

MegaconvertGS

for the Apple IIgs

User manual

Pictures from many computers, converted on the Apple IIgs

Version 1.5 · Walter Tengler · github.com/portwally/MegaconvertGS

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MegaconvertGS is a successor to SuperConvert by Jason Harper and Ian Brumby, published with the kind permission of Ian Brumby. Babelfish is a trademark of Seven Hills Software. The sample pictures in this manual come from Apple IIgs and Apple II software and disks of their time; they belong to their authors.

CHAPTER 1

Welcome

MegaconvertGS turns pictures from many computers and file formats into Apple IIgs Super Hi-Res screens, and saves them in the formats the IIgs and other computers read. It runs under GS/OS on a real Apple IIgs or in an emulator.

MegaconvertGS is a new program written from scratch in 65816 assembly. It follows SuperConvert 4, the classic IIgs converter by Jason Harper and Ian Brumby: the same windows, lists, menus and conversions, so SuperConvert's users feel at home. Where GS Remap, a modern reimplementation of SuperConvert's arithmetic, has a function, MegaconvertGS gives the same result pixel for pixel.

What it does

- **Opens 72 load formats** from 14 kinds of computer: the Apple II and IIgs, Atari ST and 8-bit, Amiga, Commodore 64, Macintosh, PC, Unix workstations, Amstrad CPC, MSX, ZX Spectrum and today's PNG, JPEG, GIF, BMP and TIFF.
- **Remaps** true color pictures to 320 or 640 mode, 640 dither mode or a palette for every line, with SuperConvert's palettes and dithering.
- **Filters** true color pictures, makes **monochrome** images and turns them back.
- **Saves** in 26 formats: Apple Preferred, $C1, PackBytes, PaintWorks, Finder icons, icon resources, a desktop picture, GIF, PNG, TIFF, BMP and Apple II screens.
- **Batch converts** many files or whole folders with Load & convert.
- **Works with Babelfish**, Seven Hills' file translators, for even more formats.

What you need

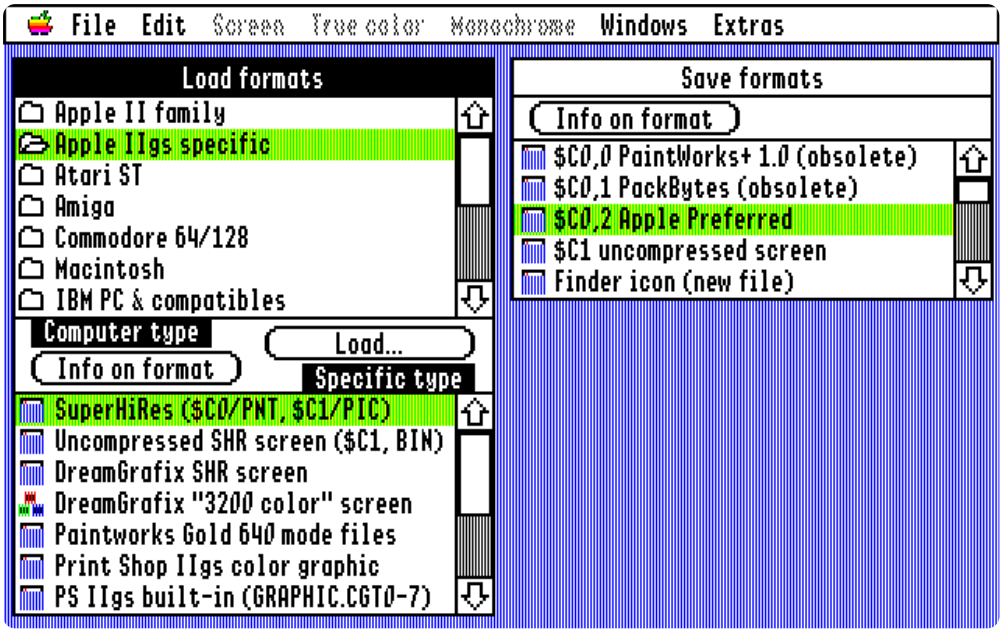
- An Apple IIgs with GS/OS System 6 (tested with System 6.0.4), or an emulator: MegaconvertGS is developed and tested in MAME (most easily run through Ample on the Mac).
- Memory: the tests run with 4 MB. Large photographs need more than small screens; true color pictures up to 4096 x 4096 pixels are read when memory allows.

Installing

MegaconvertGS comes on an 800K ProDOS disk image, `MegaconvertGS.po`, from the project's GitHub page.

1. Boot GS/OS and insert (or mount) the MegaconvertGS disk.
2. Double-click **MegaconvertGS** to run it straight from the disk.
3. To keep it on a hard disk, copy **MegaconvertGS**, **MCGS.Help** and **MCGS.Title** into one folder, and **MCGS.Icons** into the disk's **Icons** folder so the Finder shows its icon.

> **Tip** On a real IIgs, write the image to a 3.5" disk, or use a FloppyEmu or BlueSCSI. In an emulator, boot your System 6 disk and mount the image as a second drive.



MegaconvertGS just after it starts: the Load formats and Save formats windows.

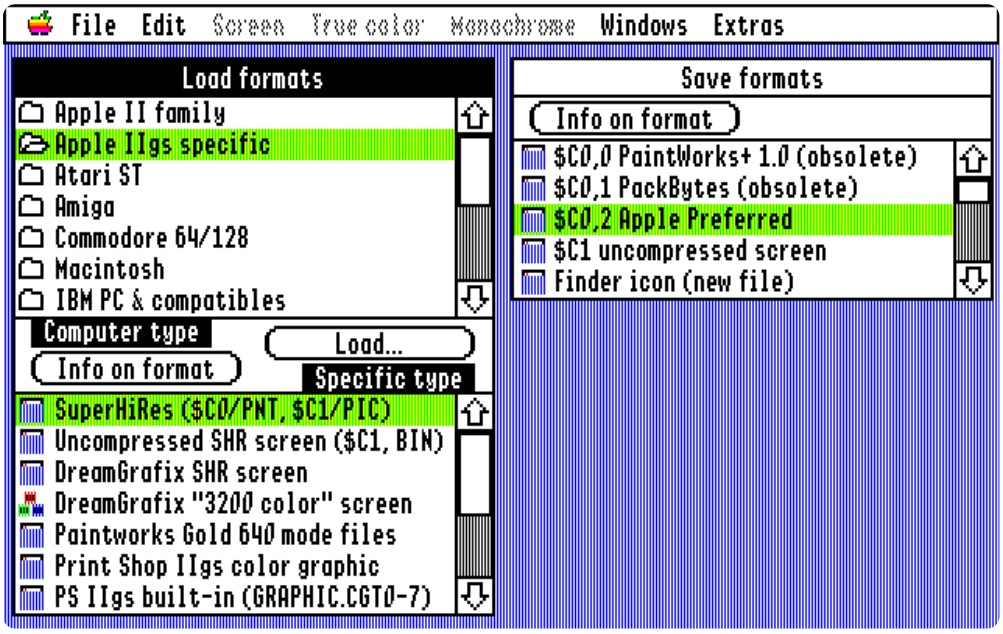
CHAPTER 2

A guided tour

Ten minutes with MegaconvertGS: load a Super Hi-Res picture, look at it, load a photograph, remap it to the screen and save the result.

The desktop

MegaconvertGS opens two windows side by side. **Load formats** lists the kinds of computer (Computer type) and, below, the formats of the one chosen (Specific type). **Save formats** lists what MegaconvertGS can write. A small icon in front of each format tells what kind of image it gives: a Super Hi-Res **screen image**, a **true color image**, both, or a **monochrome image**.

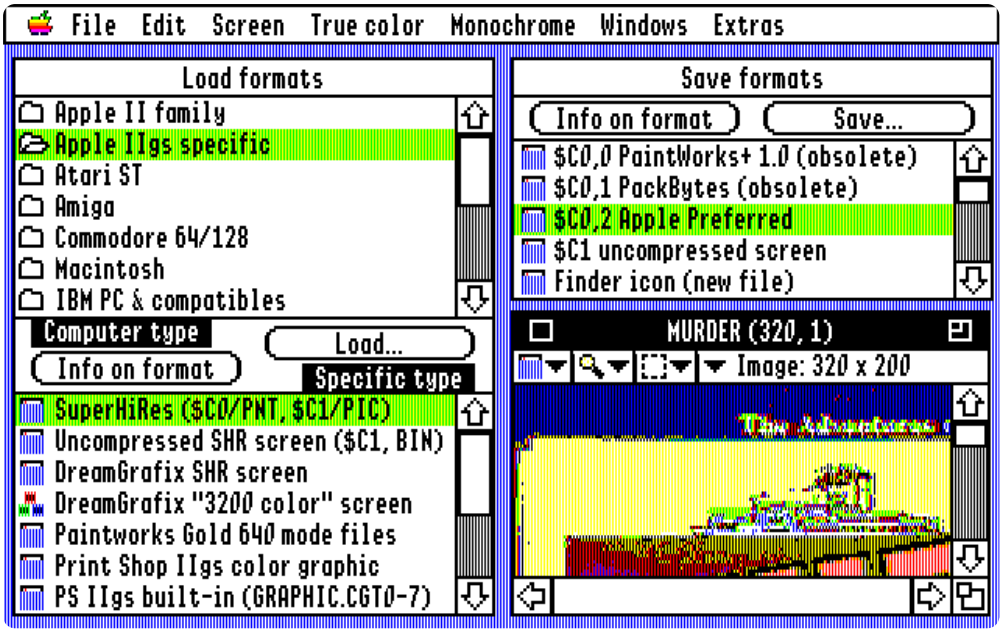


Load formats with Apple IIgs specific chosen: SuperHiRes, $C1 screens, DreamGrafix, PaintWorks Gold, Print Shop IIgs, Finder icons and more.

Loading a picture

1. In Load formats, click the computer the picture comes from, then its format. Click **Info on format** to read about it.
2. Click **Load...** (or double-click the format, or choose **File > Load & convert...**, ⌘L).
3. The file dialog lists only the files that format can read. Choose one and click Open.

Not sure what a file is? **File > Load any picture...** (⌘0) recognises most formats by their file type, name, size and contents.



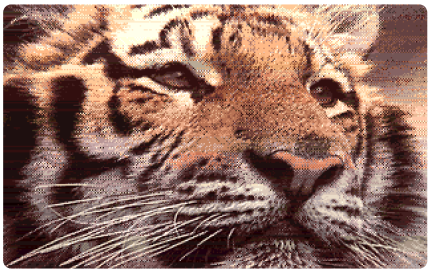
An Apple Preferred picture loaded: the image window beside the format windows, its info bar at the top.

Viewing

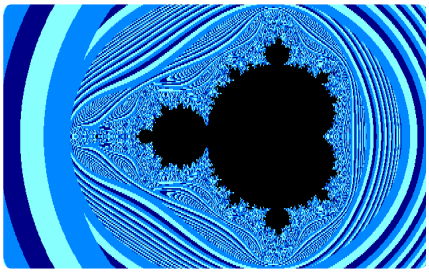
The image window shows the picture in the desktop's own colors, as closely as the desktop's 640 mode allows. To see it in its real colors, choose **Screen > View full screen** (`⌘F`); a click or a key returns. **View half size** (`⌘H`) shows a large picture whole, **View X4 magnified** (`⌘4`) its pixels.



View full screen: the picture as the IIgs shows it.



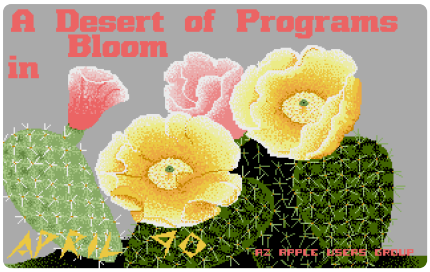
A 320 mode picture with 16 palettes.



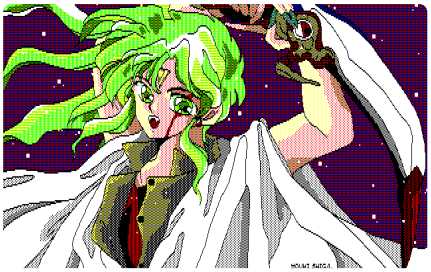
A 640 mode picture.

Pictures from the IIgs

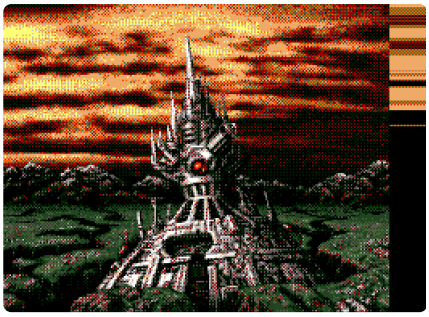
Super Hi-Res pictures load as they are, in every variety the IIgs knew: plain and packed screens, PaintWorks, Apple Preferred, DreamGrafix, "3200 color" pictures with a palette for every line. An Apple Preferred picture larger than the screen, or with 3200 colors, is read whole as a true color picture and fitted to the screen.



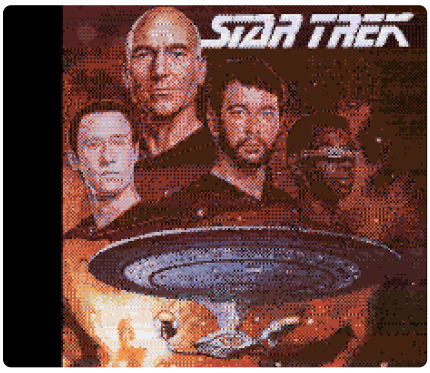
PaintWorks.



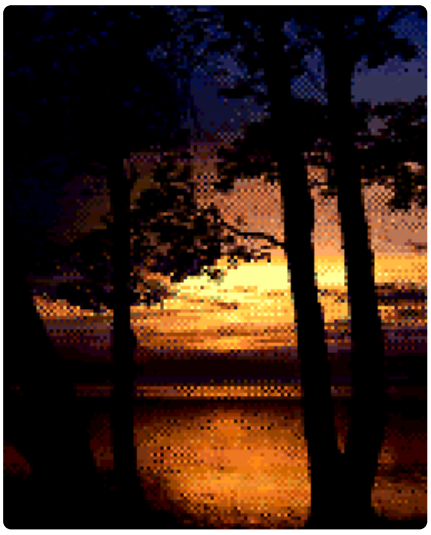
Apple Preferred, 640 mode.



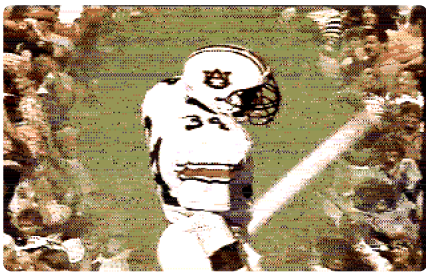
Apple Preferred, 352 x 256, fitted.



Apple Preferred with 3200 colors, 800 x 600, fitted.



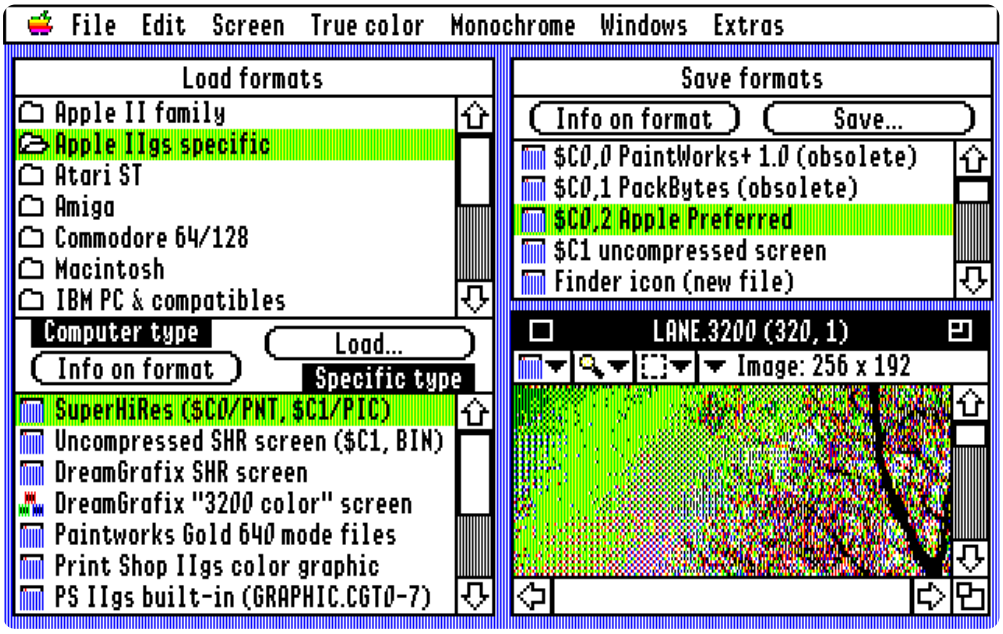
Apple Preferred with 3200 colors.



A Brooks "3200 color" picture.

Loading a photograph

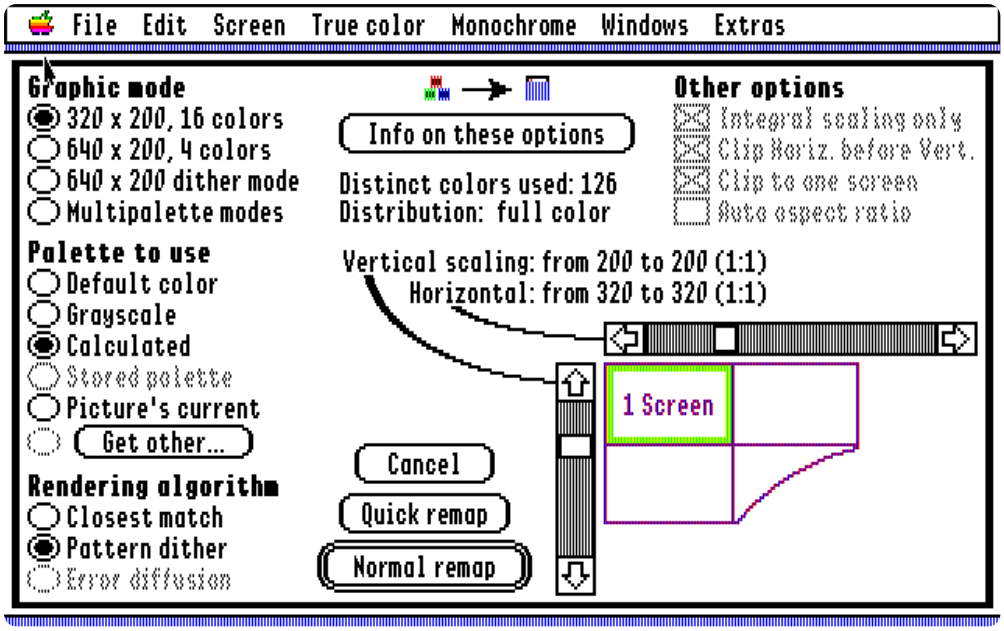
Pictures with more colors or pixels than the screen holds – PNG, JPEG, GIF, BMP, TIFF, "3200 color" pictures, Amiga 24-bit IFF and many more – become a **true color image**: red, green and blue for every pixel. MegaconvertGS then fits it to the screen at once, so there is always something to see, and opens the Remap dialog.



A 3200 color photograph loaded as a true color image, fitted to the screen.

Remapping and saving

In the **Remap** dialog (also **True color > Convert to screen**, ⌘M) choose the graphic mode, the palette, how colors are rendered and the size, then click Remap. The next chapter but two explains every choice.

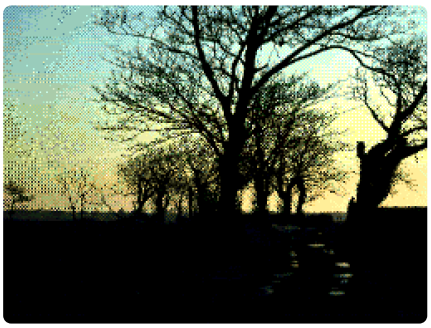


The Remap dialog: graphic mode, palette, rendering, and the size with its scroll bars.

To save, choose a format in **Save formats** and click **Save...** (or **File > Save conversion...**, ⌘S). Apple Preferred is the IIgs's standard picture file and the best choice for most pictures.



As loaded: fitted to the screen.



Remapped to multipalette with error diffusion.



Remapped to 640 mode.

CHAPTER 3

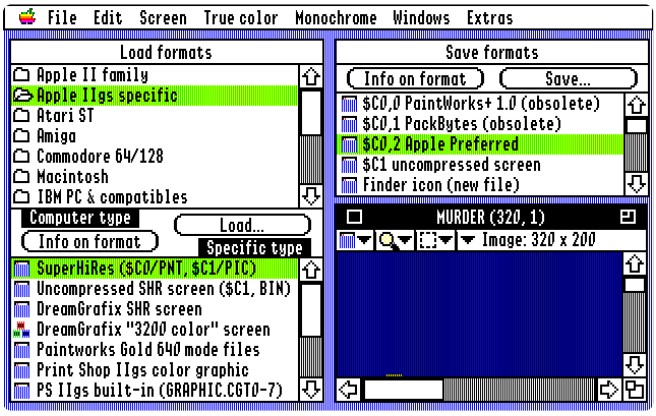
The image window

One picture, three ways at once: as a screen image, as a true color image and as a monochrome image. The image window shows any of them.

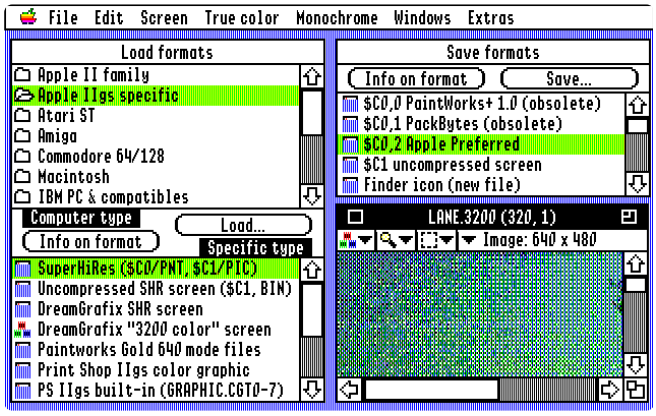
The three kinds of image

Kind	What it holds	Made by
Screen image	Super Hi-Res pixels, a mode and palette for each line (320 or 640 mode), up to 16 color tables of 16 colors.	Loading a screen format; Remap; Monochrome > Convert to screen.
True color image	Red, green and blue for every pixel, up to 4096 x 4096 pixels.	Loading a photograph or another true color format; Screen > Convert to true color.
Monochrome image	One bit a pixel, black or white.	Convert to monochrome (Screen or True color menu); Works of Art pages.

Choose which kind the window shows with the pop-up at the left of its info bar. The other pop-ups choose the tool, the zoom and actions.



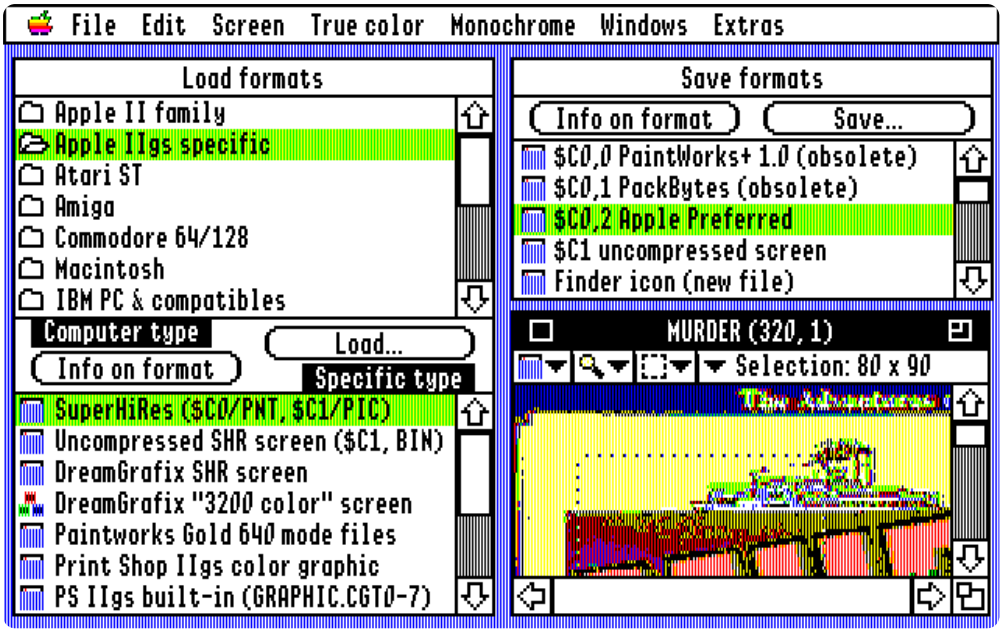
Zoomed in: every Super Hi-Res pixel shows.



The true color image shown in the window.

Tools and actions

- **Selection:** drag a rectangle; its marching ants show it. **Crop to selection** keeps only it; Save's size choice can save just the selection; Edit > Copy copies it.
- **Pixel peek:** point at a pixel to read its color (and its palette entry) in the info bar.
- **Zoom:** four steps, from the whole picture to every pixel large.
- **Actions:** crop to the selection, discard this kind of image or the others, and **Use image's palette**, which puts the picture's own colors on the screen while you look at it.



A selection in the image window.

Tip The number keys 1-9 and the space bar move around a picture larger than the window.

CHAPTER 4

Remapping true color pictures

Remap turns a true color picture into a Super Hi-Res screen: it picks the colors, chooses how to show the ones the screen can't, and sizes the picture.

The graphic mode

Mode	Resolution	Colors
320 mode	320 x 200	16 colors from 4096, one palette for the whole picture.
640 mode	640 x 200	4 colors (pure), the desktop's mode.
640 dither mode	640 x 200	4 colors in each column of four, which the eye mixes into more.
Multipalette	320 x 200	A palette of 16 for every line: the most colors the IIgs shows without special tricks.



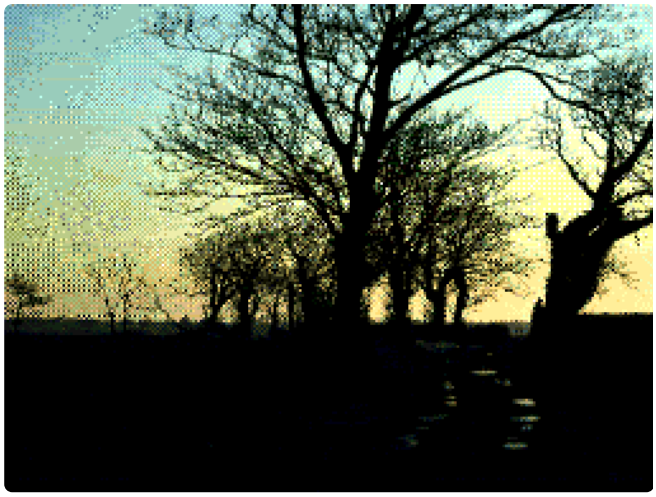
320 mode, error diffusion.



640 mode, error diffusion.



640 dither mode, pattern dither.



Multipalette, error diffusion.

The palette

Calculated finds the best colors for this picture. **Default** uses the IIgs's standard colors, **Greys** sixteen greys. **Stored** uses the colors kept with Screen > Store palette, and **Other...** takes them from another picture file — useful when several pictures must share one palette. **Current** keeps the screen image's own.



Calculated palette.



The default palette.



Greys.

Rendering

Closest color gives each pixel the nearest color; **pattern dither** mixes neighbors in a regular pattern; **error diffusion** spreads each pixel's error to its neighbors for the smoothest look.



Closest color.



Pattern dither.



Error diffusion.

Size

The scroll bars in the dialog choose how large the picture comes out, in SuperConvert's scale steps; the diagram shows its size against the screen. A picture larger than the screen is fitted to it when it loads. **Quick remap** makes a fast preview.

> **Tip** Remapping never changes the true color image: try as many modes and palettes as you like, then save the one you prefer.

CHAPTER 5

Filters and effects

The True color menu changes the true color picture itself. Remap afterwards to see and save the result.

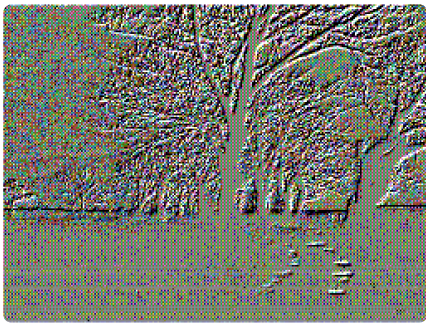
Command	What it does
Histogram equalization	Spreads the picture's brightness over the whole range: dull pictures gain contrast.
Median filter, Sigma filter	Remove noise; Sigma keeps edges sharper.
Emboss image	Makes the picture look raised, in grey.
Blur image, Sharpen image	Soften or sharpen by a factor you choose.
Solarize image	Inverts the brighter half, as an overexposed photograph.
Find edges	Outlines the shapes.
Increase / Decrease contrast	Stretch or flatten the colors.
Rotate/flip image…	Quarter turns and mirror images.



The original, remapped to multipalette.



Histogram equalization.



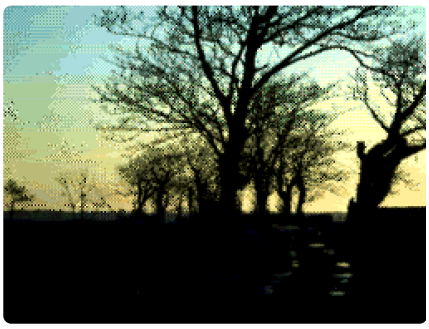
Emboss.



Solarize.



Find edges.



Blur (factor 80).



Sharpen (factor 80).



Increase contrast.



Mirrored.

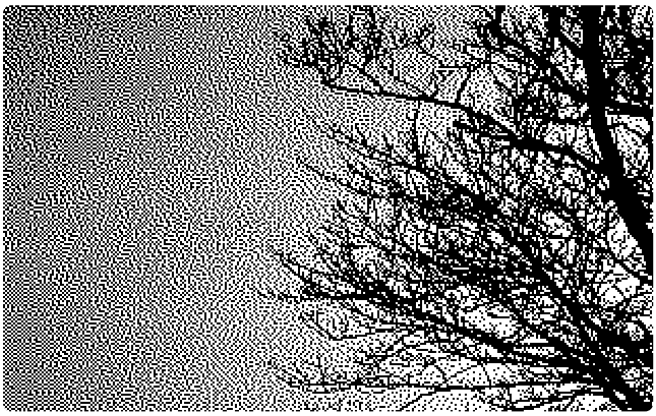
True color image info... (⌘T) shows the picture's size and its red, green, blue and brightness histograms;
View approximation (⌘A) shows the true color picture as closely as the screen can, without remapping.

CHAPTER 6

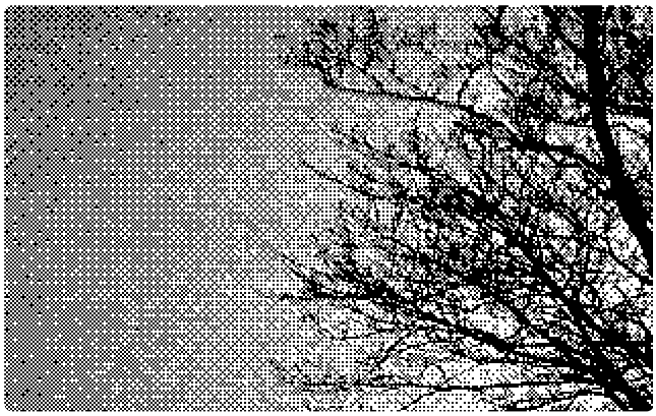
Monochrome images

Black and white, one bit a pixel: for printing, for 640 mode, for MacPaint-style art and for a look of its own.

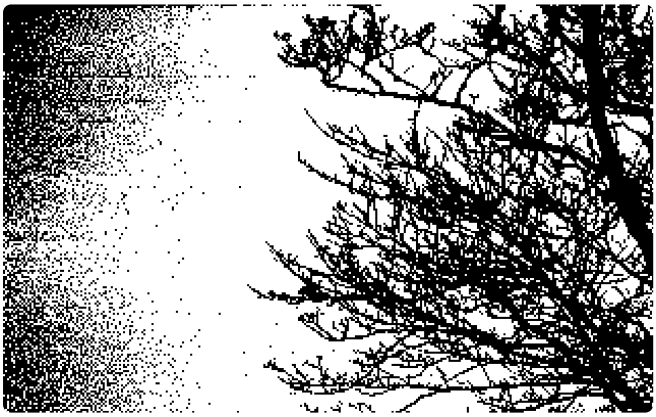
Convert to monochrome... (in the Screen and True color menus) makes the monochrome image, enlarged two or four times if you like, by one of four methods. The **Monochrome** menu turns it back into a screen or true color image – choosing the pixels' aspect, the scaling, 320 or 640 mode and how much grey to keep – and makes its negative.



Error diffusion.



Pattern dither.



50% threshold.



Halftone.

Tip Macintosh MacPaint pictures and Springboard Works of Art pages load straight into a monochrome image.

CHAPTER 7

Loading many files

Load & convert works through many pictures one after another: choose them all at once, or whole folders.

1. Choose the format in Load formats and click **Load...**.
2. In the file dialog, select several files (shift-click), or folders with **Load all pictures within selected folders** checked.
3. The first picture loads; **Load next** (⌘N, or the button that takes Load…'s place) loads the next. **File > Cancel remaining files** forgets the rest.

With the preferences **Automatically save picture after loading** and **Automatically load next picture after saving**, a whole folder converts while you watch: each picture loads, is remapped as you set, saved in the chosen Save format, and the next one follows.

> **Tip** File > Re-convert last file (⌘R) loads the last picture again in the chosen format – handy after changing the Remap settings or the preferences.

CHAPTER 8

Saving

Choose a format in Save formats and click Save…. MegaconvertGS asks only what the format needs.

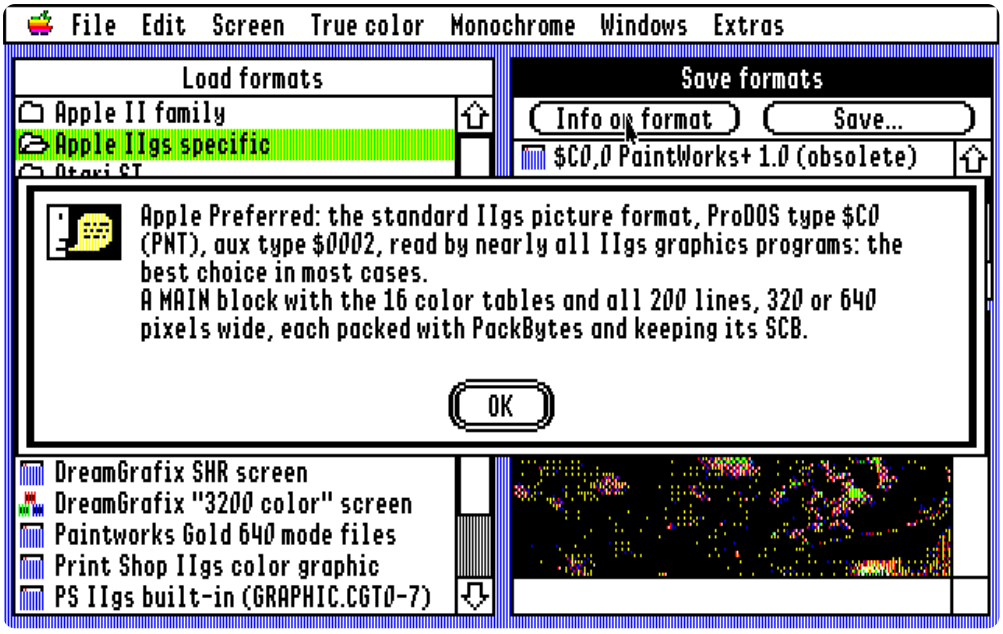
Before the file dialog, MegaconvertGS may ask:

- **The size** of the saved picture: the original, one screen, a page, two screens high or wide, or the selection.
- **Where** a smaller picture goes in a larger area.
- Whether to **go on** when the format can't hold everything the picture has: 640 mode, several color tables, mixed modes, dithering.
- The format's **own options**: PNG compression and comments, TIFF Save Options, Hex data's layout, a Finder icon's criteria, the Apple II saves' dithering and size.

With only a true color or monochrome image, a screen image is made first. GIF, PNG, TIFF and BMP are written with square pixels, as the picture looks, for today's computers.

Which format?

For	Use
Keeping a IIgs picture	$C0,2 Apple Preferred: compressed, holds any size and every mode.
Programs that load a raw screen	$C1 uncompressed screen (32768 bytes).
Today's computers	PNG (lossless), or GIF, TIFF, BMP.
The Finder	Finder icon (new file, or added to an icon file).
HyperCard IIgs, HyperStudio	Icon resource.
The desktop's background	Desktop background image INIT (copy it to System.Setup).
Apple IIe, IIc programs	Apple II HiRes, Double HiRes, LoRes, Double LoRes (plain or packed).
Programmers	Hex data: the picture as assembler or BASIC data.



Info on format explains each save format before you choose it.

CHAPTER 9

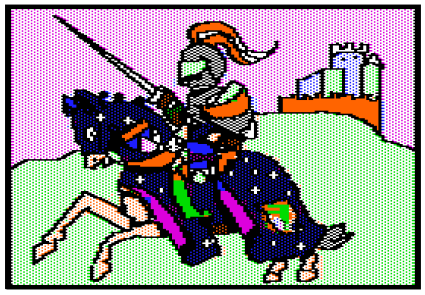
Apple II pictures

HiRes, Double HiRes, LoRes and Double LoRes: the Apple IIe and IIc screens, loaded with their colors worked out as a color monitor shows them, and saved back.

HiRes and Double HiRes

A HiRes screen is 8192 bytes, 280 x 192 dots in six colors; Double HiRes is 16384 bytes (the auxiliary memory half first), 140 x 192 pixels in 16 colors. MegaconvertGS reads them in color or black and white, and also:

- packed with PackBytes (ProDOS type $08, aux type $4000 or $4001);
- packed with fadden's **LZ4FH** (type $08, aux type $8066);
- Double HiRes as **two files**, `NAME.BIN` (main memory) and `NAME.AUX` (auxiliary), as Beagle Graphics and bmp2dhr write them — open either one;
- **Dazzle Draw** and bmp2dhr's `.A2FC` files (and `.A2FM`, black and white), and bmp2dhr's `.DHR` picture pieces.



HiRes.



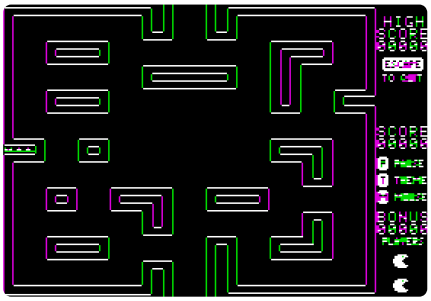
HiRes.



Double HiRes (A2FC).



Double HiRes (A2FC).



Double HiRes.

Saving for the Apple II

The Apple II save formats fit the picture to 280 x 192 (or 40 x 48 and 80 x 48 blocks) and dither it in the Apple II colors. Their options choose error diffusion, a pattern or no dithering, and whether the picture fills the screen or keeps its proportions. A picture already in Apple II colors keeps them exactly.

CHAPTER 10

Babelfish

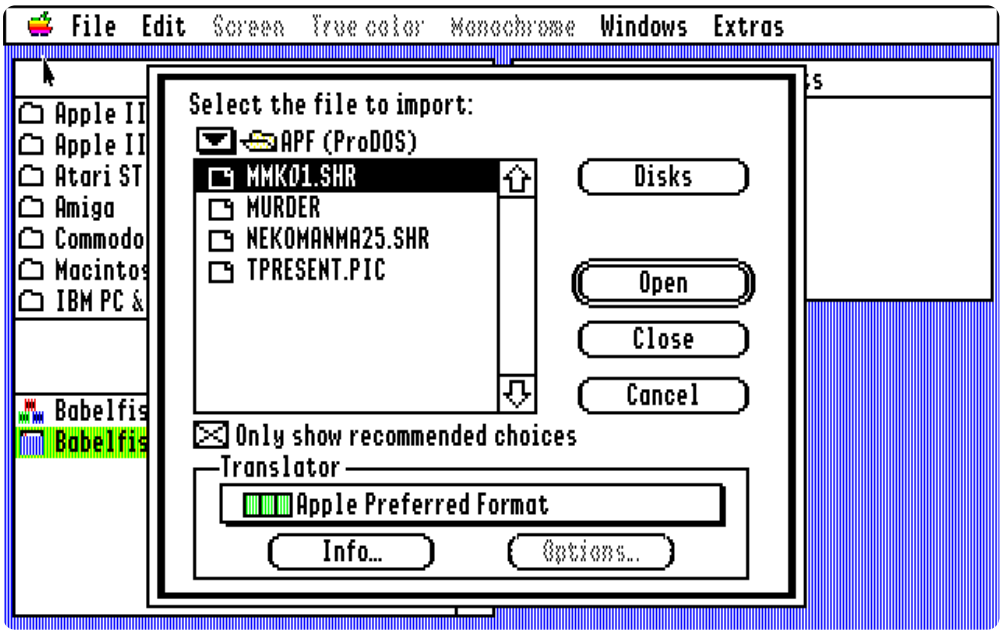
Babelfish, Seven Hills Software's freeware file translators, adds the formats of its translators to every program that uses it – MegaconvertGS among them, as SuperConvert 4 did.

Installing Babelfish

Babelfish is freeware; the archive and its manual are at **speccie.uk/software/babelfish**. Copy the files of its System folder into your boot disk's System folder (System.Setup, Desk.Accs and SHS.Babelfish) and restart.

Importing

1. In Load formats, choose **External (Babelfish™)**, then **True Color Import** or **PixelMap Import**.
2. Click Load…. MegaconvertGS shows "Loading Babelfish…" the first time, then Babelfish's own Open dialog.
3. Choose the file; the translator that knows it best is chosen for you, with its rating shown. Click Open.



Babelfish's Open dialog: the file, and the translator that will read it.

PixelMap Import gives a screen image (or a true color image when the picture is larger than the screen); True Color Import a true color image. Babelfish's translators read Apple Preferred, Super Hi-Res, MacPaint, Print Shop and Print Shop GS, GEM/IMG, PBM, PGM and PPM, ComputerEyes, Visionary, ThunderScan, Works of Art and Single and Double Hi-Res.

Exporting

In Save formats choose **Babelfish™ PixelMap Export** (the screen image: Apple Preferred, Super Hi-Res, MacPaint, Print Shop) or **True Color Export** (the true color image, as a PPM file), then Save…: Babelfish's Export dialog asks for the name and the translator.

> **Note** Without Babelfish installed, these entries say "Unable to startup Babelfish."

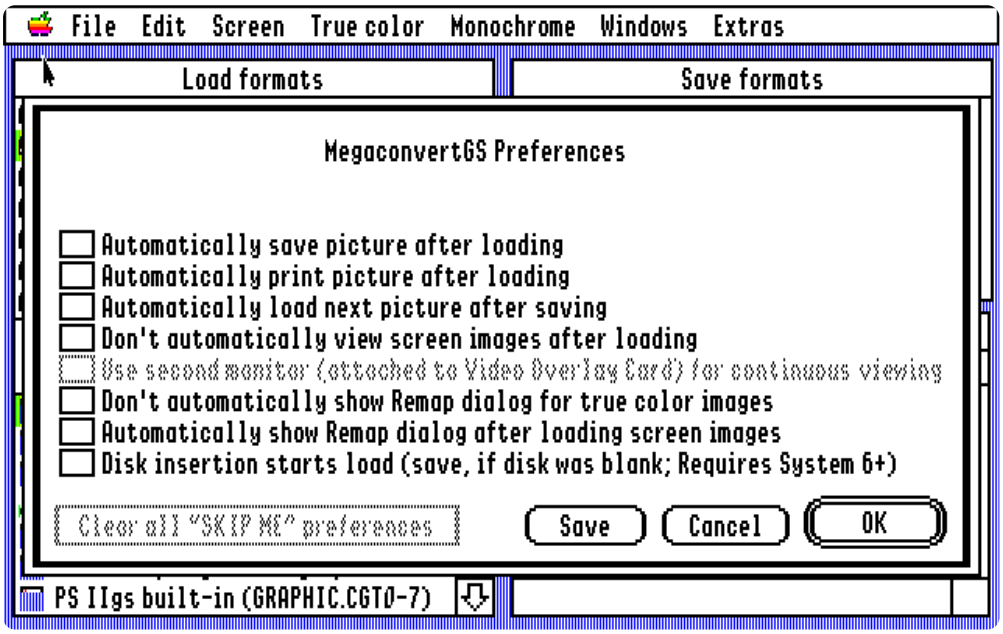
CHAPTER 11

Extras and preferences

A few tools beyond converting, and the options that decide what happens after a picture loads or saves.

Preferences

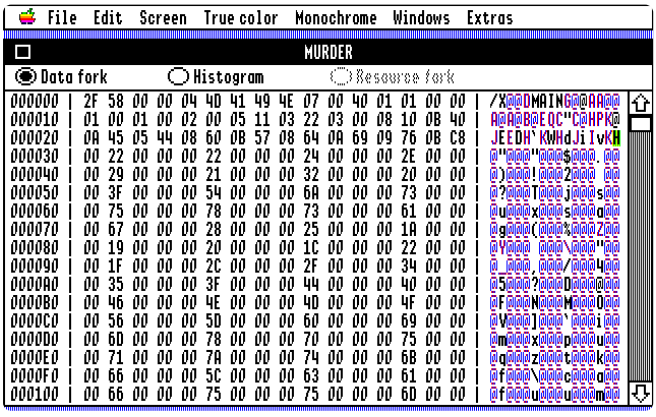
Apple > Preferences... sets what happens after a picture is loaded or saved: save it at once, view it full screen or not, open the Remap dialog for true color pictures (or also after screen images), load the next file waiting after saving. **Save** keeps the options for next time (in MCGS.Prefs beside the program).



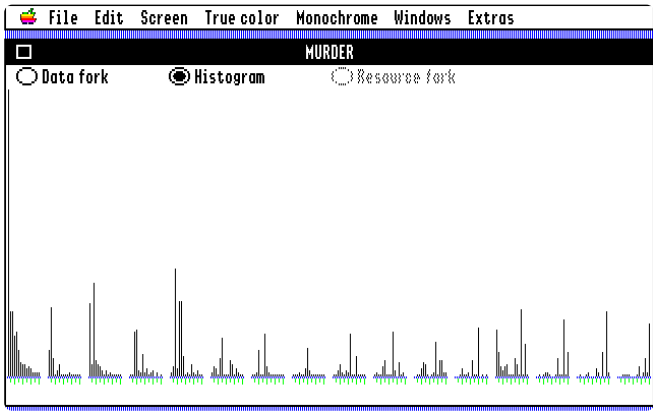
The Preferences dialog.

Examine file

File > Examine file... shows any file's data or resource fork as hex and text, or a histogram of its byte values – useful when a file won't load and you want to know what it is.



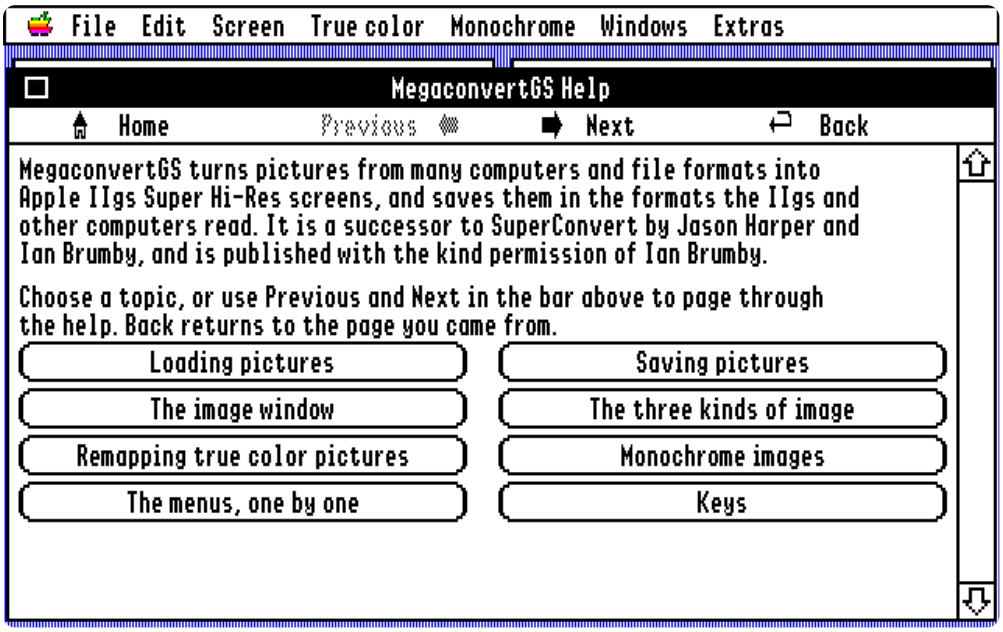
Examine file: hex and text.



Examine file: the bytes' histogram.

And more

- **Screen > Use as desktop background** puts the picture behind every desktop program's windows; save it as a Desktop background image INIT to keep it.
- **Screen > Oscilloscope Art** makes a picture to watch on an oscilloscope on the composite output.
- **Extras > Available font list**, **More available fonts** and **Font key chart...** show the installed fonts.
- **Extras > System info report...** describes the computer: memory, tools, versions.
- **Apple > Help!** opens the help window; **Menu item help**, then any menu item, shows that command's page.



The help window.

CHAPTER 12

Menus and keys

Every command at a glance.

Menu	Commands
Apple	About MegaconvertGS, Help!, Menu item help, Preferences…, desk accessories.
File	Load & convert…, Load any picture…, Re-convert last file, Load next, Cancel remaining files, Save conversion…, Exchange load/save paths, Examine file…, Quit.
Edit	Undo, Cut, Copy (the screen image or its selection, with its colors), Paste, Clear, Close (every image).
Screen	Screen image info…, Convert to true color…, Convert to monochrome…, View full screen, View half size, View X4 magnified, Store palette, Use as desktop background, Oscilloscope Art.
True color	True color image info…, Convert to screen (Remap)…, Convert to monochrome…, View approximation, Rotate/flip image…, and the filters.
Monochrome	Monochrome image info…, Convert to screen…, Convert to true color…, Negative image.
Windows	Normal positions, Load formats, Save formats, Current image.
Extras	Available font list, More available fonts, Font key chart…, Revert to normal desktop, System info report….

Keys

Key	Command	Key	Command
`⌘L`	Load & convert	`⌘M`	Remap
`⌘O`	Load any picture	`⌘F`	View full screen
`⌘R`	Re-convert last file	`⌘H`	View half size
`⌘N`	Load next	`⌘4`	View X4 magnified
`⌘S`	Save conversion	`⌘A`	View approximation
`⌘I`	Screen image info	`⌘T`	True color image info
`⌘?` `⌘/`	Help	`⌘Q`	Quit

In the help window: `H` goes home, the left and right arrows page, the up and down arrows go back.

CHAPTER 13

Load formats reference

Every entry of the Load formats window, by computer type, with what MegaconvertGS reads and makes of it – the same texts as its Info on format button.

Apple II family

HiRes black & white

SCREEN IMAGE

HiRes black & white: the Apple II high resolution screen (8192 bytes, usually a BIN or FOT file) as a monochrome monitor shows it, each of its 280 x 192 dots white or black.

Loaded as 280 x 192 in 320 mode.

HiRes color

SCREEN IMAGE

HiRes color: the Apple II high resolution screen, 8192 bytes: 280 x 192 dots in black, white, violet, green, blue and orange, worked out from the dots and their neighbors as on a color monitor.

Loaded as 280 x 192 in 320 mode. Also packed (PackBytes: $08, $4000; LZ4FH: $08, $8066); a $08 file with byte 120 set to black & white or Double HiRes opens so.

DoubleHiRes black & white

SCREEN IMAGE

Double HiRes black & white: the Apple II double high resolution screen (16384 bytes, the auxiliary half first) as a monochrome monitor shows it, each of its 560 x 192 dots white or black.

Loaded as 560 x 192 in 640 mode. Also NAME.BIN with NAME.AUX; Open reads .A2FM files and .DHM masks so.

DoubleHiRes color

SCREEN IMAGE

Double HiRes color: the double high resolution screen of the Apple IIe, IIc and IIgs, 16384 bytes, the auxiliary memory half first: 140 x 192 pixels in 16 colors, each pixel made of 4 dots.

Loaded in 320 mode, each pixel doubled across: 280 x 192. Also read packed with PackBytes ($08, $4001), as two files (NAME.BIN, main, and NAME.AUX) and as bmp2dhr pieces (.DHR).

Print Shop B & W graphic

SCREEN IMAGE

Print Shop graphic: a graphic from Broderbund's original Print Shop for the Apple II, 88 x 52 dots in black and white, 572 bytes. Print Shop keeps them on DOS 3.3 disks, so copy them to ProDOS first.

Loaded as 88 x 52 in 320 mode.

ThunderScan raw scan file

TRUE COLOR IMAGE

ThunderScan raw scan: a scan from Thunderware's ThunderScan, the scanner that takes the place of the ribbon in an ImageWriter printer: a 256-byte header, then rows of 4-bit gray samples.

It becomes a gray true color picture, remapped to fit a 320 mode screen.

Works of Art (Springboard Publ.)

MONOCHROME IMAGE

Works of Art: black and white clip art from Springboard Publishing's Works of Art collections.

Each page chosen becomes a monochrome image.

TDM 40-column text screen capture

SCREEN IMAGE

TDM 40-column text screen: the Apple II text screen memory saved as a BIN file, as On Three's The Desktop Manager (TDM) captures it: 1024 bytes, 40 columns by 24 lines.

Drawn with the Apple II characters, normal and inverse, as 280 x 192 in 320 mode.

TDM 80-column text screen capture

SCREEN IMAGE

TDM 80-column text screen: the Apple II 80-column text screen memory saved as a BIN file, as TDM (The Desktop Manager) captures it: 2048 bytes, the auxiliary memory half first.

Drawn with the Apple II characters, normal and inverse, as 560 x 192 in 640 mode.

LoRes (40 x 48)

SCREEN IMAGE

LoRes: the Apple II low resolution screen, 1024 bytes (the text page, usually a BIN file): 40 x 48 blocks in 16 colors.

Loaded as 280 x 192 in 320 mode, each block 7 x 4 pixels. Open takes a 1024-byte file this way.

Double LoRes (80 x 48)

SCREEN IMAGE

Double LoRes: the 80-column low resolution screen of the Apple IIe, IIc and IIgs, 2048 bytes, the auxiliary memory half first: 80 x 48 blocks in 16 colors.

Loaded as 280 x 192 in 320 mode, each block 3 or 4 pixels across and 4 down. Open takes a 2048-byte file this way.

Apple IIgs specific

SuperHiRes ($C0/PNT, $C1/PIC)

SCREEN IMAGE

SuperHiRes ($C0 PNT, $C1 PIC): reads the common Super Hi-Res files and works out by itself which kind each one is: ProDOS type $C0 with aux type $0000 (PaintWorks), $0001 (PackBytes) or $0002 (Apple Preferred), or type $C1 with aux type $0000 (a plain screen).

Loaded as it is; an Apple Preferred picture larger than the screen or with 3200 colors as a true color one.

Uncompressed SHR screen ($C1, BIN)

SCREEN IMAGE

$C1 screen: the Super Hi-Res screen saved byte for byte, 32768 bytes: the pixels, the 200 SCBs (each line's mode and color table) and 16 color tables. ProDOS type $C1 (PIC), aux type $0000, though early pictures were often BIN files.

Loaded unchanged. Any file of at least 32000 bytes can be read this way.

DreamGrafix SHR screen

SCREEN IMAGE

DreamGrafix: pictures from the DreamGrafix paint program, ProDOS type $C0 (PNT), aux type $8005, LZW compressed. This is the 256 color kind, a screen using all 16 color tables.

Unpacked and loaded unchanged, in 320 or 640 mode, whichever most of its lines use.

DreamGrafix "3200 color" screen

TRUE COLOR IMAGE

DreamGrafix "3200 color": the DreamGrafix kind with its own palette on each of the 200 lines, ProDOS type $C0 (PNT), aux type $8005, LZW compressed.

It becomes a 320 x 200 true color picture, remapped to 320 mode. Remap's multipalette mode keeps more of its colors.

Paintworks Gold 640 mode files

SCREEN IMAGE

PaintWorks Gold 640 mode: PaintWorks Gold saves 640 mode pictures with 320 mode headers, in all of its formats, so other programs show them at half width in the wrong colors.

This reads them as the 640 x 200 pictures they are. Save them again, as Apple Preferred for example.

Print Shop IIgs color graphic

SCREEN IMAGE

Print Shop IIgs color graphic: a graphic from Broderbund's Print Shop IIgs, 88 x 52 dots in 8 colors (black, white, red, orange, yellow, green, blue and purple) made of yellow, magenta and cyan planes, 1716 bytes.

Loaded as 88 x 52 in 320 mode with the standard colors.

PS IIgs built-in (GRAPHIC.CGT0-7)

SCREEN IMAGE

Print Shop IIgs built-in graphics: the libraries GRAPHIC.CGT0 to GRAPHIC.CGT7 that come with Print Shop IIgs, each a series of 88 x 52 color graphics followed by their names.

The first graphic in the file is loaded, as 88 x 52 in 320 mode.

Finder icon file

SCREEN IMAGE

Finder icon file: the IIgs Finder's icons, ProDOS type $CA (ICN). Each entry says which files it is for and holds a large and a small icon, each with a mask, in up to 16 colors.

The first entry's large icon is shown in 640 mode with the standard colors, on white.

AST picture data file (color only)

TRUE COLOR IMAGE

AST picture data: a full color picture from VisionEffects, the software of AST's VisionPlus video digitizer, saved as picture data from 320 mode: red, green and blue planes of 4-bit samples, 96000 bytes.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

ComputerEyes GS raw data file

TRUE COLOR IMAGE

ComputerEyes GS raw data: a full color capture from the ComputerEyes GS video digitizer: red, green and blue planes of 6-bit samples, stored column by column, about 192000 bytes.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

"3200 color" uncompressed picture

TRUE COLOR IMAGE

"3200 color" picture: 320 mode pixels followed by a color table for each of the 200 lines, 38400 bytes, ProDOS type $C1 (PIC), aux type $0002, called Brooks format after John Brooks. Special viewers show them, changing the palette on every line.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

"3200 color" compressed picture

TRUE COLOR IMAGE

"3200 color" picture, compressed: two packed kinds are read: .3201 files (an APP header, the 200 color tables, then the pixels packed with PackBytes) and a run coded kind with a 7-byte header.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

Atari ST

Degas (.PI1, .PI2, .PI3)

SCREEN AND TRUE COLOR

Degas (.PI1, .PI2, .PI3): Atari ST pictures from Degas and Degas Elite, 32034 bytes. Low resolution (320 x 200, 16 colors) loads in 320 mode, medium (640 x 200, 4 colors) in 640 mode, with their own colors.

High resolution (640 x 400, black & white) becomes a true color picture, remapped to fit a 320 mode screen.

Degas Elite (.PC1, .PC2, .PC3)

SCREEN AND TRUE COLOR

Degas Elite (.PC1, .PC2, .PC3): the compressed Atari ST pictures of Degas Elite. Low resolution (320 x 200, 16 colors) loads in 320 mode, medium (640 x 200, 4 colors) in 640 mode, with their own colors.

High resolution (640 x 400, black & white) becomes a true color picture, remapped to fit a 320 mode screen.

Neochrome (.NEO)

SCREEN AND TRUE COLOR

Neochrome (.NEO): Atari ST pictures from the Neochrome paint program, 32128 bytes, nearly always low resolution: 320 x 200 in 16 colors, loaded in 320 mode with their own colors.

Medium and high resolution ones are read as Degas pictures are.

Tiny (.TNY)

SCREEN AND TRUE COLOR

Tiny (.TNY, .TN1 to .TN3): compressed Atari ST pictures. Low resolution (320 x 200, 16 colors) loads in 320 mode, medium (640 x 200, 4 colors) in 640 mode, with their own colors.

High resolution (640 x 400, black & white) becomes a true color picture, remapped to fit a 320 mode screen.

Spectrum 512 uncompressed (.SPU)

TRUE COLOR IMAGE

Spectrum 512 (.SPU): Atari ST pictures from Spectrum 512, which changes palettes three times along each line to show up to 512 colors: 51104 bytes, the top line always black.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

Spectrum 512 compressed (.SPC)

TRUE COLOR IMAGE

Spectrum 512 compressed (.SPC): Spectrum 512 pictures with the bit planes and each line's palettes packed: 320 x 200 with up to 512 colors, the top line black.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

Amiga

IFF (FORM ILBM only)

TRUE COLOR IMAGE

IFF: the Amiga's standard picture file (FORM ILBM), also used by DeluxePaint on the PC (FORM PBM, .LBM): 1 to 8 bit planes, Extra HalfBrite, HAM and 24-bit, packed or not, found anywhere in the file.

It becomes a true color picture, remapped to fit a 320 mode screen.

Commodore 64/128

Doodle (DDxxx)

SCREEN IMAGE

Doodle: Commodore 64 pictures from the Doodle paint program, whose file names usually start with DD: 320 x 200 dots, with two colors in each 8 x 8 cell.

Loaded as 320 x 200 in 320 mode with the Commodore 64 colors.

Koala Illustrator

SCREEN IMAGE

Koala: Commodore 64 multicolor pictures from the KoalaPad's paint program (.KOA, .KLA), 10003 bytes: 160 x 200 double-wide pixels, with four colors in each 4 x 8 cell.

Loaded as 320 x 200 in 320 mode with the Commodore 64 colors.

Print Shop screen

SCREEN IMAGE

C64 Print Shop screen: a Commodore 64 Print Shop screen, a load address and then a 320 x 200 bitmap (8000 bytes) in black and white.

Loaded as 320 x 200 in 320 mode, white on black. Other C64 bitmaps can be viewed this way too, without their colors; Open takes any 8002-byte file this way.

Art Studio, Interpaint hires

SCREEN IMAGE

Art Studio (OCP): hires pictures from the Commodore 64's Art Studio, 9009 bytes: 320 x 200 dots, a color pair for each 8 x 8 cell; and the same pictures of 9002 bytes (Interpaint, Gigapaint and others).

It becomes a screen image in the C64's 16 colors.

Advanced Art Studio (OCP)

SCREEN IMAGE

Advanced Art Studio (OCP): multicolor pictures from the Commodore 64's Advanced Art Studio, 10018 bytes: 160 x 200 wide dots in four colors for each cell.

It becomes a screen image in the C64's 16 colors.

FLI Graph (.FLI)

SCREEN IMAGE

FLI Graph (.FLI): Commodore 64 multicolor pictures with new screen colors on every line, 17409 bytes.

It becomes a screen image in the C64's 16 colors; the first three columns, which the C64 can't show, are black.

Amica Paint (.AMI)

SCREEN IMAGE

Amica Paint (.AMI): packed Commodore 64 multicolor pictures, as Koala pictures.

It becomes a screen image in the C64's 16 colors.

Macintosh

MacPaint => 640 mode grayscale

SCREEN IMAGE

MacPaint as 640 mode grays: MacPaint documents (Mac file type PNTG) are 576 x 720 dots, black and white, packed with PackBits. A MacBinary header is skipped.

Each pair of lines becomes a line of four grays: the top 400 lines as 576 x 200 in 640 mode.

MacPaint => 320 mode black & white

SCREEN IMAGE

MacPaint as 320 mode black & white: MacPaint documents (Mac file type PNTG) are 576 x 720 dots, black and white, packed with PackBits. A MacBinary header is skipped.

The top left 320 x 200 dots are loaded in 320 mode, black on white.

MacPaint, as monochrome image

TRUE COLOR IMAGE

MacPaint as monochrome image: MacPaint documents (Mac file type PNTG) are 576 x 720 dots, black and white, packed with PackBits. A MacBinary header is skipped.

The whole page becomes a true color picture, remapped to fit a 320 mode screen.

ScreenMaker (old startup screen)

TRUE COLOR IMAGE

ScreenMaker: the startup screen of early Macintoshes, made with ScreenMaker: a plain 512 x 342 bitmap in black and white, 21888 bytes. A MacBinary header is skipped.

It becomes a true color picture, remapped to fit a 320 mode screen.

QuickDraw picture (PICT)

TRUE COLOR IMAGE

QuickDraw picture (PICT): the Macintosh's picture format, version 1 or 2, with or without the 512 bytes a Mac file starts with.

Reads the pictures in it: bitmaps and pixel maps, packed or not, of 1 to 32 bits a pixel; the lines, shapes and text it may also draw are left out.

IBM PC & compatibles

Windows or OS/2 bitmap (.BMP)

TRUE COLOR IMAGE

Windows bitmap (.BMP): the plain picture file of Windows PCs, also with the older OS-2 header: 1, 4, 8, 16, 24 or 32 bits a pixel, uncompressed (run coded files can't be read).

It becomes a true color picture, remapped to fit a 320 mode screen with a calculated palette. Convert to screen (Remap) offers other settings.

Ventura Publisher (.IMG, .GEM)

TRUE COLOR IMAGE

GEM IMG: the bitmap pictures (.IMG) of Digital Research's GEM and of Ventura Publisher, with 1 to 8 bit planes, run coded.

Shown in grays, 0 as white and the highest value as black: a true color picture, remapped to fit a 320 mode screen.

PC Paintbrush (.PCX, .PCC)

TRUE COLOR IMAGE

PC Paintbrush (.PCX, .PCC): ZSoft's PC paint program format, run coded: 2 to 16 colors in bit planes, 256 colors with a palette at the end, or 24-bit color. PCC files are clippings.

It becomes a true color picture, remapped to fit a 320 mode screen.

DeluxePaint, not Enhanced (.LBM)

TRUE COLOR IMAGE

IFF: the Amiga's standard picture file (FORM ILBM), also used by DeluxePaint on the PC (FORM PBM, .LBM): 1 to 8 bit planes, Extra HalfBrite, HAM and 24-bit, packed or not, found anywhere in the file.

It becomes a true color picture, remapped to fit a 320 mode screen.

AA frame file from FliAway

TRUE COLOR IMAGE

FliAway frame: one frame of an Autodesk Animator animation (.FLI, PC), saved by the FliAway utility: 256 colors and the 320 x 200 frame, packed with PackBytes or not.

It becomes a 320 x 200 true color picture, remapped to 320 mode.

Unix machines

Sun Rasterfile

TRUE COLOR IMAGE

Sun Rasterfile: the bitmap format of Sun workstations (.RAS): 1, 8, 24 or 32 bits a pixel, with or without a color map, plain or run coded.

It becomes a true color picture of its own size (up to 4096 x 4096), remapped to fit a 320 mode screen.

SGI Iris (.SGI, .BW, .RGB, .RGBA)

TRUE COLOR IMAGE

SGI image: the picture format of Silicon Graphics workstations (.SGI, .RGB, .BW): gray or RGB (alpha is ignored), 8 or 16 bits a sample, plain or run coded.

It becomes a true color picture, remapped to fit a 320 mode screen.

Portable Pixelmap (.PBM, .PGM, .PPM)

TRUE COLOR IMAGE

PBM, PGM, PPM: the portable bitmap, graymap and pixmap files of the Unix PBMPLUS (Netpbm) tools: black & white, gray or color, as text (P1 to P3) or binary (P4 to P6).

It becomes a true color picture, remapped to fit a 320 mode screen.

Amstrad CPC

Mode 0 screen (.SCR)

SCREEN IMAGE

Amstrad CPC mode 0 screen (.SCR): the CPC's 16K of screen memory, with or without its AMSDOS header or packed by OCP Art Studio, as mode 0: 160 x 200 in 16 colors.

It becomes a screen image in the colors of the .PAL file beside it, or the CPC's start-up colors.

Mode 1 screen (.SCR)

SCREEN IMAGE

Amstrad CPC mode 1 screen (.SCR): the CPC's 16K of screen memory, with or without its AMSDOS header or packed by OCP Art Studio, as mode 1: 320 x 200 in 4 colors (Open reads a CPC screen this way, unless a .PAL file beside it says another mode).

It becomes a screen image in the colors of the .PAL file, or the CPC's start-up colors.

Mode 2 screen (.SCR)

SCREEN IMAGE

Amstrad CPC mode 2 screen (.SCR): the CPC's 16K of screen memory, with or without its AMSDOS header or packed by OCP Art Studio, as mode 2: 640 x 200 in 2 colors.

It becomes a 640 mode screen image.

Atari 8-bit

MicroPainter (.MIC)

SCREEN IMAGE

MicroPainter (.MIC): Atari 8-bit pictures, 160 x 192 in 4 colors (7680 bytes, and the 4 color registers if the file has them; else grays).

It becomes a screen image in close to the Atari's colors.

Graphics 8 screen (.GR8)

SCREEN IMAGE

Atari Graphics 8 screen (.GR8): 320 x 192 in 2 colors, 7680 bytes.

It becomes a black and white screen image.

Graphics 9 screen (.GR9)

SCREEN IMAGE

Atari Graphics 9 screen (.GR9): 80 x 192 in 16 grays, 7680 bytes.

It becomes a screen image in 16 grays, its dots four times as wide.

MSX

Screen 2 (.SC2)

SCREEN IMAGE

MSX Screen 2 (.SC2): the MSX's 256 x 192 graphics screen saved with BSAVE, a color pair for each line of each 8 x 8 cell.

It becomes a screen image in the MSX's 16 colors.

Screen 5 (.SC5, .GE5)

TRUE COLOR IMAGE

MSX2 Screen 5 (.SC5, .GE5): 256 x 212 in 16 colors from a palette of 512, saved with BSAVE (the palette from the file if it holds it, else the MSX2's own).

It becomes a true color picture, remapped to fit a 320 mode screen.

Screen 7 (.SC7)

TRUE COLOR IMAGE

MSX2 Screen 7 (.SC7): 512 x 212 in 16 colors from a palette of 512, saved with BSAVE; its dots are half as wide as tall.

It becomes a true color picture, remapped to fit a 320 mode screen.

Screen 8 (.SC8)

TRUE COLOR IMAGE

MSX2 Screen 8 (.SC8): 256 x 212 in 256 colors (3 bits of green, 3 of red, 2 of blue), saved with BSAVE.

It becomes a true color picture, remapped to fit a 320 mode screen.

ZX Spectrum

Screen (.SCR)

SCREEN IMAGE

ZX Spectrum screen (.SCR): the Sinclair ZX Spectrum's screen, 6912 bytes: 256 x 192 dots and a color pair for each 8 x 8 cell (a 6144-byte file: the dots alone, black on white).

It becomes a screen image in the Spectrum's 15 colors.

Computer-independent

JPEG (JFIF)

TRUE COLOR IMAGE

JPEG (JFIF): the usual format for photographs (.JPG), compressed with some loss. Baseline and progressive JPEG files are read, gray or color, up to 2048 pixels wide and 4096 tall (progressive ones as far as memory allows).

It becomes a true color picture, remapped to fit a 320 mode screen.

GIF (Graphics Interchange Format)

TRUE COLOR IMAGE

GIF: CompuServe's Graphics Interchange Format (87a and 89a), up to 256 colors out of 16 million. The first picture in the file is read, interlaced or not, on a white background where transparent pixels stay white.

It becomes a true color picture, remapped to fit a 320 mode screen.

PNG (Portable Network Graphics)

TRUE COLOR IMAGE

PNG (Portable Network Graphics): the lossless picture format of today's computers. Every kind is read: gray, palette or RGB, with or without alpha, 1 to 16 bits, interlaced or not. Transparent parts are mixed with white.

It becomes a true color picture, remapped to fit a 320 mode screen.

RLE (Run Length Encoding)

SCREEN IMAGE

RLE: CompuServe's run-length coded pictures (.RLE), 256 x 192 or 128 x 96 dots in black and white, kept as plain text that may start anywhere in the file, so a terminal's capture buffer will do.

Loaded in 320 mode.

IPI 256x256 image (.R + .G + .B)

TRUE COLOR IMAGE

IPI image: a format of the Image Processing Institute (University of Southern California): three files named alike but ending .R, .G and .B, squares of 8-bit samples, 256 or 512 a side. Pick any one, the other two are read with it.

It becomes a true color picture, remapped to fit a 320 mode screen.

IPI 512x512 image (.R + .G + .B)

TRUE COLOR IMAGE

IPI image: a format of the Image Processing Institute (University of Southern California): three files named alike but ending .R, .G and .B, squares of 8-bit samples, 256 or 512 a side. Pick any one, the other two are read with it.

It becomes a true color picture, remapped to fit a 320 mode screen.

QRT raw image file

TRUE COLOR IMAGE

QRT raw image: the output of QRT, the Quick Ray Tracer: width and height, then each line's number and its rows of red, green and blue samples, 8 bits each.

It becomes a true color picture, remapped to fit a 320 mode screen.

TIFF (Tagged Image File Format)

TRUE COLOR IMAGE

TIFF (.TIF): the Tagged Image File Format of desktop publishing on Macs and PCs. The first image of a file is read, in either byte order, uncompressed, PackBits or LZW: gray (1 to 16 bits), palette (1 to 8 bits) or RGB (8 or 16 bits).

It becomes a true color picture, remapped to fit a 320 mode screen.

Truevision Targa (.TGA)

TRUE COLOR IMAGE

Truevision Targa (.TGA): pictures from paint and video programs, usually ProDOS type $06 (BIN).

Reads color-mapped, true color and gray pictures, run-length coded or not, of 8, 15, 16, 24 or 32 bits a pixel; an alpha channel is left out.

External (Babelfish™)

Babelfish™ True Color Import

TRUE COLOR IMAGE

Babelfish True Color Import: a picture read through Babelfish, Seven Hills Software's file translator system, as a true color image. Babelfish's own dialog chooses the file and the translator (PBM, PGM and PPM, ComputerEyes, Visionary ...). Babelfish must be installed.

Babelfish™ PixelMap Import

SCREEN IMAGE

Babelfish PixelMap Import: a picture read through Babelfish, Seven Hills Software's file translator system, as a screen image (larger than the screen: a true color image). Babelfish's own dialog chooses the file and the translator. Babelfish must be installed.

CHAPTER 14

Save formats reference

Every entry of the Save formats window, in its order, with the file it writes.

$C0,0 PaintWorks+ 1.0 (obsolete)

PaintWorks: the format of the first PaintWorks Plus, ProDOS type $C0 (PNT), aux type $0000: color table 0, empty painting patterns, then the lines packed with PackBytes.

For 320 mode pictures only. Lines using other color tables change color.

$C0,1 PackBytes (obsolete)

PackBytes screen: the whole 32768-byte screen, SCBs and color tables included, packed with the toolbox routine PackBytes, ProDOS type $C0 (PNT), aux type $0001.

Smaller than a $C1 screen with nothing lost, but few programs read it.

$C0,2 Apple Preferred

Apple Preferred: the standard IIgs picture format, ProDOS type $C0 (PNT), aux type $0002, read by nearly all IIgs graphics programs: the best choice in most cases.

A MAIN block with the 16 color tables and all 200 lines, 320 or 640 pixels wide, each packed with PackBytes and keeping its SCB.

$C1 uncompressed screen

$C1 screen: the whole Super Hi-Res screen as it is in memory, 32768 bytes (pixels, SCBs and 16 color tables), ProDOS type $C1 (PIC), aux type $0000.

Every IIgs graphics program reads it, though it is not packed. Always a whole screen.

Finder icon (new file)

Finder icon, new file: an icon file, ProDOS type $CA (ICN), with one icon for any file: the picture as the large icon and a reduced copy as the small one.

The picture must be 640 mode, at most 160 x 50 (80 x 25 is usual), and should use the standard colors, as the Finder does.

Finder icon (add to existing file)

Finder icon, add to a file: the same icon, added after the last one in an icon file you choose, so several icons can share one file. Same limits: 640 mode, at most 160 x 50.

Leave the system disk's own icon files alone: new system software replaces them.

Icon resource (HyperCard, etc.)

Icon resource, add to a file: the picture as one more rIcon ($8001) resource, with the lowest free ID, added to a resource file you choose, such as a program of your own.

320 or 640 mode, at most a quarter of the screen (8000 bytes of pixels).

Desktop background image INIT

Desktop background image INIT: the picture saved as a startup file, ProDOS type $B7. In the SYSTEM.SETUP folder of a startup disk it puts the picture on the desktop of every program at start-up.

Only its pixels are kept: it shows in the mode and colours of the program. A larger picture is cut, a smaller one centred on light blue.

Hex data (for programmers only)

Hex data, for programmers: a text file (ProDOS type $04, TXT) with an assembler line for each picture line, its pixel bytes in hexadecimal, as in dc h'00 11 22'.

Only the picture's own size, two pixels a byte in 320 mode and four in 640 mode, without SCBs or colors.

GIF (Graphics Interchange Format)

GIF: a GIF 87a file for other computers, ProDOS type $06 (BIN), up to 256 colors.

Written as it looks, with square pixels: lines twice and 320 mode pixels twice across (a full screen gives 640 x 400). Each pixel keeps the color it shows, whatever its palette.

PNG (Portable Network Graphics)

PNG: an 8-bit palette PNG file for today's computers, ProDOS type $06 (BIN).

Written as it looks, with square pixels: lines twice and 320 mode pixels twice across (a full screen gives 640 x 400). Each pixel keeps the color it shows, whatever its palette.

TIFF (Tagged Image File Format)

TIFF: an 8-bit palette TIFF file in Intel byte order, packed with PackBits, for desktop publishing and other programs on other computers, ProDOS type $06 (BIN).

Written as it looks, with square pixels: lines twice and 320 mode pixels twice across (a full screen gives 640 x 400).

Babelfish™ True Color Export

Babelfish True Color Export: the true color picture written through Babelfish, Seven Hills Software's file translator system, in a format its translators offer (PBM, PGM and PPM). Babelfish must be installed.

Babelfish™ PixelMap Export

Babelfish PixelMap Export: the screen picture written through Babelfish, Seven Hills Software's file translator system, in a format its translators offer (Apple Preferred, Super Hi-Res, MacPaint, Print Shop ...). Babelfish must be installed.

Icon resource (new file)

Icon resource, new file: a new file (ProDOS type $06, BIN) whose resource fork holds the picture as an rIcon ($8001) resource, ID 1, for use in programs.

320 or 640 mode, at most a quarter of the screen (8000 bytes of pixels).

BMP (Windows bitmap)

BMP: a Windows bitmap for today's computers, ProDOS type $06 (BIN), 8 bits a pixel, uncompressed.

Written as it looks, with square pixels: lines twice and 320 mode pixels twice across (a full screen gives 640 x 400). Each pixel keeps the color it shows, whatever its palette.

Apple II HiRes color

HiRes color: the Apple II high resolution screen, ProDOS type $06 (BIN), aux type $2000, 8192 bytes: 280 x 192 dots in black, white, violet, green, blue and orange.

The picture is fitted to the Apple II screen and dithered, a pair of dots at a time; each byte of 7 dots shows blue and orange or violet and green, whichever its part of the picture is closer to. Apple II save options choose the dithering (error diffusion, pattern or none) and whether the picture fills the screen or keeps its proportions.

Apple II HiRes black & white

HiRes black & white: the Apple II high resolution screen, ProDOS type $06 (BIN), aux type $2000, 8192 bytes: 280 x 192 dots.

The picture is fitted to the Apple II screen and dithered; a black & white picture keeps its dots where they fit. Apple II save options choose the dithering (error diffusion, pattern or none) and whether the picture fills the screen or keeps its proportions.

Apple II Double HiRes color

Double HiRes color: the double high resolution screen of the Apple IIe, IIc and IIgs, ProDOS type $06 (BIN), aux type $2000, 16384 bytes, the auxiliary memory half first: 140 x 192 pixels in 16 colors.

The picture is fitted to the Apple II screen and dithered; a picture in the Apple II colors keeps them. Apple II save options choose the dithering (error diffusion, pattern or none) and whether the picture fills the screen or keeps its proportions.

Apple II Double HiRes b & w

Double HiRes black & white: the Apple II double high resolution screen, ProDOS type $06 (BIN), aux type $2000, 16384 bytes, the auxiliary half first: 560 x 192 dots.

The picture is fitted to the Apple II screen and dithered. Apple II save options choose the dithering (error diffusion, pattern or none) and whether the picture fills the screen or keeps its proportions.

Apple II LoRes

LoRes: the Apple II low resolution screen, ProDOS type $06 (BIN), aux type $0400, 1024 bytes (the text page): 40 x 48 blocks in 16 colors.

The picture is fitted to the Apple II screen and dithered; a picture in the Apple II colors keeps them. Apple II save options choose the dithering (error diffusion, pattern or none) and whether the picture fills the screen or keeps its proportions.

Apple II Double LoRes

Double LoRes: the low resolution screen of the Apple IIe, IIc and IIgs with 80 columns, ProDOS type $06 (BIN), aux type $0400, 2048 bytes, the auxiliary memory half first: 80 x 48 blocks in 16 colors.

The picture is fitted to the Apple II screen and dithered; a picture in the Apple II colors keeps them. Apple II save options choose the dithering (error diffusion, pattern or none) and whether the picture fills the screen or keeps its proportions.

Apple II HiRes color, packed

HiRes color, packed: the Apple II high resolution screen packed with PackBytes, ProDOS type $08 (FOT), aux type $4000, as Apple's File Type Note has it.

The picture is made as for HiRes color (280 x 192, dithered in its six colors), then packed.

Apple II HiRes b & w, packed

HiRes black & white, packed: the Apple II high resolution screen packed with PackBytes, ProDOS type $08 (FOT), aux type $4000.

The picture is made as for HiRes black & white, then packed.

Apple II Double HiRes color, packed

Double HiRes color, packed: the double high resolution screen packed with PackBytes, the auxiliary memory half first, ProDOS type $08 (FOT), aux type $4001, as Apple's File Type Note has it.

The picture is made as for Double HiRes color (140 x 192 in 16 colors), then packed.

Apple II Double HiRes b & w, packed

Double HiRes black & white, packed: the double high resolution screen packed with PackBytes, the auxiliary half first, ProDOS type $08 (FOT), aux type $4001.

The picture is made as for Double HiRes black & white, then packed.