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Orlando, Florida

The 12 Hidden Secrets of AutoCAD® Productivity Revealed!

Matt Murphy - ACADventures

GD21-2 Productivity is a goal of every AutoCAD user. Unfortunately, using AutoCAD every day does not, in itself, make you more productive. You improve productivity by choosing the shortest, most efficient technique for each specific drawing problem. Learn how to improve your productivity by tapping into AutoCAD's hidden secrets and eliminating repetitive steps. Wouldn't you be more productive if you could eliminate half of the clicks and picks you're making today? See for yourself the 12 hidden productivity secrets that elude most AutoCAD users.

About the Speaker:

Matt has been recognized by Autodesk as a leader in providing professional training since 1985. He has served as an advisor and consultant to the training industry as chair of the Autodesk Training Center Advisory Board (ATCAB) and executive committee (ATCEC), and to AUGI. Matt is also an Autodesk Certified Instructor and a Certified Technical Trainer. He has received numerous instructional awards for his efforts in raising the quality of the training industry. A widely acclaimed top trainer and featured columnist for AUGIWorld magazine, he has presented at Autodesk University for 11 years as one of the event's most popular presenters.

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Introduction

Without a doubt more people than ever are frustrated with their ability to become truly productive with AutoCAD. I have also found that the majority of users I meet have had no formal training on how to use AutoCAD. Why should they? – because “You don’t know what you don’t know!” Getting training from knowledgeable and certified training professionals will give you the skills you don’t know you need, so you can improve your productivity. Attending this session and other sessions at AUGI CAD Camp is an excellent step toward greater productivity.

Let’s begin by addressing a couple of major misconceptions. The first is that productive users are programmers. This is not necessarily true. There are many advantages to writing code and the goal of programming is to eliminate repetitive tasks and steps. There are many ways to reduce the number of clicks and picks, thus eliminating repetitive operations, without having to program. The second misconception is that if you work faster you’ll be more productive. Speed has nothing to do with being productive! Even today’s super-fast computers may only save a few seconds in processing speed on large drawings as compared to machines from just a few years ago. I find many users are wasting time by trying to “do it” faster.

In this session I will address many of the simplest yet most powerful techniques to bring your AutoCAD experience to a new productivity level by eliminating many of your daily repetitive steps. You can become instantly more productive by choosing the shortest, most efficient method and best technique for each specific drawing problem. What if you could eliminate 20, 30, or even 50 percent of the clicks and picks you are doing today? Wouldn’t you be more productive?

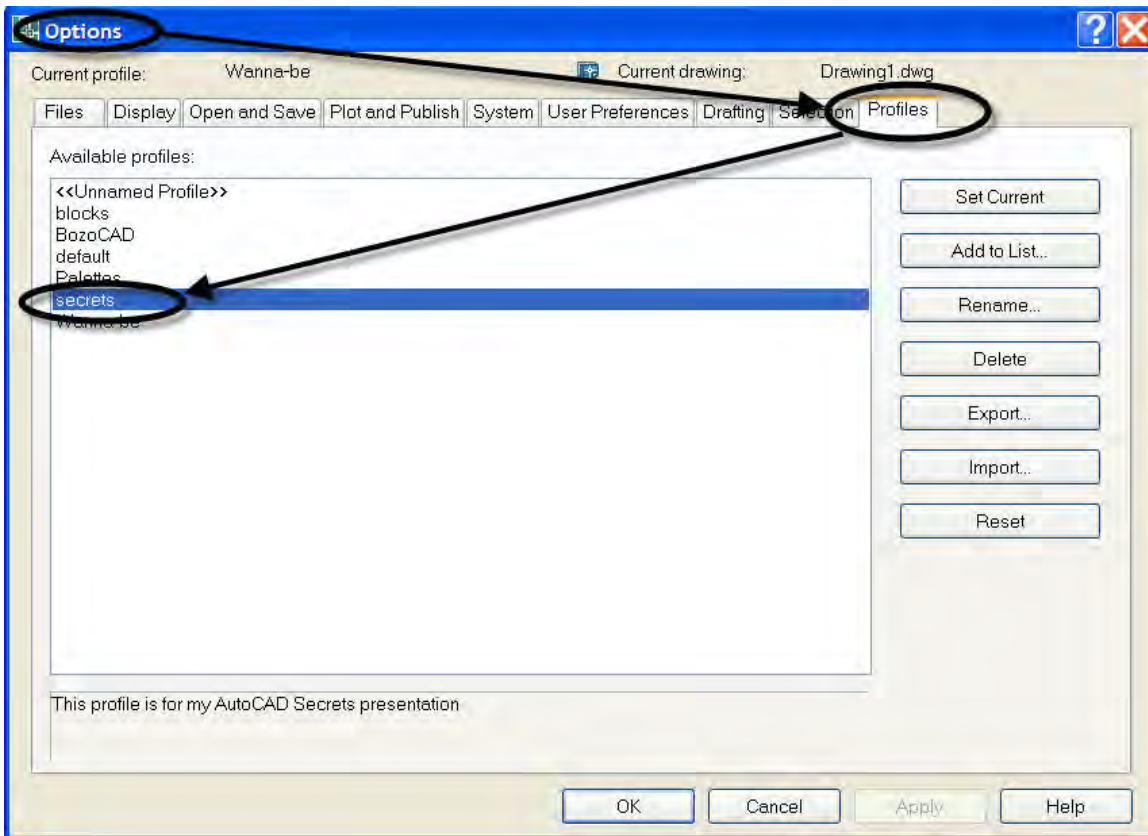
In this session you’ll experience what I’ve found to be the 12 greatest tips for better productivity. We’ll count them down beginning with number 12!

#12 – Where’s My Desktop?

Use Profiles

Profiles are added and controlled using the Profiles tab in the Options dialog box. From here you can create and save your drawing environment settings as a profile. If you share your workstation with other users who use the same login name, you can restore your options by making the profile current. You can also create and save profiles to use with different projects or for different tasks.

The profile information is stored in the system registry and can be saved to a text file (an ARG file). AutoCAD organizes essential data and maintains changes in the registry as necessary.



Reset system variables with a Script

There are more than 370 system variables in AutoCAD 2006. This means that there are more than 370 individual settings, over 70 of which are just for dimensioning. What do you do if AutoCAD system variables have been changed? Running a script routine is one of the easiest things to do, but seems to be one of those mysterious things that people find difficult. A script file is very simple, yet is a potentially very powerful customizing tool.

A script routine is similar to a macro or batch routine. Ever run the macro recorder while in Microsoft® Word® or Excel®? A script executes a series of commands that are inside an ASCII text file with a file extension .SCR. The script file can be generated using Microsoft® Notepad or another text editor, though you can use Microsoft® Word® if you can remember to save the file as Plain ASCII Text. All you need to know is the correct command sequence. The easiest way to write a script is to execute all the commands or variable settings you wish to set. Then cut and paste your F2 text window into Notepad. You'll need to do a little cleanup. Just remember each space and each line is a "return" from the AutoCAD command prompt.

Here's one that I use just in case someone has changed the grips settings and made monkey grips in AutoCAD 2005.

```
GRI PBLOCK 0
GRI PCOLOR 5
GRI PHOT 1
GRI PHOVER 3
GRI POBJLIMIT 100
GRI PS 1
GRI PSIZE 7
GRI PTIPS 1
```

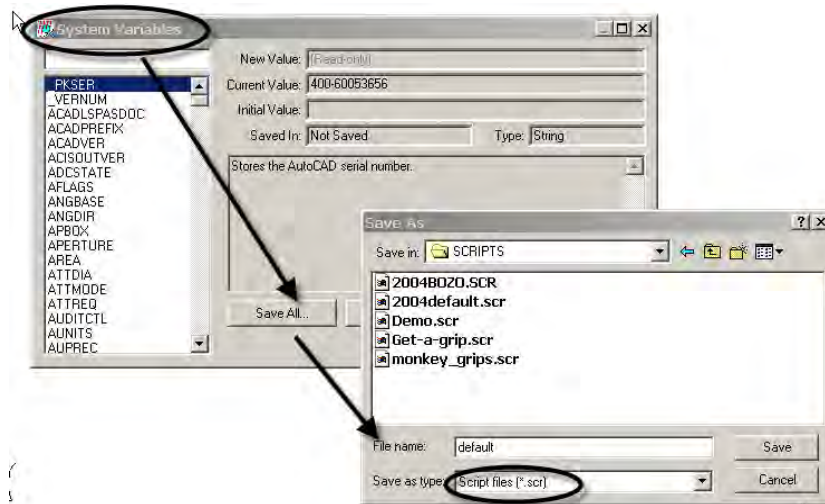
In AutoCAD 2006, it would look like this:

```
BGRI POBJCOLOR "141"
BGRI POBJSIZE 8
DYNDI GRIP 31
GRI PBLOCK 0
GRI PCOLOR 160
GRI PDYNCOLOR 140
GRI PHOT 1
GRI PHOVER 3
GRI POBJLIMIT 100
GRI PS 1
GRI PSIZE 5
GRI PTIPS 1
```

SECRET REVEALED: If you cut and paste your system variable settings from your AutoCAD Text window into Microsoft Word, you can do an Edit>Replace with a ^W for all white spaces (find) and replace with a <space> to clean up your custom script file with just two clicks.

SECRET REVEALED: System variables and their settings vary from release to release. It's always important to use variables from your currently working and active AutoCAD desktop.

If you want to get all the system variables for AutoCAD 2004 use the editor in the Express Tools. This is the fastest way to create an editable script file. Remember that Express Tools are NOT supported in AutoCAD 2005 and higher. That means there are no new system variables in this creation tool.



Warning: The System Variable editor under Express Tools only gathers variables up to and including AutoCAD 2004!

#11 – Take It From the Start – Use Startup Switches!

Startup or command switches can be used to get AutoCAD set before you even start. Startup switches are added in the “Target” of your desktop icon. Here are the ones I use:

Remove startup screen in desktop /nologo

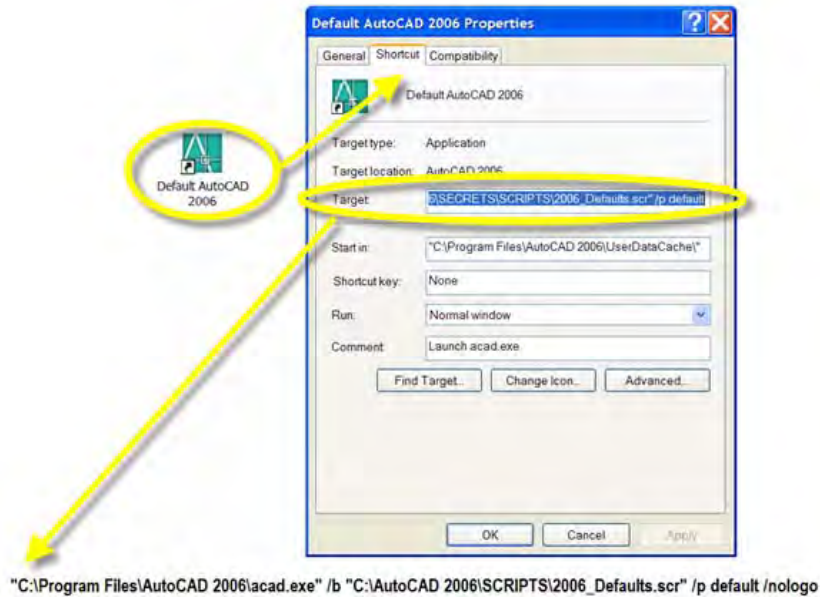
Every time AutoCAD is started, the AutoCAD logo makes a brief appearance. A quick way to make AutoCAD load faster is to remove the AutoCAD logo startup screen. Right-click once on the AutoCAD desktop icon and select Properties. Once the AutoCAD Desktop Properties dialog box opens, put your cursor in the Target display and at the end of the default text that is already there, outside the quotation marks, type “/nologo” with a space in front of it. This will prevent the logo from appearing on the startup.

Add profile in startup Target: /p <nameofprofile>

By starting with a profile you are setting up your AutoCAD desktop for the task at hand. Forget about opening and closing toolbars. Starting with a profile presets many of the AutoCAD system settings and makes your desktop ready. Once inside AutoCAD, right-click in the middle of the screen and select Properties. Then choose the Profiles tab. Create as many profiles as necessary for each occurrence that you might need. Exit AutoCAD and right-click once on the AutoCAD desktop icon and select Properties. Once the AutoCAD Desktop Properties dialog box opens, put your cursor in the Target display. At the end of the default text that is already there, outside the quotation marks, type “/p” with a space in front of it and then add the name of the profile. Copy your desktop icon, rename to the new profile name, and then change the /p name.

Add a script to startup Target /b <c:\scriptnameandpath>

Let’s remove the splash screen logo, set our profile, take that system variable script, and reset those troublesome variables before we start our drawing session.



Other Startup Switches

- /R Restores default pointing device
- /T Template file name
- /C Hardware configuration folder
- /V View name
- /S Support Directory
- /LD ARX or DBX application
- /NOSSM No sheet set manager window
- /SET Loads sheet set

#10 – Seeing is Believing if You Can Find What You’re Looking For.

What is the number one command used by AutoCAD users?

Over the years I have found that the thousands of AutoCAD users I’ve trained are using Zoom and Pan more than any other command. Why? Because they are constantly looking for the things they need to edit.

Get the best performance from your AutoCAD session by adjusting real-time Pan and Zoom with IntelliMouse® inside AutoCAD and on your PC. You can adjust Zoom percentage and scroll increment for the mouse wheel. The standard Microsoft® IntelliMouse® is a two-button mouse with a small wheel between the buttons. You can use the wheel to:

- Zoom in a drawing without using Autodesk software commands
- Scroll in dialog boxes without using scroll bars

The scroll value adjusts the number of lines scrolled for each increment of wheel rotation. Using the wheel to scroll is a fast and easy alternative to using the scroll bars.

To ensure the pan feature works when you depress the wheel, make sure the MBUTTONPAN system variable is set to 1. When MBUTTONPAN is set to 0 you’ll get the Object Snap popup menu.

To adjust the zoom percentage, change the value of the ZOOMFACTOR system variable. The initial value of ZOOMFACTOR is 10. You can enter an integer value for ZOOMFACTOR in the range 3-100. The value you enter represents the percentage change in zoom level for each increment of wheel rotation. For example, when ZOOMFACTOR is set to 10, each increment of wheel rotation changes the zoom level by 10 percent.

Another way to adjust the scroll value is in your Windows® Control Panel:

1. In Windows Control Panel, double-click the Mouse program icon.
2. In the Mouse Properties dialog box, choose the Wheel tab.
3. In the Wheel area, choose Settings.
4. In the Settings for Wheel dialog box, change the settings for scrolling (you can also change the wheel direction in this dialog).
5. Choose OK to close the Settings for Wheel dialog box.
6. Choose Apply, then OK to close the Mouse Properties dialog box.

More Intellitips

If you are using an Intellimouse, you can Zoom and Pan using the wheel. Roll the wheel away from you to zoom in; roll the wheel towards you to zoom out. When you zoom in and out, AutoCAD zooms in and out around the location of the cursor.

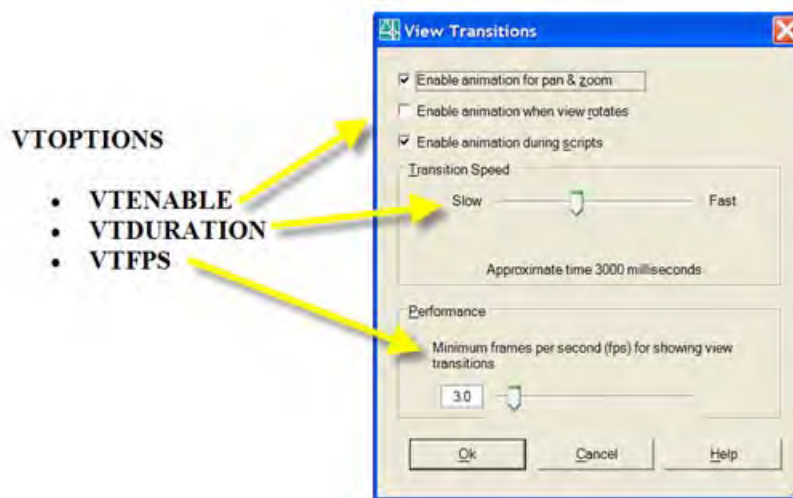
Press the wheel down and move the mouse to pan.

Double-click on the wheel to zoom extents.

Hold the CTRL button on the keyboard while you hold down the wheel and move the mouse to use another mode of panning called Joystick Pan.

VT Options

The new View Transitions feature lets you pan and zoom at varying speeds.



Switching Between Zoom and Pan

In either Zoom Realtime or Pan Realtime, you can right-click to bring up a shortcut menu with viewing options. Pick the option you want from the menu and continue with another viewing option.

Zoom Window in this option requires that you hold down the pick button while you draw the window.

Zoom Original returns the display to the view that was current when the Zoom/Pan Realtime command was started.

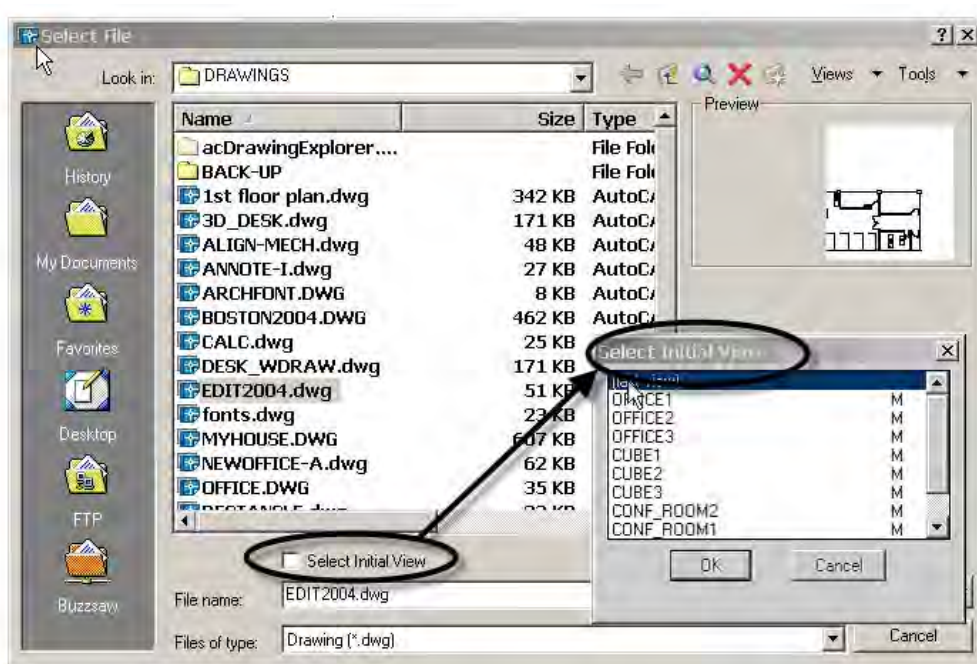
Saving your zoom window with a name – because there is more to viewing your drawing than zooming and panning.

You can create named views or essentially save your current display window with a name so you can recall it at anytime. The name of a view can be up to 255 characters long and contain letters and digits, the special characters dollar sign (\$), hyphen (-), and underscore (_).

If you want to save only part of the current view, select Define Window. Then click the Define Window button to use the pointing device to specify opposite corners of the view. Otherwise, select Current Display.

Opening drawings with an initial view

You can determine how you open a drawing and how much of the drawing you open. You have the options of Open, Open Read-Only, Partial Open, and Partial Open Read-Only.



Partial Open – which layers do you want to see?

Did you ever wish you could open certain layers of a drawing to work on instead of the entire drawing? Does it take forever to open a large drawing? AutoCAD 2000 to the rescue! You will save load time when partial information is needed. You can then load other parts of a drawing as more information is needed. You can now Partial Open and Partial Load a drawing.

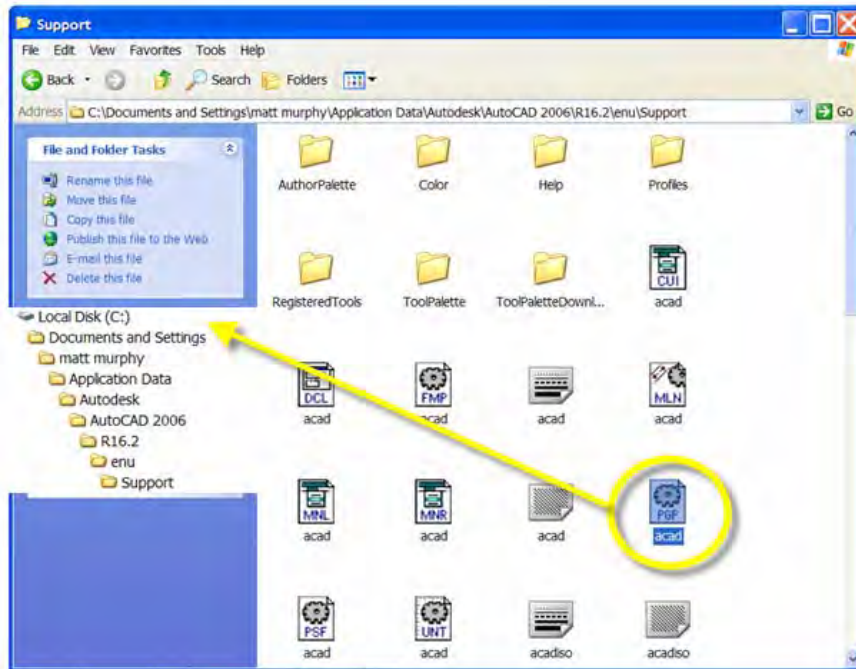
Performance advantages are gained with large drawing files that have multiple layers and views. Memory requirements are also reduced. Also note that partially opened drawings are locked and the purge command cannot be used.

SECRET REVEALED: With either of the “Partial” options, you would be presented with a Partial Open dialog box that allows you to pick the layers that you wish to view. This saves time as opening large drawing files degrade both your computer’s performance and yours!

#9 – Alias Who? The Abbreviated Short-Cut to Commands.

Command aliases

Fewer clicks and picks is one way to productivity but what about eliminating the number of keystrokes you execute? Rather than typing the entire command name, you can use abbreviations called command aliases. Many AutoCAD commands are already programmed for three or fewer keystrokes.



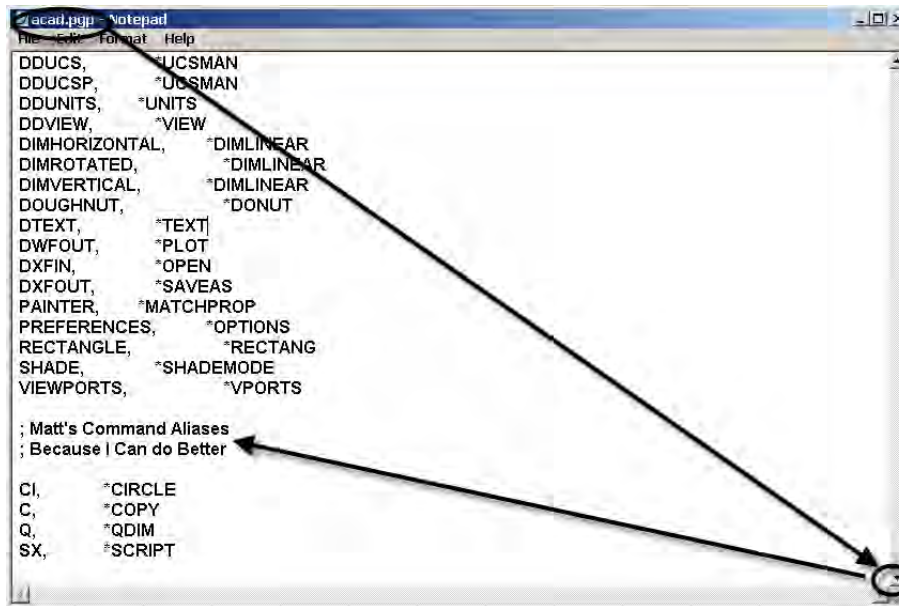
If you want to add aliases, this is done by editing the text file acad.pgp which stands for the **Pro**gram **P**arameters file. The acad.pgp file can be found in the Support directory of AutoCAD's program placement (for AutoCAD 2002: C:\Program Files\Autodesk\AutoCAD 2002\Support\acad.pgp) and (for AutoCAD 2004 and later: C:\Documents and Settings\LOGI N NAME\Appl i cati on Data\Autodesk\AutoCAD 200X\R16. X \enu\Support\acad.pgp). Please note that since AutoCAD 2004 there is a hidden support folder for each user login. This was done to support roaming profiles in the Windows 2000 and XP environments.

Second, read through for any commands that you may wish to customize that are present in the file already. There might be an alias already. Another reason is so that you don't take a short key assigned to another command or vice versa. For instance, many people like to type "C" for COPY rather than "C" for CIRCLE. Adding your command alias will overwrite any previously assigned key.

Add to the .PGP file – do NOT modify existing alias!

Add your command aliases to the bottom of the pgp file. The last alias read is the one that works. Also if you would like to return to the default aliases you only have to delete the ones you created at the bottom of the file.

This whole idea behind this file is to allow the user to take plain commands and reduce the number of keystrokes necessary to execute them. It is not intended to combine several commands together or to support LISP files or other programming features.



Don't forget to use Reinit to reset the acad.pgp

When you modify this file while AutoCAD is still open and running, the changes will not take effect until you run Reinit from the command line. This is one of those little secrets that many people forget to tell you about editing the acad.pgp file. In the old days of AutoCAD Release 9 and prior we had to shut AutoCAD down and restart. That's because this file is only read on the initial start-up of AutoCAD.

SECRET REVEALED: Do NOT use the Express Tool editor to change the PGP file as it does not map the correct path to the user login PGP file in AutoCAD 2004. I recommend to always use the Program Parameter Editor under the Tools pull-down menu.

SECRET REVEALED: Make your additions to the program parameters file at the bottom of the file. Do NOT change existing command aliases. This way you can easily remove any customization. The last alias read is the one that is in effect. The AutoCAD 2006 PGP file actually recommends this, if you read to the bottom of the file.

#8 – The Keys to Acceleration and Control.

Windows® keys

More Bill Gates features:

Use arrow keys to cycle through commands or coordinates that have been previously used.

- Windows+E Explorer
- Windows+F Search
- CTRL+N New
- CTRL+O Open
- CTRL+P Print
- CTRL+S Save
- CTRL+V Paste from Clipboard

| | |
|-----------|----------------------------|
| CTRL+X | Cut to Clipboard |
| CTRL+Y | Redo |
| CTRL+Z | Undo |
| Windows+R | Run |
| Windows+M | Minimize your open windows |

More Keys to Control

People either love or hate control keys but control freaks usually have their house in order. The importance of control keys is indicated by the presence of two of them on the keyboard!

The following is a list of Control Keys defined in Windows® and in AutoCAD®.

| | |
|----------------|--|
| CTRL+TAB | Cycles through open drawings – forwards |
| CTRL+SHIFT+TAB | Cycles through open drawings – backwards |
| CTRL+1 | Properties |
| CTRL+2 | AutoCAD DesignCenter |
| CTRL+3 | Tool Palette Window |
| CTRL+6 | dbConnect |
| CTRL+0 | Cleanscreen |
| CTRL+A | Select all |
| CTRL+SHIFT+A | Toggles Group* |
| CTRL+B | Toggles Snap |
| CTRL+C | Copy to Clipboard |
| CTRL+D | Toggles coordinate display |
| CTRL+E | Cycles through isometric planes |
| CTRL+F | Toggles running Object Snap |
| CTRL+G | Toggles Grid |
| *CTRL+H | Toggles Group |
| CTRL+J | Executes last command |
| CTRL+K | Insert hyperlink |
| CTRL+L | Toggles Ortho on/off |
| CTRL+T | Toggles Tablet mode |

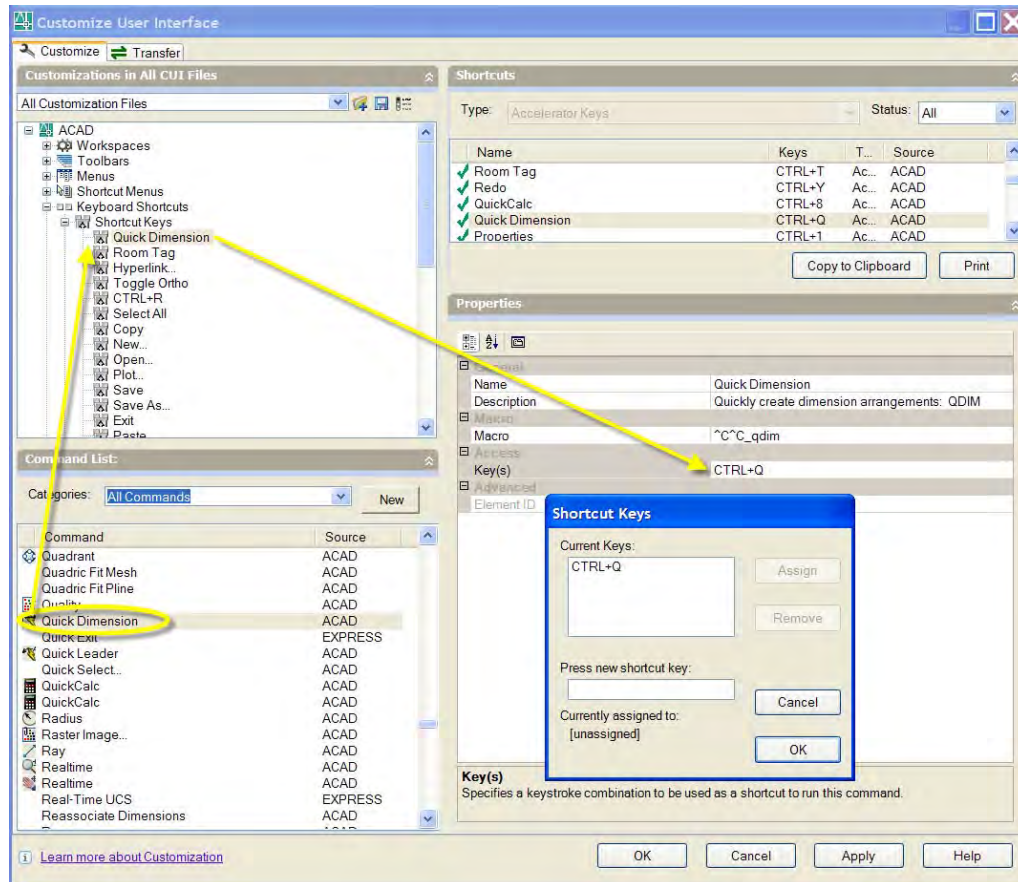
AutoCAD 2005 and earlier: If you want to make your own keyboard shortcuts, type “customize” in the command line, right-click on any toolbar button or from the “Tools” pull-down menu choose “customize” and choose “keyboard”. Pick a Category such as Dimension. Pick a command such as QDIM. No current keys are assigned, so you can pick your own. In “Press New Shortcut Key:” assign it a shortcut such as “CTRL+Q” or add multiple keys. You can also use unassigned accelerator keys like F12.

AutoCAD 2006: If you want to make your own keyboard shortcuts, type “customize” in the command line and right-click on any toolbar button or from the “Tools” pull-down menu. Choose “customize” and choose “Interface.” Pick your favorite command from the “command list” inside the Custom User Interface (CUI). Then drag and drop the command into the “shortcut key.”

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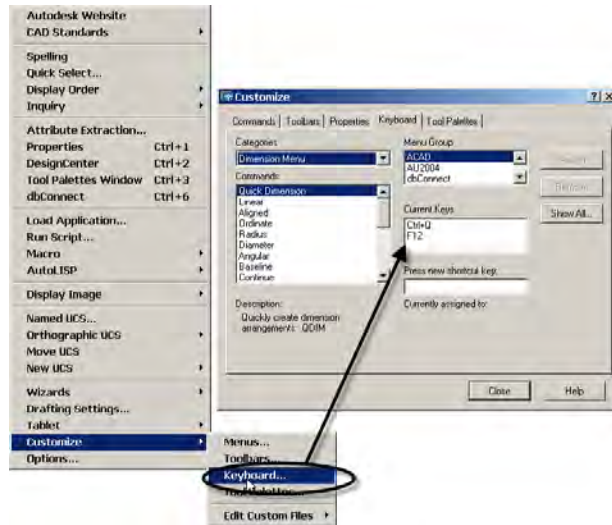
Once you place your shortcut into the CUI, you can drag it and resequence the list. Pick on the command in the “shortcut key” section, and you’ll see the properties display. Choose “Keys” and assign your favorite keystroke.

SECRET REVEALED: For AutoCAD 2006, the accelerator keys and shortcut keys are kept in the ACAD.CUI file.



SECRET REVEALED: Most people try to choose keystrokes with semantic meaning, when in fact they only need to make sense to yourself. For example, left-mousers should use right-side keys, and right-mousers should use left-side keys. This way, there is no hand-crossing or awkward reaching across the keyboard.

SECRET REVEALED: For AutoCAD 2005 and earlier the accelerator keys and shortcut keys are kept in the ACAD.mnc file.



SECRET REVEALED: When you make your own keys, the info is stored in ACAD.MNS file (Menu Source File) (for AutoCAD 2002: C:\Program Files\Autodesk\AutoCAD 2002\Support\ACAD.MNS) and (for AutoCAD 2004 or 2005: C:\Documents and Settings\LOGIN NAME\Application Data\Autodesk\AutoCAD 200X\R16.X\enu\Support\ACAD.MNS). Please note that for AutoCAD 2004 users this is a hidden support folder for each user login.

SECRET REVEALED: For AutoCAD 2006, the accelerator keys and shortcut keys are kept in the ACAD.CUI file.

#7 – Custom Commands & Macro Mayhem.

Customize your UI

Making custom commands is now as easy as drag and drop. All your customization is now done inside the CUI. Simply drag and drop your command from the command list into the customize menu. Click on the command within the CUI menu and you'll see the property window open. Now you can write your own command sequence as a macro.

A macro is simply a series of commands and steps that AutoCAD will perform for you. I've listed the most common codes. Simply map out the steps you find yourself doing repetitively everyday. Using the following command codes you can write your own custom command. This will save you clicks and picks by reducing those repetitive tasks as AutoCAD will now do those steps for you.

Writing your own command sequence

Use the following command codes to automate existing commands into custom commands

- ^c executes a cancel
- \ pauses for user input
- * preceding string repeats command string
- * within the string sets an environment variable
- _ native English
- - suppresses any dialog box
- ; executes an "Enter"

If you wanted to draw a rectangle with a fillet of 2 and a width of .5 it would look like this:

```
^^C_rectang; fillet; 2; width; .5
```

Create a new command, menu or toolbar and write your macro in the Macro line under properties.

Here's one for you. This string will allow you to place single-line text on a layer called "ROOM_TAG" that is placed using the CHISEL text style, justified by middle with a height of 12 units. This string also creates the layer and sets the color of layer text to yellow even if the layer doesn't exist. Once complete, the command repeats until you ESC.

Note: This string does require that the Text Style "CHISEL" exists in the current drawing.

```
*^^C_-layer; m; ROOM_TAG; c; yellow; ROOM_TAG; ; dtext; s; chisel ; j ; m; \; 0;
```

#6 – Use Tool Palettes for Maintaining Blocks and Standards – Making Palatable Tools.

The Power of Content

Tool Palettes don't make you go out of your way to create content, although you can go out of AutoCAD to find it. This technique of managing tools and content is new to most AutoCAD users. Tool Palettes allow you to tap into the content that has already been established. You'll need to think out of the AutoCAD box to understand the power of using this new style of interface. Below are many of the ways to populate your Tool Palettes with Content Tools.

Drag and drop

A finished drawing contains the guidelines and company standards that were used to create it. So the objects in the drawing can be used to build new tools to help adhere to these standards for future projects. You can create block tools from these drawings.

DesignCenter (ADC)

Now let's go back to AutoCAD 2000 when Autodesk introduced DesignCenter. Back then, AutoCAD Design Center (ADC) added a way to re-use information from existing drawings. However, it was a poor way to ensure that drawing standards were being used. DesignCenter allows you to steal or cannibalize content from one drawing into another. Although powerful, it gives you almost no control. For example, blocks are placed on the current layer only. Block tools give you much more control for consistency and maintaining standards.

Creating a Block Tool

Blocks are by far the most popular method of customizing AutoCAD and building reusable content. They are probably the most common element that you might find on a Tool Palette due to the flexibility of the Block tool.

The power of the Tool Palettes' Block tool allows you to assign properties such as layer, color, etc. to the blocks on a palette. There are even more powerful properties of the Block tool that allow you to set rotation and scale and even whether the block should be exploded or not when it is inserted into a drawing.

The procedure for creating Block tools from an entire drawing is easy. Right-click on any drawing file found in DesignCenter and choose Create Tool Palette. A new palette will be made from all the Blocks within the drawing with the name of the drawing as the name of the palette.

SECRET REVEALED: Make sure you use the purge command three times on any drawing you intend to create a Tool Palette from, because anonymous blocks will be added to the palette with this technique.

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You can also use this exact same technique for your ancestral block libraries that exist on your network drive. Simply navigate to the folder in DesignCenter, right-click on the folder and choose Create Tool Palette.



SECRET REVEALED: You can add an Image tool by dragging an image file from DesignCenter onto the Tool Palette.

SUPER SECRET REVEALED: You can also change the scale and rotation of a block tool without exploding or redefining the Block. Right-click on the Block Tool and choose Properties.

Windows and Internet Explorer

Autodesk enabled the use of dragging and dropping files directly from Windows Explorer onto a Tool Palette. This works in a similar way to dragging content from the DesignCenter to a Tool Palette. Some of the file types that can be dragged to the Tool Palette from Windows Explorer are drawing files and image files.

Sharing Your Blocks on Tool Palettes

Tool Palette Groups

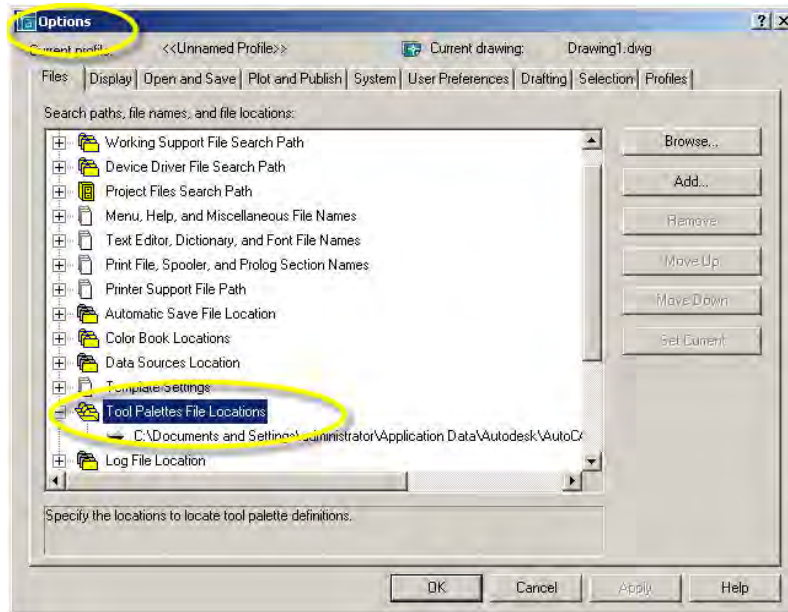
Tool Palette groups are a way to simultaneously control the display of certain Tool Palettes. You might have a Tool Palette for electrical and another for plumbing when creating building plans. Maintaining organization used to be difficult as all palettes were open and active at once. But this organization problem has been resolved with the Group feature when customizing, if you're using Tool Palette Extension in AutoCAD 2004 or AutoCAD 2005. By default, All Palettes is active.

There are some problems with the group feature. Groups are not easily shareable, as they are stored with each user's AutoCAD profile. But I have a solution for you!

Managing Tool Palettes with Paths

Just like managing your support path statements in AutoCAD, you can set a Tool Palette path location and not use the group feature.

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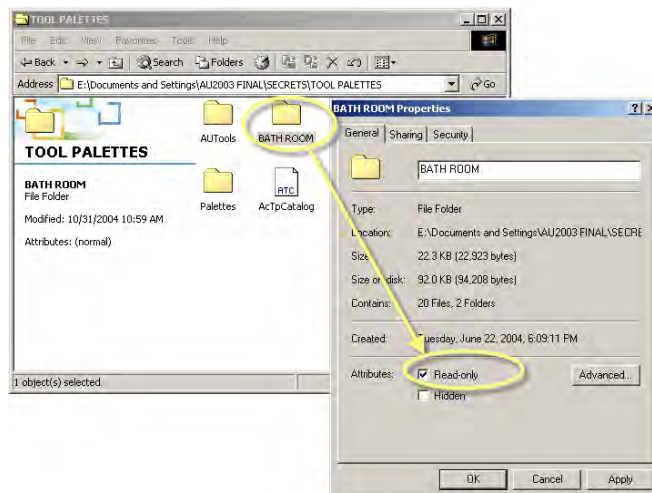
SUPER SECRET REVEALED: You can also create a blank palette window with no tools by setting an empty path or a path that does not exist. AutoCAD will automatically build the necessary XML content as an ATP file with support folder locations for images.

Note: The technique listed here is for “vanilla” AutoCAD only. Architectural Desktop (ADT) and Autodesk Building Systems (ABS) do not have an Import or Export option like the ones found in AutoCAD 2004 and 2005.

Note: It might seem obvious but it’s worth saying: Make sure the path locations for the source files exist in your support path locations under Options... Files.

Protecting Your Tools

Once you have created your content and set your palettes in a shared folder, you’ll want to protect them from being modified. Network drives can be set to read only and local drives can be set by right-clicking on the file in Windows Explorer and setting the properties of the folder to read only.



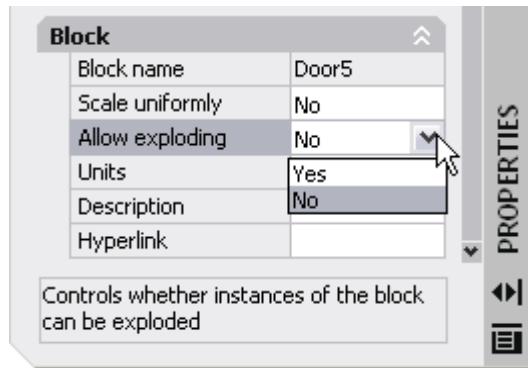
The next time you restart AutoCAD and open the Tool Palette Windows, you’ll see a small padlock in the lower corner.

SECRET REVEALED: Locking the Tool Palette folder only prevents the content from being changed. Individuals who have access to the folder that contains the definition will still have the ability to rearrange the tools on the palette as well as control the appearance of the palette.

SECRET REVEALED: When moving ATC files and folders to new locations, tools that appear in the palette will appear in the order they were created.

Don't Leave Your Blocks Open for Modification or Exploding

Super SECRET REVEALED: Lock your block! A new option in the Properties window enables you to prevent someone from exploding the block references. To access this option, open your block definition in the block editor. Use the Properties window without any objects selected. This option can also be selected from the standard block command.



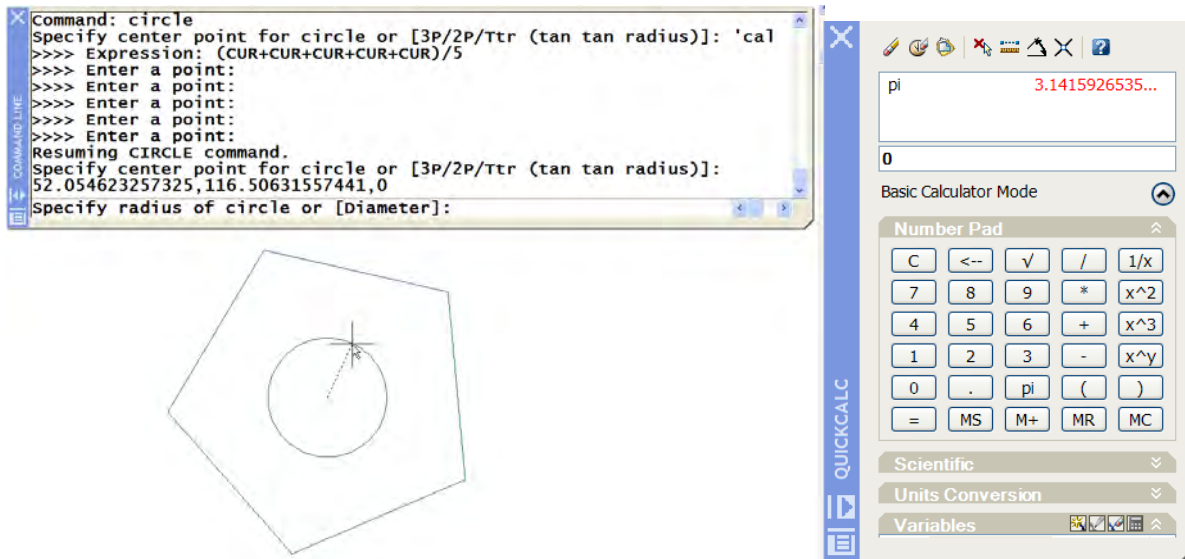
#5 – Locate Geometry The Easy Way.

One of the greatest hidden secrets is Geometry Calculator

CAL is an online geometry calculator that evaluates point (vector), real, or integer expressions. The expressions can access existing geometry using the Object Snap functions such as CEN, END, and INS. You can insert AutoLISP® variables into the arithmetic expression and assign the value of the expression back to an AutoLISP variable. You can use these arithmetic and vector expressions in any AutoCAD command that expects points, vectors, or numbers, by adding the apostrophe (') to make the expression transparent.

There are dozens of examples. One of my favorite examples is picking the center of a rectangular object or between two points.

For a midpoint between two endpoints while in any command that asks for you to “pick a point,” type ' CAL (enter), then MEE, then pick opposite corners of the rectangle. MEE is “midpoint between two endpoints” (CAL automatically grabs the endpoint when you pick the corner of the rectangle). If you want this same calculation done between two given pick points, you would have to use the following ' CAL then (CUR+CUR)/2 to get the same response without having Object Snaps getting in the way.



Taking this to another level, if you needed to find the centerpoint (centroid) of a multisided object, you would then need to make the calculator work a bit harder. In the figure shown, you could locate the center of a pentagon object using the calculator by doing the following with the 'CAL command. >>Expression: (END+END+END+END+END)/5 would get you the centerpoint of this non-rectangular object using any command or simple use a Point as a marker. If the object had four endpoints then this same expression would look like: (CUR+CUR+CUR+CUR)/4.

The combinations are endless when you think about it. Knowing this information alone would save you valuable time if you work with irregular objects or need to locate centroid points in places that would be difficult when using tracking.

In AutoCAD 2006 we now have the QuickCalc palette that works and acts like a real calculator, giving us a visual tool to perform our calculations instead of typing expressions.

#4 – Eliminate Construction Lines.

There is no greater waste of time and effort than to use construction lines. You can eliminate construction lines using any of the following techniques.

Direct distance entry

With direct distance entry, you can quickly specify a point relative to the last point you entered. At any AutoCAD prompt for a point location, you move the cursor first to specify the direction, and then enter a numeric distance.

Tracking at angles

Polar Tracking restricts cursor movement to specified angles. When increment angles are set, the cursor will move at all multiples of that angle. You can enter any angle, or select a common angle of 90, 45, 30, 22.5, 18, 15, 10, and 5 degrees from the list. This setting is also controlled by the POLARANG system variable.

Additional Angles

Makes any additional angles in the list available for polar tracking. The Additional Angles check box is also controlled by the POLARMODE system variable. Additional angles are NOT incremental. You can add a maximum of 10 additional angles.

Polar Snap

Like using Grid/Snap, Polar Snap will restrict cursor movement to specified increments but only along a polar angle.

Temporary Tracking Points and From Object Snaps

Temporary Tracking Points and From Object Snaps allow you to specify a distance and direction away from existing objects whenever AutoCAD asks you to select a point. When using the From method with Object Snaps, you can use absolute coordinates or Object Snaps to set temporary references. Once your "from" point is established, you can specify relative coordinates for locating and specifying subsequent points.

Angle overrides

Forget about setting those unusual angle increments. But don't give up using Polar Tracking. You can specify an angle override that locks the cursor for the next point entered. Like a Temporary Object Snap that overrides running Object Snap modes, the angle override locks in only one angle for the next point to be specified.

To specify an angle override, enter a left angle bracket (<) followed by an angle whenever a command asks you to specify a point. Then use direct distance entry by moving the cursor to specify the distance.

Object Snap Tracking SECRET REVEALED: Still confused by all the tracking lines? Set the TRACKPATH system variable to 1 to only show tracking lines in the direction of the cursor movement and not to infinity in both directions on the screen.

#3 – When In Doubt, Right-Click.

Where? Everywhere!

Heads-up design was incorporated into AutoCAD 2002. For the user it means less typing and more on-screen access to the features and functions of AutoCAD. I've listed some of the most common places you can right-click. But if you're wondering if you can or not, all I say is just "do it"! (Right-click that is.)

Middle of screen

Allows you to repeat the last command as well as cut, copy, copy with base point, and paste. You also get real-time Zoom and Pan and the options dialog.

Middle of a Command

Brings up command options, Recent Input, Snap Overrides and the QuickCalc.

Toolbars

Allows you to toggle toolbars on/off and customize...

Command line

Shows the six most recent commands plus copy, copy history, paste, and the options dialog.

Status bar

Brings up settings for each of the toggle switches.

Layout tabs

Brings up Layout setting, delete, rename, move, and copy plus page setup and plot. You can also right-click on model tab to Page Setup and Plot.

On objects

Double-clicking on several objects will bring up their editing tools.

| | |
|-----------------------|-----------|
| Attribute Definitions | DDEDIT |
| Attributes in a Block | EATTEDIT |
| Blocks | REFEDIT |
| Hatch | HATCHEDIT |
| Leader Text | DDEDIT |
| Mine | MLEDIT |
| Mtext | DDEDIT |
| Text | DDEDIT |

Other Right-Clicks

Mtext editor – converts text to all caps.

Layer dialog – brings up selection and filter settings.

Properties dialog – brings up docking, hide, description, and undo.

#2 – Super Groups.

Super Groups are legends

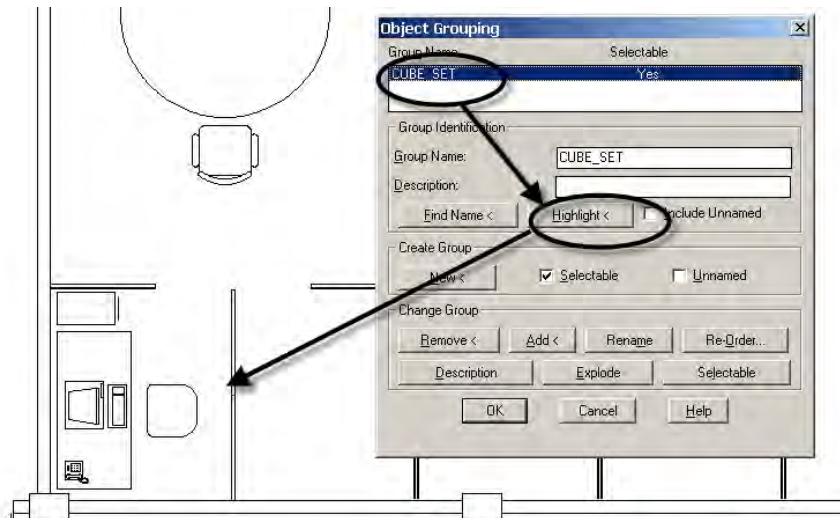
The GROUP command has been around for a long time. It allows you to group objects so they act as one item. They will move as one unit as long as they are grouped. This command is most useful for items you need to move together frequently but you don't need to make into a block.

Grouping objects is more flexible than blocking, since you can easily turn the grouping feature on or off. However, it does not have the same memory advantages as blocks for multiple copies of objects.

A group is a named selection set of objects. Unlike unnamed selection sets, groups are saved with the drawing. Group definitions are maintained when you use a drawing as an external reference or insert it in another drawing. However, until you have bound and exploded external references or exploded blocks, you cannot directly access groups that have been defined in an external reference or block.

When you create or edit a group, you can specify whether it is selectable. If a group is selectable, selecting one of its members selects all members in the current space that meet the selection criteria (for example, members on locked layers are not selectable). The ability to select groups is also affected by the PICKSTYLE system variable. When PICKSTYLE is off for group selection, you can individually select group members.

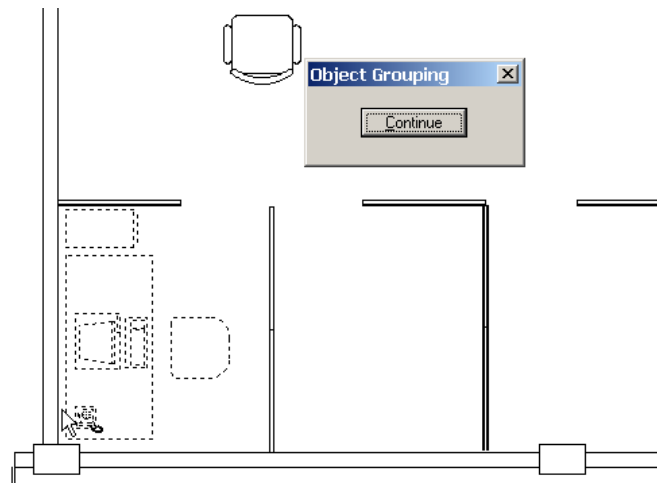
An object can be a member of more than one group. You can list all the groups to which a selected object belongs by using the Find Name option in the Object Grouping dialog box. Highlight all the members of a specified group with the Highlight option. Group members are numerically ordered and can be reordered. Reordering may be useful in some batch operations on objects or when it's important which object is "on top" for display purposes.



Creating Groups

When you create a group, you can give the group a name and description. If you copy a group, the copy is given the default name **Ax** and is considered unnamed. Unnamed groups are not listed in the Object Grouping dialog box unless you select Include Unnamed.

If you choose a member of a selectable group for inclusion in a new group, all members of that selectable group are included in the new group. Selectable groups can also be highlighted making it easy to track and find them for revisions.



Selecting Groups

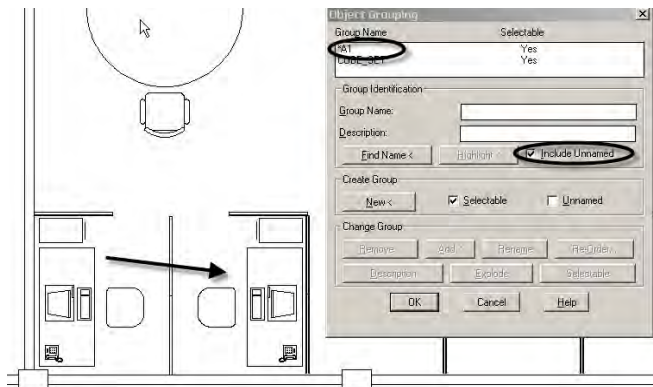
You can select groups by name at the Select Objects prompt. If the PICKSTYLE system variable is set to 1 or 3 and you select any member of a selectable group, AutoCAD selects all group members that meet the selection criteria. You can also toggle group selection on and off by pressing CTRL+H or CTRL+SHIFT+A.

All members of selectable groups are also selected when you use object selection cycling. Selecting an object that is a member of more than one selectable group selects all the members of all the groups that contain that object. To select groups for editing with grips, use the pointing device to select the group at the Command prompt.

Editing Groups

At any time, you can add or remove group members and rename groups. You can also copy, mirror, and array groups. Erasing a group member deletes that object from the group definition. When a group member is included in a deleted block, the object is deleted from the drawing and also from the group. If deleting an object or removing it from a group leaves the group empty, the group remains defined. You can remove the group definition by exploding the group. Exploding a group deletes it from a drawing. Objects that were part of the group remain in the drawing.

You can alter the group's member order (the order in which the objects were selected), its description, and whether it's selectable. You can reorder group members in two ways: either change the numerical position of individual members or ranges of group members, or reverse the order of all members. The first object in each group is number 0, not number 1.



Note: The first object in each group is number 0, not number 1.

#1 – Join and Attend Your Local Users' Group, AUGI and AU!

Because networking is everything!

Meeting and talking to people that use AutoCAD® on a regular basis can provide a resource unmatched in its depth of knowledge and practical applications. Because networking is everything!

LUGs

Local User Groups are right in your backyard. Monthly meetings of active members provide a wealth of information, because user group members are eager to share knowledge and resources. The more you give the more you get! Find out when and where your local group meets and become an active member.

AUGI

Autodesk User Group International is your direct voice to Autodesk®. It's also free to join.

AUGI CAD Camps and AUGI CAD Matinees

These mini-versions of Autodesk University will be arriving for one-day productivity sessions in over 30 cities around the country in 2006. What better way to increase your productivity on AutoCAD and Autodesk vertical products!

Contact me

Got questions or need help implementing these productivity techniques? I can be reached at matt.murphy@ACADventures.com.

