

GNU gv Manual

First Edition, Updated for gv Version 3.6.1.

Johannes Plass
José E. Marchesi

This is the First edition of the *GNU gv Manual*, updated for gv version 3.6.1.

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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
--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         selects the scale N
--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 page
-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 resources
                  have lower priority than those provided on the context of --ad
--spartan        shortcut for --style=gv_spartan.dat
--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, bziped, 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 respected 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) comments. This may help when viewing documents which import other documents without enclosing them within the proper "BeginDocument" and "EndDocument" comments. If `--eof` is used, the scanner treats an EOF comment as marking the end of the file.
- `--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`
Selects the scale entry *n* relative to the scale 1.0. *n* must be an integer.
- `--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.
- `--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.

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**.

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 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`.

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 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`

showTitle 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 defaults to `True`.

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 detection 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. Allowed 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 detection 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 occurred 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

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

⌘	Scroll in the direction of the arrow
⌘	Scroll columns up or jump -1 pages
⌘	Scroll columns down or jump 1 pages
⌘	Scroll rows left or jump -1 pages
⌘	Scroll rows right or jump 1 pages
⌘	Jump -1 pages (to top/left corner)
⌘	Jump 1 pages (to top/left corner)
⌘	Jump -5 pages (to top/left corner)
⌘	Jump 5 pages (to top/left corner)
⌘	Identical to arrow up
⌘	Identical to arrow down
⌘	Identical to arrow left
⌘	Identical to arrow left
⌘	Identical to arrow right
⌘	Center the page
⌘	Scroll columns up or jump -1 pages
⌘	Scroll columns down or jump 1 pages
⌘	Scroll columns up or jump -1 pages
⌘	Jump -5 pages
⌘	Jump 5 pages
⌘	Go to the first page

<code><End></code>	Go to the last page
<code><Prior></code>	Jump -1 pages
<code><Next></code>	Jump 1 pages
<code><Keypad 0-9></code>	Highlight a page number
<code><Keypad -></code>	Highlight previous page number
<code><Keypad +></code>	Highlight next page number
<code><Keypad Enter></code>	Jump to the highlighted page
<code><C-Enter></code>	Jump -1 pages
<code><S-Enter></code>	Jump -1 pages
<code><Enter></code>	Jump 1 pages
<code></code>	Jump -1 pages
<code><F></code>	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" | xrdp -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 (VMS users should use the **Update File** entry in the **File** menu). 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 2, June 1991

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