ADI Driver User's Guide

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Contributors

Written by Lawrence R. Ertel
Illustrations by Michelle McBride-Bushneff
Production by Lorrie Williams
Technical Assistance: Paul Ho, Rodger Brown, Bruce Thompson, and the rest of the Personal Systems Division staff

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Silicon Graphics, Inc.
Mountain View, California

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Chapter 1

Introduction

The ADI® Driver for the IRISVISION™ graphics boardset is a protected mode (P386 version 4.1) AutoCAD® driver.

The ADI Driver gives you several very useful add-ons to your AutoCAD program:

- Real Time BirdsEye
  - One of two types of bird's-eye windows provided with the ADI Driver. Both types give you an overall look at your on-screen drawing in a separate, moveable window. The Real Time BirdsEye gives you real time panning and zooming of your drawing, with a monochrome view within the bird's-eye window.
- BirdsEye
  - The second type of bird's-eye window provided with the ADI Driver; this one is referred to simply as the BirdsEye. It displays the colors of your drawing within the window, but the panning and zooming are not done in real time.
- Command Palette
  - The Command palette gives you 20 AutoCAD commands as clickable buttons in a moveable window.
- SGI Tools Menu
  - The SGI Tools menu may be added to the AutoCAD menu bar. The menu provides an assortment of features, in addition to command access to the Command palette and bird's-eye windows.

- ADI Driver Configuration Utility
  - An easy-to-use, menu-based utility for configuring AutoCAD. It allows you to set AutoCAD attributes such as color, text, number of prompt lines, and much, much more. Complete instructions for the Configuration software may be found in Chapter 4 of this guide.

AutoShade

Version 1.10 of the ADI Driver is also fully compatible with AutoShade. Chapter 5, "Using the ADI Driver with AutoShade," describes the use of the driver with this program.

The Advanced AutoCAD User

The appendix to this user's guide provides more in-depth technical specifications and information, as well as a question-and-answer section that should address any problems you may encounter.

Chapter 2

Installing the Software

In addition to having IRISVISION properly installed in your computer system, you'll need the following:

- The disk labeled ADI Driver that was enclosed with this guide.
- AutoCAD 386™ release 10 c10a or greater.

To install the ADI Driver:

1. Insert the disk labeled *ADI Driver* into drive A.
2. Type:

   ```
   A:install
   ```

   and press **<Enter>**.
3. Type the pathname to the directory where you'd like the software to be installed, or simply press **<Enter>** to accept the default path and directory.

   After a moment, the first in a series of menus appears on screen. Use the up and down arrow keys to highlight the desired option, and press **<Enter>** to make the selection.
4. Select "Install ADI Driver" from the menu.

   After a short wait the software files are installed on the destination drive.

5. Select "Configure AutoCAD/AutoShade display driver" from the next menu that appears if you want to use the ADI Driver as your display driver.

   Note: For more information on using the ADI driver with AutoShade, please refer to Chapter 5 of this guide.

6. Press any key to continue.
7. Select "Configure AutoShade rendering driver" if you want to use the ADI Driver as your AutoShade rendering driver.
8. Press any key to continue.
9. Select "Quit."
10. A menu appears asking if you wish to have the installation program modify your *Autoexec.bat file*.
    a. Select "Go ahead and modify" if you wish to have your *Autoexec.bat file* automatically modified.
    b. Select "Bypass these changes" if you wish to modify your *Autoexec.bat file* manually.
11. Type the pathname to your *Autoexec.bat file*, or simply press **<Enter>** to accept the default pathname.
12. Press any key to continue.
13. Select "Quit."
14. If you wish to have your *Autoexec.bat file* modified, you'll need to reboot your computer when indicated by the screen prompts.

The ADI Driver is now installed in the designated directory.

For additional information on software installation, please refer to the Appendix.

Reconfiguring AutoCAD

After installing the the ADI Driver software, you'll need to reconfigure AutoCAD so that it recognizes the Driver.

1. Go to the AutoCAD directory.
2. At the DOS prompt type:

   acad

   and press **<Enter>** to load AutoCAD.
3. If you are updating an existing AutoCAD program, select "Configure AutoCAD" from the main menu and press **<Enter>**.

   If AutoCAD is being run on your computer for the first time, the program automatically goes to the Configure AutoCAD options.
4. Press **<Enter>** when the current configuration information appears.
5. Select "Configure video display" from the Configuration menu and press **<Enter>**.
6. Type **Y** (yes) and press `Enter` to indicate that you want to select a different video display .
7. Select "ADI P386 v4.0/4.1 display" from the list that appears and press **<Enter>**.
8. Press **<Enter>** to accept the default values each time you're prompted until you return to the configuration menu.
9. Press **<Enter>** to save the configuration changes.

You're now back at the AutoCAD main menu.

Chapter 3

Using The ADI Driver

The ADI Driver has four main components:

- Real Time BirdsEye
- BirdsEye
- Command palette
- SGI Tools menu

Three of these components may be displayed anytime you're in the AutoCAD drawing editor by entering the appropriate command on the AutoCAD command line.

To display:	At the command line enter:
Real Time BirdsEye	rtbird
BirdsEye	birdseye
Command palette	palette

Table 3-1 ADI Driver Commands.

The Command palette gives you access to all of the ADI Driver features as well as eight other useful AutoCAD commands, so you may want to leave the palette on the screen all the time. To avoid screen clutter, the palette can be stowed away in an icon that appears in the lower-right corner of the screen.

The SGI Tools menu also gives you access to the full complement of ADI Driver features. When the menu is loaded it appears in the AutoCAD menu bar as well as in the sidebar.

Adding the SGI Tools Menu

You'll need to load the SGI Tools menu into your drawing in order for the menu to appear in the menu bar.

The SGI Tools menu is added to the drawing from within the AutoCAD drawing editor.

To add the SGI Tools menu:

1. Load AutoCAD
   - Change to the AutoCAD directory.
   - At the prompt type **acad** and press **<Enter>**.
2. Go into the drawing editor.
   - Select either "Begin a NEW drawing" or "Edit an EXISTING drawing" from the main menu and press **<Enter>**.
   - Enter the name of your new or existing drawing and press **<Enter>**.
3. Once in the drawing editor type **menu** and press **<Enter>**.
4. Click to select "IV_Menu" from the menu that appears in a pop-up window and then click *Open,* or type **iv_menu** and press **<Enter>**.

The menu now appears when "SGI Tools" is clicked in the AutoCAD menu bar.

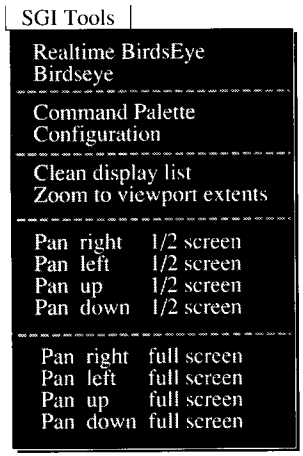

Figure 3-1 SGI Tools menu.

The menu commands also appears in the sidebar when "SGI Tools" is selected in the sidebar.

Note: If you want the SGI Tools menu to always appear in the drawing editor, please consult the Appendix for instructions on replacing AutoCAD's default menu.

The SGI Tools Menu Commands

The SGI tools menu contains the following commands:

- Real Time BirdsEye
  - Brings to the screen a monochrome bird's-eye window that has real time zooming and panning features.
- BirdsEye
  - Brings the full-color bird's-eye window to the screen.

- Commands Palette
  - Brings the Commands palette – a moveable window containing 20 commands as clickable buttons – on the screen.
- Configuration
  - Brings the Configuration menu on the screen, which allows you to reconfigure the AutoCAD interface.
- Clean Display List
  - A process that speeds up the screen redraws and gives back additional RAM space.

  Note: For additional information on display lists, please consult the Appendix A.
- Zoom to Viewport Extents
  - Displays on screen all of the drawing contained in the current AutoCAD viewport.
- Pan ... 1/2 Screen
  - Four commands that pan the drawing by a half screen to the right and left, up and down.
- Pan ... Full Screen
  - Four commands that pan the drawing by a full screen to the right and left, up and down.

The rest of the this chapter concentrates on the first three commands in the SGI Tools menu: Command palette, Real Time BirdsEye, and BirdsEye.

The other commands may be used at any time within AutoCAD, whether or not one of the bird's-eye windows or the Command palette is on screen.

The Command Palette

The Command palette contains 16 AutoCAD commands as clickable buttons, as well as 4 buttons for specific ADI driver commands. The Command palette may be used at any time, even in the middle of another AutoCAD operation.

To bring the Command palette onto the screen, do one of the following:

- Type **palette** at the AutoCAD command prompt.
- Select "Command Palette" from the SGI Tools menu (if you've added the menu).
- Press the middle mouse button if you're using a three button mouse.

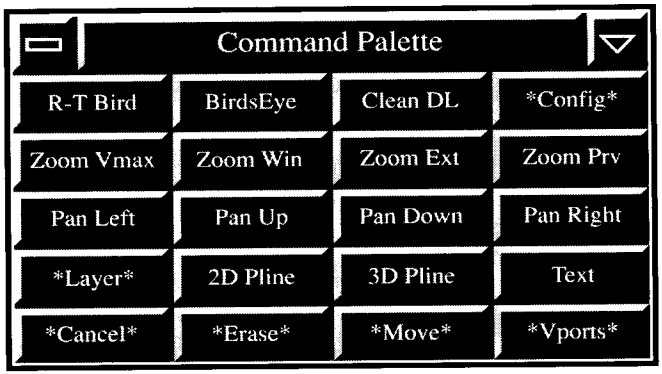

Figure 3-2 Command palette.

The Command palette window has three important window control features as illustrated in Figure 3-3

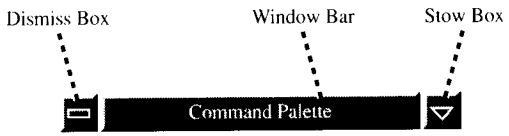

Figure 3-3 Command palette window control features.

Window Bar

The window bar is used to move the window around on screen. Click the bar once to highlight it; then reposition the window by moving the mouse. Click again when the window is in the desired location.

Stow Box

Clicking the stow box turns the Command palette into a small icon appearing in the lower-right corner of the screen. Clicking the icon makes the Command palette appear again on screen.

Close Box

Clicking the close box closes the Command palette, removing it from the screen.

ADI Driver Commands

The following ADI driver commands are contained in the Command palette:

- R-T Bird
  - Brings the Real Time BirdsEye on screen.
- BirdsEye
  - Brings the BirdsEye on screen.
- Clean DL
  - Produces a fresh display list; the equivalent of the *Clean Display List* command in the SGI Tools menu.
- *Config*
  - Brings the Configuration menu on screen.
- Zoom VX
  - Zooms the drawing to the "viewport extents." The area of the drawing visible on the screen then matches the drawing displayed in the bird's-eye.

The other 16 commands in the Command palette are specific AutoCAD commands. The table below outlines the command palette buttons and their AutoCAD equivalents.

Command Palette AutoCAD Equivalents

The following table summarizes the AutoCAD commands that are equivalent to the commands found in the Command palette:

Command Palette	AutoCAD
Zoom Win	'zoom window
Zoom Ext	'zoom extents
Zoom Prv	zoomprevious
XYZ Axes	vpoint
Pan Left	'panlf
Pan Up	'panuf
Pan Down	'pandf
Pan Right	'panrf
Layer	ddlmodes
2D Pline	pline
3D Pline	3dpoly
Text	dtext
Cancel	Ctrl-C
Erase	erase
Move	move
Vports	vports

Table 3-2 Equivalent AutoCAD command.

Reconfiguring the Command Palette

You may reconfigure the Command palette to include your own choice of AutoCAD commands.

The commands appear in a file named *iv_com.txt* in the DSPADI subdirectory. Text enclosed within square brackets in this file appears as button titles, while the rest of the text line is sent to AutoCAD. This is the standard format for an AutoCAD menu file.

The number of characters inside the brackets is limited to eight, just as in the AutoCAD sidebar menu. If there is no square bracket entry, then the first eight characters of the line are used for the title.

Real Time BirdsEye Window

The Real Time BirdsEye window is a separate, moveable window that displays an overall view of your drawing.

To bring the Real Time BirdsEye to the screen, do one of the following:

- Type **`rtbird`** at the AutoCAD command prompt.
- Select "Real Time BirdsEye" from the SGI Tools menu (if you've added the menu).
- Click ***R-T Bird*** on the Command palette (if the Command palette is on screen).

There is also a very handy way to bring a bird's-eye window on screen without affecting an active AutoCAD command. Type **`<Ctrl-L>`** and the last bird's-eye window you used appears on screen. If you haven't used a bird's-eye window as yet, the Real Time BirdsEye appears as the default.

Both the Real Time BirdsEye window and the BirdsEye window have a close box and a window bar like the Command palette. However, instead of a stow box, the two bird's-eye windows have a scale box that allows you to resize the window area.

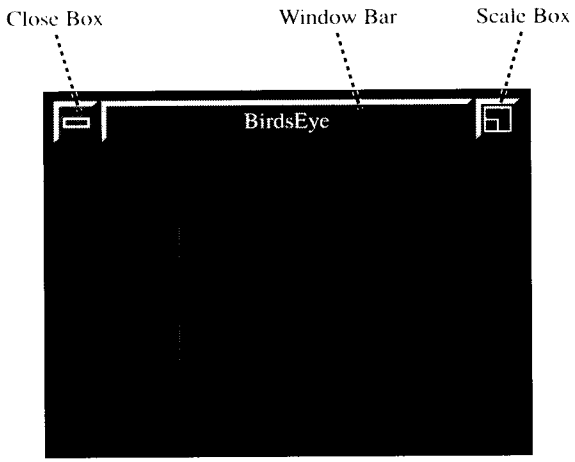

Figure 3-4 BirdsEye window control features.

Scale Box

Click the scale box once to highlight it, then move the mouse to the right to make the window larger, to the left to make the window smaller. Click again when the window is the desired size.

Window Bar

The window bar is used to move the window around on screen. Click the bar once to highlight it, then reposition the window by moving the mouse. Click again when the window is in the desired location.

Close Box

Clicking the close box closes the Command palette, removing it from the screen.

Panning and Zooming

The Real Time BirdsEye allows you to pan and zoom your drawing dynamically. The drawing moves as you pan or zoom, although the pan or zoom action does not actually take effect until you hold down the mouse button for a few seconds.

A pointer within the view area of the Real Time BirdsEye indicates if you are in pan mode or zoom mode. The pan mode pointer appears as a rectangle with an X through it. The zoom mode pointer appears as a rectangle with an arrow in it. Clicking within the view area toggles you between the two modes. This procedure is similar to AutoCAD's zoom dynamic command.

Figure 3-5 illustrates the BirdsEye window with the pan mode pointer.

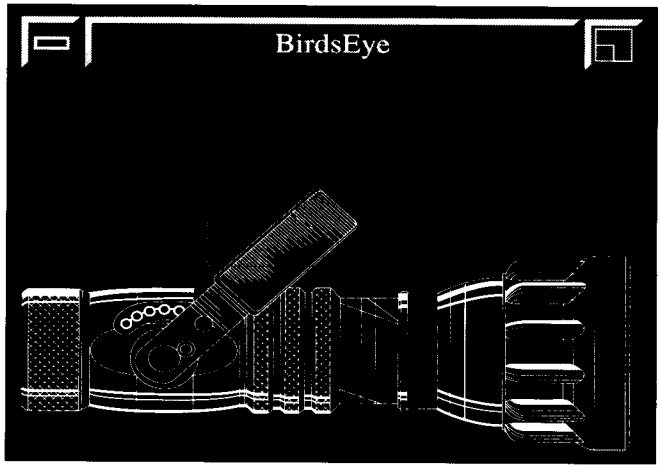

Figure 3-5 BirdsEye with the pan mode pointer.

The area covered by the pointer indicates the area of your drawing currently on screen (outside the Real Time BirdsEye window).

Figure 3-6 illustrates a drawing on screen with the Real time BirdsEye window.

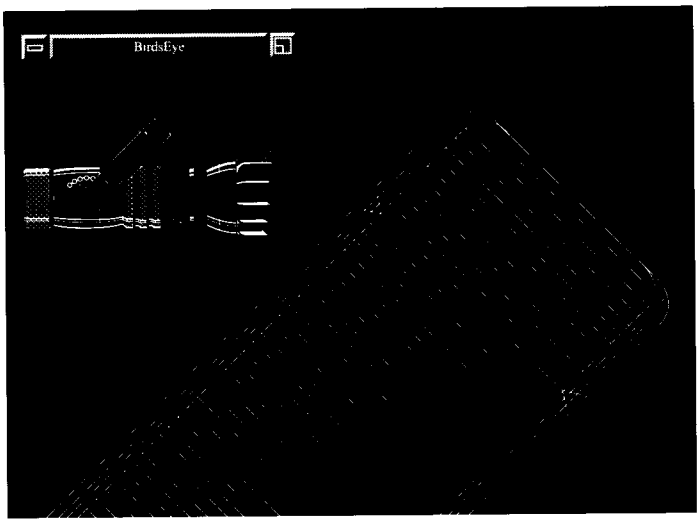

Figure 3-6 A drawing on screen with the Real Time BirdsEye.

When the Real Time BirdsEye is first displayed, the pan mode pointer appears as an X running from corner to corner within the view area. This indicates that the area of your drawing shown on the main screen matches the area shown in the Real Time BirdsEye.

You'll need to zoom the drawing when the Real Time BirdsEye first appears in order to modify the size of the pan mode pointer.

Zooming

To zoom the drawing:

1. Make sure the zoom mode pointer is displayed; if not, click within the view area.
2. Move the mouse up and down to position the zoom pointer; move the mouse to the left and right to scale the zoom pointer.

   The drawing zooms in and out as you move the pointer.

3. Hold down the mouse button until the birdseye window disappears.

The drawing changes to reflect the zooming action.

Panning

To pan the drawing:

1. Make sure the Pan mode pointer is displayed; if not, click within the view area.
2. Position the pan mode pointer in the appropriate location.

   The drawing moves as you move the pointer.
3. Hold down the mouse button until the birdseye window disappears.

The drawing changes to reflect the panning action.

The BirdsEye Window

The BirdsEye window is very similar to the Real Time BirdsEye window with two important differences:

- The drawing appears in color in the view area of the BirdsEye window.
- Panning and Zooming are not done dynamically. You don't see the drawing pan or zoom until you hold down the mouse button and the action takes effect.

To bring the BirdsEye on screen, do one of the following:

- Enter birdseye at the AutoCAD command prompt.
- Select BirdsEye from the SGI Tools status line menu (if you've added the menu).
- Click BirdsEye on the Command palette (if the Command palette is on screen).

You may also type <Ctrl-L> to display the last birdseye window that you used. If you haven't used a birdseye window as yet, the Real Time BirdsEye appears as the default.

Panning and Zooming

When the BirdsEye is first displayed the pan mode pointer appears as an X running from corner to corner within the view area.

This indicates that the area of your drawing shown on the main screen matches the area shown in the BirdsEye.

You'll need to zoom the drawing when the BirdsEye first appears in order to modify the size of the pan mode pointer.

To zoom the drawing:

1. Make sure the zoom mode pointer is displayed; if not, click within the view area.
2. Move the mouse up and down to position the zoom pointer; move the mouse to the left and right to scale the zoom pointer.
3. Hold down the mouse button until the birdseye window disappears.

The drawing changes to reflect the zooming action.

To pan the drawing:

1. Make sure the Pan mode pointer is displayed; if not, click within the view area.
2. Move the mouse to position the pan pointer in the appropriate location.
3. Hold down the mouse button until the birdseye window disappears.

The drawing changes to reflect the panning action.

The next time you bring the BirdsEye on screen, a solid rectangle within the view area indicates the area of your last pan or zoom. See figure 3-7.

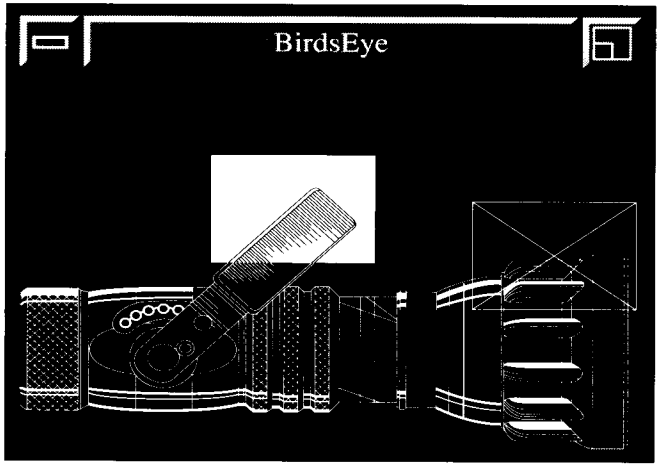

Figure 3-7 BirdsEye indicating your last pan or zoom.

Chapter 4

The Configuration Utility

Your ADI Driver software includes a configuration utility that allows you to configure just about every aspect of the AutoCAD interface.

To bring the configuration menu on screen, do one of the following:

- Type **config** at the command prompt within the drawing editor.
- Select Configuration from the SGI Tools menu (if you've added the menu).
- Click ***Config**** on the Command Palette (if the Command Palette is on screen).

The configuration menu appears as illustrated in figure 4-1.

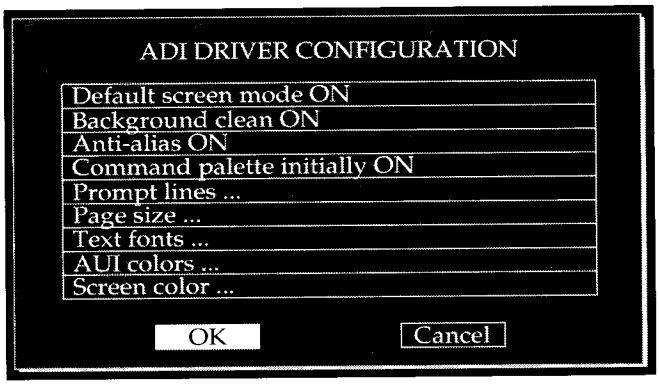

Figure 4-1 ADI Driver Configuration menu.

The first four items in the menu will cycle through the available options when you click on the item.

For example, clicking once on menu item #1 "Default screen mode ON" changes this option to read "Single screen ON." Clicking again then presents the option "Duel screen ON." Clicking a third time cycles you back to the original state.

Clicking on one of the items that contain an ellipsis (...) displays dialog menus that require additional input.

For example, clicking "Prompt Lines..." displays a menu that lists the available choices of from 1 to 5 prompt lines.

AutoCAD only allows certain configuration values to be changed while in the Drawing Editor. The number of Prompt Lines, the Screen font (actually character size), and Single vs. Dual screen are values that AutoCAD will only recognize when the Drawing Editor is being initialized. The ADI driver will display a message notifying you of this situation. To have the settings take affect, simply return to the AutoCAD Main Menu and then re-enter the Drawing Editor.

Configuration Menu Options

Each of the items on the main configuration menu is outlined in the following sections.

Single vs. Dual Screen Operation Menu Item #1

If you are running with the VGA pass-through cable connected, such that you'll be using a single monitor for both AutoCAD graphics and DOS text, select "Single screen ON" from configuration menu item #1. In this mode, pressing the **<F1>** key toggles you from graphics to text and back, as well as the standard *'TEXTSCR* and *'GRAPHSCR* AutoCAD commands.

If you are running with two monitors, one for text and one for graphics, you should select "Dual screen ON." If you're using a dual screen set-up it's recommended that you also inform AutoCAD that you don't want a command prompt area on the screen. In dual-screen mode, AutoCAD only allows one prompt line and doesn't display all prompts there.

By default, the option "Default screen mode ON" is selected. This option uses the setting chosen when *IV_CONF* was run with the IRISVISION installation procedure. Once you use the ADI driver, it records and saves to disk a copy of its configuration state. If you subsequently change the *IV_CONF* setting, the ADI Driver will read the new value and pass it along to AutoCAD.

Background Display List Cleanup Menu Item #2

This is a by-product of the way AutoCAD handles erasing entities.

When an entity is erased, AutoCAD creates a duplicate copy of the erased entity drawn in the background color. The erased entity seems to disappear; however, every erased entity in the display list will actually be drawn twice, and there is the potential for the second background color to erase some previously drawn entity on the screen.

With the "Background clean ON" option selected, the ADI Driver transparently marks deleted drawing entities in its internal display list so that they are not displayed.

With the "Background clean OFF" option selected, the time required to check for erased entities is not needed, and the ADI Driver operates somewhat faster. However, during editing sessions, you may notice visible evidence of erased entities. If so, simply issue a "CLEAN" command to remedy the situation.

Anti-aliasing (24-bit Systems)
Single or Double Buffer (8-bit Systems)
Menu Item #3

If you're using the 24-bit version of IRISVISION, menu item #3 presents the option of anti-aliasing. On 8-bit systems, the menu item gives you the option to use the single buffer or double buffer modes.

Selecting "Anti-aliasing ON" removes the appearance of jagged edges from your drawing, making it look smoother and more realistic on screen; however, this may slow down redraws of complex drawings.

Selecting "Double buffer mode ON" on an 8-bit system gives you much smoother pans and zooms when using the Real Time BirdsEye. The trade-off is that the system only display 16 colors in double buffer mode. Selecting "Single buffer mode ON" will display the usual 256 colors.

Command Palette On/Off
Menu Item #4

Select the option "Command Palette initially ON" to automatically display the Command Palette whenever you're in the drawing editor. It then remains on screen until you dismiss it.

Select the option "Command Palette initially OFF" if you don't want the palette to automatically appear on screen when you enter the drawing editor. With this option the palette disappears from screen each time you use it.

Select the option "Command Palette initially iconified" to automatically display the Command Palette icon in the lower right-corner of the screen whenever you're in the drawing editor. The icon then remains on screen until you dismiss it.

Number of Prompt Lines Menu Item #5

Selecting menu item #5 displays an additional dialog menu, from which you may select the number of AutoCAD prompt lines that appear on screen.

Display List Page Size Menu Item #6

Selecting menu item #6 displays a dialog box with a slide bar to adjust the page size, and a representative view of your drawing so you may immediately see the effect of the modified page size.

The Page Size setting controls the size of individual display list pages. The default setting is 1K (64K for version 1.00) or your last selection.

Among other things, the setting determines the number of vectors that are drawn when zooming and panning with the Real Time Birdseye. The greater the page size, the more vectors that are drawn. Drawing more vectors may adversely effect the smoothness of real-time panning and zooming on a complex drawing.

The size of the page also determines the amount of memory allocated at any time; the greater the page size, the more memory is used up.

Lastly, this setting also controls the background display list cleanup function in that during times of low processor activity, one page at a time is searched for deleted vectors.

The default value has been selected to give the optimum redraw performance.

For ADI Driver version 1.10, redrawing is done for 1/18 of a second or for one page of display list, whichever is greater, and the 1K page size default gives the best redraw performance.

However, for version 1.00, setting the display list page size to small values results in faster response times, while larger numbers results in more efficient overall operation.

Text Fonts Menu Item #7

Selecting menu item # 7 displays a dialog menu with a list of available screen fonts. A window appears above the list box showing representative samples of the fonts as you select them.

AUI Colors Menu Item #8

Selecting menu item #8 displays a dialog menu with a list of all the configurable elements of the AutoCAD User Interface. A color palette also appears from which you may select the desired interface color.

As you make your selections, the appropriate element within the AutoCAD interface is highlighted.

Screen Colors Menu Item #9

Selecting menu item #9 displays a dialog menu with a list of all the configurable screen elements. A color palette also appears from which you may select the desired screen color.

For some of the dialog menu selections, a window appears above the dialog box showing representative samples of the screen element.

Chapter 5

Using the ADI Driver with AutoShade

You may use the ADI Driver for either or both of the following:

- The display driver for menus and wireframe display.
- The rendering driver for shaded images and RenderMan images.

When "Continuous Color Rendering" is enabled, you may select "Smooth Shading" in the Expert menu. IRISVISION will handle the smooth shading very quickly as a hardware function. For both "Fast Shade" and "Full Shade" your scene will be rendered entirely with polygons.

When using "Continuous Color Rendering" in medium and high resolutions, the <Save Image> function will be disabled, and you'll have to use the <Record> function to save images.

Dual Screen Systems

AutoShade is most useful when run on a dual-screen system. A typical system might be set-up as follows:

A VGA display card and monitor for the AutoShade display screen.

IRISVISION with a high-resolution display, a NTSC or PAL video monitor and/or a VCR for the rendering screen.

Option selection and setup can then be done on the display screen, while simultaneously viewing the rendered image on the rendering screen.

If you are using a single monitor with VGA pass-thru you may still select VGA display and IRISVISION rendering. However, you may not select IRISVISION display with VGA rendering. AutoShade will not issue the appropriate commands to cause the VGA-passthru circuitry to operate correctly.

If you do chose to operate with IRISVISION display and rendering, you may notice a slowing of the display-screen menus due to the saved, rendered image filling all off-screen memory.

Reconfiguring AutoShade

You'll need to reconfigure AutoShade so that it recognizes the ADR Driver.

1. Change to the AutoShade directory.
2. At the DOS prompt, type:

   shade/r

   and press **<Enter>** to load AutoShade and display the set-up menus.
3. Select the type of pointing device you're using and press **<Enter>**.
4. Select P386 Autodesk Device Interface display driver from the display device menu
5. Press **<Enter>** twice to accept the default settings for the next two questions.
6. Select P386 Autodesk Device Interface rendering driver from the rendering display device menu.
7. Press **<Enter>** for continuous color rendering.

8. The question "Do the display and AutoShade rendering devices share a single screen ?" next appears.

   Enter Yes if your display and rendering devices share one monitor via the pass-through cable; otherwise, enter No.

9. Enter the appropriate response to the question"Do the display and Autodesk RenderMan devices share a single screen ?" and press **<Enter>**.

10. The question "Does FLIP SCREEN require a redraw?" next appears.

    Answer "Yes" if you're using IRISVISION for both display and rendering.

    Answer "No" if any other configuration is used.

11. Select the type of hard copy device you're using and press **<Enter>**.

This completes the AutoShade configuration procedure. AutoShade now loads it self automatically.

Appendix A

Information and Specifications

Installation Notes

The ADI driver is supplied in the form of a PharLap 386 | DOS file (extension .EXP). Unlike standard ADI drivers that are "Terminate and Stay Resident," this driver is loaded by AutoCAD when you first enter the Drawing Editor; AutoCAD therefore needs to know the driver filename.

There are two ways to make AutoCAD automatically recognize the filename. The simple method is to name the driver file ADIDISP.EXP and place it in the AutoCAD directory. The only drawback to this method is that you must start AutoCAD from the AutoCAD directory. The preferred method, used by the ADI Driver Installation Program, is to set the DSPADI environment variable to the path and file name of our driver. In either case, all you need to do is to inform AutoCAD that you wish to use the P386 driver and the rest is automatic.

Display List Driver

The ADI driver operates as a display list driver. In addition to the basic AutoCAD functionality, it offers a number of additional features to increase user productivity and ease-of-use. The display list is the central feature of this driver, upon which all the other functionality is built. It uses the extended memory (i.e. above 1MB) in your computer to keep track of all the graphics primitives (i.e. lines and polygons) that make up the current drawing. Once the drawing is in memory,

the driver is able to redraw all or part of the drawing 10 to 100 times faster than AutoCAD alone.

When first loaded into memory, the display list is clean, meaning that all entities in the list are actually displayed. As you edit and delete items from the drawing AutoCAD sends down drawing entities marked for deletion.When this happens, the entity is initially displayed, and then subsequently erased. In light of this, this driver supports background display list cleaning, whereby, each matching pair of a displayed and a deleted entity are matched up and marked so as not to be displayed. Whenever the display list is clean, a message to that effect is displayed in the upper right hand corner of the status line (if enabled). When the background display list cleaning is in progress, a different message is displayed. The clean-up time is affected by the size of the display list memory page, the speed of your processor, and the number of entities deleted. If you do a significant amount of editing, the size of the display list grows as each entity is duplicated. In this case, you may choose to issue the built-in command "CLEAN" which instructs AutoCAD to send a fresh copy of the display list to the driver, freeing up unused memory in the process. This background clean function may also be disabled to allow for faster overall operation.

When an object is erased in a drawing, AutoCAD does not actually discard it until a regeneration occurs. Until that point, AutoCAD simply draws the object in the background color. This necessitates that the ADI driver keep track of the object in its "display list,"which slows down the redraw time and and uses up valuable RAM space. The Clean Display List command produces a more current and accurate display list without causing a regeneration.

ADI Driver Commands

An additional command series has been added to allow dynamic changes to the internal display list page size. The command "PAGESIZExxxx" where "xxxx" may take on any value from "1" to "1000" will cause AutoCAD to send down a new display list in the requested page size. This change will only be in affect for the current

drawing. If a permanent change is desired, you may reconfigure the display driver from the AutoCAD Main Menu.

The following list outlines all the Internal ADI Driver Commands Recognized by AutoCAD:

config — displays the configuration menu.

palette or 'palette — displays the Command Palette.

clean or 'clean — requests a clean display list from AutoCAD.

rtbird or 'rtbird — displays the Real-Time BirdsEye window.

birdseye or 'birdseye — displays the BirdsEye window.

Ctrl-L — displays the last Birdseye window you used.

pagesizennnn — sets the display list page size to "nnnn" Kbytes where "nnnn" can range from 1 to 1000 (KB).

statistics or 'statistics — Shows the display list statistics on the text screen.

zoomvx or 'zoomvx — zooms to current viewport extents.

panuf or 'panuf — pans up one full screen.

pandf or 'pandf — pans down one full screen.

panlf or 'panlf — pans left one full screen.

panrf or 'panrf — pans right one full screen.

panuh or 'panuh — pans up one half screen.

pandh or 'pandh — pans down one half screen.

panlh or 'panlh — pans left one half screen.

panrh or 'panrh — pans right one half screen.

Note: Note: Internal commands preceeded with an apostrophe are forms that are "transparent" to AutoCAD, and may be issued in the middle of a pending AutoCAD operation. As such, they are useful for constructing menus. For instance, if you are in the middle of drawing a polyline and need to pan the drawing a little further to the right, you could use the 'panrh command in a menu , or from the keyboard.

AutoCAD Menu Commands

The following AutoCAD menu commands are recognized by the ADI Driver.

Ctrl-B — toggles Snap On/Off

Ctrl-C — Cancel.

Ctrl-D — toggles Coords On/Off

Ctrl-E — toggles Isoplane Top/Right/Left

Ctrl-G — toggles Grid On/Off

Ctrl-O — toggles Ortho On/Off

Ctrl-T — toggles Tablet On/Off

; — same as carriage return

' — transparent command prefix

[ ] — enclose menu button title string (max. 8 characters)

SGI Tools in the Default Menu

You may replace the AutoCAD default menu so that the SGI Tools menu appears whenever you are in the drawing editor.

To replace the default menu:

1. While in DOS, type;

   copy acad.mnu acadold.mnu

   and press `Enter`.

   This creates a backup copy of the default menu with the filename "acadold.mnu."

2. Type:

   copy iv_menu.mnu acad.mnu

   and press Enter.

   SGI Tools now appears as both a status line menu and a sidebar menu.

Appendix B

Troubleshooting

Q. When I bring up the BirdsEye View, why don't I see the whole drawing?

A. The drawing you're working on was saved in a "zoom-in" state. Whenever you save a drawing in AutoCAD, the current viewport extents are saved as well so that when you next load the drawing, you are brought back to the same location. Therefore, in order to achieve maximum benefit from the display list features, type the AutoCAD command ZOOM EXTENTS followed by SAVE. This ensures that an entire copy of you drawing is loaded into the display list.

Q. When I do an AutoCAD PAN command, why does a REGEN occur?

A. If you are at the display list extents (i.e. you are zoomed-out as far as possible) and you issue a command to PAN off the edge, AutoCAD begins a REGEN sequence in order to bring additional drawing information into the working display list.

Q. Why can I only zoom-in so far in the BirdsEye view?

A. The minimum zoom-extents in the BirdsEye view is set to the smallest value that AutoCAD allows the display list driver to process on its own. If a further zoom-in is required, it will be necessary to issue an AutoCAD ZOOM WINDOW command, forcing a REGEN.

Q. Why can't I zoom into a drawing once I have run the HIDE or SHADE commands?

A. Once AutoCAD performs either of these two commands, or a 3D perspective view, the contents of the display list are only issued at the physical screen resolution. Therefore, it is not possible to zoom-in any further, without sacrificing the accuracy of the displayed drawing. This is a feature of AutoCAD; in the HIDE and SHADE modes, the drawing is rendered at exactly the resolution of the screen. If this were not done, the process would be about 30 times slower!

Q. When I go into PAPER SPACE, why doesn't the BirdsEye view work correctly?

A. In this mode (i.e. TILEMODE = 0), the only entities that AutoCAD sends to the display list are the fixed drawing outline and title box. This mode is intended to be used for arranging and plotting groups of detail views. If you desire to use the display list editing features, you may simply set the TILEMODE variable to 1 and then switch back to TILEMODE 0 to finish plotting.

Q. When I installed my updated ADI display driver, why do I get "Invalid Configuration Data" messages from AutoCAD.

A. When you install a new version of the display driver, AutoCAD assumes that the same configuration (ACAD.CFG) is to be used. If the updated driver detects a older version of the configuration data, it informs AutoCAD, which then issues this message. To tell AutoCAD you wish to update this data, enter the Configuration Menu and select the Video Display option. When asked if you want a new driver, enter "Y", then press "Enter" to select the default entry (which is actually the same one you had before). Now, when you save the configuration data, you are saving the new copy, not the old.

Q. When I change screen font, why does the driver go back to the old one?

A. AutoCAD only allows certain configuration values to be changed while in the Drawing Editor. Screen font (actually character size), Single vs. Dual screen, and number of prompt lines are values that AutoCAD will only recognizes when the Drawing Editor is being initialized. The ADI driver will display an alert box notifying you of this situation. To have the settings take affect, simply return to the AutoCAD Main Menu and then re-enter the Drawing Editor.

Q. When I use the Display List Page Size, why don't I see any difference between large and small page size values?

A. Perhaps the drawing is very small. The only time you'll see any significant difference is with a large drawing. We use about 10 bytes of display list memory per vector. We find that the IRISVISION board is able to process the display list so fast that unless you have more than about 10 - 20,000 vectors in your drawing, the page size setting has little effect. This control is mainly intended for extremely large drawings, where it is necessary to trade off response time in return for a greater amount of detail in the Real-Time Birdseye view.

Version 1.10

With ADI Driver version 1.10, the default page size is set to 1024 bytes. This value gives the fastest performance in nearly all cases. The only time you should consider changing it is if you are not able to see a given part of your drawing in the Real Time BirdsEye view. Then you may wish to set it to a larger number in order to force more of the drawing to be displayed at the sacrifice of smooth panning.

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