

# **GfxCon**

Dirk Farin

**COLLABORATORS**

	<i>TITLE :</i> GfxCon		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY	Dirk Farin	August 13, 2022	

**REVISION HISTORY**

NUMBER	DATE	DESCRIPTION	NAME

# Contents

<b>1</b>	<b>GfxCon</b>	<b>1</b>
1.1	contents	1
1.2	the purpose of GfxCon	2
1.3	news	2
1.4	remarks	3
1.5	bugs	3
1.6	requirements	4
1.7	installation	4
1.8	using as shell-command	4
1.9	entering filenames	7
1.10	selection the output format	8
1.11	modifying size and orientation	8
1.12	modifying colors	9
1.13	the conversion-process	10
1.14	showing information about the input-image	10
1.15	supported formats	11
1.16	problemes	11
1.17	setting the tooltypes	12
1.18	automatic format-recognition	13
1.19	memory usage	13
1.20	virtual memory	14
1.21	IFF - ILBM Format	14
1.22	PCX - format	15
1.23	JPEG - format	15
1.24	Postscript	16
1.25	RGB - raw - files	16
1.26	RGB8 / RGBN - format	17
1.27	IMG - format	17
1.28	BMP/RLE4/RLE8 - formats	17
1.29	GIF - format	18

---

---

1.30	TIFF - format . . . . .	18
1.31	Targa - format . . . . .	19
1.32	position and size of Postscript output . . . . .	19
1.33	about GfxCon . . . . .	19
1.34	registration . . . . .	20
1.35	copyright . . . . .	21

---

# Chapter 1

## GfxCon

### 1.1 contents

GfxCon - image format converter

=====

V1.8 (28 April 1997)

Dirk Farin

Introduction

-----

what is GfxCon ?

what's new ?

Remarks

bugs ?

installation

-----

requirements

installation

usage

-----

entering the filenames

selection the output-format

modifying size and orientation

modifying colors

the conversion-process

showing information about the input image

using GfxCon as shell-command                      NEW  
reference

-----

supported formats

problems that may occur

about the program

copyright

(registration)

## 1.2 the purpose of GfxCon

what is GfxCon ?

=====

GfxCon makes it possible to convert images to the most popular image formats in a user-friendly way. Simplicity of usage and a high quality have been the primary goals while developing GfxCon.

Besides this it is possible to modify the image in many ways like changing the resolution, contrast of the image or numerous color-effects.

## 1.3 news

news

----

version 1.8

- Much more TIFF-images can be loaded. Especially LZW compressed images are supported now.
- 24bit-PCX-images (version 5) can be loaded.
- all known bugs have been removed in the TIFF,PCX and BMP-loaders (valid BMP-files were refused because GfxCon thought they are corrupted, TIFF-files were sometimes read up to behind the end)
- new shell commands: CROP, CENTERBOX, OFFSET, SORTDIR, UNUSED, RESIZEH, RESIZEV

version 1.7

- RGB-Raw input, output and brightness, contrast may be used with the Shell-interface
  - output format = input format by default in the shell
  - GIF89a transparent color is now saved and loaded too (not only background color)
  - Guru with bad input files removed
  - progress-information in the Shell may be switched off
-

version 1.6

- two ways to proportionally resize an image (shell only)
- it's now possible to query the image-infos from shell

version 1.5

- may now be used as shell-command
- saves background-color if known (ILBM<->GIF)  
can only be changed by hand with shell-parameter
- runs under Kick 1.2 :) (shell only)
- bug fixed: changing image-geometry and saving as GIF at once was faulty

version 1.4

- bug in PCX-loader fixed (images with odd number of bytes per row)
- bug in PCX-saver fixed (BytesPerRow in PCX-header was set incorrectly)
- 68020-version doesn't need 68881 any more (uses IEEE-libraries now)

version 1.3

- HAM6 is working again
- virtual memory improved (new Tooltypes)
- TIFF-RGB-images and bug-fix

version 1.2

- HAM8-mode (finally)
- Targa-CLUT-images

## 1.4 remarks

I've written GfxCon a long time ago (before the release of ↔  
WB2.1).

Therefore some things like localisation have been solved in a different way (with tooltypes instead of using the WB2.1-catalogs). But this allows even users of WB1.2 to use the feature of localisation :)

For the same reason GfxCon does not support the use of datatypes (introduces in Kick3.0).

Since upgrading the program to use all these would exceed my free time at the moment, it is unlikely that an update will be released. But a completely new program (of course much better than this) may be possible in the near future.

see here for more information...

## 1.5 bugs

known bugs:

- sometimes the font in one of the button-gadgets changes to a smaller one "without any sensible reason". But this does not affect functionality in any way.

If you discover a bug, please let me know. I will try to fix it, but I cannot promise to succeed, as this program is nearly 2 years old by now (!) and has not been looked at in the meantime.

my address

## 1.6 requirements

requirements

=====

This program requires to run:

Kickstart 1.2  
20000 Bytes stack

Recommended:

At LEAST a 68020 !

4 MB memory

hard-disk

## 1.7 installation

installation

=====

To install this program simply move the drawer containing the program (or only the program) to a place of your choice.

To configure the program to your system, it is recommended to change the

tooltypes  
to your needs.

Thats all.

## 1.8 using as shell-command

---



GfxCon can now (since version 1.5) be used as shell-command. This works even with Kickstart 1.2 (or lower :-)

usage:

```
GfxCon inputfile [TO outputfile] [FORMAT f] [COLORS c] [SIZE x y] [FLIPX] [...]
```

If you don't specify an outputfile, the old suffix will be replaced with the suffix of the output-format.

parameter:

TO destname set destination filename

FORMAT output format { ILBM,GIF,PCX,JPEG,Postscript,RGB-Raw }

COLORS n use 'n' colors max.

DITHER use floyd-steinberg dithering

FASTDITHER use fast floyd dithering

BACKGROUND n use color 'n' as background color (only ILBM and GIF)

UNUSED r g b fill empty CLUT entries with (r,g,b)

OFFSET n don't use first 'n' colors of CLUT (see below)

SORTDIR n sort CLUT-colors (n=1 darkest to brightest/n=-1) (see below)

CROP x1 y1 x2 y2 crops the image to the specifies rectangle

SIZE w h resize image

RESIZE f proportionally resize image with factor f (>0)

RESIZEH f resize image horizontally with factor f (>0)

RESIZEV f resize image vertically with factor f (>0)

BOXFIT w h proportionally resize image to fit into the box specified

BOXFITALL w h same as BOXFIT, but enlarges image, if smaller than the box

CENTERBOX w h r g b creates image with the size (w,h), centers the loaded image into the box and fills the border with the color (r,g,b)

QUALITY q set JPEG-quality

CLUT select IFF-CLUT mode\

HAM IFF-HAM mode \\_ use only with 'FORMAT ILBM'

HAM8 IFF-HAM8 mode /

24BIT IFF-24bit mode/

INVERS invert colors

BW create black and white only

GRAYSCALE produce a grayscale (not simply BW!) output

NORED remove red

NOGREEN remove green

NOBLUE remove blue

BRIGHTNESS n change brightness by n (255 to shift black to white)

CONTRAST n change contrast by n (percent)

FLIPX flip horizontally

FLIPY flip vertically

ROTATELEFT rotate left (90 degrees)

ROTATERIGHT rotate right (90 degrees)

GREEN n set name of green-rgb-raw-file to n (RGB-Raw only)  
 BLUE n set name of blue -rgb-raw-file to n (RGB-Raw only)  
 INPUTWIDTH n force input-width to be 'n' pixels (RGB-Raw only)

INFO show image-information only  
 NOPROGRESS don't show how much the conversion has progressed  
 HELP / -help / -h / ? / -? this help-page :-)

remarks:

The shell-interface becomes much more powerful if combined with the 'foreach'-program (by me; available e.g. on aminet 'util/cli/foreach.lha'.

Examples:

Convert all IFFs to GIFs: `foreach #?.iff GfxCon & FORMAT GIF`  
 Produce a series of JPEGs with different quality-settings:  
`foreach {30,50,70,90} GfxCon Pic.iff TO Pic&.jpg FORMAT JPEG QUALITY &`

The shell-functions and the Kick1.2-support have been implemented after the program has been finished with a lot of dirty tricks and is therefore everything but perfect. It is mainly to offer these capabilities until GfxCon2.0 is finished and to finally give a graphics-converter to those poor Kick1.2 people :)

NEW (v1.8) usage of UNUSED

-----

If you put the UNUSED-parameter after the COLORS-parameter, the number of colors not to be used will be subtracted from the number you specified with the COLORS parameter. If you place the two parameters the other way, they will be added. This shall mean:

`gfxcon ... COLORS 32 UNUSED 10 ...`

creates an image with 32 colors, 10 of which are not used.

`gfxcon ... UNUSED 10 COLORS 32 ...`

creates an image with 42 colors in total.

IMPORTANT: UNUSED only works with ILBM-output. Behaviour with other output formats is undefined.

SORTDIR

-----

If you write "SORTDIR 1", colors will be sorted that the darkest colors will be in the first color table entry and the brightest color in the last. If you write "SORTDIR -1" it just sorts in the other direction.

using CROP/RESIZE/BOXFIT... at once

-----

The operators that change the image size are executed independent of the order on the command line in this

```
order:
  1) CROP
  2) RESIZE, RESIZEH, RESIZEV
  3) SIZE
  4) BOXFIT, BOXFITALL
```

It is not allowed to use several RESIZE\* or BOXFIT\* commands in one program run.

(v1.7) How to load RGB-Raw-files: type the red-file as input file and add the two other files with the GREEN and BLUE parameter.

Example: To load the files "pic.red", "pic.green", "pic.blue", type

```
GfxCon pic.red GREEN pic.green BLUE pic.blue ...
```

If you have to override the width, GfxCon guesses for the width, use the INPUTWIDTH parameter.

The suffices ".red", ".green" and ".blue" are used for RGB-Raw file output. If you specify an output filename with "TO", these suffices are appended too.

caution:

Kick1.3 users CANNOT use the Postscript-output. Sorry!

## 1.9 entering filenames

entering filenames

=====

general case

-----

There is a box 'Load' at the top left and a box 'Save' at the right to enter the filenames for the input- and output-filename respective. Both boxes can be used in the same way.

To enter a filename simply type it into the string-gadget or choose a file using the filerequester which can be opened by pressing the button to the left of each string-gadget.

If you entered the input-filename (and have pressed RETURN or the TAB-key or you choose it with the filerequester, GfxCon tries to determine the format of the input-file and enters the name of the format into the popup-gadget below the string-gadgets.

RGB-files (raw)

-----

If GfxCon doesn't recognise the input-format, it supposes that it is a raw

RGB-file

(consisting of three files for red,green and blue).

As three input-files are needed to load a RGB-raw-image, GfxCon enables the two string-gadgets below the normal one to let you enter the filenames

for the green and blue part of the image. The character at the right of each string-gadget shows which filename to enter (the red-part at R, the green at G and the blue at B of course).

## 1.10 selection the output format

selection the output format  
=====

selecting the file-format  
-----

You can select the format using the "popup-gadget" in the 'Save'-box.

selecting the color mode (only ILBM)  
-----

As the

ILBM-format supports several color modes (colortable, 24 bit, HAM6, HAM8), you may choose the color mode with the popup-gadget 'colormode'.

setting number of colors  
-----

The number of colors allowed in the output-file may be specified with the gadget 'colors'. You may also enter unusual numbers like 28 or 53. As most image-formats only allow numbers that are a power of 2, GfxCon rounds this number up to the next possible number of colors and leaves the remaining colors unused. (If you specify more colors than the format allows, like 512 für PCX, GfxCon uses the maximum colors possible with that format).

## 1.11 modifying size and orientation

modifying size and orientation  
=====

resizing  
-----

Switch the button 'custom' in the box 'size' to on. The two gadgets 'width' and 'height' will become enabled with the original size of the image in pixel already filled in. Modify these values to the desired ones.

If you enlarge the image and don't want that "big pixels" are created, set the switch 'interpolated'. The conversion will take longer but the result will be a smoother image.

NOTE: Interpolating an image creates new colors. It makes no sense to interpolate a image when the output will only have 2 colors for example.

NOTE: To enlarge the picture, GfxCon need more  
memory  
than normal.

flipping the image

-----  
you may flip the image horizontally or vertically (or both, what results  
in rotating the image 180 degrees) using the gadget 'flip' in the  
'transform' box.

rotating the image

-----  
you may rotate the image 90 degrees (counterclockwise) or -90 degrees  
(clockwise) using the gadget 'rotate' in the 'transform' box.

NOTE: for rotating the image GfxCon needs more  
memory  
than normal.

## 1.12 modifying colors

modifying colors

=====

brightness and contrast

-----

At the bottom of the box 'colors' there are two gadgets to change the  
brightness and contrast of the whole image. The value for the brightness  
must be in the range between -255 and +255 inclusive. The value for  
contrast should of course be at least 1%. A value between 1% and 99%  
reduces the contrast, a value above 100% enhances contrast.

Brightness is always changed first.

I.e.:  $output = (input + brightness) * contrast$

color effects

-----

There are several special color effects, which you can choose using the  
popup-gadget 'effects' in the 'colors' box:

convert to black-white	:	choose 'black/white'
invert image	:	'inverse'
black-white-negative	:	'inserve & bw'

Besides this you can select filters. In the 'effects'-popup-gadget there  
are filters in these colors:

red, green, blue, yellow, magenta and cyan.

grayscales

---

-----

If you want the output image to be colored using a linear grayscale (or images using only the colors black and white as needed for printing) choose the item 'grayscale' from the 'effects'-gadget. But remember that this only works if you are converting to a image with a format using a CLUT (colortable).

dithering

-----

If you are reducing the number of colors of a picture with many colors (like JPEG) it is very important to use dithering. If you don't, awful looking "wrong" colors will stay in the output. The principle of dithering is to use several pixels of different colors to achieve the effect that these colors look like the missing one if looked at from a distance.

GfxCon uses at the moment only the 'Floyd-Steinberg'-dithering, that is very time-consuming but produces very good images.

Select the Floyd-Steinberg-dithering with the gadget 'dithering'.

## 1.13 the conversion-process

the conversion-process

=====

The conversion can be started by clicking the big gadget 'convert' at the bottom left. A window will open telling you what GfxCon is doing at the moment (rotating, saving...) in the lower part and showing how much of this action is finished with the bar in the upper part of the window.

It may be that another window will open, where you may enter additional parameters (like the quality of  
 JPEG-output  
 or the  
 size of the image  
 with  
 Postscript-output  
 ).

## 1.14 showing information about the input-image

showing information about the input-image

=====

With the big gadget 'infos' at the bottom, you can display some details about the input-image. What is displayed depends on the format of the input-image and what is really stored in the image. This information can be very complex (like TIFF) or very scarce (like IMG).

## 1.15 supported formats

```

                                supported formats
                                =====

input formats                    output formats
-----

                                ILBM

                                ILBM

                                LBM

                                PCX

                                RGB8 / RGBN

                                JPEG

                                PCX

                                RGB-Raw

                                IMG

                                Postscript

                                BMP / RLE4 / RLE8

                                GIF

                                GIF

                                TIFF

                                JPEG

                                Targa

                                RGB-Raw

```

## 1.16 problemes

```

                                any problems ?
                                =====

```

There are files called 'GFXCON...' in a directory of my harddisc. Have they any use?

These files are created if the program needs to save parts of the image

---

it is working on onto the hard-disc (see  
virtual memory  
).

Normally, these files are automatically deleted after use. But if you  
reset your computer while GfxCon is working it doesn't have a chance to  
do this.

Please delete these files by hand or start GfxCon again to delete these  
files automatically.

---

After starting the program I only get the message 'window does not fit on the  
screen'.

GfxCon is font-sensitive. You have selected too big fonts for the  
gadgets, which would require a window that is too large to fit on the  
screen.

Please select smaller fonts in the  
Tooltypes  
.

## 1.17 setting the tooltypes

These tooltypes are used by GfxCon:

LANGUAGE - lets you select the language of GfxCon. Currently  
possible values are: 'english', 'german' or  
'englisch', 'deutsch'

TEMPDIR - As GfxCon uses a big amount of memory, it swaps part  
of the image to hard-disc if more memory is needed  
than available (see  
virtual memory  
) to let you even  
convert pictures that are too large to fit in the  
memory.

With this tooltype you specify the directory into  
which GfxCon writes these temporary files.

NOTE: This string will be used as prefix to the  
filename. Therefore do NOT enter 'sys:t' but  
'sys:t/'.

HINT: Insert a command in your s:user-startup to clear  
this directory during startup, as files may stay  
in there if a strange error occurs or the system  
crashes.

STDLOADPATH - Most people have most of their image in the same  
directory. To prevent you from entering the path to

---



this directory each time you start GfxCon, you may specify a default directory which will automatically be used if you use the filerequester.

STDSAVEPATH - The same as STDLOADPATH for the output-file.

GADGETFONT - With this tooltype you may specify the font for most of the gadgets and nearly all output. The format of this tooltype is: '<name> <size>'. For example: 'topaz 8' or 'helvetica 18'.

TITLEFONT - The font for titles and big gadgets. The format is the same as that of 'GADGETFONT'.

MINMEM - How much memory (in bytes) GfxCon may not use for its image-data.

MINMEMBLOCK - GfxCon only allocates memory if there is a mem-block with at least "MINMEMBLOCK" bytes.

## 1.18 automatic format-recognition

GfxCon determines the input-format by itself by scanning the input for unequivocal characteristics. It does not look at the suffix of the filename (as most programs do).

The format-recognition will be called when you leave to topmost string-gadget in the 'load'-box.

The algorithm works fine in almost every case. But theoretically it may be, that the wrong format is guessed. Then you have to set it manually using the popup-gadget.

## 1.19 memory usage

This program needs very much memory, as all images are stored internally using 24 bit. Additional the program needs one more byte for each pixel for special data.

You may estimate the memory-usage using this equation:

$$\begin{array}{l}
 +-----+ \\
 | \\
 | \quad \text{memory usage} = \text{height in pixels} * \text{width in pixel} * 4 \text{ Bytes} \quad | \\
 | \\
 +-----+
 \end{array}$$

For example: a 320x 256 image needs 320 kByte

640x 512	1.25 MB
800x 600	ca. 1.80 MB
1024x 768	3 MB
1280x1024	5 MB

#### exceptions

-----

Some effects (resize, rotate) need two buffers at the same time. But the memory that is needed is not the memory of these two buffers added together, as GfxCon knows what parts of the image it does not need any more. These parts will be freed when it is not needed any more.

#### virtual memory

-----

To make it possible to convert images that do not fit into the memory, parts of the image, that are not needed at the moment are written to hard-disc (see virtual memory ).

## 1.20 virtual memory

If more memory is needed to process an image than available, ↔ parts of the image are saved to hard-disc to use the memory to do other calculations there.

If a image would for example require 5 MB to be processed, but you only have 3 MB free memory, GfxCon will swap at least 2 MB to hard-disc during processing the image.

These files are of course deleted just when they are not needed any more, not to fill the hard-disc with useless files.

NOTE: If you reset the computer while GfxCon is using such temporary files, GfxCon cannot delete this files. Beginning with version 1.3, GfxCon deletes this files automatically at start.

DO NOT delete any file, while GfxCon is using them!!!

## 1.21 IFF - ILBM Format

IFF - ILBM format

-----

load

----

- images with any number of colors, 24 bit, HAM6/8 and ExtraHalfBrite
- the PC-version of the ILBM-format with 16 or 256 colors
- compressed and uncompressed

save

----

- images with any number of colors (even more than 256)
- images with 24 Bit or HAM6/8
- all images are compressed
- not supported at the moment is ExtraHalfbrite

## 1.22 PCX - format

PCX - format

-----

load

----

- all PCX-images
- compressed and uncompressed

save

----

- images with 2, 16 or 256 (all possibilities)
- all images are compressed
- PCX-version 3.0 is used

## 1.23 JPEG - format

JPEG format

-----

load

----

---

- all color JPEG/JFIF images, greyscale JPEG is not supported

save  
-----

- the quality of the output can be altered in the range between 25% and 100%

## 1.24 Postscript

Postscript - format

-----

load  
-----

- not supported at the moment

save  
-----

- output is intended to drive a Postscript-printer
- it is not intended as exchange-format (EPS)
- the  
    size and position  
    of the picture in the output can be specified in 'cm'.
- only black/white output (color images are automatically converted to black/white)

## 1.25 RGB - raw - files

RGB - raw - files      ( 3 files with the red, green and blue parts of the image)  
-----

load  
-----

- As the size of the picture cannot be determined by looking at the input-file. Therefore GfxCon guesses the width of the picture. If it guesses wrong, you can correct the width in pixel.

save  
-----

- yes
-

## 1.26 RGB8 / RGBN - format

IFF - RGB8 / RGBN - format (Imagine)  
-----

load  
----

- RGBN (4096 colors) and RGB8 (truecolor, 24 bit) images

save  
----

- no

## 1.27 IMG - format

IMG (GEM Image File Format)  
-----

load  
----

- all IMG-files

- IMG files do not contain a colortable. GfxCon uses the PC default colors.

save  
----

- no

## 1.28 BMP/RLE4/RLE8 - formats

BMP / RLE4 / RLE8 (MS-Windows)  
-----

load  
----

- all files except 24bit BMP-files (I don't have a 24bit image to test my routines)

- compression is supported

save

---

----

- no

## 1.29 GIF - format

GIF - format

-----

load

----

- all images (even those with fewer than 256 colors)
- raster and interlace format
- only the first picture of the file is read

save

----

- always saves GIF87a / raster-images

## 1.30 TIFF - format

TIFF - format

-----

load

----

- uncompressed:           black/white (2 colors)  
                  16 colors   (with and without bitplanes)  
                  256 colors   (with and without bitplanes)  
                  RGB-images   (without bitplanes)
- CCITT3 (FAX) compressed:   black/white
- RunLength                   black/white  
                  256 colors
- LZW                         black/white  
                  256 colors  
                  RGB-images
- JPEG is not supported.

save

----

---

- no

### 1.31 Targa - format

Targa (TGA) - format

-----

load

----

- only truecolor pictures
- 15,16,24 or 32 bit
- uncompressed or compressed with RLE

save

----

- no

### 1.32 position and size of Postscript output

position and size of Postscript output

=====

The window to enter the position and size of the Postscript-output opens automatically. You must specify the position of the top left corner of the picture measured from the bottom left corner of the paper in portrait-orientation (may depend on your printer) and the width and height of the image (in cm).

The values that are by default filled into the gadgets produce a picture 18cm wide and a height according to the aspect of the picture.

### 1.33 about GfxCon

NOTE: As usual, this version 1.8 is of course the last one. And ↩  
of  
course I am sure it will be the last :-)

But the successor is under development (for some time now). Those who are brave and want to test it can find preview versions of it on my WWW page.

author

=====

Dirk Farin  
Kapellenweg 15

---

72070 Tübingen  
Germany

E-Mail: farindk@trick.informatik.uni-stuttgart.de  
WWW: <http://tick.informatik.uni-stuttgart.de/~farindk>

copyright

(registration)

I would be happy to receive any proposals and bug-reports ( ←  
E-Mail  
preferred). I will answer to all of these if possible.

If you miss your favourite format (and probably do have any  
documentation about it), I will try to implement this format too in  
future versions.

This program has been written on an Amiga3000T/25Mhz with 5MB,  
Kick2.04 and graphics-card. It has been compiled with SAS/C V6.55.

It has been successfully tested on these systems:

Amiga 3000T / OS2.04  
Amiga 3000 / OS2.04  
Amiga 2000 / OS2.04  
Amiga 500 / OS2.04  
Amiga 4000 / OS3.0  
Amiga 1200 / OS3.0  
... :-))

thanx go to:

Fred Fish           for his Fish-discs / -CDs.  
Matthew Dillon     for his DME-editor.  
Bob Richardson     who persuaded me to write version 1.8  
The maintainers of Aminet  
All users of GfxCon who did send me E-Mails, postcards letters or/and  
did sent bug reports !!!

## 1.34 registration

(registration)

-----  
This program is Cardware / EMailware.

As this program is very old and not up to date, I think it would be  
unfair to sell it as Shareware.

But if you use this program sometimes I would be very happy to  
receive a postcard or even an E-Mail, in which you can tell me, if you  
like this program or what could be done better.

---



Of course I will answer any questions concerning the program.

my address

### 1.35 copyright

copyright:

-----

GfxCon is

Cardware / EMailware.

It may be included on Public-Domain-discs, AmiNet and spread in ↔  
any  
other noncommercial way. No part of GfxCon may be used for commercial  
purpose without my permission.

The Graphics Interchange Format(c) is the Copyright property of  
CompuServe Incorporated. GIF(sm) is a Service Mark property of  
CompuServe Incorporated.