GNU gv Manual

First Edition, Updated for gv Version 3.6.6.

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This is the First edition of the *GNU gv Manual*, updated for gv version 3.6.6.

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1 Introduction

GNU gv allows to view and navigate through PostScript and PDF documents on an X display by providing a user interface for the ghostscript interpreter.

Please note that gv is derived from Tim Theisen's ghostview.

2 Invoking gv

```
Usage: gv [OPTION]... [FILE]
PostScript and PDF viewer.
  [-]-monochrome                     display document using only black and white
  [-]-grayscale                      display document without colors
  [-]-color                          display document as usual
  [-]-safer                          start ghostscript in safe mode
  [-]-nosafer                        do not start ghostscript in safe mode
  [-]-quiet                          start ghostscript with the -dQUIET option
  [-]-noquiet                        do not start ghostscript with the -dQUIET option
  [-]-infoSilent                     do not show any messages in the info popup window
  [-]-infoErrors                     do not show warning messages in the info popup window
  [-]-infoAll                        do show all messages in the info popup window
  [-]-arguments=ARGS                 start ghostscript with additional options as specified
                                     by the string ARGS
  [-]-page=LABEL                     display the page with label LABEL first
  [-]-center                         the page should be centered automatically
  [-]-nocenter                       the page should not be centered automatically
  [-]-media=MEDIA                    selects the paper size to be used
  [-]-orientation=ORIENTATION        sets the orientation of the page
  [-]-scale=N|f.f                    selects the scale N, or arbitrary scale f.f
  [-]-scalebase=N                    selects the scale base N
  [-]-swap                           interchange the meaning of the orientations landscape
                                     and seascape
  [-]-noswap                         do not interchange the meaning of the orientation
                                     landscape and seascape
  [-]-antialias                      use antialiasing
  [-]-noantialias                    do not use antialiasing
  [-]-dsc                            dsc comments are respected
  [-]-nodsc                          dsc comments are not respected
  [-]-eof                            ignore the postscript EOF comment while scanning
                                     documents
  [-]-noeof                          do not ignore the postscript EOF comment while
                                     scanning documents
  [-]-pixmap                         use backing pixmap
  [-]-nopixmap                       do not use backing pixmap
  [-]-watch                          watch the document file for changes
  [-]-nowatch                        do not watch the document file for changes
  [-]-help                           print a help message and exit
  [-]-usage                          print a usage message and exit
  [-]-resize                         fit the size of the window to the size of the page
  [-]-noresize                       do not fit the size of the window to the size of the
  -geometry [<width>][x<height>][{+-}<xoffset>{+-}<yoffset>]
  [-]-ad=FILE                        read and use additional resources from FILE
  [-]-style=FILE                     read and use additional resources from FILE. These re
                                     have lower priority than those provided on the contex
```

```
[-]-password=PASSWORD              Sets the password for opening encrypted PDF files
[-]-spartan                        shortcut for --style=gv_spartan.dat
[-]-widgetless                     shortcut for --style=gv_widgetless.dat
[-]-fullscreen                     start in fullscreen mode (needs support from WM)
[-]-presentation                   Presentation mode (fullscreen, Fit to window,
                                   widgetless and no resizing of window)
[-]-version                        show gv version and exit
```

`file`   The name of the file to be displayed. The file ending '`.ps`' may be omitted.
           file may point to a compressed file (gzipped, bzipped, zipped or compressed).
           Viewing PDF files requires at least ghostscript version 4.x.

`--ad=file`
           Read and use additional resources from the file *file*. These resources have higher
           priority than those provided in the context of the `--style` option.

`--antialias, --noantialias`
           Whether to use antialiasing.

`--arguments=args`
           Start ghostscrip with additional options as specified by the string *args*.

`--center, --nocenter`
           Whether the page should be centered automatically.

`--dsc, --nodsc`
           Determines if *document structuring convention* (DSC) comments should be re-
           spected or ignored. If `--nodsc` is used gv will not attempt to examine the
           structure of the document but will pass the file to the ghostscript interpreter
           as a whole. In this case no page numbers are shown and freely moving around
           in the document is not possible. This option may help when viewing files not
           conforming to the *document structuring conventions*.

`--eof, --noeof`
           Defines the behaviour of the postscript scanner used to examine the structure of
           the document. If `--noeof` is used the scanner will ignore end of file (EOF) com-
           ments. This may help when viewing documents which import other documents
           without enclosing them within the proper "BeginDocument" and "EndDocu-
           ment" comments. If `--eof` is used, the scanner treats an EOF comment as
           marking the end of the file.

`--fullscreen`
           Selects the fullscreen mode.

`--infoSilent`
           Do not show any ghostscript messages in an info popup window.

`--infoErrors`
           Only show error messages from ghostscript in an info popup window.

`--infoAll`
           Shows all ghostscript messages in an info popup window.

`--pixmap, --nopixmap`

> If `--pixmap` is used gv tries to maintain off-screen regions of the displayed page by allocating a sufficiently large pixmap. If `--nopixmap` is used the *X Server* is responsible for maintaining obscured portions of the displayed page (see also the *useBackingPixmap* resource).

`--version`

> Print the version number of gv to standard output and exit.

`--help, --usage`

> Display a short help message and exit.

`--scale=n`

> *n* must be an integer or a positive float. In case *n* is an integer, *n* selects the scale entry *n* relative to the scale 1.0. With the special value of `-1000` Fit to page is selected, and likewise with the value of `-1001` Fit widthto page is selected. In case *n* is a float, *n* selects an arbitrary scale.

`--scalebase n`

> Selects the scale base *n*.

`--monochrome, --grayscale, --color`

> Sets the color palette to be used.

`--media=media`

> Selects the paper size to be used. Valid values are names of paper sizes that appear in the list of page medias as given by the *medias* resource.

`--page=label`

> Display the page with label *label* first.

`--orientation=orientation`

> Sets the orientation. Valid values for *orientation* are `portrait`, `landscape`, `seascape` and `upsidedown`.

`--quiet, --noquiet`

> Whether to start ghostscript with the `-dQUIET` option.

`--resize, --noresize`

> Whether ghostscrip is allowed to automatically fit the size of its window to the size of the displayed page.

`--password=PASSWORD`

> When opening a file, use PASSWORD to decrypt it. This Option is usefull for viewing encrypted PDF files.

`--presentation`

> Is actually a shortcut for `--fullscreen --noresize --scale=-1000 --widgetless`.

`--safer, --nosafer`

> Whether to start ghostscript with the `-dSAFER` option.

`--spartan`

> This is a shortcut for `--style=gv_spartan.dat`.

`--style=`*file*
>   Read and use additional resources from the file *file*. These resources have lower priority than those provided in the context of the `--ad` option.

`--swap, --noswap`
>   Whether to interchange the meaning of the orientations landscape and seascape.

`--watch, --nowatch`
>   The `--watch` option causes gv to check the document periodically. If changes are detected gv will automatically display the newer version of the file. The document is by default checked once every second. This can be changed via the *watchFileFrequency* resource. Note that sending gv the **SIGHUP** signal also causes an update of the displayed document. This method may be used by document creators to trigger gv remotely.

`--widgetless`
>   This is a shortcut for `--style=gv_widgetless.dat`.

3 Resources

3.1 Resource files

In general gv does not depend on any external resource files. However, when starting gv, preferences are read from

a system specific resource file.
> The name of this file is GV and is installed on as part of gv's architecture independent library. Usually the library files are installed on '`/usr/local/lib/gv`'.
>
> Administrators may want to modify this file in order to set up gv according to the local needs of their system.

a user specific resource file.
> The name of this file is either '`~/.gv`' or as described by the `XUSERFILESEARCHPATH` environment variable.

The files '`gv_user.ad`' and '`gv_system.ad`' (located in the library directory of gv, which is most probably either '`/usr/local/lib/gv/`' or '`/usr/lib/gv/`') may serve as a basis for constructing the user and system specific resource files.

Note that the user and system specific resource files are not the only sources of preferences taken into account when gv is started. However, in practice these are the most important.

3.2 Resources of gv

The following describes some of the resources of gv. The precise syntax of some of the resource values may be inferred from the appended default system specific resource file.

antialias   Whether antialiasing should be used. Valid values are `True` and `False`.
> It defaults to `True`.

autoCenter
> Whether the displayed page should automatically be centered (for instance when opening a new file). Valid values are `True` and `False`.
> It defaults to `True`.

autoResize
> Whether gv is allowed to resize the main window according to the size of the current page. Valid values are `True` and `False`.
> It defaults to `True`.

confirmPrint
> Whether printing requires an extra confirmation. Valid values are `True` and `False`.
> It defaults to `True`.

confirmQuit
> Whether leaving gv requires extra confirmation. Valid values are `0` (Never), `1` (When processing) and `2` (Always). The default value is `1`, which causes a confirmation request when trying to leave gv in the presence of pending PDF to Postscript conversions.

scrollingEyeGuide

> If this resource is `True` scrolling via the keyboard causes a temporary border to be drawn around the previously visible area of the page. Allowed values are `True` and `False`.
>
> It defaults to `True`.

infoVerbose

> Defines the behavior of the info popup which shows messages from ghostscript. Valid values are `Silent` (Never), `Errors` (show only errror messages) and `All` (Any message is being shown).
>
> It defaults to `Errors`.

xinerama Defines whether the display resolution is determined by xinerama. Valid values are `On` (use Xinerama if available), `Off` (do not use Xinerama) and `Auto` (heuristically decide whether to use Xinerama or not).

> It defaults to `Auto`.

ignoreEOF

> Defines the behaviour of the postscript scanner as described in the Options section. Valid values are `True` and `False`.
>
> It defaults to `True`.

respectDSC

> Determines whether gv should attempt to respect document structuring comments. Valid values are `True` and `False`.
>
> It defaults to `True`.

reverseScrolling

> Defines the interpretation of directions when scrolling with the mouse. Valid values are `True` and `False`.
>
> It defaults to `False`.

swapLandscape

> Whether the meaning of `landscape` and `seacape` should be interchanged. Valid values are `True` and `False`.
>
> It defaults to `False`.

scratchDir Specifies a directory used to store temporary data.

> It defaults to the invocation directory.

defaultSaveDir

> Specifies the default destination directory for files to be saved.
>
> It defaults to the home directory, '`~/`'.

useBackingPixmap

> If the value of this resource is `False` the *X Server* is advised that saving off-screen pixels of the displayed page would be beneficial (maintaining backing store). In this case gv does not actively maintain the contents of the page but relies on the *X Server*. The server is, however, always free to stop maintaining backing backing store. If the value of this resource is `True` the *X Server* is

advised that maintaining backing store is not useful. In this case gv attempts to allocate a sufficiently large pixmap to store the contents of the displayed page.

It defaults to `True`.

watchFile   Whether the document should be checked periodically and updated automatically if changes are detected. Valid values are `True` and `False`.

It defaults to `False`.

watchFileFrequency

Defines the time in milliseconds elapsing between successive checks of the document when *watchFile* is set to `True`. Allowed values must be larger than 500.

It defaults to `1000`.

printCommand

The command used for printing a file. The command may contain multiple `%s` wildcards which will be replaced by the name of the file to be printed.

It defaults to `lpr`.

saveposFilename

This file is used for saving positions by the `z` and `u` keys.

It defaults to `~/gv.savepos`.

gsInterpreter

The command used to start the ghostscript interpreter.

It defaults to `gv`.

gsCmdScanPDF

The command used to extract document structuring comments from a PDF file.

It defaults to `gs -dNODISPLAY -dQUIET -sPDFname=%s -sDSCname=%s pdf2dsc.ps -c quit`

gsCmdConvPDF

The command used to convert a PDF file to PostScript.

It defaults to `gs -dNODISPLAY -dQUIET -dNOPAUSE -sPSFile=%s %s -c quit`

gsX11Device

The ghostscript command line option which activates the *X11* device.

It defaults to `-sDEVICE=x11`

gsX11AlphaDevice

The ghostscript command line option which activates the *X11* device with antialiasing enabled.

It defaults to `-dNOPLATFONTS -sDEVICE=x11alpha`

gsSafer   Determines whether ghostscript should be started with the `-dSAFER` command line option.

It defaults to `True`.

gsQuiet   Determines whether ghostscript should be started with the `-dQUIET` command line option.

It defaults to `True`.

gsArguments

May be used to provide additional command line options for the ghostscript interpreter. Starting gv with the `-arguments` *arguments* option will override this resource setting.

It defaults to the empty string.

magMenu   Describes the menu that pops up when preparing to to zoom an area of the displayed page.

dirs   Defines a list of directories accessible via the `Directories` menu in the file selection window. The special value `Home` corresponds to the users home directory, the value `Tmp` corresponds to the scratch directory as defined by the **scratchDir** resource.

It defaults to `Home Tmp /usr/doc /usr/local/doc`

filter   Defines the default filter to be used when displaying a directory contents in the file selection window. A filter is specified according to the syntax

```
<filter>    := [<filespecs>] [no <filespecs>]
<filespecs> := <filespec> [<filespecs>]
<filespec>  := filename possibly including wildcards '*'
               which match any character.
```

Example: The filter

```
GV*filter: *.ps *.pdf no .*
```

screens out all files with names starting with a dot and keeps of the remaining ones only those which end on '`.ps`' or '`.pdf`'.

It defaults to `no .*`

filters   Defines a list of filters offered in the *Filters* menu of the file selection window. The filter `None` has a special meaning causing all files to be displayed when the corresponding menu entry is selected.

miscMenuEntries

Describes the menu that pops up when clicking with the third mouse button on the displayed page. The value of this resource is a list of menu entries.

Allowed entries are

- `update`
- `reload`
- `toggle_current`
- `toggle_even`
- `toggle_odd`
- `unmark`
- `stop`
- `print_all`

- `print_marked`
- `save_all`
- `save_marked`
- `line`

titleStyle   Whether the name of the displayed document should be shown in the title bar of the window. The name of gv's icon will also change accordingly if this resource is set to `True`.

It this is `0`, no title will be shown. `1` means to show a the document title or the file name if there is no document title. Only the file name is shown with `2`.

It defaults to `1`.

maximumWidth, maximumHeight
When resizing gv will not attempt to exceed the size specified by these resources. These resources may be specified as a positive integer or as `screen`, optionally combined with a positive or negative offset. The default values listed above provide examples for this syntax. `screen` will automatically be replaced by the size of the screen.

`maximumWidth` defaults to `screen-20`. `maximumHeight` defaults to `screen-44`.

minimumWidth, minimumHeight
Defines a minimum size for the main window. Valid values for both resources are positive integers larger than 200.

`minimumWidth` defaults to `400`. `minimumHeight` defaults to `430`.

scale   Sets the initial scale. The value of this resource is the offset of the scale to be selected relative to the scale 1.0 in the the *Scale* menu.

It defaults to `0`.

scaleBase   Selects the initial scale base. The value of this resource should be a positive integer.

It defaults to `1`.

scales   Defines the available scales bases and scales in the *Scale* menu.

orientation
Sets the initial orientation. Valid values are

- `portrait`
- `landscape`
- `seascape`
- `upside-down`
- `automatic`

`automatic` causes gv to attempt to derive the correct orientation from document structuring comments.

It defaults to `automatic`.

fallbackOrientation

>   Defines the paper-size to be used when automatic orientation detetction fails. Valid values are `portrait`, `landscape`, `seascape` and `upside-down`.
>
>   It defaults to `portrait`.

medias A list describing the page medias known to gv. List entries starting with `!` or `#` will not appear in the *Media* menu but will still be used for automatic paper size detection.

pagemedia

>   Sets the paper size. Allowd values are as given in the above list of paper-sizes. Specifying `automatic` causes gv to attempt to derive the correct paper-size from document structuring comments.
>
>   It defaults to `automatic`.

fallbackPageMedia

>   Defines the paper-size to be used when automatic paper-size detetction fails. Valid values are as given in the above list of paper-sizes.
>
>   It defaults to `a4`.

4 Mouse and key bindings

4.1 Mouse bindings in the Main and the Zoom window

The following mouse events are defined when the mouse pointer is either on the displayed page or on a zoomed area:

press button 1, move mouse, release button 1
> Scrolls the displayed page 'proportionally'.

press button 3, move mouse, release button 3
> Scrolls the displayed page 'absolutely'.

double-click with button 1
> In the main window this displays the previous/next page if the double-click occured in the left/right half of the window. In a zoom window it does nothing.

press button 2, release button 2
> Pops up a small menu which allows to choose a magnification for a certain area around the current mouse position. After selecting a magnification a zoom window pops up displaying the area at the chosen scale.

press button 2, move mouse, release button 2
> This draws and thereby defines a rectangular region which can be displayed in a zoom window. The magnification for the area can be selected by means of a popup menu which appears after releasing button 2.

press button 1, press button 2
> Reload the current page. This event sequence works only in the main window.

press button 3, release button 3
> Pops up a small menu which offers a few standard actions like 'Reload', 'Mark Page', etc.

4.2 Mouse bindings in the File Selection popup

The following mouse events are defined when the mouse pointer is in the window of either a file or a directory list:

press button 1, move mouse, release button 1
> Scrolls a file or directory list 'proportionally'.

press button 2, move mouse, release button 2
> Scrolls a file or directory list 'absolutely'.

press button 2, release button 2
> Scrolls a file or directory list one page up/down if the button was pressed in the upper/lower half of the list.

double-click with button 1 on a filename
> Selects the file and closes the File Selection popup.

click with button 1 on a directory name
> Causes the contents of this directory to be displayed.

4.3 Mouse bindings in the Table of Contents

The following mouse events are defined when the mouse pointer is in the window showing a list of page numbers of the current file (table of contents):

press button 1, move mouse, release button 1
      Scrolls the table of contents.

press button 1 on a page number
      Go to this page.

press button 2 on a page number
      Mark this page if it is unmarked, but unmark it if it is marked.

press button 2, move mouse, release button 2
      Marks/unmarks all unmarked/marked pages in the region crossed by the mouse pointer during the movement.

4.4 Mouse bindings in the Panner widget

The Panner widget is the rectangular region located close to the left edge of the main window. It indicates the size and the position of the visible area of the current page relative to the total page.

The following mouse events are defined when the mouse pointer is in this region:

press button 1, move mouse
      Scrolls the displayed page.

press button 2
      Display the previous page.

press button 3
      Display the next page.

4.5 Mouse bindings in the << and >> button windows

The << and >> buttons are used to move to another page. The following mouse events are defined:

press button 1
      Move 1 page forward/backwards.

press button 2
      Move 5 pages forward/backwards.

press button 3
      Move 10 pages forward/backwards.

4.6 Key Bindings

The following key events are defined in the main window. Those bindings scrolling the page are also defined in zoom popups.

4.6.1 Notation

⟨S-X⟩	means press ⟨Shift⟩ and key ⟨X⟩
⟨C-X⟩	means press ⟨Ctrl⟩ and key ⟨X⟩
⟨SC-X⟩	means press ⟨Shift⟩ or ⟨Ctrl⟩ and key ⟨X⟩

4.6.2 Miscellaneous keys:

⟨A⟩	Toggle antialiasing on and off
⟨O⟩	Open a new file
⟨Q⟩	Quit gv
⟨R⟩	Toggle gv's resizing behaviour
⟨I⟩	Respect/Ignore document structuring
⟨W⟩	Watch file / Don't watch file
⟨S⟩	Save the marked pages
⟨SC-S⟩	Save the current file
⟨P⟩	Print the marked pages
⟨SC-P⟩	Print the current file
⟨c-L⟩	Reload the current page
⟨.⟩	Reload the current page
⟨SC-.⟩	Reopen the current file
⟨M⟩	Mark the current page
⟨N⟩	Unmark the current page
⟨Z⟩	append the current coordinate to a file whose name is given by the `GV.saveposFilename` resource.
⟨U⟩	enter a command with the current coordinate as its default parameter. By defalt it is % TODO *PutAtPos(x,y)()*, where x,y are the current coordinate and the user can put needed commands into (). This command is appended to a file whose name is given by the `GV.saveposFilename` resource.

4.6.3 Orientation

⟨7⟩	Orientation portrait
⟨8⟩	Orientation landscape
⟨9⟩	Orientation upside-down
⟨0⟩	Orientation seascape

4.6.4 Magnification

⟨SC-6⟩	Select the scale entry -6 relative to the scale 1.0
⟨SC-5⟩	Select the scale entry -5 relative to the scale 1.0
⟨SC-4⟩	Select the scale entry -4 relative to the scale 1.0
⟨SC-3⟩	Select the scale entry -3 relative to the scale 1.0
⟨SC-2⟩	Select the scale entry -2 relative to the scale 1.0
⟨SC-1⟩	Select the scale entry -1 relative to the scale 1.0
⟨^⟩	Select the scale 1.0 (for german keyboard layout)
⟨'⟩	Select the scale 1.0
⟨1⟩	Select the scale entry 1 relative to the scale 1.0
⟨2⟩	Select the scale entry 2 relative to the scale 1.0
⟨3⟩	Select the scale entry 3 relative to the scale 1.0
⟨4⟩	Select the scale entry 4 relative to the scale 1.0
⟨5⟩	Select the scale entry 5 relative to the scale 1.0
⟨6⟩	Select the scale entry 6 relative to the scale 1.0
⟨+⟩	Select the next scale entry
⟨=⟩	Select the next scale entry
⟨-⟩	Select the previous scale entry

4.6.5 Navigating

⟨Arrow⟩	Scroll in the direction of the arrow
⟨S-Up⟩	Scroll columns up or jump -1 pages
⟨S-Down⟩	Scroll columns down or jump 1 pages
⟨S-Left⟩	Scroll rows left or jump -1 pages
⟨S-Right⟩	Scroll rows right or jump 1 pages
⟨C-Up⟩	Jump -1 pages (to top/left corner)
⟨C-Down⟩	Jump 1 pages (to top/left corner)
⟨C-Left⟩	Jump -5 pages (to top/left corner)
⟨C-Right⟩	Jump 5 pages (to top/left corner)
⟨D⟩	Identical to arrow up
⟨X⟩	Identical to arrow down
⟨Z⟩	Identical to arrow left
⟨Y⟩	Identical to arrow left

⟨C⟩ Identical to arrow right

⟨V⟩ Center the page

⟨SC-Space⟩ Scroll columns up or jump -1 pages

⟨Space⟩ Scroll columns down or jump 1 pages

⟨BackSpace⟩ Scroll columns up or jump -1 pages

⟨Insert⟩ Jump -5 pages

⟨Delete⟩ Jump 5 pages

⟨Home⟩ Go to the first page

⟨End⟩ Go to the last page

⟨Prior⟩ Jump -1 pages

⟨Next⟩ Jump 1 pages

⟨Keypad 0-9⟩ Highlight a page number

⟨Keypad -⟩ Highlight previous page number

⟨Keypad +⟩ Highlight next page number

⟨Keypad Enter⟩
Jump to the highlighted page

⟨C-Enter⟩ Scroll columns up

⟨S-Enter⟩ Scroll columns up

⟨Enter⟩ Scroll columns down

⟨B⟩ Jump -1 pages

⟨F⟩ Jump 1 pages

5 Comments about the user interface

5.1 Scales

The *Scale* menu which allows to view the document at different sizes is divided into two parts. The first part shows a list of available scale bases, the second part, separated by a line, lists the relative scales which are applied with respect to the selected scale base.

By default two scales bases are available, the *Natural size* and the *Pixel based* base. When choosing the *Pixel based* scale base a relative scale of 1.0 causes one postscript point to correspond to one pixel on the screen.

When viewing a document at a relative scale of 1.0 using the *Natural size* base the page should appear in its real size, as if printed on paper. For the *Natural size* base to work properly gv has to know the correct size of the root window. Automatic detection of this size unfortunately only provides approximate results, therefore it is best if it is provided by the user. To do so the resource

```
GV.screenSize:  <width> x <height>
```

should be added to the `SCREEN_RESOURCES` property of the screen the document is viewed on, with *width* and *height* describing the width and height of the root window in units of millimeters. For instance by using the command

```
echo "GV.screenSize: 396 x 291" | xrdb -override -screen
```

a width of 346 mm and a height of 291 mm will be used for the *Natural size* scale base. Alternatively the resource

```
GV.screenSize_<machine>_<disp>_<scr>:  <width> x <height>
```

may be added to a resource file read by gv. Here *machine* ,*disp* and *ANGLED* describe the display on which gv displays the document. For instance, if the display is set to `tic.tac.toe.wo:0.1` the resource should be specified as

```
GV.screenSize_tic_0_1: 396 x 291
```

Note that this method doesn't work on VMS. As a last alternative the resource

```
GV.screenSize:  <width> x <height>
```

may be added to one of the resource files. However, for obvious reasons this method should be used only on single user machines.

5.2 Scrolling

It is probably a *de facto* standard for user interfaces that windows are supposed to be scrolled by means of scrollbars attached to their sides. However, for various reasons the use of scrollbars has been minimized in gv.

Instead, in all windows with obscured data, scrolling may be performed by

pressing button1, moving the mouse, then releasing button1

directly in the window. This includes the displayed page, zoom popups, the table of contents and the file and directory lists displayed in the file selection popup.

5.3 Displaying new versions of a document

During document creation it is usually desirable to always display the newest version of the document in work.

Instead of explicitly loading it via the file selection popup the most recent version can be displayed by pressing the **Reload** button in the main window. Choosing the **Reload** entry in the menu that pops up when clicking with the third mouse button anywhere on the displayed page certainly has the same effect.

More comfortable is the "Watch File" feature which may be switched on by selecting the corresponding entry in the **State** menu. If activated gv will check every now and then if a new version of the displayed file exists. If so it will be displayed automatically. By default the file is checked about once every second.

Finally it may also be left to the document creating program to trigger gv to update its display. To do so the program should send the SIGHUP signal to gv. For instance at the end of a shell script generating a postscript file from latex sources the line

```
kill -SIGHUP <gv_pid>
```

may be added (here *gv_pid* is the process id of gv). Executing the script and thereby creating a new version of the document will then also cause the result to be displayed instantaneously. Please note that this feature is available only on X11 R6 based systems.

6 Frequently asked questions

6.1 What happened to the scroll bars?

They have been removed in order to make more room for the image. The displayed portion of the image may be moved by dragging the image or the paner (panel between the "Save Marked" and `<< >>` buttons) with the mouse. Alternatively, the cursor arrow keys can be used.

6.2 How can I make even more room for the image?

Use the "spartan" style by starting gv with the command

```
gv --spartan
```

This removes the "Open", "Print", "Save", "Reload", and page marking buttons (they are still available from the "File" and "Page" menus) and replaces them with the document attribute controls, which are normally along the top.

6.3 Small characters are not very clear

Antialiasing can improve the display of bitmapped fonts (eg. from TeX) when displayed on a colour or greyscale screen. The same technique is used by xdvi. Note that antialiasing requires at least Ghostscript version 4.x.

Antialiasing can be turned on from the "State" menu, and can be made default by saving the setting in `State | gv Options...`.

6.4 The output is not refreshed automatically

There are two methods that can be used to save the contents of the window when it's not currently displayed: backing store and backing pixmap. Some X-servers seem to support only backing store (eg. VAXstations) and some only backing pixmap (eg. some X-terminals, including EWS).

In order to force gv to use one method or the other, use the `State | Setup Options ...` menu and toggle the "Backing Pixmap" button. When selected/highlighted (normally the default), gv will use backing pixmap; otherwise it will use backing store. Select "Apply" to use a new setting and "Save" to make it the new default.

7 gv internals

7.1 Interface with ghostscript

7.1.1 Ghostview interface to ghostscript

When the `GHOSTVIEW` environment variable is set, ghostscript draws on an existing drawable rather than creating its own window. Ghostscript can be directed to draw on either a window or a pixmap.

7.1.2 Drawing on a Window

The `GHOSTVIEW` environment variable contains the window id of the target window. The window id is an integer. Ghostscript will use the attributes of the window to obtain the width, height, colormap, screen, and visual of the window. The remainder of the information is gotten from the GHOSTVIEW property on that window.

7.1.3 Drawing on a Pixmap

The GHOSTVIEW environment variable contains a window id and a pixmap id. They are integers separated by white space. Ghostscript will use the attributes of the window to obtain the colormap, screen, and visual to use. The width and height will be obtained from the pixmap. The remainder of the information, is gotten from the GHOSTVIEW property on the window. In this case, the property is deleted when read.

7.1.4 The GHOSTVIEW environment variable

parameters

> `window-id [pixmap-id]`

scanf format

> `"%d %d"`

Explanation of parameters:

`window-id`

> tells ghostscript where to
>
> - read the GHOSTVIEW property
> - send events
>
> If pixmap-id is not present, ghostscript will draw on this window.

`pixmap-id`

> If present, tells ghostscript that a pixmap will be used as the final destination for drawing. The window will not be touched for drawing purposes.

7.1.5 The GHOSTVIEW property

type   STRING

parameters

> `bpixmap orient llx lly urx ury xdpi ydpi [left bottom top right]`

scanf format

```
"%d %d %d %d %d %d %f %f %d %d %d %d"
```

Explanation of parameters:

`pixmap` pixmap id of the backing pixmap for the window. If no pixmap is to be used, this parameter should be zero. This parameter must be zero when drawing on a pixmap.

`orient` orientation of the page. The number represents clockwise rotation of the paper in degrees. Permitted values are 0, 90, 180, 270.

`llx, lly, urx, ury`
Bounding box of the drawable. The bounding box is specified in PostScript points in default user coordinates.

`xdpi, ydpi`
Resolution of window. (This can be derived from the other parameters, but not without roundoff error. These values are included to avoid this error.)

`left, bottom, top, right (optional)`
Margins around the window. The margins extend the imageable area beyond the boundaries of the window. This is primarily used for popup zoom windows. I have encountered several instances of PostScript programs that position themselves with respect to the imageable area. The margins are specified in PostScript points. If omitted, the margins are assumed to be 0.

7.1.6 Events from ghostscript

If the final destination is a pixmap, the client will get a property notify event when ghostscript reads the GHOSTVIEW property causing it to be deleted.

Ghostscript sends events to the window where it read the GHOSTVIEW property. These events are of type ClientMessage. The message_type is set to either PAGE or DONE. The first long data value gives the window to be used to send replies to ghostscript. The second long data value gives the primary drawable. If rendering to a pixmap, it is the primary drawable. If rendering to a window, the backing pixmap is the primary drawable. If no backing pixmap is employed, then the window is the primary drawable. This field is necessary to distinguish multiple ghostscripts rendering to separate pixmaps where the GHOSTVIEW property was placed on the same window.

The PAGE message indicates that a "page" has completed. Ghostscript will wait until it receives a ClientMessage whose message_type is NEXT before continuing.

The DONE message indicates that ghostscript has finished processing.

7.2 Comments recognized by ghostview

```
%!PS-Adobe-<real> [EPSF-<real>]
%%BoundingBox: <int> <int> <int> <int>|(atend)
%%CreationDate: <textline>
%%Orientation: Portrait|Landscape|(atend)
%%Pages: <uint>|(atend)
%%PageOrder: Ascend|Descend|Special|(atend)
```

```
%%Title: <textline>
%%DocumentMedia: <text> <real> <real> <real> <text> <text>
%%DocumentPageSizes: <text>
%%EndComments
```

Preview section:

```
%%BeginPreview
%%EndPreview
```

Defaults section:

```
%%BeginDefaults
%%PageBoundingBox: <int> <int> <int> <int>|(atend)
%%PageOrientation: Portrait|Landscape
%%PageMedia: <text>
%%EndDefaults
```

Prolog section:

```
%%BeginProlog
%%EndProlog
```

Setup section:

```
%%BeginSetup
%%PageBoundingBox: <int> <int> <int> <int>|(atend)
%%PageOrientation: Portrait|Landscape
%%PaperSize: <text>
%%EndSetup
```

Page properties:

```
%%Page: <text> <uint>
%%PageBoundingBox: <int> <int> <int> <int>|(atend)
%%PageOrientation: Portrait|Landscape
%%PageMedia: <text>
%%PaperSize: <text>

%%Trailer
%%EOF
```

Document section:

```
%%BeginDocument: <text> [<real>[<text>]]
%%EndDocument
```

Binary section:

```
%%BeginBinary: <uint>
%%EndBinary
```

Data section:

```
%%BeginData: <uint> [Hex|Binary|ASCII[Bytes|Lines]]
%%EndData
```

7.3 Paper Keywords and paper size in points

```
Letter           612x792
LetterSmall      612x792
Tabloid          792x1224
Ledger          1224x792
Legal            612x1008
Statement        396x612
Executive        540x720
A0              2384x3371
A1              1685x2384
A2              1190x1684
A3               842x1190
A4               595x842
A4Small          595x842
A5               420x595
B4               729x1032
B5               516x729
Envelope         ???x???
Folio            612x936
Quarto           610x780
10x14            720x1008
```

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Version 3, 29 June 2007

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