

The Blue Guitar

Processing Graphics Files

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Viewing and Printing Graphics Files

With all of the GIF and JPG files on this and other web sites I thought I should mention some of the shareware programs that I have found to be indispensable for viewing, printing and managing graphics files:

ACDSee 32 (version 2.22)

This is a shareware program (\$30 to register) that is handy for quickly viewing, thumbnailing and managing the graphics files on your hard drive. The latest version has added many new features which allow you to manage graphics files more effectively. The versatile print features are available only with the registered version. (Using your search engine of choice you may be able to find a pirated registration key on the Web, but of course it'd be better to send your money to ACDSsystems.)

<http://www.acdsystems.com>

JASC Image Commander (version 2.00)

This is a shareware program (\$19 + \$5 s/h to register) that works great with these drawings! It can open files in 49 formats and save files in 27 formats (great for converting BMP files to GIF files, or vice versa). There are several print options that allow you to scale an image to fit a single page, while maintaining the original aspect ratio. Although it has no draw or paint tools, JASC IC will allow you crop, resize and rotate image files. JASC are the folks who brought us Paint Show Plus so they certainly know a lot about graphics formats.

(This program is no longer supported by JASC as it was discontinued. The following link is to the original ZIP file now on my site.)

[jic200.zip](#)

Snag It / 32 (version 4.1)

This is a shareware program (\$39.95 to register) for capturing screens and sending the image to your printer or saving them to a file in BMP, GIF, JPG, PCX or TIF formats. You can choose to capture the entire screen, a specific window or a region that you define by moving the cursor. There is a very revolutionary "Auto-Scroll" feature that allows you to capture an image larger than the window, but that feature doesn't work with all programs. I've found that Snag It/32 works every bit as well as commercial programs such as HiJaak 95 for screen captures.

<http://www.techsmith.com>

GhostScript and GSView (versions 5.1 and 2.5)

GhostScript is a very powerful interpreter for PostScript files, allowing you to print them out on many non-PS printers. GSView is a Windows 95 front-end for the GhostScript program (which would normally run from the command line). The features that I mainly use are the utilities which allow you to convert EPS files to BMP and PDF files at various resolutions.

<http://www.cs.wisc.edu/~ghost/index.html>

Hex Workshop (versions 2.20)

Hex Workshop allows you to edit practically any file in Hex or as text. The display shows the hex code and offsets on the left and a text version on the right. You can edit files in either hex or ASCII. It is a shareware program that costs \$20 to register. It is very handy for editing EPS and PDF files as outlined below in the section on processing landscape files for PDF output. [The authors have moved and I'm trying to locate a new URL... In the meantime here is a link to the original ZIP file I just added to my site.]

[hw32v22.zip](#)

Filename conventions

Although Windows 95 allows you to name files using long filenames, imbedded spaces, and mixed upper & lower cases, at this time I prefer to follow the traditional DOS limitation of 8 lowercase characters for the name and 3 characters for the extension. While the long filenames can be very informative, people using older operating systems will have those long filenames truncated to the first 6 characters plus a tilde and an identifying character. So **SuperReverbPreamp.GIF** and **SuperReverbPowerAmp.GIF** will be converted to **superr~1.gif** and **superr~2.gif**, which are not as useful as filenames designed with the 8+3 convention in mind such as **sr_pre.gif** and **sr_power.gif**.

For embedded spaces, I generally use the underline character, with the hyphen reserved for differentiation: **sr_pre-1.gif** and **sr_pre-2.gif**. As for using just lowercase characters for filenames, http addresses on the Web are case sensitive; it is hard enough trying to remember which letters to type in without having to also remember which were uppercase and which were lowercase.

Image File Formats

As for file formats and resolutions used, my target is the printed copy. The files may take longer to load on-screen, but I figure that serious readers will be printing them out so I choose resolutions that will work with a typical 300dpi laser or ink jet printer. I will use 2 color GIF files for black and white drawings or scans. For color drawings, GIF files can be saved in 16 color or

256 color formats. For grayscale or full color images, the JPG format may be more appropriate, supporting 256 shades of gray and 16 million colors. It should be noted that the JPG format uses variable degrees of file compression and any loss due to compression cannot be reversed. (You can convert GIF files back into BMP files with no losses for bitmap level editing.)

With all of these choices, I try to keep it simple. If it is a scan of a full color photo or a very detailed gray scale schematic, I will save the file as a JPG file, experimenting with different levels of compression to find the best compromise between image quality and file size. For black and white drawings I will save the file as a 2 color GIF file; if the drawings include colors I will compare the results between 16 color and 256 color GIF files. (16 color GIF files are less than 1/3 the size of 256 color GIF files.) GIF also supports a 16-shade gray scale (compared to the 256 shades supported by JPG which is more suitable for b&w photos).

Document Formats

For web sites, the HTML format has been the standard for several years now. An HTM or HTML file is an ASCII text file which can be interpreted by the browser for most platforms (IBM, Mac, Unix). It also allows for hyper-text links to other files or URL addresses. HTM files are very compact which allows them to be loaded quickly by your browser, although linked or embedded image files will slow down the process.

Another format which is becoming increasingly popular is the Adobe PDF (**Portable Document Format**) file, which requires the free Adobe Acrobat reader. If you've ever downloaded an HTM file and tried to print it out when you were off-line, you may have noticed that most or all of the images were replaced with "place savers" (or broken links to image files not found on your computer). In contrast, a PDF file can be downloaded to your computer and viewed off-line with no compromises. In fact, I prefer to view PDF files off-line at hard disk access speeds rather than on-line at connect speeds. The PDF format is becoming the standard for on-line user manuals for software or hardware products, as well as for on-line catalogs from many vendors. PDF manuals can have the table of contents displayed in the left pane of the window so that you can quickly zip over to the appropriate section.

Processing Drawings for the Web

I've been using TurboCAD for Windows version 3.01 to create drawings of schematics and circuit boards. Unfortunately this version does not support any of the "web-friendly" image file formats so I have had to use various work-arounds to convert the drawings into GIF and JPG files.

For drawings that can be displayed in full in a window I've used Snag It/32 to convert them into GIF files. To increase the resolution of the image I would reset my monitor to 1024 or 1280. Snag It/32 uses a hot key (**Ctrl-Shift-P** by default) to bring up the capture cursor and you use it to define the upper left and lower right corners of the image to be captured. However even at the highest resolution supported by my monitor a full-page amp schematic would not be readable

when zoomed full-screen.

To convert full-page drawings of schematics into GIF files I ended up getting an inexpensive parallel port flatbed scanner to scan pages printed out by TurboCAD. I would scan the pages at 300dpi or 600dpi after setting the brightness and color filters to generate a BMP file which would then be loaded into JASC IC to rotate and crop the image and finally save it as a GIF file. If the scan was a bit crooked I would first load it into the freeware FotoTouch program available from the Logitech site; FotoTouch has a deskewing function that will rotate the image with a resolution of 1/10th of a degree. (JASC IC will rotate images, too, but only to the nearest degree.)

Creating EPS files from any program

After going through the multi-step hassle of printing, scanning and then processing the scanned images to create GIF files, tboy over at AMPAGE suggested using the PostScript printer driver to generate EPS (**Encapsulated PostScript**) files. I had tried this before but could not load the resulting EPS files into any of my programs (like CorelDraw 3.0) so I never pursued this option any further. However, there are programs such as GhostScript and GSView which will load these EPS files and can output them as BMP or PDF files.

Step One

The first step is to add a PostScript printer to your Windows setup : **Control Panel | Printers | Add Printer** will bring up the **Add Printer Wizard**. As you go through the dialog boxes you want to select a local (not network) printer and when you get to the listing of all of the printer manufacturers and models you have several choices. You can either select a printer included on the Windows 95 cd, or select a driver for a newer printer that you have downloaded from the appropriate site (in which case you click on **Have Disk**.)

At this point, let us stick with the printers on the Windows 95 cd. For starters, I selected the **HP LaserJet 5P/5MP** printer because it supports PostScript Level 2 at 600 dpi. After a few more dialog boxes you are asked to assign the printer to a port. Select **FILE** since we will just be using the driver to create EPS print files. When prompted to print out a test page just click on **No**.

Once the new printer is listed in the printer folder you can right-click on it to bring up a menu to allow you to edit its properties. Under the tab labelled **Graphics** select **600dpi** (you can ignore the half-tone settings if your drawings will be b&w). Under the tab labelled **PostScript** choose **Encapsulated PostScript (EPS)**. Under **Device Options** turn **OFF EconoMode** and **Resolution Enhancement**, and set **Levels of Gray** to **Standard**. After setting these options in Control Panel, I noticed that they may revert to other values when you print out a drawing so I always recheck them from the Print dialog box.

Other printers you may want to add later include the HP LaserJet 8000 PS which supports 11x17 sheets (important if you wish to create landscape PDF files as described later). The Xerox

DocuPrint C55MP printer supports color at 600 dpi, although you may need to allow the installation program install its own version of [adobepps4.drv](#) for the driver to work. (I had a lot of fun shopping through catalogs picking out my new "virtual" printers since they didn't cost me a penny.)

Step Two

With one or more PostScript printers added to your Windows setup as outlined in the step above you are ready to generate EPS files from your drawing or paint program. Choose Printer Setup from the File menu and select the PostScript printer you want to use. Go through the various tabs of the Properties dialog box to make sure that the options are still set properly. If there is a **Fit to Page** check box, you probably want to enable that option.

When you click on OK in the Print dialog box, you will be prompted to type in a filename using the default .PRN extension (quite possibly in your Windows directory). Change the directory as necessary and then type in the filename you want to use, with the extension of EPS. (If you already have some EPS files in that directory, you can type in *.EPS and then [**ENTER**] to have them listed in the file list box.) After clicking on OK you should now have an EPS file for further processing in GSView.

Processing EPS files with GSView

After installing GhostScript and GSView, the default page size is letter in portrait orientation. Landscape drawings will be truncated, but you can edit the [gs_init.ps](#) file in your GS510 directory to allow for larger paper sizes. In a text editor look for the line that reads:

```
% (a4) /PAPERSIZE where { pop pop } { /PAPERSIZE exch def } ifelse
```

Replace **a4** with **11x17**, remove the initial % comment sign and save the file. When you run GSView, the **Media** menu will now bring up a full list of sizes ranging up to **Tabloid** (which is 11x17). Be sure to set **Media** to the actual page size used in your drawing program.

If you want to add a higher resolution (like 600 dpi) you can edit the [printer.ini](#) file in your gsview directory. Under the [devices] heading locate the entries you wish to edit (such as **bmpmono** or **pdfwrite**) and add in the higher resolutions. In order for GSView to recognize these changes you need to run the Options | Configure... wizard which will add them in to the [gsview32.ini](#) file stored in your **profiles** directory (right next to **user.dat**). Be sure that the check box labeled **Update GSView printer list** is checked so that the changes are recorded.

Step One

Once the EPS file has been saved you can then load it into GhostView. (If you get any error messages, there may be a problem with your PS printer driver or the print options you selected.) Once the file has loaded and the drawing is displayed, use the scroll bars to make sure that the entire drawing is there. If it is, then you can proceed with the next step. (If not, you may need to scale down the original drawing a bit and try again.) If the drawing file is landscape, make sure that you edited the [gs_init.ps](#) as outlined in Step One.

Step Two

Under the File menu in GhostView, choose "Print" and under Device, select **bmpmono** for a black and white drawing (or **bmp16**, **bmp16m** or **bmp256** for color or grayscale drawings). There is a box below the **Device** list box that you need to check: **Print to file**. And under Resolution you will want to select 300dpi. [There is also a device labelled **pdfwrite** that you can use to create PDF files and one labelled **jpeg** to create JPG files.]

Once you have selected the appropriate options click OK which will bring up a dialog box to type in the filename you wish to save it as. Once a BMP file has been created you should import it into a program like JASC Image Commander (aka "JASC IC") to crop its size and rotate it if necessary before converting it into a GIF file. (JASC IC will also load JPG files.) For PDF files you will want to test them out using the Acrobat Reader to see if they turned out okay. (Landscape files will probably be displayed sideways, which is okay if they are just to be printed out.)

Processing Landscape Files for PDF

As noted above, landscape drawings might be displayed sideways in the Adobe Acrobat reader. Many tube amp schematics are drawn up in landscape mode so I worked out these steps to be able to convert landscape drawings into PDF files which are displayed properly.

Step One

In your drawing program select a PostScript printer that supports large media (like the HP LaserJet 8000PS). Select the 11x17 tabloid page size and have it set to portrait orientation. You may need to arrange the print margins so that your landscape drawing will fit in the printable area of the page. Set the options as outlined above and generate an EPS print file.

Step Two

Load your EPS file into GSView. Under **Media** you should now have a long list of sizes; select **Tabloid**. Your drawing will undoubtedly cover less than 1/2 of the page so use the **File | Info** dialog box to get the coordinates of the Bounding Box. Scale the drawing so that it all fits inside the window. The status bar will indicate the actual coordinates of the cursor. Figure out how you want to crop the drawing and write down the new coordinates you would like for the Bounding Box.

Step Three:

You now need to edit the EPS file to change the coordinates of the Bounding Box. I used a hex editor so I could see exactly what I was doing. You need to locate an entry near the top of the file labelled **%%BoundingBox** followed with the coordinates you copied from the **File | Info** dialog box in GSView. You need to change these coordinates to the new ones you determined in the previous step to crop the drawing. When changing a 4 digit coordinate to 3 digits I typed in a space (20H) for the 4th digit without generating an error. Save the file under a different filename (just in case it became corrupted) and when you load it into GhostView the drawing should be displayed in the Bounding Box that you just defined. Use **File | Print** and select **pdfwrite** as the device with a resolution of 300dpi.

Step Four

You now need to edit the generated PDF file as Acrobat will display the full 11x17 page. Using a hex editor, locate the entry: **/Page. /MediaBox**. The coordinates listed are slightly larger than those of the original Bounding Box, so I added 13 to the high values of the coordinates of the cropped Bounding Box and subtracted 13 from the low values of the coordinates. If there is not enough room to type in all of the coordinates switch your hex editor from the "Overtime" mode to "Insert" mode to type in the extra digit(s). Save the PDF file under a different filename and then try loading it into Acrobat. After following these instructions it should now be displayed with the proper orientation.

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August 19, 1998

(Revised 3/22/99)

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