0x00000000	REG_DWORD	0x00000000 (0)
Pickstyle	REG_DWORD	0x00000001 (1)
PlotLogPath	REG_EXPAND_SZ	%USERPROFILE%\appdata\local\autodesk\autocad r
PlotToFilePath	REG_EXPAND_SZ	%USERPROFILE%\documents
PrinterConfigDir	REG_EXPAND_SZ	%USERPROFILE%\appdata\roaming\autodesk\autoc
PrinterDescDir	REG_EXPAND_SZ	%USERPROFILE%\appdata\roaming\autodesk\autoc
PrinterStyleSheetDir	REG_EXPAND_SZ	%USERPROFILE%\appdata\roaming\autodesk\autoc
ProfileStorage	REG_EXPAND_SZ	%USERPROFILE%\appdata\roaming\autodesk\autoc
RegisteredToolsPath	REG_EXPAND_SZ	%RoamableRootFolder%\Support\RegisteredTools
Scrollbars	REG_DWORD	0x00000001 (1)

Override with code

```
(setenv "PrinterConfigDir" "C:\\TEMP\\acad\\Plotters")
```

Summing Up

Things to keep in mind



You'll find your unique solution ...

- **Every network is different**
- **Every company has different needs**
- **Every CAD manager has to make tradeoffs**
- **There is no single right answer!**
- **Use a combination of local, network and synch techniques to optimize your AutoCAD environment.**
- **All the best ...**

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