

# mpv

## a media player

**Copyright:** GPLv2+  
**Manual** 1  
**section:**  
**Manual group:** multimedia

## SYNOPSIS

**mpv** [options] [file|URL|PLAYLIST|-]  
**mpv** [options] files

## DESCRIPTION

**mpv** is a media player based on MPlayer and mplayer2. It supports a wide variety of video file formats, audio and video codecs, and subtitle types. Special input URL types are available to read input from a variety of sources other than disk files. Depending on platform, a variety of different video and audio output methods are supported.

Usage examples to get you started quickly can be found at the end of this man page.

## INTERACTIVE CONTROL

mpv has a fully configurable, command-driven control layer which allows you to control mpv using keyboard, mouse, or remote control (there is no LIRC support - configure remotes as input devices instead).

See the `--input-` options for ways to customize it.

### Keyboard Control

#### LEFT and RIGHT

Seek backward/forward 5 seconds. Shift+arrow does a 1 second exact seek (see `--hr-seek`).

#### UP and DOWN

Seek forward/backward 1 minute. Shift+arrow does a 5 second exact seek (see `--hr-seek`).

#### Ctrl+LEFT and Ctrl+RIGHT

Seek to the previous/next subtitle. Subject to some restrictions and might not work always; see `sub_seek` command.

#### [ and ]

Decrease/increase current playback speed by 10%.

#### { and }

Halve/double current playback speed.

#### BACKSPACE

Reset playback speed to normal.

#### < and >

Go backward/forward in the playlist.

#### ENTER

Go forward in the playlist.

**p / SPACE**

Pause (pressing again unpauses).

.

Step forward. Pressing once will pause, every consecutive press will play one frame and then go into pause mode again.

,

Step backward. Pressing once will pause, every consecutive press will play one frame in reverse and then go into pause mode again.

**q**

Stop playing and quit.

**Q**

Like **q**, but store the current playback position. Playing the same file later will resume at the old playback position if possible.

**/ and \***

Decrease/increase volume.

**9 and 0**

Decrease/increase volume.

**m**

Mute sound.

—

Cycle through the available video tracks.

**#**

Cycle through the available audio tracks.

**f**

Toggle fullscreen (see also `--fs`).

**ESC**

Exit fullscreen mode.

**T**

Toggle stay-on-top (see also `--ontop`).

**w and e**

Decrease/increase pan-and-scan range.

**o (also P)**

Show progression bar, elapsed time and total duration on the OSD.

**O**

Toggle OSD states between normal and playback time/duration.

**v**

Toggle subtitle visibility.

**j and J**

Cycle through the available subtitles.

**x and z**

Adjust subtitle delay by +/- 0.1 seconds.

l

Set/clear A-B loop points. See `ab_loop` command for details.

**L**

Toggle infinite looping.

**Ctrl + and Ctrl -**

Adjust audio delay by +/- 0.1 seconds.

**u**

Switch between applying no style overrides to SSA/ASS subtitles, and overriding them almost completely with the normal subtitle style. See `--ass-style-override` for more info.

**V**

Toggle subtitle VSFilter aspect compatibility mode. See `--ass-vsfilter-aspect-compat` for more info.

**r and t**

Move subtitles up/down.

**s**

Take a screenshot.

**S**

Take a screenshot, without subtitles. (Whether this works depends on VO driver support.)

**Ctrl s**

Take a screenshot, as the window shows it (with subtitles, OSD, and scaled video).

**I**

Show filename on the OSD.

**PGUP and PGDWN**

Seek to the beginning of the previous/next chapter. In most cases, "previous" will actually go to the beginning of the current chapter; see `--chapter-seek-threshold`.

**Shift+PGUP and Shift+PGDWN**

Seek backward or forward by 10 minutes. (This used to be mapped to PGUP/PGDWN without Shift.)

**d**

Activate/deactivate deinterlacer.

**A**

Cycle aspect ratio override.

(The following keys are valid only when using a video output that supports the corresponding adjustment, or the software equalizer (`--vf=eq`).)

**1 and 2**

Adjust contrast.

**3 and 4**

Adjust brightness.

**5 and 6**

Adjust gamma.

**7 and 8**

Adjust saturation.

(The following keys are valid only on OS X.)

**command + 0**

Resize video window to half its original size. (On other platforms, you can bind keys to change the `window-scale` property.)

**command + 1**

Resize video window to its original size.

**command + 2**

Resize video window to double its original size.

**command + f**

Toggle fullscreen (see also `--fs`).

**command + [ and command + ]**

Set video window alpha.

(The following keys are valid if you have a keyboard with multimedia keys.)

**PAUSE**

Pause.

**STOP**

Stop playing and quit.

**PREVIOUS and NEXT**

Seek backward/forward 1 minute.

(The following keys are only valid if you compiled with TV or DVB input support.)

**h and k**

Select previous/next channel.

## Mouse Control

**button 3 and button 4**

Seek backward/forward 1 minute.

**button 5 and button 6**

Decrease/increase volume.

## USAGE

Every *flag* option has a *no-flag* counterpart, e.g. the opposite of the `--fs` option is `--no-fs`. `--fs=yes` is same as `--fs`, `--fs=no` is the same as `--no-fs`.

If an option is marked as (*XXX only*), it will only work in combination with the *XXX* option or if *XXX* is compiled in.

## Escaping spaces and other special characters

Keep in mind that the shell will partially parse and mangle the arguments you pass to mpv. For example, you might need to quote or escape options and filenames:

```
mpv "filename with spaces.mkv" --title="window title"
```

It gets more complicated if the suboption parser is involved. The suboption parser puts several options into a single string, and passes them to a component at once, instead of using multiple options on the level of the command line.

The suboption parser can quote strings with `"`, `'`, and `[...]`. Additionally, there is a special form of quoting with `%n%` described below.

For example, the `opengl` VO can take multiple options:

```
mpv test.mkv --vo=opengl:scale=lanczos:icc-profile=file.icc,xv
```

This passes `scale=lanczos` and `icc-profile=file.icc` to `opengl`, and also specifies `xv` as fallback VO. If the `icc-profile` path contains spaces or characters like `,` or `:`, you need to quote them:

```
mpv '--vo=opengl:icc-profile="file with spaces.icc",xv'
```

Shells may actually strip some quotes from the string passed to the commandline, so the example quotes the string twice, ensuring that mpv receives the `"` quotes.

The [...] form of quotes wraps everything between [ and ]. It's useful with shells that don't interpret these characters in the middle of an argument (like bash). These quotes are balanced (since mpv 0.9.0): the [ and ] nest, and the quote terminates on the last ] that has no matching [ within the string. (For example, [a[b]c] results in a[b]c.)

The fixed-length quoting syntax is intended for use with external scripts and programs.

It is started with % and has the following format:

```
%n%string_of_length_n
```

### Examples

```
mpv --ao=pcm:file=%10%C:test.wav test.avi
```

Or in a script:

```
mpv --ao=pcm:file=%`expr length "$NAME"`${"$NAME" test.avi
```

Suboptions passed to the client API are also subject to escaping. Using `mpv_set_option_string()` is exactly like passing `--name=data` to the command line (but without shell processing of the string). Some options support passing values in a more structured way instead of flat strings, and can avoid the suboption parsing mess. For example, `--vf` supports `MPV_FORMAT_NODE`, which lets you pass suboptions as a nested data structure of maps and arrays. (`--vo` supports this in the same way, although this fact is undocumented.)

## Paths

Some care must be taken when passing arbitrary paths and filenames to mpv. For example, paths starting with `-` will be interpreted as options. Likewise, if a path contains the sequence `://`, the string before that might be interpreted as protocol prefix, even though `://` can be part of a legal UNIX path. To avoid problems with arbitrary paths, you should be sure that absolute paths passed to mpv start with `/`, and relative paths with `./`.

The name `-` itself is interpreted as `stdin`, and will cause mpv to disable console controls. (Which makes it suitable for playing data piped to `stdin`.)

For paths passed to suboptions, the situation is further complicated by the need to escape special characters. To work this around, the path can be additionally wrapped in the fixed-length syntax, e.g. `%n%string_of_length_n` (see above).

Some mpv options interpret paths starting with `~`. Currently, the prefix `~/` expands to the mpv configuration directory (usually `~/.config/mpv/`). `~/` expands to the user's home directory. (The trailing `/` is always required.) There are the following paths as well:

Name	Meaning
<code>~/home/</code>	same as <code>~/</code>
<code>~/global/</code>	the global config path, if available (not on win32)
<code>~/osxbundle/</code>	the OSX bundle resource path (OSX only)
<code>~/desktop/</code>	the path to the desktop (win32, OSX)

## Per-File Options

When playing multiple files, any option given on the command line usually affects all files. Example:

```
mpv --a file1.mkv --b file2.mkv --c
```

File	Active options
file1.mkv	--a --b --c
file2.mkv	--a --b --c

(This is different from MPlayer and mplayer2.)

Also, if any option is changed at runtime (via input commands), they are not reset when a new file is played.

Sometimes, it is useful to change options per-file. This can be achieved by adding the special per-file markers `--{` and `--}`. (Note that you must escape these on some shells.) Example:

```
mpv --a file1.mkv --b --\{ --c file2.mkv --d file3.mkv --e --\} file4.mkv --f
```

File	Active options
file1.mkv	--a --b --f
file2.mkv	--a --b --f --c --d --e
file3.mkv	--a --b --f --c --d --e
file4.mkv	--a --b --f

Additionally, any file-local option changed at runtime is reset when the current file stops playing. If option `--c` is changed during playback of `file2.mkv`, it is reset when advancing to `file3.mkv`. This only affects file-local options. The option `--a` is never reset here.

## CONFIGURATION FILES

### Location and Syntax

You can put all of the options in configuration files which will be read every time `mpv` is run. The system-wide configuration file `'mpv.conf'` is in your configuration directory (e.g. `/etc/mpv` or `/usr/local/etc/mpv`), the user-specific one is `~/.config/mpv/mpv.conf`. For details and platform specifics see the [FILES](#) section. User-specific options override system-wide options and options given on the command line override either. The syntax of the configuration files is `option=<value>;` everything after a `#` is considered a comment. Options that work without values can be enabled by setting them to `yes` and disabled by setting them to `no`. Even suboptions can be specified in this way.

#### ***Example configuration file***

```
# Use opengl video output by default.
vo=opengl
# Use quotes for text that can contain spaces:
status-msg="Time: ${time-pos}"
```

## Escaping spaces and special characters

This is done like with command line options. The shell is not involved here, but option values still need to be quoted as a whole if it contains certain characters like spaces. A config entry can be quoted with " and ', as well as with the fixed-length syntax (%n%) mentioned before. This is like passing the exact contents of the quoted string as command line option. C-style escapes are currently not interpreted on this level, although some options do this manually. (This is a mess and should probably be changed at some point.)

## Putting Command Line Options into the Configuration File

Almost all command line options can be put into the configuration file. Here is a small guide:

Option	Configuration file entry
--flag	flag
-opt val	opt=val
--opt=val	opt=val
-opt "has spaces"	opt="has spaces"

## File-specific Configuration Files

You can also write file-specific configuration files. If you wish to have a configuration file for a file called 'video.avi', create a file named 'video.avi.conf' with the file-specific options in it and put it in ~/.config/mpv/. You can also put the configuration file in the same directory as the file to be played. Both require you to set the --use-filedir-conf option (either on the command line or in your global config file). If a file-specific configuration file is found in the same directory, no file-specific configuration is loaded from ~/.config/mpv. In addition, the --use-filedir-conf option enables directory-specific configuration files. For this, mpv first tries to load a mpv.conf from the same directory as the file played and then tries to load any file-specific configuration.

## Profiles

To ease working with different configurations, profiles can be defined in the configuration files. A profile starts with its name in square brackets, e.g. [my-profile]. All following options will be part of the profile. A description (shown by --profile=help) can be defined with the profile-desc option. To end the profile, start another one or use the profile name default to continue with normal options.

### ***Example mpv profile***

```
[vo.vdpau]
# Use hardware decoding
hwdec=vdpau

[protocol.dvd]
profile-desc="profile for dvd:// streams"
alang=en

[extension.flv]
profile-desc="profile for .flv files"
vf=flip
```

```
[ao.alsa]
device=spdif
```

## TAKING SCREENSHOTS

Screenshots of the currently played file can be taken using the 'screenshot' input mode command, which is by default bound to the `s` key. Files named `shotNNNN.jpg` will be saved in the working directory, using the first available number - no files will be overwritten.

A screenshot will usually contain the unscaled video contents at the end of the video filter chain and subtitles. By default, `S` takes screenshots without subtitles, while `s` includes subtitles.

Unlike with MPlayer, the `screenshot` video filter is not required. This filter was never required in mpv, and has been removed.

## TERMINAL STATUS LINE

During playback, mpv shows the playback status on the terminal. It looks like something like this:

```
AV: 00:03:12 / 00:24:25 (13%) A-V: -0.000
```

The status line can be overridden with the `--term-status-msg` option.

The following is a list of things that can show up in the status line. Input properties, that can be used to get the same information manually, are also listed.

- `AV:` or `V:` (video only) or `A:` (audio only)
- The current time position in `HH:MM:SS` format (`playback-time` property)
- The total file duration (absent if unknown) (`length` property)
- Playback speed, e.g. `x2.0`. Only visible if the speed is not normal. This is the user-requested speed, and not the actual speed (usually they should be the same, unless playback is too slow). (`speed` property.)
- Playback percentage, e.g. `(13%)`. How much of the file has been played. Normally calculated out of playback position and duration, but can fallback to other methods (like byte position) if these are not available. (`percent-pos` property.)
- The audio/video sync as `A-V: -0.000`. This is the difference between audio and video time. Normally it should be 0 or close to 0. If it's growing, it might indicate a playback problem. (`avsync` property.)
- Total A/V sync change, e.g. `ct: -0.417`. Normally invisible. Can show up if there is audio "missing", or not enough frames can be dropped. Usually this will indicate a problem. (`total-avsync-change` property.)
- Encoding state in `{...}`, only shown in encoding mode.
- Display sync state. If display sync is active (`display-sync-active` property), this shows `DS: +0.02598%`, where the number is the speed change factor applied to audio to achieve sync to display, expressed in percent deviation from 1.0 (`audio-speed-correction` property). In sync modes which don't resample, this will always be `+0.00000%`.
- Missed frames, e.g. `Missed: 4`. (`vo-missed-frame-count` property.) Shows up in display sync mode only. This is incremented each time a frame took longer to display than intended.
- Dropped frames, e.g. `Dropped: 4`. Shows up only if the count is not 0. Can grow if the video framerate is higher than that of the display, or if video rendering is too slow. Also can be



incremented on "hiccups" and when the video frame couldn't be displayed on time. (`vo-drop-frame-count` property.) If the decoder drops frames, the number of decoder-dropped frames is appended to the display as well, e.g.: `Dropped: 4/34`. This happens only if decoder frame dropping is enabled with the `--framedrop` options. (`drop-frame-count` property.)

- Cache state, e.g. `Cache: 2s+134KB`. Visible if the stream cache is enabled. The first value shows the amount of video buffered in the demuxer in seconds, the second value shows *additional* data buffered in the stream cache in kilobytes. (`demuxer-cache-duration` and `cache-used` properties.)

## PROTOCOLS

**http://...,https://,...**

Many network protocols are supported, but the protocol prefix must always be specified. mpv will never attempt to guess whether a filename is actually a network address. A protocol prefix is always required.

Note that not all prefixes are documented here. Undocumented prefixes are either aliases to documented protocols, or are just redirections to protocols implemented and documented in FFmpeg.

-

Play data from stdin.

**smb://PATH**

Play a path from Samba share.

**bd://[title][/device] --bluray-device=PATH**

Play a Blu-Ray disc. Currently, this does not accept ISO files. Instead, you must mount the ISO file as filesystem, and point `--bluray-device` to the mounted directory directly.

**dvd://[title|[starttitle]-endtitle][/device] --dvd-device=PATH**

Play a DVD. DVD menus are not supported. If no title is given, the longest title is auto-selected.

`dvdnav://` is an old alias for `dvd://` and does exactly the same thing.

**dvdread://...:**

Play a DVD using the old libdvdread code. This is what MPlayer and older mpv versions use for `dvd://`. Use is discouraged. It's provided only for compatibility and for transition.

**tv://[channel][input\_id] --tv-...**

Analogue TV via V4L. Also useful for webcams. (Linux only.)

**pvr:// --pvr-...**

PVR. (Linux only.)

**dvb://[cardnumber@]channel --dvbin-...**

Digital TV via DVB. (Linux only.)

**mf://[filemask]@listfile] --mf-...**

Play a series of images as video.

**cdda://track[-endtrack][:speed][/device] --cdrom-device=PATH --cdda-...**

Play CD.

**lavf://...**

Access any FFmpeg/Libav libavformat protocol. Basically, this passed the string after the `//` directly to libavformat.

**av://type:options**

This is intended for using libavdevice inputs. `type` is the libavdevice demuxer name, and `options` is the (pseudo-)filename passed to the demuxer.

For example, `mpv av://lavfi:mandelbrot` makes use of the libavfilter wrapper included in libavdevice, and will use the `mandelbrot` source filter to generate input data.

`avdevice://` is an alias.

**file://PATH**

A local path as URL. Might be useful in some special use-cases. Note that `PATH` itself should start with a third `/` to make the path an absolute path.

**fd://123**

Read data from the given UNIX FD (for example 123). This is similar to piping data to stdin via `-`, but can use an arbitrary file descriptor. Will not work correctly on MS Windows.

**edl://[edl specification as in edl-mpv.rst]**

Stitch together parts of multiple files and play them.

**null://**

Simulate an empty file.

**memory://data**

Use the `data` part as source data.

## PSEUDO GUI MODE

mpv has no official GUI, other than the OSC ([ON SCREEN CONTROLLER](#)), which is not a full GUI and is not meant to be. However, to compensate for the lack of expected GUI behavior, mpv will in some cases start with some settings changed to behave slightly more like a GUI mode.

Currently this happens only in the following cases:

- if started using the `mpv.desktop` file on Linux (e.g. started from menus or file associations provided by desktop environments)
- if started from `explorer.exe` on Windows (technically, if it was started on Windows, and all of the `stdout/stderr/stdin` handles are unset)
- manually adding `--profile=pseudo-gui` to the command line

This mode implicitly adds `--profile=pseudo-gui` to the command line, with the `pseudo-gui` profile being predefined with the following contents:

```
[pseudo-gui]
terminal=no
force-window=yes
idle=once
screenshot-directory=~desktop/
```

This follows the mpv config file format. To customize pseudo-GUI mode, you can put your own `pseudo-gui` profile into your `mpv.conf`. This profile will enhance the default profile, rather than overwrite it.

The profile always overrides other settings in `mpv.conf`.

## OPTIONS

### Track Selection

**--alang=<languagecode[,languagecode,...]>**

Specify a priority list of audio languages to use. Different container formats employ different language codes. DVDs use ISO 639-1 two-letter language codes, Matroska, MPEG-TS and NUT use ISO 639-2 three-letter language codes, while OGM uses a free-form identifier. See also `--aid`.

## Examples

**mpv dvd://1 --alang=hu,en**

Chooses the Hungarian language track on a DVD and falls back on English if Hungarian is not available.

**mpv --alang=jpn example.mkv**

Plays a Matroska file in Japanese.

**--slang=<languagecode[,languagecode,...]>**

Specify a priority list of subtitle languages to use. Different container formats employ different language codes. DVDs use ISO 639-1 two letter language codes, Matroska uses ISO 639-2 three letter language codes while OGM uses a free-form identifier. See also `--sid`.

## Examples

- **mpv dvd://1 --slang=hu,en** chooses the Hungarian subtitle track on a DVD and falls back on English if Hungarian is not available.
- **mpv --slang=jpn example.mkv** plays a Matroska file with Japanese subtitles.

**--aid=<ID|auto|no>**

Select audio track. `auto` selects the default, `no` disables audio. See also `--alang`. mpv normally prints available audio tracks on the terminal when starting playback of a file.

**--sid=<ID|auto|no>**

Display the subtitle stream specified by `<ID>`. `auto` selects the default, `no` disables subtitles.

See also `--slang`, `--no-sub`.

**--vid=<ID|auto|no>**

Select video channel. `auto` selects the default, `no` disables video.

**--ff-aid=<ID|auto|no>, --ff-sid=<ID|auto|no>, --ff-vid=<ID|auto|no>**

Select audio/subtitle/video streams by the FFmpeg stream index. The FFmpeg stream index is relatively arbitrary, but useful when interacting with other software using FFmpeg (consider `ffprobe`).

Note that with external tracks (added with `--sub-file` and similar options), there will be streams with duplicate IDs. In this case, the first stream in order is selected.

**--edition=<ID|auto>**

(Matroska files only) Specify the edition (set of chapters) to use, where 0 is the first. If set to `auto` (the default), mpv will choose the first edition declared as a default, or if there is no default, the first edition defined.

## Playback Control

**--start=<relative time>**

Seek to given time position.

The general format for absolute times is `[ [hh:]mm:]ss[.ms]`. If the time is given with a prefix of `+` or `-`, the seek is relative from the start or end of the file.

`pp%` seeks to percent position `pp` (0-100).

#c seeks to chapter number c. (Chapters start from 1.)

### **Examples**

**--start=+56, --start=+00:56**

Seeks to the start time + 56 seconds.

**--start=-56, --start=-00:56**

Seeks to the end time - 56 seconds.

**--start=01:10:00**

Seeks to 1 hour 10 min.

**--start=50%**

Seeks to the middle of the file.

**--start=30 --end=40**

Seeks to 30 seconds, plays 10 seconds, and exits.

**--start=-3:20 --length=10**

Seeks to 3 minutes and 20 seconds before the end of the file, plays 10 seconds, and exits.

**--start='#2' --end='#4'**

Plays chapters 2 and 3, and exits.

**--end=<time>**

Stop at given absolute time. Use **--length** if the time should be relative to **--start**. See **--start** for valid option values and examples.

**--length=<relative time>**

Stop after a given time relative to the start time. See **--start** for valid option values and examples.

**--speed=<0.01-100>**

Slow down or speed up playback by the factor given as parameter.

If **--audio-pitch-correction** (on by default) is used, playing with a speed higher than normal automatically inserts the `scaletempo` audio filter.

**--loop=<N|inf|force|no>**

Loops playback `N` times. A value of `1` plays it one time (default), `2` two times, etc. `inf` means forever. `no` is the same as `1` and disables looping. If several files are specified on command line, the entire playlist is looped.

The `force` mode is like `inf`, but does not skip playlist entries which have been marked as failing. This means the player might waste CPU time trying to loop a file that doesn't exist. But it might be useful for playing webradios under very bad network conditions.

**--pause**

Start the player in paused state.

**--shuffle**

Play files in random order.

**--chapter=<start[-end]>**

Specify which chapter to start playing at. Optionally specify which chapter to end playing at. Also see **--start**.

**--playlist-pos=<no|index>**

Set which file on the internal playlist to start playback with. The index is an integer, with 0 meaning the first file. The value `no` means that the selection of the entry to play is left to the playback resume mechanism (default). If an entry with the given index doesn't exist, the behavior is unspecified and might change in future mpv versions. The same applies if the playlist contains further playlists (don't expect any reasonable behavior). Passing a playlist file to mpv should work with this option, though. E.g. `mpv playlist.m3u --playlist-pos=123` will work as expected, as long as `playlist.m3u` does not link to further playlists.

**--playlist=<filename>**

Play files according to a playlist file (Supports some common formats. If no format is detected, it will be treated as list of files, separated by newline characters. Note that XML playlist formats are not supported.)

You can play playlists directly and without this option, however, this option disables any security mechanisms that might be in place. You may also need this option to load plaintext files as playlist.

### **Warning**

The way mpv uses playlist files via `--playlist` is not safe against maliciously constructed files. Such files may trigger harmful actions. This has been the case for all mpv and MPlayer versions, but unfortunately this fact was not well documented earlier, and some people have even misguidedly recommended use of `--playlist` with untrusted sources. Do NOT use `--playlist` with random internet sources or files you do not trust!

Playlist can contain entries using other protocols, such as local files, or (most severely), special protocols like `avdevice://`, which are inherently unsafe.

**--chapter-merge-threshold=<number>**

Threshold for merging almost consecutive ordered chapter parts in milliseconds (default: 100). Some Matroska files with ordered chapters have inaccurate chapter end timestamps, causing a small gap between the end of one chapter and the start of the next one when they should match. If the end of one playback part is less than the given threshold away from the start of the next one then keep playing video normally over the chapter change instead of doing a seek.

**--chapter-seek-threshold=<seconds>**

Distance in seconds from the beginning of a chapter within which a backward chapter seek will go to the previous chapter (default: 5.0). Past this threshold, a backward chapter seek will go to the beginning of the current chapter instead. A negative value means always go back to the previous chapter.

**--hr-seek=<no|absolute|yes>**

Select when to use precise seeks that are not limited to keyframes. Such seeks require decoding video from the previous keyframe up to the target position and so can take some time depending on decoding performance. For some video formats, precise seeks are disabled. This option selects the default choice to use for seeks; it is possible to explicitly override that default in the definition of key bindings and in slave mode commands.

**no:** Never use precise seeks.

**absolute:** Use precise seeks if the seek is to an absolute position in the file, such as a chapter seek, but not for relative seeks like the default behavior of arrow keys (default).

**yes:** Use precise seeks whenever possible.

**always:** Same as `yes` (for compatibility).

**--hr-seek-demuxer-offset=<seconds>**

This option exists to work around failures to do precise seeks (as in `--hr-seek`) caused by bugs or limitations in the demuxers for some file formats. Some demuxers fail to seek to a keyframe before the given target position, going to a later position instead. The value of this option is subtracted from the time stamp given to the demuxer. Thus, if you set this option to 1.5 and try to do a precise seek to 60 seconds, the demuxer is told to seek to time 58.5, which hopefully reduces the chance that it erroneously goes to some time later than 60 seconds. The downside of setting this option is that precise seeks become slower, as video between the earlier demuxer position and the real target may be unnecessarily decoded.

**--hr-seek-framedrop=<yes|no>**

Allow the video decoder to drop frames during seek, if these frames are before the seek target. If this is enabled, precise seeking can be faster, but if you're using video filters which modify timestamps or add new frames, it can lead to precise seeking skipping the target frame. This e.g. can break frame backstepping when deinterlacing is enabled.

Default: yes

**--index=<mode>**

Controls how to seek in files. Note that if the index is missing from a file, it will be built on the fly by default, so you don't need to change this. But it might help with some broken files.

**default:** use an index if the file has one, or build it if missing

**recreate:** don't read or use the file's index

### Note

This option only works if the underlying media supports seeking (i.e. not with stdin, pipe, etc).

**--load-unsafe-playlists**

Load URLs from playlists which are considered unsafe (default: no). This includes special protocols and anything that doesn't refer to normal files. Local files and HTTP links on the other hand are always considered safe.

Note that `--playlist` always loads all entries, so you use that instead if you really have the need for this functionality.

**--loop-file=<N|inf|no>**

Loop a single file N times. `inf` means forever, `no` means normal playback. For compatibility, `--loop-file` and `--loop-file=yes` are also accepted, and are the same as `--loop-file=inf`.

The difference to `--loop` is that this doesn't loop the playlist, just the file itself. If the playlist contains only a single file, the difference between the two option is that this option performs a seek on loop, instead of reloading the file.

**--ab-loop-a=<time>, --ab-loop-b=<time>**

Set loop points. If playback passes the `b` timestamp, it will seek to the `a` timestamp. Seeking past the `b` point doesn't loop (this is intentional). The loop-points can be adjusted at runtime with the corresponding properties. See also `ab_loop` command.

**--ordered-chapters, --no-ordered-chapters**

Enabled by default. Disable support for Matroska ordered chapters. mpv will not load or search for video segments from other files, and will also ignore any chapter order specified for the main file.

**--ordered-chapters-files=<playlist-file>**

Loads the given file as playlist, and tries to use the files contained in it as reference files when opening a Matroska file that uses ordered chapters. This overrides the normal mechanism for loading referenced files by scanning the same directory the main file is located in.

Useful for loading ordered chapter files that are not located on the local filesystem, or if the referenced files are in different directories.

Note: a playlist can be as simple as a text file containing filenames separated by newlines.

**--chapters-file=<filename>**

Load chapters from this file, instead of using the chapter metadata found in the main file.

**--sstep=<sec>**

Skip <sec> seconds after every frame.

### Note

Without `--hr-seeking`, skipping will snap to keyframes.

**--stop-playback-on-init-failure=<yes|no>**

Stop playback if either audio or video fails to initialize. Currently, the default behavior is `no` for the command line player, but `yes` for libmpv. With `no`, playback will continue in video-only or audio-only mode if one of them fails. This doesn't affect playback of audio-only or video-only files.

## Program Behavior

**--help**

Show short summary of options.

**-v**

Increment verbosity level, one level for each `-v` found on the command line.

**--version, -V**

Print version string and exit.

**--no-config**

Do not load default configuration files. This prevents loading of both the user-level and system-wide `mpv.conf` and `input.conf` files. Other configuration files are blocked as well, such as resume playback files.

### Note

Files explicitly requested by command line options, like `--include` or `--use-filedir-conf`, will still be loaded.

Also see `--config-dir`.

**--list-options**

Prints all available options.

**--list-properties**

Print a list of the available properties.

**--list-protocols**

Print a list of the supported protocols.

**--log-file=<path>**

Opens the given path for writing, and print log messages to it. Existing files will be truncated. The log level always corresponds to `-v`, regardless of terminal verbosity levels.

**--config-dir=<path>**

Force a different configuration directory. If this is set, the given directory is used to load configuration files, and all other configuration directories are ignored. This means the global mpv configuration directory as well as per-user directories are ignored, and overrides through environment variables (`MPV_HOME`) are also ignored.

Note that the `--no-config` option takes precedence over this option.

**--save-position-on-quit**

Always save the current playback position on quit. When this file is played again later, the player will seek to the old playback position on start. This does not happen if playback of a file is stopped in any other way than quitting. For example, going to the next file in the playlist will not save the position, and start playback at beginning the next time the file is played.

This behavior is disabled by default, but is always available when quitting the player with `Shift+Q`.

**--dump-stats=<filename>**

Write certain statistics to the given file. The file is truncated on opening. The file will contain raw samples, each with a timestamp. To make this file into a readable, the script `TOOLS/stats-conv.py` can be used (which currently displays it as a graph).

This option is useful for debugging only.

**--idle=<no|yes|once>**

Makes mpv wait idly instead of quitting when there is no file to play. Mostly useful in slave mode, where mpv can be controlled through input commands.

`once` will only idle at start and let the player close once the first playlist has finished playing back.

**--include=<configuration-file>**

Specify configuration file to be parsed after the default ones.

**--load-scripts=<yes|no>**

If set to `no`, don't auto-load scripts from the `scripts` configuration subdirectory (usually `~/.config/mpv/scripts/`). (Default: `yes`)

**--script=<filename>**

Load a Lua script. You can load multiple scripts by separating them with commas (,).

**--script-opts=key1=value1,key2=value2,...**

Set options for scripts. A script can query an option by key. If an option is used and what semantics the option value has depends entirely on the loaded scripts. Values not claimed by any scripts are ignored.

**--merge-files**

Pretend that all files passed to mpv are concatenated into a single, big file. This uses timeline/EDL support internally. Note that this won't work for ordered chapter files.

**--no-resume-playback**

Do not restore playback position from the `watch_later` configuration subdirectory (usually `~/.config/mpv/watch_later/`). See `quit_watch_later` input command.

**--profile=<profile1,profile2,...>**

Use the given profile(s), `--profile=help` displays a list of the defined profiles.

**--reset-on-next-file=<all|option1,option2,...>**

Normally, mpv will try to keep all settings when playing the next file on the playlist, even if they were changed by the user during playback. (This behavior is the opposite of MPlayer's, which tries to reset all settings when starting next file.)



Default: Do not reset anything.

This can be changed with this option. It accepts a list of options, and mpv will reset the value of these options on playback start to the initial value. The initial value is either the default value, or as set by the config file or command line.

In some cases, this might not work as expected. For example, `--volume` will only be reset if it is explicitly set in the config file or the command line.

The special name `all` resets as many options as possible.

### **Examples**

- `--reset-on-next-file=pause` Reset pause mode when switching to the next file.
- `--reset-on-next-file=fullscreen,speed` Reset fullscreen and playback speed settings if they were changed during playback.
- `--reset-on-next-file=all` Try to reset all settings that were changed during playback.

#### **`--write-filename-in-watch-later-config`**

Prepend the watch later config files with the name of the file they refer to. This is simply written as comment on the top of the file.

### **Warning**

This option may expose privacy-sensitive information and is thus disabled by default.

#### **`--ignore-path-in-watch-later-config`**

Ignore path (i.e. use filename only) when using watch later feature.

#### **`--show-profile=<profile>`**

Show the description and content of a profile.

#### **`--use-filedir-conf`**

Look for a file-specific configuration file in the same directory as the file that is being played. See [File-specific Configuration Files](#).

### **Warning**

May be dangerous if playing from untrusted media.

#### **`--ytdl, --no-ytdl`**

Enable the youtube-dl hook-script. It will look at the input URL, and will play the video located on the website. This works with many streaming sites, not just the one that the script is named after. This requires a recent version of youtube-dl to be installed on the system. (Enabled by default, except when the client API / libmpv is used.)

If the script can't do anything with an URL, it will do nothing.

(Note: this is the replacement for the now removed libquvi support.)

**--ytdl-format=<best|worst|mp4|webm|...>**

Video format/quality that is directly passed to youtube-dl. The possible values are specific to the website and the video, for a given url the available formats can be found with the command `youtube-dl --list-formats URL`. See youtube-dl's documentation for available aliases. To use experimental DASH support for youtube, use `bestvideo+bestaudio`. (Default: best)

**--ytdl-raw-options=<key>=<value>[,<key>=<value>[,...]]**

Pass arbitrary options to youtube-dl. Parameter and argument should be passed as a key-value pair. Options without argument must include `=`.

There is no sanity checking so it's possible to break things (i.e. passing invalid parameters to youtube-dl).

### Example

```
--ytdl-raw-options=username=user,password=pass
--ytdl-raw-options=force-ipv6=
```

## Video

**--vo=<driver1[:suboption1[=value]:...],driver2,...[,]>**

Specify a priority list of video output drivers to be used. For interactive use, one would normally specify a single one to use, but in configuration files, specifying a list of fallbacks may make sense. See [VIDEO OUTPUT DRIVERS](#) for details and descriptions of available drivers.

**--vd=<[+|-]family1:(\*|decoder1),[+|-]family2:(\*|decoder2),...[-]>**

Specify a priority list of video decoders to be used, according to their family and name. See `--ad` for further details. Both of these options use the same syntax and semantics; the only difference is that they operate on different codec lists.

### Note

See `--vd=help` for a full list of available decoders.

**--vf=<filter1[=parameter1:parameter2:...],filter2,...>**

Specify a list of video filters to apply to the video stream. See [VIDEO FILTERS](#) for details and descriptions of the available filters. The option variants `--vf-add`, `--vf-pre`, `--vf-del` and `--vf-clr` exist to modify a previously specified list, but you should not need these for typical use.

**--no-video**

Do not play video. With some demuxers this may not work. In those cases you can try `--vo=null` instead.

mpv will try to download the audio only if media is streamed with youtube-dl, because it saves bandwidth. This is done by setting the `ytdl_format` to "bestaudio/best" in the `ytdl_hook.lua` script.

**--untimed**

Do not sleep when outputting video frames. Useful for benchmarks when used with `--no-audio`.

**--framedrop=<mode>**

Skip displaying some frames to maintain A/V sync on slow systems, or playing high framerate video on video outputs that have an upper framerate limit.

The argument selects the drop methods, and can be one of the following:

#### <no>

Disable any framedropping.

#### <vo>

Drop late frames on video output (default). This still decodes and filters all frames, but doesn't render them on the VO. It tries to query the display FPS (X11 only, not correct on multi-monitor systems), or assumes infinite display FPS if that fails. Drops are indicated in the terminal status line as `D: field`. If the decoder is too slow, in theory all frames would have to be dropped (because all frames are too late) - to avoid this, frame dropping stops if the effective framerate is below 10 FPS.

#### <decoder>

Old, decoder-based framedrop mode. (This is the same as `--framedrop=yes` in mpv 0.5.x and before.) This tells the decoder to skip frames (unless they are needed to decode future frames). May help with slow systems, but can produce unwatchable choppy output, or even freeze the display completely. Not recommended. The `--vd-lavc-framedrop` option controls what frames to drop.

#### <decoder+vo>

Enable both modes. Not recommended.

### Note

`--vo=vdpau` has its own code for the `vo` framedrop mode. Slight differences to other VOs are possible.

#### `--display-fps=<fps>`

Set the maximum assumed display FPS used with `--framedrop`. By default a detected value is used (X11 only, not correct on multi-monitor systems), or infinite display FPS if that fails. Infinite FPS means only frames too late are dropped. If a correct FPS is provided, frames that are predicted to be too late are dropped too.

#### `--hwdec=<api>`

Specify the hardware video decoding API that should be used if possible. Whether hardware decoding is actually done depends on the video codec. If hardware decoding is not possible, mpv will fall back on software decoding.

<api> can be one of the following:

- no:** always use software decoding (default)
- auto:** see below
- vdpau:** requires `--vo=vdpau` or `--vo=opengl` (Linux only)
- vaapi:** requires `--vo=opengl` or `--vo=vaapi` (Linux with Intel GPUs only)
- vaapi-copy:** copies video back into system RAM (Linux with Intel GPUs only)
- vda:** requires `--vo=opengl` (OS X only)
- videotoolbox:** requires `--vo=opengl` (newer OS X only)
- dxva2-copy:** copies video back to system RAM (Windows only)
- rpi:** requires `--vo=rpi` (Raspberry Pi only - default if available)

`auto` tries to automatically enable hardware decoding using the first available method. This still depends what VO you are using. For example, if you are not using `--vo=vdpau` or `--vo=opengl`, vdpau decoding will never be enabled. Also note that if the first found method doesn't actually work, it will always fall back to software decoding, instead of trying the next method (might matter on some Linux systems).

The `vaapi-copy` mode allows you to use `vaapi` with any VO. Because this copies the decoded video back to system RAM, it's likely less efficient than the `vaapi` mode.

### **Note**

When using this switch, hardware decoding is still only done for some codecs. See `--hwdec-codecs` to enable hardware decoding for more codecs.

#### **--hwdec-preload=<api>**

This is useful for the `opengl` and `opengl-cb` VOs for creating the hardware decoding OpenGL interop context, but without actually enabling hardware decoding itself (like `--hwdec` does).

If set to `no` (default), the `--hwdec` option is used.

For `opengl`, if set, do not create the interop context on demand, but when the VO is created.

For `opengl-cb`, if set, load the interop context as soon as the OpenGL context is created. Since `opengl-cb` has no on-demand loading, this allows enabling hardware decoding at runtime at all, without having to temporarily set the `hwdec` option just during OpenGL context initialization with `mpv_opengl_cb_init_gl()`.

#### **--panscan=<0.0-1.0>**

Enables pan-and-scan functionality (cropping the sides of e.g. a 16:9 video to make it fit a 4:3 display without black bands). The range controls how much of the image is cropped. May not work with all video output drivers.

#### **--video-aspect=<ratio>**

Override video aspect ratio, in case aspect information is incorrect or missing in the file being played. See also `--no-video-aspect`.

Two values have special meaning:

- 0:** disable aspect ratio handling, pretend the video has square pixels
- 1:** use the video stream or container aspect (default)

But note that handling of these special values might change in the future.

### **Examples**

- `--video-aspect=4:3` or `--video-aspect=1.3333`
- `--video-aspect=16:9` or `--video-aspect=1.7777`

#### **--no-video-aspect**

Ignore aspect ratio information from video file and assume the video has square pixels. See also `--video-aspect`.

#### **--video-aspect-method=<hybrid|bitstream|container>**

This sets the default video aspect determination method (if the aspect is `_not_` overridden by the user with `--video-aspect` or others).

- hybrid:** Prefer the container aspect ratio. If the bitstream aspect switches mid-stream, switch to preferring the bitstream aspect. This is the default behavior in `mpv` and `mplayer2`.

**container:** Strictly prefer the container aspect ratio. This is apparently the default behavior with VLC, at least with Matroska.

**bitstream:** Strictly prefer the bitstream aspect ratio, unless the bitstream aspect ratio is not set. This is apparently the default behavior with XBMC/kodi, at least with Matroska.

Normally you should not set this. Try the `container` and `bitstream` choices if you encounter video that has the wrong aspect ratio in mpv, but seems to be correct in other players.

#### **--video-unscaled**

Disable scaling of the video. If the window is larger than the video, black bars are added. Otherwise, the video is cropped. The video still can be influenced by the other `--video-...` options. (But not all; for example `--video-zoom` does nothing if this option is enabled.)

The video and monitor aspects aspect will be ignored. Aspect correction would require to scale the video in the X or Y direction, but this option disables scaling, disabling all aspect correction.

Note that the scaler algorithm may still be used, even if the video isn't scaled. For example, this can influence chroma conversion.

This option is disabled if the `--no-keepaspect` option is used.

#### **--video-pan-x=<value>, --video-pan-y=<value>**

Moves the displayed video rectangle by the given value in the X or Y direction. The unit is in fractions of the size of the scaled video (the full size, even if parts of the video are not visible due to panscan or other options).

For example, displaying a 1280x720 video fullscreen on a 1680x1050 screen with `--video-pan-x=-0.1` would move the video 168 pixels to the left (making 128 pixels of the source video invisible).

This option is disabled if the `--no-keepaspect` option is used.

#### **--video-rotate=<0-360|no>**

Rotate the video clockwise, in degrees. Currently supports 90° steps only. If `no` is given, the video is never rotated, even if the file has rotation metadata. (The rotation value is added to the rotation metadata, which means the value 0 would rotate the video according to the rotation metadata.)

#### **--video-stereo-mode=<no|mode>**

Set the stereo 3D output mode (default: `mono`). This is done by inserting the `stereo3d` conversion filter.

The pseudo-mode `no` disables automatic conversion completely.

The mode `mono` is an alias to `ml`, which refers to the left frame in 2D. This is the default, which means mpv will try to show 3D movies in 2D, instead of the mangled 3D image not intended for consumption (such as showing the left and right frame side by side, etc.).

Use `--video-stereo-mode=help` to list all available modes. Check with the `stereo3d` filter documentation to see what the names mean. Note that some names refer to modes not supported by `stereo3d` - these modes can appear in files, but can't be handled properly by mpv.

#### **--video-zoom=<value>**

Adjust the video display scale factor by the given value. The unit is in fractions of the (scaled) window video size.

For example, given a 1280x720 video shown in a 1280x720 window, `--video-zoom=-0.1` would make the video by 128 pixels smaller in X direction, and 72 pixels in Y direction.

This option is disabled if the `--no-keepaspect` option is used.

#### **--video-align-x=<-1-1>, --video-align-y=<-1-1>**

Moves the video rectangle within the black borders, which are usually added to pad the video to screen if video and screen aspect ratios are different. `--video-align-y=-1` would move the

video to the top of the screen (leaving a border only on the bottom), a value of 0 centers it (default), and a value of 1 would put the video at the bottom of the screen.

If video and screen aspect match perfectly, these options do nothing.

This option is disabled if the `--no-keepaspect` option is used.

**--correct-pts, --no-correct-pts**

`--no-correct-pts` switches mpv to a mode where video timing is determined using a fixed framerate value (either using the `--fps` option, or using file information). Sometimes, files with very broken timestamps can be played somewhat well in this mode. Note that video filters, subtitle rendering and audio synchronization can be completely broken in this mode.

**--fps=<float>**

Override video framerate. Useful if the original value is wrong or missing.

### Note

Works in `--no-correct-pts` mode only.

**--deinterlace=<yes|no|auto>**

Enable or disable interlacing (default: auto, which usually means no). Interlaced video shows ugly comb-like artifacts, which are visible on fast movement. Enabling this typically inserts the yadif video filter in order to deinterlace the video, or lets the video output apply deinterlacing if supported.

This behaves exactly like the `deinterlace` input property (usually mapped to `Shift+D`).

`auto` is a technicality. Strictly speaking, the default for this option is deinterlacing disabled, but the `auto` case is needed if `yadif` was added to the filter chain manually with `--vf`. Then the core shouldn't disable deinterlacing just because the `--deinterlace` was not set.

**--field-dominance=<auto|top|bottom>**

Set first field for interlaced content. Useful for deinterlacers that double the framerate: `--vf=yadif=field` and `--vo=vdpu:deint`.

**auto:** (default) If the decoder does not export the appropriate information, it falls back on `top` (top field first).

**top:** top field first

**bottom:** bottom field first

### Note

Setting either `top` or `bottom` will flag all frames as interlaced.

**--frames=<number>**

Play/convert only first `<number>` video frames, then quit.

`--frames=0` loads the file, but immediately quits before initializing playback. (Might be useful for scripts which just want to determine some file properties.)

For audio-only playback, any value greater than 0 will quit playback immediately after initialization. The value 0 works as with video.

**--hwdec-codecs=<codec1,codec2,...|all>**

Allow hardware decoding for a given list of codecs only. The special value `all` always allows all codecs.

You can get the list of allowed codecs with `mpv --vd=help`. Remove the prefix, e.g. instead of `lavc:h264` use `h264`.

By default this is set to `h264,vc1,wmv3,hevc`. Note that the hardware acceleration special codecs like `h264_vdpau` are not relevant anymore, and in fact have been removed from Libav in this form.

This is usually only needed with broken GPUs, where a codec is reported as supported, but decoding causes more problems than it solves.

### **Example**

```
mpv --hwdec=vdpau --vo=vdpau --hwdec-codecs=h264,mpeg2video
```

Enable vdpau decoding for h264 and mpeg2 only.

#### **--vd-lavc-check-hw-profile=<yes|no>**

Check hardware decoder profile (default: yes). If `no` is set, the highest profile of the hardware decoder is unconditionally selected, and decoding is forced even if the profile of the video is higher than that. The result is most likely broken decoding, but may also help if the detected or reported profiles are somehow incorrect.

#### **--vd-lavc-bitexact**

Only use bit-exact algorithms in all decoding steps (for codec testing).

#### **--vd-lavc-fast (MPEG-2, MPEG-4, and H.264 only)**

Enable optimizations which do not comply with the format specification and potentially cause problems, like simpler dequantization, simpler motion compensation, assuming use of the default quantization matrix, assuming YUV 4:2:0 and skipping a few checks to detect damaged bitstreams.

#### **--vd-lavc-o=<key>=<value>[,<key>=<value>[,...]]**

Pass AVOptions to libavcodec decoder. Note, a patch to make the `o=` unneeded and pass all unknown options through the AVOption system is welcome. A full list of AVOptions can be found in the FFmpeg manual.

Some options which used to be direct options can be set with this mechanism, like `bug`, `gray`, `idct`, `ec`, `vismv`, `skip_top` (was `st`), `skip_bottom` (was `sb`), `debug`.

### **Example**

```
--vd--lavc-o=debug=pict
```

#### **--vd-lavc-show-all=<yes|no>**

Show even broken/corrupt frames (default: no). If this option is set to `no`, libavcodec won't output frames that were either decoded before an initial keyframe was decoded, or frames that are recognized as corrupted.

#### **--vd-lavc-skiploopfilter=<skipvalue> (H.264 only)**

Skips the loop filter (AKA deblocking) during H.264 decoding. Since the filtered frame is supposed to be used as reference for decoding dependent frames, this has a worse effect on quality than not doing deblocking on e.g. MPEG-2 video. But at least for high bitrate HDTV, this provides a big speedup with little visible quality loss.

<skipvalue> can be one of the following:

- none:** Never skip.
- default:** Skip useless processing steps (e.g. 0 size packets in AVI).
- nonref:** Skip frames that are not referenced (i.e. not used for decoding other frames, the error cannot "build up").
- bidir:** Skip B-Frames.
- nonkey:** Skip all frames except keyframes.
- all:** Skip all frames.

**--vd-lavc-skipidct=<skipvalue> (MPEG-1/2 only)**

Skips the IDCT step. This degrades quality a lot in almost all cases (see skiploopfilter for available skip values).

**--vd-lavc-skipframe=<skipvalue>**

Skips decoding of frames completely. Big speedup, but jerky motion and sometimes bad artifacts (see skiploopfilter for available skip values).

**--vd-lavc-framedrop=<skipvalue>**

Set framedropping mode used with --framedrop (see skiploopfilter for available skip values).

**--vd-lavc-threads=<N>**

Number of threads to use for decoding. Whether threading is actually supported depends on codec (default: 0). 0 means autodetect number of cores on the machine and use that, up to the maximum of 16. You can set more than 16 threads manually.

## Audio

**--audio-pitch-correction=<yes|no>**

If this is enabled (default), playing with a speed different from normal automatically inserts the scaletempo audio filter. For details, see audio filter section.

**--audio-device=<name>**

Use the given audio device. This consists of the audio output name, e.g. alsa, followed by /, followed by the audio output specific device name.

You can list audio devices with --audio-device=help. This outputs the device name in quotes, followed by a description. The device name is what you have to pass to the --audio-device option.

The default value for this option is auto, which tries every audio output in preference order with the default device.

Note that many AOs have a device sub-option, which overrides the device selection of this option (but not the audio output selection). Likewise, forcing an AO with --ao will override the audio output selection of --audio-device (but not the device selection).

Currently not implemented for most AOs.

**--ao=<driver1[:suboption1[=value]:...],driver2,...[,]>**

Specify a priority list of audio output drivers to be used. For interactive use one would normally specify a single one to use, but in configuration files specifying a list of fallbacks may make sense. See [AUDIO OUTPUT DRIVERS](#) for details and descriptions of available drivers.

**--af=<filter1[=parameter1:parameter2:...],filter2,...>**

Specify a list of audio filters to apply to the audio stream. See [AUDIO FILTERS](#) for details and descriptions of the available filters. The option variants --af-add, --af-pre, --af-del and --af-clr exist to modify a previously specified list, but you should not need these for typical use.

**--audio-spdif=<codecs>**

List of codecs for which compressed audio passthrough should be used. This works for both classic S/PDIF and HDMI.



Possible codecs are `ac3`, `dtc`, `dtc-hd`. Multiple codecs can be specified by separating them with `,`. `dtc` refers to low bitrate DTS core, while `dtc-hd` refers to DTS MA (receiver and OS support varies). You should only use either `dtc` or `dtc-hd` (if both are specified, and `dtc` comes first, only `dtc` will be used).

In general, all codecs in the `spdif` family listed with `--ad=help` are supported in theory.

### **Warning**

There is not much reason to use this. HDMI supports uncompressed multichannel PCM, and mpv supports lossless DTS-HD decoding via FFmpeg's libdcadec wrapper.

**--ad=<[+|-]family1:(\*|decoder1),[+|-]family2:(\*|decoder2),...[-]>**

Specify a priority list of audio decoders to be used, according to their family and decoder name. Entries like `family:*` prioritize all decoders of the given family. When determining which decoder to use, the first decoder that matches the audio format is selected. If that is unavailable, the next decoder is used. Finally, it tries all other decoders that are not explicitly selected or rejected by the option.

- at the end of the list suppresses fallback on other available decoders not on the `--ad` list. `+` in front of an entry forces the decoder. Both of these should not normally be used, because they break normal decoder auto-selection!
- in front of an entry disables selection of the decoder.

### **Examples**

**--ad=lavc:mp3float**

Prefer the FFmpeg/Libav `mp3float` decoder over all other MP3 decoders.

**--ad=spdif:ac3,lavc:\***

Always prefer spdif AC3 over FFmpeg/Libav over anything else.

**--ad=help**

List all available decoders.

### **Warning**

Enabling compressed audio passthrough (AC3 and DTS via SPDIF/HDMI) with this option is deprecated. Use `--audio-spdif` instead.

**--volume=<value>**

Set the startup volume. 0 means silence, 100 means no volume reduction or amplification. A value of -1 (the default) will not change the volume. See also `--softvol`.

## Note

This was changed after the mpv 0.9 release. Before that, 100 actually meant maximum volume. At the same time, the volume scale was made cubic, so the old values won't match up with the new ones anyway.

### **--audio-delay=<sec>**

Audio delay in seconds (positive or negative float value). Positive values delay the audio, and negative values delay the video.

### **--no-audio**

Do not play sound.

### **--mute=<auto|yes|no>**

Set startup audio mute status. `auto` (default) will not change the mute status. Also see `--volume`.

### **--softvol=<mode>**

Control whether to use the volume controls of the audio output driver or the internal mpv volume filter.

- no:** prefer audio driver controls, use the volume filter only if absolutely needed
- yes:** always use the volume filter
- auto:** prefer the volume filter if the audio driver uses the system mixer (default)

The intention of `auto` is to avoid changing system mixer settings from within mpv with default settings. mpv is a video player, not a mixer panel. On the other hand, mixer controls are enabled for sound servers like PulseAudio, which provide per-application volume.

### **--audio-demuxer=<[+]name>**

Use this audio demuxer type when using `--audio-file`. Use a '+' before the name to force it; this will skip some checks. Give the demuxer name as printed by `--audio-demuxer=help`.

### **--ad-lavc-ac3drc=<level>**

Select the Dynamic Range Compression level for AC-3 audio streams. `<level>` is a float value ranging from 0 to 1, where 0 means no compression (which is the default) and 1 means full compression (make loud passages more silent and vice versa). Values up to 6 are also accepted, but are purely experimental. This option only shows an effect if the AC-3 stream contains the required range compression information.

The standard mandates that DRC is enabled by default, but mpv (and some other players) ignore this for the sake of better audio quality.

### **--ad-lavc-downmix=<yes|no>**

Whether to request audio channel downmixing from the decoder (default: yes). Some decoders, like AC-3, AAC and DTS, can remix audio on decoding. The requested number of output channels is set with the `--audio-channels` option. Useful for playing surround audio on a stereo system.

### **--ad-lavc-threads=<0-16>**

Number of threads to use for decoding. Whether threading is actually supported depends on codec. As of this writing, it's supported for some lossless codecs only. 0 means autodetect number of cores on the machine and use that, up to the maximum of 16 (default: 1).

### **--ad-lavc-o=<key>=<value>[,<key>=<value>[,...]]**

Pass AVOptions to libavcodec decoder. Note, a patch to make the `o=` unneeded and pass all unknown options through the AVOption system is welcome. A full list of AVOptions can be found in the FFmpeg manual.

### **--ad-spdif-dtshd=<yes|no>, --dtshd, --no-dtshd**

If DTS is passed through, use DTS-HD.

## Warning

This and enabling passthrough via `--ad` are deprecated in favor of using `--audio-spdif=dts-hd`.

### `--audio-channels=<number|layout>`

Request a channel layout for audio output (default: `auto`). This will ask the AO to open a device with the given channel layout. It's up to the AO to accept this layout, or to pick a fallback or to error out if the requested layout is not supported.

The `--audio-channels` option either takes a channel number or an explicit channel layout. Channel numbers refer to default layouts, e.g. 2 channels refer to stereo, 6 refers to 5.1.

See `--audio-channels=help` output for defined default layouts. This also lists speaker names, which can be used to express arbitrary channel layouts (e.g. `fl-fr-lfe` is 2.1).

The default is `--audio-channels=auto`, which tries to play audio using the input file's channel layout. (Or more precisely, the output of the audio filter chain.) (`empty` is an accepted obsolete alias for `auto`.)

This will also request the channel layout from the decoder. If the decoder does not support the layout, it will fall back to its native channel layout. (You can use `--ad-lavc-downmix=no` to make the decoder always output its native layout.) Note that only some decoders support remixing audio. Some that do include AC-3, AAC or DTS audio.

If the channel layout of the media file (i.e. the decoder) and the AO's channel layout don't match, mpv will attempt to insert a conversion filter.

## Warning

Using `auto` can cause issues when using audio over HDMI. The OS will typically report all channel layouts that `_can_` go over HDMI, even if the receiver does not support them. If a receiver gets an unsupported channel layout, random things can happen, such as dropping the additional channels, or adding noise.

### `--audio-display=<no|attachment>`

Setting this option to `attachment` (default) will display image attachments (e.g. album cover art) when playing audio files. It will display the first image found, and additional images are available as video tracks.

Setting this option to `no` disables display of video entirely when playing audio files.

This option has no influence on files with normal video tracks.

### `--audio-file=<filename>`

Play audio from an external file while viewing a video. Each use of this option will add a new audio track. The details are similar to how `--sub-file` works.

### `--audio-format=<format>`

Select the sample format used for output from the audio filter layer to the sound card. The values that `<format>` can adopt are listed below in the description of the `format` audio filter.

### `--audio-samplerate=<Hz>`

Select the output sample rate to be used (of course sound cards have limits on this). If the sample frequency selected is different from that of the current media, the `lavresample` audio filter will be inserted into the audio filter layer to compensate for the difference.

**--gapless-audio=<no|yes|weak>**

Try to play consecutive audio files with no silence or disruption at the point of file change. Default: weak.

- no:** Disable gapless audio.
- yes:** The audio device is opened using parameters chosen according to the first file played and is then kept open for gapless playback. This means that if the first file for example has a low sample rate, then the following files may get resampled to the same low sample rate, resulting in reduced sound quality. If you play files with different parameters, consider using options such as `--audio-samplerate` and `--audio-format` to explicitly select what the shared output format will be.
- weak:** Normally, the audio device is kept open (using the format it was first initialized with). If the audio format the decoder output changes, the audio device is closed and reopened. This means that you will normally get gapless audio with files that were encoded using the same settings, but might not be gapless in other cases. (Unlike with `yes`, you don't have to worry about corner cases like the first file setting a very low quality output format, and ruining the playback of higher quality files that follow.)

### Note

This feature is implemented in a simple manner and relies on audio output device buffering to continue playback while moving from one file to another. If playback of the new file starts slowly, for example because it is played from a remote network location or because you have specified cache settings that require time for the initial cache fill, then the buffered audio may run out before playback of the new file can start.

**--initial-audio-sync, --no-initial-audio-sync**

When starting a video file or after events such as seeking, mpv will by default modify the audio stream to make it start from the same timestamp as video, by either inserting silence at the start or cutting away the first samples. Disabling this option makes the player behave like older mpv versions did: video and audio are both started immediately even if their start timestamps differ, and then video timing is gradually adjusted if necessary to reach correct synchronization later.

**--softvol-max=<100.0-1000.0>**

Set the maximum amplification level in percent (default: 130). A value of 130 will allow you to adjust the volume up to about double the normal level.

**--audio-file-auto=<no|exact|fuzzy|all>, --no-audio-file-auto**

Load additional audio files matching the video filename. The parameter specifies how external audio files are matched. `exact` is enabled by default.

- no:** Don't automatically load external audio files.
- exact:** Load the media filename with audio file extension (default).
- fuzzy:** Load all audio files containing media filename.
- all:** Load all audio files in the current directory.

**--audio-client-name=<name>**

The application name the player reports to the audio API. Can be useful if you want to force a different audio profile (e.g. with PulseAudio), or to set your own application name when using libmpv.

**--volume-restore-data=<string>**

Used internally for use by playback resume (e.g. with `quit_watch_later`). Restoring value has to be done carefully, because different AOs as well as `softvol` can have different value ranges, and we don't want to restore volume if setting the volume changes it system wide. The normal options (like `--volume`) would always set the volume. This option was added for restoring volume in a safer way (by storing the method used to set the volume), and is not generally useful. Its semantics are considered private to `mpv`.

Do not use.

**--audio-buffer=<seconds>**

Set the audio output minimum buffer. The audio device might actually create a larger buffer if it pleases. If the device creates a smaller buffer, additional audio is buffered in an additional software buffer.

Making this larger will make soft-volume and other filters react slower, introduce additional issues on playback speed change, and block the player on audio format changes. A smaller buffer might lead to audio dropouts.

This option should be used for testing only. If a non-default value helps significantly, the `mpv` developers should be contacted.

Default: 0.2 (200 ms).

## Subtitles

**--no-sub**

Do not select any subtitle when the file is loaded.

**--sub-demuxer=<[+]name>**

Force subtitle demuxer type for `--sub-file`. Give the demuxer name as printed by `--sub-demuxer=help`.

**--sub-delay=<sec>**

Delays subtitles by `<sec>` seconds. Can be negative.

**--sub-file=subtitlefile**

Add a subtitle file to the list of external subtitles.

If you use `--sub-file` only once, this subtitle file is displayed by default.

If `--sub-file` is used multiple times, the subtitle to use can be switched at runtime by cycling subtitle tracks. It's possible to show two subtitles at once: use `--sid` to select the first subtitle index, and `--secondary-sid` to select the second index. (The index is printed on the terminal output after the `--sid=` in the list of streams.)

**--secondary-sid=<ID|auto|no>**

Select a secondary subtitle stream. This is similar to `--sid`. If a secondary subtitle is selected, it will be rendered as `toptitle` (i.e. on the top of the screen) alongside the normal subtitle, and provides a way to render two subtitles at once.

There are some caveats associated with this feature. For example, bitmap subtitles will always be rendered in their usual position, so selecting a bitmap subtitle as secondary subtitle will result in overlapping subtitles. Secondary subtitles are never shown on the terminal if video is disabled.

### Note

Styling and interpretation of any formatting tags is disabled for the secondary subtitle. Internally, the same mechanism as `--no-sub-ass` is used to strip the styling.

### **Note**

If the main subtitle stream contains formatting tags which display the subtitle at the top of the screen, it will overlap with the secondary subtitle. To prevent this, you could use `--no-sub-ass` to disable styling in the main subtitle stream.

**`--sub-scale=<0-100>`**

Factor for the text subtitle font size (default: 1).

### **Note**

This affects ASS subtitles as well, and may lead to incorrect subtitle rendering. Use with care, or use `--sub-text-font-size` instead.

**`--sub-scale-by-window=<yes|no>`**

Whether to scale subtitles with the window size (default: yes). If this is disabled, changing the window size won't change the subtitle font size.

Like `--sub-scale`, this can break ASS subtitles.

**`--sub-scale-with-window=<yes|no>`**

Make the subtitle font size relative to the window, instead of the video. This is useful if you always want the same font size, even if the video doesn't cover the window fully, e.g. because screen aspect and window aspect mismatch (and the player adds black bars).

Default: yes.

This option is misnamed. The difference to the confusingly similar sounding option `--sub-scale-by-window` is that `--sub-scale-with-window` still scales with the approximate window size, while the other option disables this scaling.

Affects plain text subtitles only (or ASS if `--ass-style-override` is set high enough).

**`--ass-scale-with-window=<yes|no>`**

Like `--sub-scale-with-window`, but affects subtitles in ASS format only. Like `--sub-scale`, this can break ASS subtitles.

Default: no.

**`--embeddedfonts, --no-embeddedfonts`**

Use fonts embedded in Matroska container files and ASS scripts (default: enabled). These fonts can be used for SSA/ASS subtitle rendering.

**`--sub-pos=<0-100>`**

Specify the position of subtitles on the screen. The value is the vertical position of the subtitle in % of the screen height.

### **Note**

This affects ASS subtitles as well, and may lead to incorrect subtitle rendering. Use with care, or use `--sub-text-margin-y` instead.

**`--sub-speed=<0.1-10.0>`**

Multiply the subtitle event timestamps with the given value. Can be used to fix the playback speed for frame-based subtitle formats. Works for external text subtitles only.

### **Example**

`--sub-speed=25/23.976`` plays frame based subtitles which have been loaded assuming a framerate of 23.976 at 25 FPS.

`--ass-force-style=<[Style.]Param=Value[,...]>`

Override some style or script info parameters.

### **Examples**

- `--ass-force-style=FontName=Arial,Default.Bold=1`
- `--ass-force-style=PlayResY=768`

### **Note**

Using this option may lead to incorrect subtitle rendering.

`--ass-hinting=<none|light|normal|native>`

Set font hinting type. `<type>` can be:

- none:** no hinting (default)
- light:** FreeType autohinter, light mode
- normal:** FreeType autohinter, normal mode
- native:** font native hinter

### **Warning**

Enabling hinting can lead to mispositioned text (in situations it's supposed to match up with video background), or reduce the smoothness of animations with some badly authored ASS scripts. It is recommended to not use this option, unless really needed.

`--ass-line-spacing=<value>`

Set line spacing value for SSA/ASS renderer.

`--ass-shaper=<simple|complex>`

Set the text layout engine used by libass.

- simple:** uses Fribidi only, fast, doesn't render some languages correctly
- complex:** uses HarfBuzz, slower, wider language support

`complex` is the default. If libass hasn't been compiled against HarfBuzz, libass silently reverts to `simple`.

**--ass-styles=<filename>**

Load all SSA/ASS styles found in the specified file and use them for rendering text subtitles. The syntax of the file is exactly like the [v4 Styles] / [v4+ Styles] section of SSA/ASS.

### Note

Using this option may lead to incorrect subtitle rendering.

**--ass-style-override=<yes|no|force>**

Control whether user style overrides should be applied.

**yes:** Apply all the `--ass-*` style override options. Changing the default for any of these options can lead to incorrect subtitle rendering (default).

**signfs:** like `yes`, but apply `--sub-scale` only to signs

**no:** Render subtitles as forced by subtitle scripts.

**force:** Try to force the font style as defined by the `--sub-text-*` options. Can break rendering easily.

**--ass-force-margins**

Enables placing toptitles and subtitles in black borders when they are available, if the subtitles are in the ASS format.

Default: no.

**--sub-use-margins**

Enables placing toptitles and subtitles in black borders when they are available, if the subtitles are in a plain text format (or ASS if `--ass-style-override` is set high enough).

Default: yes.

Renamed from `--ass-use-margins`. To place ASS subtitles in the borders too (like the old option did), also add `--ass-force-margins`.

**--ass-vsfilter-aspect-compat=<yes|no>**

Stretch SSA/ASS subtitles when playing anamorphic videos for compatibility with traditional VSFilter behavior. This switch has no effect when the video is stored with square pixels.

The renderer historically most commonly used for the SSA/ASS subtitle formats, VSFilter, had questionable behavior that resulted in subtitles being stretched too if the video was stored in anamorphic format that required scaling for display. This behavior is usually undesirable and newer VSFilter versions may behave differently. However, many existing scripts compensate for the stretching by modifying things in the opposite direction. Thus, if such scripts are displayed "correctly", they will not appear as intended. This switch enables emulation of the old VSFilter behavior (undesirable but expected by many existing scripts).

Enabled by default.

**--ass-vsfilter-blur-compat=<yes|no>**

Scale `\blur` tags by video resolution instead of script resolution (enabled by default). This is bug in VSFilter, which according to some, can't be fixed anymore in the name of compatibility.

Note that this uses the actual video resolution for calculating the offset scale factor, not what the video filter chain or the video output use.

**--ass-vsfilter-color-compat=<basic|full|force-601|no>**

Mangle colors like (xy-)vsfilter do (default: basic). Historically, VSFilter was not color space aware. This was no problem as long as the color space used for SD video (BT.601) was used. But when everything switched to HD (BT.709), VSFilter was still converting RGB colors to BT.601, rendered



them into the video frame, and handled the frame to the video output, which would use BT.709 for conversion to RGB. The result were mangled subtitle colors. Later on, bad hacks were added on top of the ASS format to control how colors are to be mangled.

- basic:** Handle only BT.601->BT.709 mangling, if the subtitles seem to indicate that this is required (default).
- full:** Handle the full YCbCr `Matrix` header with all video color spaces supported by libass and mpv. This might lead to bad breakages in corner cases and is not strictly needed for compatibility (hopefully), which is why this is not default.
- force-601:** Force BT.601->BT.709 mangling, regardless of subtitle headers or video color space.
- no:** Disable color mangling completely. All colors are RGB.

Choosing anything other than `no` will make the subtitle color depend on the video color space, and it's for example in theory not possible to reuse a subtitle script with another video file. The `--ass-style-override` option doesn't affect how this option is interpreted.

#### **`--stretch-dvd-subs=<yes|no>`**

Stretch DVD subtitles when playing anamorphic videos for better looking fonts on badly mastered DVDs. This switch has no effect when the video is stored with square pixels - which for DVD input cannot be the case though.

Many studios tend to use bitmap fonts designed for square pixels when authoring DVDs, causing the fonts to look stretched on playback on DVD players. This option fixes them, however at the price of possibly misaligning some subtitles (e.g. sign translations).

Disabled by default.

#### **`--stretch-image-subs-to-screen=<yes|no>`**

Stretch DVD and other image subtitles to the screen, ignoring the video margins. This has a similar effect as `--sub-use-margins` for text subtitles, except that the text itself will be stretched, not only just repositioned. (At least in general it is unavoidable, as an image bitmap can in theory consist of a single bitmap covering the whole screen, and the player won't know where exactly the text parts are located.)

This option does not display subtitles correctly. Use with care.

Disabled by default.

#### **`--sub-ass, --no-sub-ass`**

Render ASS subtitles natively (enabled by default).

If `--no-sub-ass` is specified, all tags and style declarations are stripped and ignored on display. The subtitle renderer uses the font style as specified by the `--sub-text-` options instead.

### **Note**

Using `--no-sub-ass` may lead to incorrect or completely broken rendering of ASS/SSA subtitles. It can sometimes be useful to forcibly override the styling of ASS subtitles, but should be avoided in general.

### **Note**

Try using `--ass-style-override=force` instead.

**--sub-auto=<no|exact|fuzzy|all>, --no-sub-auto**

Load additional subtitle files matching the video filename. The parameter specifies how external subtitle files are matched. `exact` is enabled by default.

- no:** Don't automatically load external subtitle files.
- exact:** Load the media filename with subtitle file extension (default).
- fuzzy:** Load all subs containing media filename.
- all:** Load all subs in the current and `--sub-paths` directories.

**--sub-codepage=<codepage>**

If your system supports `iconv(3)`, you can use this option to specify the subtitle codepage. By default, `uchardet` will be used to guess the charset. If `mpv` is not compiled with `uchardet`, `enca` will be used. If `mpv` is compiled with neither `uchardet` nor `enca`, `UTF-8:UTF-8-BROKEN` is the default, which means it will try to use UTF-8, otherwise the `UTF-8-BROKEN` pseudo codepage (see below).

The default value for this option is `auto`, whose actual effect depends on whether ENCA is compiled.

### **Warning**

If you force the charset, even subtitles that are known to be UTF-8 will be recoded, which is perhaps not what you expect. Prefix codepages with `utf8:` if you want the codepage to be used only if the input is not valid UTF-8.

### **Examples**

- `--sub-codepage=utf8:latin2` Use Latin 2 if input is not UTF-8.
- `--sub-codepage=cp1250` Always force recoding to cp1250.

The pseudo codepage `UTF-8-BROKEN` is used internally. When it is the codepage, subtitles are interpreted as UTF-8 with "Latin 1" as fallback for bytes which are not valid UTF-8 sequences. `iconv` is never involved in this mode.

If the player was compiled with ENCA support, you can control it with the following syntax:

`--sub-codepage=enca:<language>:<fallback codepage>`

Language is specified using a two letter code to help ENCA detect the codepage automatically. If an invalid language code is entered, `mpv` will complain and list valid languages. (Note however that this list will only be printed when the conversion code is actually called, for example when loading an external subtitle). The fallback codepage is used if autodetection fails. If no fallback is specified, `UTF-8-BROKEN` is used.

### **Examples**

- `--sub-codepage=enca:pl:cp1250` guess the encoding, assuming the subtitles are Polish, fall back on cp1250
- `--sub-codepage=enca:pl` guess the encoding for Polish, fall back on UTF-8.
- `--sub-codepage=enca` try universal detection, fall back on UTF-8.

If the player was compiled with libguess support, you can use it with:

```
--sub-codepage=guess:<language>:<fallback codepage>
```

libguess always needs a language. There is no universal detection mode. Use `--sub-codepage=guess:help` to get a list of languages subject to the same caveat as with ENCA above.

If the player was compiled with uchardet support you can use it with:

```
--sub-codepage=uchardet
```

This mode doesn't take language or fallback codepage.

**--sub-fix-timing, --no-sub-fix-timing**

By default, external text subtitles are preprocessed to remove minor gaps or overlaps between subtitles (if the difference is smaller than 200 ms, the gap or overlap is removed). This does not affect image subtitles, subtitles muxed with audio/video, or subtitles in the ASS format.

**--sub-forced-only**

Display only forced subtitles for the DVD subtitle stream selected by e.g. `--slang`.

**--sub-fps=<rate>**

Specify the framerate of the subtitle file (default: video fps).

**Note**

`<rate>` > video fps speeds the subtitles up for frame-based subtitle files and slows them down for time-based ones.

Also see `--sub-speed` option.

**--sub-gauss=<0.0-3.0>**

Apply Gaussian blur to image subtitles (default: 0). This can help making pixelated DVD/Vobsubs look nicer. A value other than 0 also switches to software subtitle scaling. Might be slow.

**Note**

Never applied to text subtitles.

**--sub-gray**

Convert image subtitles to grayscale. Can help making yellow DVD/Vobsubs look nicer.

**Note**

Never applied to text subtitles.

**--sub-paths=<path1:path2:...>**

Specify extra directories to search for subtitles matching the video. Multiple directories can be separated by ":" (";" on Windows). Paths can be relative or absolute. Relative paths are interpreted relative to video file directory.

### **Example**

Assuming that `/path/to/video/video.avi` is played and `--sub-paths=sub:subtitles:/tmp/subs` is specified, mpv searches for subtitle files in these directories:

- `/path/to/video/`
- `/path/to/video/sub/`
- `/path/to/video/subtitles/`
- `/tmp/subs/`
- the `sub` configuration subdirectory (usually `~/.config/mpv/sub/`)

#### **--sub-visibility, --no-sub-visibility**

Can be used to disable display of subtitles, but still select and decode them.

#### **--sub-clear-on-seek**

(Obscure, rarely useful.) Can be used to play broken mkv files with duplicate `ReadOrder` fields. `ReadOrder` is the first field in a Matroska-style ASS subtitle packets. It should be unique, and libass uses it for fast elimination of duplicates. This option disables caching of subtitles across seeks, so after a seek libass can't eliminate subtitle packets with the same `ReadOrder` as earlier packets.

## **Window**

#### **--title=<string>**

Set the window title. This is used for the video window, and if possible, also sets the audio stream title.

Properties are expanded. (See [Property Expansion](#).)

### **Warning**

There is a danger of this causing significant CPU usage, depending on the properties used. Changing the window title is often a slow operation, and if the title changes every frame, playback can be ruined.

#### **--screen=<default|0-32>**

In multi-monitor configurations (i.e. a single desktop that spans across multiple displays), this option tells mpv which screen to display the video on.

### **Note (X11)**

This option does not work properly with all window managers. In these cases, you can try to use `--geometry` to position the window explicitly. It's also possible that the window manager provides native features to control which screens application windows should use.

See also `--fs-screen`.

#### **--fullscreen, --fs**

Fullscreen playback.

**--fs-screen=<all|current|0-32>**

In multi-monitor configurations (i.e. a single desktop that spans across multiple displays), this option tells mpv which screen to go fullscreen to. If `default` is provided mpv will fallback on using the behavior depending on what the user provided with the `screen` option.

### **Note (X11)**

This option does works properly only with window managers which understand the EWMH `_NET_WM_FULLSCREEN_MONITORS` hint.

### **Note (OS X)**

`all` does not work on OS X and will behave like `current`.

See also `--screen`.

**--fs-black-out-screens**

OS X only. Black out other displays when going fullscreen.

**--keep-open=<yes|no|always>**

Do not terminate when playing or seeking beyond the end of the file, and there is not next file to be played (and `--loop` is not used). Instead, pause the player. When trying to seek beyond end of the file, the player will attempt to seek to the last frame.

The following arguments can be given:

- no:** If the current file ends, go to the next file or terminate. (Default.)
- yes:** Don't terminate if the current file is the last playlist entry. Equivalent to `--keep-open` without arguments.
- always:** Like `yes`, but also applies to files before the last playlist entry. This means playback will never automatically advance to the next file.

### **Note**

This option is not respected when using `--frames`. Explicitly skipping to the next file if the binding uses `force` will terminate playback as well.

Also, if errors or unusual circumstances happen, the player can quit anyway.

Since mpv 0.6.0, this doesn't pause if there is a next file in the playlist, or the playlist is looped. Approximately, this will pause when the player would normally exit, but in practice there are corner cases in which this is not the case (e.g. `mpv --keep-open file.mkv /dev/null` will play `file.mkv` normally, then fail to open `/dev/null`, then exit). (In mpv 0.8.0, `always` was introduced, which restores the old behavior.)

**--force-window=<yes|no|immediate>**

Create a video output window even if there is no video. This can be useful when pretending that mpv is a GUI application. Currently, the window always has the size 640x480, and is subject to `--geometry`, `--autofit`, and similar options.

### **Warning**

The window is created only after initialization (to make sure default window placement still works if the video size is different from the `--force-window` default window size). This can be a problem if initialization doesn't work perfectly, such as when opening URLs with bad network connection, or opening broken video files. The `immediate` mode can be used to create the window always on program start, but this may cause other issues.

#### **`--ontop`**

Makes the player window stay on top of other windows.

#### **`--border`, `--no-border`**

Play video with window border and decorations. Since this is on by default, use `--no-border` to disable the standard window decorations.

#### **`--on-all-workspaces`**

(X11 only) Show the video window on all virtual desktops.

#### **`--geometry=<[W[xH]] [+x+-y]>`, `--geometry=<x:y>`**

Adjust the initial window position or size. `W` and `H` set the window size in pixels. `x` and `y` set the window position, measured in pixels from the top-left corner of the screen to the top-left corner of the image being displayed. If a percentage sign (%) is given after the argument, it turns the value into a percentage of the screen size in that direction. Positions are specified similar to the standard X11 `--geometry` option format, in which e.g. `+10-50` means "place 10 pixels from the left border and 50 pixels from the lower border" and `--20+-10` means "place 20 pixels beyond the right and 10 pixels beyond the top border".

If an external window is specified using the `--wid` option, this option is ignored.

The coordinates are relative to the screen given with `--screen` for the video output drivers that fully support `--screen`.

### **Note**

Generally only supported by GUI VOs. Ignored for encoding.

### **Note (X11)**

This option does not work properly with all window managers.

### **Examples**

**`50:40`**

Places the window at `x=50`, `y=40`.

**`50%:50%`**

Places the window in the middle of the screen.

**100%:100%**

Places the window at the bottom right corner of the screen.

**50%**

Sets the window width to half the screen width. Window height is set so that the window has the video aspect ratio.

**50%x50%**

Forces the window width and height to half the screen width and height. Will show black borders to compensate for the video aspect ration (with most VOs and without `--no-keepaspect`).

**50%+10+10**

Sets the window to half the screen widths, and positions it 10 pixels below/left of the top left corner of the screen.

See also `--autofit` and `--autofit-larger` for fitting the window into a given size without changing aspect ratio.

**`--autofit=<[W[xH]]>`**

Set the initial window size to a maximum size specified by `WxH`, without changing the window's aspect ratio. The size is measured in pixels, or if a number is followed by a percentage sign (%), in percents of the screen size.

This option never changes the aspect ratio of the window. If the aspect ratio mismatches, the window's size is reduced until it fits into the specified size.

Window position is not taken into account, nor is it modified by this option (the window manager still may place the window differently depending on size). Use `--geometry` to change the window position. Its effects are applied after this option.

See `--geometry` for details how this is handled with multi-monitor setups.

Use `--autofit-larger` instead if you just want to limit the maximum size of the window, rather than always forcing a window size.

Use `--geometry` if you want to force both window width and height to a specific size.

### **Note**

Generally only supported by GUI VOs. Ignored for encoding.

### **Examples**

`70%`

Make the window width 70% of the screen size, keeping aspect ratio.

`1000`

Set the window width to 1000 pixels, keeping aspect ratio.

`70%:60%`

Make the window as large as possible, without being wider than 70% of the screen width, or higher than 60% of the screen height.

`--autofit-larger=<[W[xH]]>`

This option behaves exactly like `--autofit`, except the window size is only changed if the window would be larger than the specified size.

### **Example**

`90%x80%`

If the video is larger than 90% of the screen width or 80% of the screen height, make the window smaller until either its width is 90% of the screen, or its height is 80% of the screen.

`--autofit-smaller=<[W[xH]]>`

This option behaves exactly like `--autofit`, except that it sets the minimum size of the window (just as `--autofit-larger` sets the maximum).



## Example

### 500x500

Make the window at least 500 pixels wide and 500 pixels high (depending on the video aspect ratio, the width or height will be larger than 500 in order to keep the aspect ratio the same).

#### **--window-scale=<factor>**

Resize the video window to a multiple (or fraction) of the video size. This option is applied before `--autofit` and other options are applied (so they override this option).

For example, `--window-scale=0.5` would show the window at half the video size.

#### **--cursor-autohide=<number|no|always>**

Make mouse cursor automatically hide after given number of milliseconds. `no` will disable cursor autohide. `always` means the cursor will stay hidden.

#### **--cursor-autohide-fs-only**

If this option is given, the cursor is always visible in windowed mode. In fullscreen mode, the cursor is shown or hidden according to `--cursor-autohide`.

#### **--no-fixed-vo, --fixed-vo**

`--no-fixed-vo` enforces closing and reopening the video window for multiple files (one (un)initialization for each file).

#### **--force-rgba-osd-rendering**

Change how some video outputs render the OSD and text subtitles. This does not change appearance of the subtitles and only has performance implications. For VOs which support native ASS rendering (like `vdpa`, `opengl`, `direct3d`), this can be slightly faster or slower, depending on GPU drivers and hardware. For other VOs, this just makes rendering slower.

#### **--force-window-position**

Forcefully move mpv's video output window to default location whenever there is a change in video parameters, video stream or file. This used to be the default behavior. Currently only affects X11 VOs.

#### **--heartbeat-cmd=<command>**

Command that is executed every 30 seconds during playback via `system()` - i.e. using the shell. The time between the commands can be customized with the `--heartbeat-interval` option. The command is not run while playback is paused.

## Note

mpv uses this command without any checking. It is your responsibility to ensure it does not cause security problems (e.g. make sure to use full paths if `."` is in your path like on Windows). It also only works when playing video (i.e. not with `--no-video` but works with `-vo=null`).

This can be "misused" to disable screensavers that do not support the proper X API (see also `--stop-screensaver`). If you think this is too complicated, ask the author of the screensaver program to support the proper X APIs. Note that the `--stop-screensaver` does not influence the heartbeat code at all.

### ***Example for xscreensaver***

```
mpv --heartbeat-cmd="xscreensaver-command -deactivate" file
```

### ***Example for GNOME screensaver***

```
mpv --heartbeat-cmd="gnome-screensaver-command -p" file
```

#### **--heartbeat-interval=<sec>**

Time between `--heartbeat-cmd` invocations in seconds (default: 30).

### ***Note***

This does not affect the normal screensaver operation in any way.

#### **--no-keepaspect, --keepaspect**

`--no-keepaspect` will always stretch the video to window size, and will disable the window manager hints that force the window aspect ratio. (Ignored in fullscreen mode.)

#### **--no-keepaspect-window, --keepaspect-window**

`--keepaspect-window` (the default) will lock the window size to the video aspect. `--no-keepaspect-window` disables this behavior, and will instead add black bars if window aspect and video aspect mismatch. Whether this actually works depends on the VO backend. (Ignored in fullscreen mode.)

#### **--monitoraspect=<ratio>**

Set the aspect ratio of your monitor or TV screen. A value of 0 disables a previous setting (e.g. in the config file). Overrides the `--monitorpixelaspect` setting if enabled.

See also `--monitorpixelaspect` and `--video-aspect`.

### ***Examples***

- `--monitoraspect=4:3` or `--monitoraspect=1.3333`
- `--monitoraspect=16:9` or `--monitoraspect=1.7777`

#### **--monitorpixelaspect=<ratio>**

Set the aspect of a single pixel of your monitor or TV screen (default: 1). A value of 1 means square pixels (correct for (almost?) all LCDs). See also `--monitoraspect` and `--video-aspect`.

#### **--stop-screensaver, --no-stop-screensaver**

Turns off the screensaver (or screen blanker and similar mechanisms) at startup and turns it on again on exit (default: yes). The screensaver is always re-enabled when the player is paused.

This is not supported on all video outputs or platforms. Sometimes it is implemented, but does not work (happens often on GNOME). You might be able to work this around using `--heartbeat-cmd` instead.

**--wid=<ID>**

This tells mpv to attach to an existing window. If a VO is selected that supports this option, it will use that window for video output. mpv will scale the video to the size of this window, and will add black bars to compensate if the aspect ratio of the video is different.

On X11, the ID is interpreted as a `Window` on X11. Unlike MPlayer/mplayer2, mpv always creates its own window, and sets the wid window as parent. The window will always be resized to cover the parent window fully. The value 0 is interpreted specially, and mpv will draw directly on the root window.

On win32, the ID is interpreted as `HWND`. Pass it as value cast to `intptr_t`. mpv will create its own window, and set the wid window as parent, like with X11.

On OSX/Cocoa, the ID is interpreted as `NSView*`. Pass it as value cast to `intptr_t`. mpv will create its own sub-view. Because OSX does not support window embedding of foreign processes, this works only with libmpv, and will crash when used from the command line.

**--no-window-dragging**

Don't move the window when clicking on it and moving the mouse pointer.

**--x11-name**

Set the window class name for X11-based video output methods.

**--x11-netwm=<yes|no|auto>**

(X11 only) Control the use of NetWM protocol features.

This may or may not help with broken window managers. This provides some functionality that was implemented by the now removed `--fstype` option. Actually, it is not known to the developers to which degree this option was needed, so feedback is welcome.

Specifically, `yes` will force use of NetWM fullscreen support, even if not advertised by the WM. This can be useful for WMs that are broken on purpose, like XMonad. (XMonad supposedly doesn't advertise fullscreen support, because Flash uses it. Apparently, applications which want to use fullscreen anyway are supposed to either ignore the NetWM support hints, or provide a workaround. Shame on XMonad for deliberately breaking X protocols (as if X isn't bad enough already).

By default, NetWM support is autodetected (`auto`).

This option might be removed in the future.

## Disc Devices

**--cdrom-device=<path>**

Specify the CD-ROM device (default: `/dev/cdrom`).

**--dvd-device=<path>**

Specify the DVD device or .iso filename (default: `/dev/dvd`). You can also specify a directory that contains files previously copied directly from a DVD (with e.g. vobcopy).

### Example

```
mpv dvd:// --dvd-device=/path/to/dvd/
```

**--bluray-device=<path>**

(Blu-ray only) Specify the Blu-ray disc location. Must be a directory with Blu-ray structure.

## Example

```
mpv bd:// --bluray-device=/path/to/bd/
```

### --bluray-angle=<ID>

Some Blu-ray discs contain scenes that can be viewed from multiple angles. This option tells mpv which angle to use (default: 1).

### --cdda-...

These options can be used to tune the CD Audio reading feature of mpv.

### --cdda-speed=<value>

Set CD spin speed.

### --cdda-paranoia=<0-2>

Set paranoia level. Values other than 0 seem to break playback of anything but the first track.

- 0: disable checking (default)
- 1: overlap checking only
- 2: full data correction and verification

### --cdda-sector-size=<value>

Set atomic read size.

### --cdda-overlap=<value>

Force minimum overlap search during verification to <value> sectors.

### --cdda-toc-bias

Assume that the beginning offset of track 1 as reported in the TOC will be addressed as LBA 0. Some discs need this for getting track boundaries correctly.

### --cdda-toc-offset=<value>

Add <value> sectors to the values reported when addressing tracks. May be negative.

### --cdda-skip=<yes|no>

(Never) accept imperfect data reconstruction.

### --cdda-cdtext=<yes|no>

Print CD text. This is disabled by default, because it ruins performance with CD-ROM drives for unknown reasons.

### --dvd-speed=<speed>

Try to limit DVD speed (default: 0, no change). DVD base speed is 1385 kB/s, so an 8x drive can read at speeds up to 11080 kB/s. Slower speeds make the drive more quiet. For watching DVDs, 2700 kB/s should be quiet and fast enough. mpv resets the speed to the drive default value on close. Values of at least 100 mean speed in kB/s. Values less than 100 mean multiples of 1385 kB/s, i.e. --dvd-speed=8 selects 11080 kB/s.

## Note

You need write access to the DVD device to change the speed.

### --dvd-angle=<ID>

Some DVDs contain scenes that can be viewed from multiple angles. This option tells mpv which angle to use (default: 1).

## Equalizer

**--brightness=<-100-100>**

Adjust the brightness of the video signal (default: 0). Not supported by all video output drivers.

**--contrast=<-100-100>**

Adjust the contrast of the video signal (default: 0). Not supported by all video output drivers.

**--saturation=<-100-100>**

Adjust the saturation of the video signal (default: 0). You can get grayscale output with this option. Not supported by all video output drivers.

**--gamma=<-100-100>**

Adjust the gamma of the video signal (default: 0). Not supported by all video output drivers.

**--hue=<-100-100>**

Adjust the hue of the video signal (default: 0). You can get a colored negative of the image with this option. Not supported by all video output drivers.

## Demuxer

**--demuxer=<[+]name>**

Force demuxer type. Use a '+' before the name to force it; this will skip some checks. Give the demuxer name as printed by `--demuxer=help`.

**--demuxer-lavf-analyzeduration=<value>**

Maximum length in seconds to analyze the stream properties.

**--demuxer-lavf-probescore=<1-100>**

Minimum required libavformat probe score. Lower values will require less data to be loaded (makes streams start faster), but makes file format detection less reliable. Can be used to force auto-detected libavformat demuxers, even if libavformat considers the detection not reliable enough. (Default: 26.)

**--demuxer-lavf-allow-mimetype=<yes|no>**

Allow deriving the format from the HTTP MIME type (default: yes). Set this to no in case playing things from HTTP mysteriously fails, even though the same files work from local disk.

This is default in order to reduce latency when opening HTTP streams.

**--demuxer-lavf-format=<name>**

Force a specific libavformat demuxer.

**--demuxer-lavf-hacks=<yes|no>**

By default, some formats will be handled differently from other formats by explicitly checking for them. Most of these compensate for weird or imperfect behavior from libavformat demuxers. Passing `no` disables these. For debugging and testing only.

**--demuxer-lavf-genpts-mode=<no|lavf>**

Mode for deriving missing packet PTS values from packet DTS. `lavf` enables libavformat's `genpts` option. `no` disables it. This used to be enabled by default, but then it was deemed as not needed anymore. Enabling this might help with timestamp problems, or make them worse.

**--demuxer-lavf-o=<key>=<value>[,<key>=<value>[,...]]**

Pass AVOptions to libavformat demuxer.

Note, a patch to make the `o=` unneeded and pass all unknown options through the AVOption system is welcome. A full list of AVOptions can be found in the FFmpeg manual. Note that some options may conflict with mpv options.

## Example

```
--demuxer-lavf-o=fflags=+ignidx
```

### **--demuxer-lavf-probesize=<value>**

Maximum amount of data to probe during the detection phase. In the case of MPEG-TS this value identifies the maximum number of TS packets to scan.

### **--demuxer-lavf-buffersize=<value>**

Size of the stream read buffer allocated for libavformat in bytes (default: 32768). Lowering the size could lower latency. Note that libavformat might reallocate the buffer internally, or not fully use all of it.

### **--demuxer-lavf-cryptokey=<hexstring>**

Encryption key the demuxer should use. This is the raw binary data of the key converted to a hexadecimal string.

### **--demuxer-mkv-subtitle-preroll, --mkv-subtitle-preroll**

Try harder to show embedded soft subtitles when seeking somewhere. Normally, it can happen that the subtitle at the seek target is not shown due to how some container file formats are designed. The subtitles appear only if seeking before or exactly to the position a subtitle first appears. To make this worse, subtitles are often timed to appear a very small amount before the associated video frame, so that seeking to the video frame typically does not demux the subtitle at that position.

Enabling this option makes the demuxer start reading data a bit before the seek target, so that subtitles appear correctly. Note that this makes seeking slower, and is not guaranteed to always work. It only works if the subtitle is close enough to the seek target.

Works with the internal Matroska demuxer only. Always enabled for absolute and hr-seeks, and this option changes behavior with relative or imprecise seeks only.

You can use the `--demuxer-mkv-subtitle-preroll-secs` option to specify how much data the demuxer should pre-read at most in order to find subtitle packets that may overlap. Setting this to 0 will effectively disable this preroll mechanism. Setting a very large value can make seeking very slow, and an extremely large value would completely reread the entire file from start to seek target on every seek - seeking can become slower towards the end of the file. The details are messy, and the value is actually rounded down to the cluster with the previous video keyframe.

Some files, especially files muxed with newer mkvmerge versions, have information embedded that can be used to determine what subtitle packets overlap with a seek target. In these cases, mpv will reduce the amount of data read to a minimum. (Although it will still read *all* data between the cluster that contains the first wanted subtitle packet, and the seek target.)

See also `--hr-seek-demuxer-offset` option. This option can achieve a similar effect, but only if hr-seek is active. It works with any demuxer, but makes seeking much slower, as it has to decode audio and video data instead of just skipping over it.

`--mkv-subtitle-preroll` is a deprecated alias.

### **--demuxer-mkv-subtitle-preroll-secs=<value>**

See `--demuxer-mkv-subtitle-preroll`.

### **--demuxer-mkv-probe-video-duration=<yes|no|full>**

When opening the file, seek to the end of it, and check what timestamp the last video packet has, and report that as file duration. This is strictly for compatibility with Haali only. In this mode, it's possible that opening will be slower (especially when playing over http), or that behavior with broken files is much worse. So don't use this option.

The `yes` mode merely uses the index and reads a small number of blocks from the end of the file. The `full` mode actually traverses the entire file and can make a reliable estimate even without an index present (such as partial files).

**--demuxer-mkv-fix-timestamps=<yes|no>**

Fix rounded Matroska timestamps (disabled by default). Matroska usually stores timestamps rounded to milliseconds. This means timestamps jitter by some amount around the intended timestamp. mpv can correct the timestamps based on the framerate value stored in the file: the timestamp is rounded to the next frame (according to the framerate), unless the new timestamp would deviate more than 1ms from the old one. This should undo the rounding done by the muxer.

(The allowed deviation can be less than 1ms if the file uses a non-standard timecode scale.)

**--demuxer-rawaudio-channels=<value>**

Number of channels (or channel layout) if `--demuxer=rawaudio` is used (default: stereo).

**--demuxer-rawaudio-format=<value>**

Sample format for `--demuxer=rawaudio` (default: `s16le`). Use `--demuxer-rawaudio-format=help` to get a list of all formats.

**--demuxer-rawaudio-rate=<value>**

Sample rate for `--demuxer=rawaudio` (default: 44 kHz).

**--demuxer-rawvideo-fps=<value>**

Rate in frames per second for `--demuxer=rawvideo` (default: 25.0).

**--demuxer-rawvideo-w=<value>, --demuxer-rawvideo-h=<value>**

Image dimension in pixels for `--demuxer=rawvideo`.

### ***Example***

Play a raw YUV sample:

```
mpv sample-720x576.yuv --demuxer=rawvideo \  
--demuxer-rawvideo-w=720 --demuxer-rawvideo-h=576
```

**--demuxer-rawvideo-format=<value>**

Color space (fourcc) in hex or string for `--demuxer=rawvideo` (default: YV12).

**--demuxer-rawvideo-mp-format=<value>**

Color space by internal video format for `--demuxer=rawvideo`. Use `--demuxer-rawvideo-mp-format=help` for a list of possible formats.

**--demuxer-rawvideo-codec=<value>**

Set the video codec instead of selecting the rawvideo codec when using `--demuxer=rawvideo`. This uses the same values as codec names in `--vd` (but it does not accept decoder names).

**--demuxer-rawvideo-size=<value>**

Frame size in bytes when using `--demuxer=rawvideo`.

**--demuxer-max-packets=<packets>, --demuxer-max-bytes=<bytes>**

This controls how much the demuxer is allowed to buffer ahead. The demuxer will normally try to read ahead as much as necessary, or as much is requested with `--demuxer-readahead-secs`. The `--demuxer-max-...` options can be used to restrict the maximum readahead. This limits excessive readahead in case of broken files or desynced playback. The demuxer will stop reading additional packets as soon as one of the limits is reached. (The limits still can be slightly overstepped due to technical reasons.)

Set these limits higher if you get a packet queue overflow warning, and you think normal playback would be possible with a larger packet queue.

See `--list-options` for defaults and value range.

**--demuxer-thread=<yes|no>**

Run the demuxer in a separate thread, and let it prefetch a certain amount of packets (default: yes). Having this enabled may lead to smoother playback, but on the other hand can add delays to seeking or track switching.

**--demuxer-readahead-secs=<seconds>**

If `--demuxer-thread` is enabled, this controls how much the demuxer should buffer ahead in seconds (default: 1). As long as no packet has a timestamp difference higher than the readahead amount relative to the last packet returned to the decoder, the demuxer keeps reading.

Note that the `--cache-secs` option will override this value if a cache is enabled, and the value is larger.

(This value tends to be fuzzy, because many file formats don't store linear timestamps.)

**--force-seekable=<yes|no>**

If the player thinks that the media is not seekable (e.g. playing from a pipe, or it's a http stream with a server that doesn't support range requests), seeking will be disabled. This option can forcibly enable it. For seeks within the cache, there's a good chance of success.

## Input

**--native-keyrepeat**

Use system settings for keyrepeat delay and rate, instead of `--input-ar-delay` and `--input-ar-rate`. (Whether this applies depends on the VO backend and how it handles keyboard input. Does not apply to terminal input.)

**--input-ar-delay**

Delay in milliseconds before we start to autorepeat a key (0 to disable).

**--input-ar-rate**

Number of key presses to generate per second on autorepeat.

**--input-conf=<filename>**

Specify input configuration file other than the default location in the mpv configuration directory (usually `~/.config/mpv/input.conf`).

**--no-input-default-bindings**

Disable mpv default (built-in) key bindings.

**--input-cmdlist**

Prints all commands that can be bound to keys.

**--input-doubleclick-time=<milliseconds>**

Time in milliseconds to recognize two consecutive button presses as a double-click (default: 300).

**--input-keylist**

Prints all keys that can be bound to commands.

**--input-key-fifo-size=<2-65000>**

Specify the size of the FIFO that buffers key events (default: 7). If it is too small some events may be lost. The main disadvantage of setting it to a very large value is that if you hold down a key triggering some particularly slow command then the player may be unresponsive while it processes all the queued commands.

**--input-test**

Input test mode. Instead of executing commands on key presses, mpv will show the keys and the bound commands on the OSD. Has to be used with a dummy video, and the normal ways to quit the



player will not work (key bindings that normally quit will be shown on OSD only, just like any other binding). See [INPUT.CONF](#).

**--input-file=<filename>**

Read commands from the given file. Mostly useful with a FIFO. Since mpv 0.7.0 also understands JSON commands (see [JSON IPC](#)), but you can't get replies or events. Use `--input-unix-socket` for something bi-directional. On MS Windows, JSON commands are not available.

This can also specify a direct file descriptor with `fd: / / N` (UNIX only). In this case, JSON replies will be written if the FD is writable.

### Note

When the given file is a FIFO mpv opens both ends, so you can do several `echo "seek 10" > mp_pipe` and the pipe will stay valid.

**--input-terminal, --no-input-terminal**

`--no-input-terminal` prevents the player from reading key events from standard input. Useful when reading data from standard input. This is automatically enabled when `-` is found on the command line. There are situations where you have to set it manually, e.g. if you open `/dev/stdin` (or the equivalent on your system), use `stdin` in a playlist or intend to read from `stdin` later on via the `loadfile` or `loadlist` slave commands.

**--input-unix-socket=<filename>**

Enable the IPC support and create the listening socket at the given path.

See [JSON IPC](#) for details.

Not available on MS Windows.

**--input-appleremote=<yes|no>**

(OS X only) Enable/disable Apple Remote support. Enabled by default (except for libmpv).

**--input-cursor, --no-input-cursor**

Permit mpv to receive pointer events reported by the video output driver. Necessary to use the OSC, or to select the buttons in DVD menus. Support depends on the VO in use.

**--input-media-keys=<yes|no>**

(OS X only) Enable/disable media keys support. Enabled by default (except for libmpv).

**--input-right-alt-gr, --no-input-right-alt-gr**

(Cocoa and Windows only) Use the right Alt key as Alt Gr to produce special characters. If disabled, count the right Alt as an Alt modifier key. Enabled by default.

**--input-vo-keyboard=<yes|no>**

Disable all keyboard input on for VOs which can't participate in proper keyboard input dispatching. May not affect all VOs. Generally useful for embedding only.

On X11, a sub-window with input enabled grabs all keyboard input as long as it is 1. a child of a focused window, and 2. the mouse is inside of the sub-window. The can steal away all keyboard input from the application embedding the mpv window, and on the other hand, the mpv window will receive no input if the mouse is outside of the mpv window, even though mpv has focus. Modern toolkits work around this weird X11 behavior, but naively embedding foreign windows breaks it.

The only way to handle this reasonably is using the XEmbed protocol, which was designed to solve these problems. GTK provides `GtkSocket`, which supports XEmbed. Qt doesn't seem to provide anything working in newer versions.

If the embedder supports XEmbed, input should work with default settings and with this option disabled. Note that `input-default-bindings` is disabled by default in libmpv as well - it should be enabled if you want the mpv default key bindings.

(This option was renamed from `--input-x11-keyboard`.)

**`--input-app-events=<yes|no>`**

(OS X only) Enable/disable application wide keyboard events so that keyboard shortcuts can be processed without a window. Enabled by default (except for libmpv).

## OSD

**`--osc, --no-osc`**

Whether to load the on-screen-controller (default: yes).

**`--no-osd-bar, --osd-bar`**

Disable display of the OSD bar. This will make some things (like seeking) use OSD text messages instead of the bar.

You can configure this on a per-command basis in `input.conf` using `osd-` prefixes, see `Input command prefixes`. If you want to disable the OSD completely, use `--osd-level=0`.

**`--osd-duration=<time>`**

Set the duration of the OSD messages in ms (default: 1000).

**`--osd-font=<pattern>, --sub-text-font=<pattern>`**

Specify font to use for OSD and for subtitles that do not themselves specify a particular font. The default is `sans-serif`.

### Examples

- `--osd-font='Bitstream Vera Sans'`
- `--osd-font='Bitstream Vera Sans:style=Bold'` (fontconfig pattern)

### Note

The `--sub-text-font` option (and most other `--sub-text-` options) are ignored when ASS-subtitles are rendered, unless the `--no-sub-ass` option is specified.

**`--osd-font-size=<size>, --sub-text-font-size=<size>`**

Specify the OSD/sub font size. The unit is the size in scaled pixels at a window height of 720. The actual pixel size is scaled with the window height: if the window height is larger or smaller than 720, the actual size of the text increases or decreases as well.

Default: 55.

**`--osd-msg1=<string>`**

Show this string as message on OSD with OSD level 1 (visible by default). The message will be visible by default, and as long no other message covers it, and the OSD level isn't changed (see `--osd-level`). Expands properties; see [Property Expansion](#).

**`--osd-msg2=<string>`**

Similar as `--osd-msg1`, but for OSD level 2. If this is an empty string (default), then the playback time is shown.

**`--osd-msg3=<string>`**

Similar as `--osd-msg1`, but for OSD level 3. If this is an empty string (default), then the playback time, duration, and some more information is shown.

This is also used for the `show_progress` command (by default mapped to `P`), or in some non-default cases when seeking.

`--osd-status-msg` is a legacy equivalent (but with a minor difference).

**`--osd-status-msg=<string>`**

Show a custom string during playback instead of the standard status text. This overrides the status text used for `--osd-level=3`, when using the `show_progress` command (by default mapped to `P`), or in some non-default cases when seeking. Expands properties. See [Property Expansion](#).

This option has been replaced with `--osd-msg3`. The only difference is that this option implicitly includes `${osd-sym-cc}`. This option is ignored if `--osd-msg3` is not empty.

**`--osd-playing-msg=<string>`**

Show a message on OSD when playback starts. The string is expanded for properties, e.g. `--osd-playing-msg='file: ${filename}'` will show the message `file:` followed by a space and the currently played filename.

See [Property Expansion](#).

**`--osd-bar-align-x=<-1-1>`**

Position of the OSD bar. -1 is far left, 0 is centered, 1 is far right. Fractional values (like 0.5) are allowed.

**`--osd-bar-align-y=<-1-1>`**

Position of the OSD bar. -1 is top, 0 is centered, 1 is bottom. Fractional values (like 0.5) are allowed.

**`--osd-bar-w=<1-100>`**

Width of the OSD bar, in percentage of the screen width (default: 75). A value of 50 means the bar is half the screen wide.

**`--osd-bar-h=<0.1-50>`**

Height of the OSD bar, in percentage of the screen height (default: 3.125).

**`--osd-back-color=<color>`, **`--sub-text-back-color=<color>`****

See `--osd-color`. Color used for OSD/sub text background.

**`--osd-blur=<0..20.0>`, **`--sub-text-blur=<0..20.0>`****

Gaussian blur factor. 0 means no blur applied (default).

**`--osd-bold=<yes|no>`, **`--sub-text-bold=<yes|no>`****

Format text on bold.

**`--osd-border-color=<color>`, **`--sub-text-border-color=<color>`****

See `--osd-color`. Color used for the OSD/sub font border.

### **Note**

ignored when `--osd-back-color/--sub-text-back-color` is specified (or more exactly: when that option is not set to completely transparent).

**`--osd-border-size=<size>`, **`--sub-text-border-size=<size>`****

Size of the OSD/sub font border in scaled pixels (see `--osd-font-size` for details). A value of 0 disables borders.

Default: 3.

`--osd-color=<color>, --sub-text-color=<color>`

Specify the color used for OSD/unstyled text subtitles.

The color is specified in the form `r/g/b`, where each color component is specified as number in the range 0.0 to 1.0. It's also possible to specify the transparency by using `r/g/b/a`, where the alpha value 0 means fully transparent, and 1.0 means opaque. If the alpha component is not given, the color is 100% opaque.

Passing a single number to the option sets the OSD to gray, and the form `gray/a` lets you specify alpha additionally.

### **Examples**

- `--osd-color=1.0/0.0/0.0` set OSD to opaque red
- `--osd-color=1.0/0.0/0.0/0.75` set OSD to opaque red with 75% alpha
- `--osd-color=0.5/0.75` set OSD to 50% gray with 75% alpha

Alternatively, the color can be specified as a RGB hex triplet in the form `#RRGGBB`, where each 2-digit group expresses a color value in the range 0 (00) to 255 (FF). For example, `#FF0000` is red. This is similar to web colors. Alpha is given with `#AARRGGBB`.

### **Examples**

- `--osd-color='#FF0000'` set OSD to opaque red
- `--osd-color='#C0808080'` set OSD to 50% gray with 75% alpha

`--osd-fractions`

Show OSD times with fractions of seconds (in millisecond precision). Useful to see the exact timestamp of a video frame.

`--osd-level=<0-3>`

Specifies which mode the OSD should start in.

- 0:** OSD completely disabled (subtitles only)
- 1:** enabled (shows up only on user interaction)
- 2:** enabled + current time visible by default
- 3:** enabled + `--osd-status-msg` (current time and status by default)

`--osd-margin-x=<size>, --sub-text-margin-x=<size>`

Left and right screen margin for the OSD/subs in scaled pixels (see `--osd-font-size` for details).

This option specifies the distance of the OSD to the left, as well as at which distance from the right border long OSD text will be broken.

Default: 25.

`--osd-margin-y=<size>, --sub-text-margin-y=<size>`

Top and bottom screen margin for the OSD/subs in scaled pixels (see `--osd-font-size` for details).

This option specifies the vertical margins of the OSD. This is also used for unstyled text subtitles. If you just want to raise the vertical subtitle position, use `--sub-pos`.

Default: 22.

**`--osd-align-x=<left|center|right>, --sub-text-align-x=...`**

Control to which corner of the screen OSD or text subtitles should be aligned to (default: `center` for subs, `left` for OSD).

Never applied to ASS subtitles, except in `--no-sub-ass` mode. Likewise, this does not apply to image subtitles.

**`--osd-align-y=<top|center|bottom> --sub-text-align-y=...`**

Vertical position (default: `bottom` for subs, `top` for OSD). Details see `--osd-align-x`.

**`--osd-scale=<factor>`**

OSD font size multiplier, multiplied with `--osd-font-size` value.

**`--osd-scale-by-window=<yes|no>`**

Whether to scale the OSD with the window size (default: `yes`). If this is disabled, `--osd-font-size` and other OSD options that use scaled pixels are always in actual pixels. The effect is that changing the window size won't change the OSD font size.

**`--osd-shadow-color=<color>, --sub-text-shadow-color=<color>`**

See `--osd-color`. Color used for OSD/sub text shadow.

**`--osd-shadow-offset=<size>, --sub-text-shadow-offset=<size>`**

Displacement of the OSD/sub text shadow in scaled pixels (see `--osd-font-size` for details). A value of 0 disables shadows.

Default: 0.

**`--osd-spacing=<size>, --sub-text-spacing=<size>`**

Horizontal OSD/sub font spacing in scaled pixels (see `--osd-font-size` for details). This value is added to the normal letter spacing. Negative values are allowed.

Default: 0.

**`--use-text-osd=<yes|no>`**

Disable text OSD rendering completely. (This includes the complete OSC as well.) This is mostly useful for avoiding loading fontconfig in situations where fontconfig does not behave well, and OSD is unused - this could for example allow GUI programs using libmpv to workaround fontconfig issues.

Note that selecting subtitles of any kind still initializes fontconfig.

Default: `no`.

## Screenshot

**`--screenshot-format=<type>`**

Set the image file type used for saving screenshots.

Available choices:

<b>png:</b>	PNG
<b>ppm:</b>	PPM
<b>pgm:</b>	PGM
<b>pgmyuv:</b>	PGM with YV12 pixel format
<b>tga:</b>	TARGA
<b>jpg:</b>	JPEG (default)

**jpeg:** JPEG (same as jpg, but with .jpeg file ending)

**--screenshot-tag-colorspace=<yes|no>**

Tag screenshots with the appropriate colorspace.

Note that not all formats are supported.

Default: no.

**--screenshot-high-bit-depth=<yes|no>**

If possible, write screenshots with a bit depth similar to the source video (default: yes). This is interesting in particular for PNG, as this sometimes triggers writing 16 bit PNGs with huge file sizes.

**--screenshot-template=<template>**

Specify the filename template used to save screenshots. The template specifies the filename without file extension, and can contain format specifiers, which will be substituted when taking a screenshot. By default the template is `mpv-shot%n`, which results in filenames like `mpv-shot0012.png` for example.

The template can start with a relative or absolute path, in order to specify a directory location where screenshots should be saved.

If the final screenshot filename points to an already existing file, the file will not be overwritten. The screenshot will either not be saved, or if the template contains `%n`, saved using different, newly generated filename.

Allowed format specifiers:

**%[#][0X]n**

A sequence number, padded with zeros to length X (default: 04). E.g. passing the format `%04n` will yield `0012` on the 12th screenshot. The number is incremented every time a screenshot is taken or if the file already exists. The length `x` must be in the range 0-9. With the optional `#` sign, `mpv` will use the lowest available number. For example, if you take three screenshots--0001, 0002, 0003--and delete the first two, the next two screenshots will not be 0004 and 0005, but 0001 and 0002 again.

**%f**

Filename of the currently played video.

**%F**

Same as `%f`, but strip the file extension, including the dot.

**%x**

Directory path of the currently played video. If the video is not on the filesystem (but e.g. `http://`), this expand to an empty string.

**%X{fallback}**

Same as `%x`, but if the video file is not on the filesystem, return the fallback string inside the `{...}`.

**%p**

Current playback time, in the same format as used in the OSD. The result is a string of the form "HH:MM:SS". For example, if the video is at the time position 5 minutes and 34 seconds, `%p` will be replaced with "00:05:34".

**%P**

Similar to `%p`, but extended with the playback time in milliseconds. It is formatted as "HH:MM:SS.mmm", with "mmm" being the millisecond part of the playback time.

## Note

This is a simple way for getting unique per-frame timestamps. (Frame numbers would be more intuitive, but are not easily implementable because container formats usually use time stamps for identifying frames.)

### **%wX**

Specify the current playback time using the format string `X`. `%p` is like `%wH:%wM:%wS`, and `%P` is like `%wH:%wM:%wS.%wT`.

#### **Valid format specifiers:**

##### **%wH**

hour (padded with 0 to two digits)

##### **%wh**

hour (not padded)

##### **%wM**

minutes (00-59)

##### **%wm**

total minutes (includes hours, unlike `%wM`)

##### **%wS**

seconds (00-59)

##### **%ws**

total seconds (includes hours and minutes)

##### **%wf**

like `%ws`, but as float

##### **%wT**

milliseconds (000-999)

### **%tX**

Specify the current local date/time using the format `X`. This format specifier uses the UNIX `strftime()` function internally, and inserts the result of passing `"%X"` to `strftime`. For example, `%tm` will insert the number of the current month as number. You have to use multiple `%tX` specifiers to build a full date/time string.

### **%{prop[:fallback text]}**

Insert the value of the slave property 'prop'. E.g. `%{filename}` is the same as `%f`. If the property does not exist or is not available, an error text is inserted, unless a fallback is specified.

### **%%**

Replaced with the `%` character itself.

### **--screenshot-directory=<path>**

Store screenshots in this directory. This path is joined with the filename generated by `--screenshot-template`. If the template filename is already absolute, the directory is ignored.

If the directory does not exist, it is created on the first screenshot. If it is not a directory, an error is generated when trying to write a screenshot.

This option is not set by default, and thus will write screenshots to the directory from which `mpv` was started. In pseudo-gui mode (see [PSEUDO GUI MODE](#)), this is set to the desktop.

### **--screenshot-jpeg-quality=<0-100>**

Set the JPEG quality level. Higher means better quality. The default is 90.

**--screenshot-jpeg-source-chroma=<yes|no>**

Write JPEG files with the same chroma subsampling as the video (default: yes). If disabled, the libjpeg default is used.

**--screenshot-png-compression=<0-9>**

Set the PNG compression level. Higher means better compression. This will affect the file size of the written screenshot file and the time it takes to write a screenshot. Too high compression might occupy enough CPU time to interrupt playback. The default is 7.

**--screenshot-png-filter=<0-5>**

Set the filter applied prior to PNG compression. 0 is none, 1 is "sub", 2 is "up", 3 is "average", 4 is "Paeth", and 5 is "mixed". This affects the level of compression that can be achieved. For most images, "mixed" achieves the best compression ratio, hence it is the default.

## Software Scaler

**--sws-scaler=<name>**

Specify the software scaler algorithm to be used with `--vf=scale`. This also affects video output drivers which lack hardware acceleration, e.g. `x11`. See also `--vf=scale`.

To get a list of available scalers, run `--sws-scaler=help`.

Default: `bicubic`.

**--sws-lgb=<0-100>**

Software scaler Gaussian blur filter (luma). See `--sws-scaler`.

**--sws-cgb=<0-100>**

Software scaler Gaussian blur filter (chroma). See `--sws-scaler`.

**--sws-ls=<-100-100>**

Software scaler sharpen filter (luma). See `--sws-scaler`.

**--sws-cs=<-100-100>**

Software scaler sharpen filter (chroma). See `--sws-scaler`.

**--sws-chs=<h>**

Software scaler chroma horizontal shifting. See `--sws-scaler`.

**--sws-cvs=<v>**

Software scaler chroma vertical shifting. See `--sws-scaler`.

## Terminal

**--quiet**

Make console output less verbose; in particular, prevents the status line (i.e. `AV: 3.4 (00:00:03.37) / 5320.6 ...`) from being displayed. Particularly useful on slow terminals or broken ones which do not properly handle carriage return (i.e. `\r`).

Also see `--really-quiet` and `--msg-level`.

**--really-quiet**

Display even less output and status messages than with `--quiet`.

**--no-terminal, --terminal**

Disable any use of the terminal and `stdin/stdout/stderr`. This completely silences any message output.

Unlike `--really-quiet`, this disables input and terminal initialization as well.

**--no-msg-color**

Disable colorful console output on terminals.

**--msg-level=<module1=level1,module2=level2,...>**



Control verbosity directly for each module. The `all` module changes the verbosity of all the modules not explicitly specified on the command line.

Run `mpv` with `--msg-level=all=trace` to see all messages `mpv` outputs. You can use the module names printed in the output (prefixed to each line in `[ . . . ]`) to limit the output to interesting modules.

### Note

Some messages are printed before the command line is parsed and are therefore not affected by `--msg-level`. To control these messages, you have to use the `MPV_VERBOSE` environment variable; see [ENVIRONMENT VARIABLES](#) for details.

Available levels:

- no:** complete silence
- fatal:** fatal messages only
- error:** error messages
- warn:** warning messages
- info:** informational messages
- status:** status messages (default)
- v:** verbose messages
- debug:** debug messages
- trace:** very noisy debug messages

**--term-osd, --no-term-osd, --term-osd=force**

Display OSD messages on the console when no video output is available. Enabled by default.

`force` enables terminal OSD even if a video window is created.

**--term-osd-bar, --no-term-osd-bar**

Enable printing a progress bar under the status line on the terminal. (Disabled by default.)

**--term-osd-bar-chars=<string>**

Customize the `--term-osd-bar` feature. The string is expected to consist of 5 characters (start, left space, position indicator, right space, end). You can use Unicode characters, but note that double-width characters will not be treated correctly.

Default: `[+-]`.

**--term-playing-msg=<string>**

Print out a string after starting playback. The string is expanded for properties, e.g. `--term-playing-msg='file: ${filename}'` will print the string `file:` followed by a space and the currently played filename.

See [Property Expansion](#).

**--term-status-msg=<string>**

Print out a custom string during playback instead of the standard status line. Expands properties. See [Property Expansion](#).

**--msg-module**

Prepend module name to each console message.

**--msg-time**

Prepend timing information to each console message.

# TV

## --tv-...

These options tune various properties of the TV capture module. For watching TV with mpv, use `tv://` or `tv://<channel_number>` or even `tv://<channel_name>` (see option `tv-channels` for `channel_name` below) as a media URL. You can also use `tv:///<input_id>` to start watching a video from a composite or S-Video input (see option `input` for details).

## --tv-device=<value>

Specify TV device (default: `/dev/video0`).

## --tv-channel=<value>

Set tuner to `<value>` channel.

## --no-tv-audio

no sound

## --tv-automute=<0-255> (v4l and v4l2 only)

If signal strength reported by device is less than this value, audio and video will be muted. In most cases `automute=100` will be enough. Default is 0 (automute disabled).

## --tv-driver=<value>

See `--tv=driver=help` for a list of compiled-in TV input drivers. available: dummy, v4l2 (default: autodetect)

## --tv-input=<value>

Specify input (default: 0 (TV), see console output for available inputs).

## --tv-freq=<value>

Specify the frequency to set the tuner to (e.g. 511.250). Not compatible with the `channels` parameter.

## --tv-outfmt=<value>

Specify the output format of the tuner with a preset value supported by the V4L driver (YV12, UYVY, YUY2, I420) or an arbitrary format given as hex value.

## --tv-width=<value>

output window width

## --tv-height=<value>

output window height

## --tv-fps=<value>

framerate at which to capture video (frames per second)

## --tv-buffersize=<value>

maximum size of the capture buffer in megabytes (default: dynamical)

## --tv-norm=<value>

See the console output for a list of all available norms, also see the `normid` option below.

## --tv-normid=<value> (v4l2 only)

Sets the TV norm to the given numeric ID. The TV norm depends on the capture card. See the console output for a list of available TV norms.

## --tv-chanlist=<value>

available: argentina, australia, china-bcast, europe-east, europe-west, france, ireland, italy, japan-bcast, japan-cable, newzealand, russia, southafrica, us-bcast, us-cable, us-cable-hrc

## --tv-channels=<chan>-<name>[=<norm>],<chan>-<name>[=<norm>],...

Set names for channels.

### **Note**

If <chan> is an integer greater than 1000, it will be treated as frequency (in kHz) rather than channel name from frequency table. Use \_ for spaces in names (or play with quoting ;-). The channel names will then be written using OSD, and the slave commands `tv_step_channel`, `tv_set_channel` and `tv_last_channel` will be usable for a remote control. Not compatible with the `frequency` parameter.

### **Note**

The channel number will then be the position in the 'channels' list, beginning with 1.

### **Examples**

```
tv://1, tv://TV1, tv_set_channel 1, tv_set_channel TV1
```

**--tv-[brightness|contrast|hue|saturation]=<-100-100>**

Set the image equalizer on the card.

**--tv-audiorate=<value>**

Set input audio sample rate.

**--tv-forceaudio**

Capture audio even if there are no audio sources reported by v4l.

**--tv-alsa**

Capture from ALSA.

**--tv-amode=<0-3>**

Choose an audio mode:

**0:** mono

**1:** stereo

**2:** language 1

**3:** language 2

**--tv-forcechan=<1-2>**

By default, the count of recorded audio channels is determined automatically by querying the audio mode from the TV card. This option allows forcing stereo/mono recording regardless of the amode option and the values returned by v4l. This can be used for troubleshooting when the TV card is unable to report the current audio mode.

**--tv-adevice=<value>**

Set an audio device. <value> should be `/dev/xxx` for OSS and a hardware ID for ALSA. You must replace any ':' by a '.' in the hardware ID for ALSA.

**--tv-audioid=<value>**

Choose an audio output of the capture card, if it has more than one.

**--tv-[volume|bass|treble|balance]=<0-100>**

These options set parameters of the mixer on the video capture card. They will have no effect, if your card does not have one. For v4l2 50 maps to the default value of the control, as reported by the driver.

**--tv-gain=<0-100>**

Set gain control for video devices (usually webcams) to the desired value and switch off automatic control. A value of 0 enables automatic control. If this option is omitted, gain control will not be modified.

**--tv-immediatemode=<bool>**

A value of 0 means capture and buffer audio and video together. A value of 1 (default) means to do video capture only and let the audio go through a loopback cable from the TV card to the sound card.

**--tv-mjpeg**

Use hardware MJPEG compression (if the card supports it). When using this option, you do not need to specify the width and height of the output window, because mpv will determine it automatically from the decimation value (see below).

**--tv-decimation=<1|2|4>**

choose the size of the picture that will be compressed by hardware MJPEG compression:

**1:** full size

- 704x576 PAL
- 704x480 NTSC

**2:** medium size

- 352x288 PAL
- 352x240 NTSC

**4:** small size

- 176x144 PAL
- 176x120 NTSC

**--tv-quality=<0-100>**

Choose the quality of the JPEG compression (< 60 recommended for full size).

**--tv-scan-autostart**

Begin channel scanning immediately after startup (default: disabled).

**--tv-scan-period=<0.1-2.0>**

Specify delay in seconds before switching to next channel (default: 0.5). Lower values will cause faster scanning, but can detect inactive TV channels as active.

**--tv-scan-threshold=<1-100>**

Threshold value for the signal strength (in percent), as reported by the device (default: 50). A signal strength higher than this value will indicate that the currently scanning channel is active.

## Cache

**--cache=<kBytes|yes|no|auto>**

Set the size of the cache in kilobytes, disable it with `no`, or automatically enable it if needed with `auto` (default: `auto`). With `auto`, the cache will usually be enabled for network streams, using the size set by `--cache-default`. With `yes`, the cache will always be enabled with the size set by `--cache-default` (unless the stream can not be cached, or `--cache-default` disables caching).

May be useful when playing files from slow media, but can also have negative effects, especially with file formats that require a lot of seeking, such as MP4.

Note that half the cache size will be used to allow fast seeking back. This is also the reason why a full cache is usually not reported as 100% full. The cache fill display does not include the part of the cache reserved for seeking back. The actual maximum percentage will usually be the ratio between readahead and backbuffer sizes.

**--cache-default=<kBytes|no>**

Set the size of the cache in kilobytes (default: 75000 KB). Using `no` will not automatically enable the cache e.g. when playing from a network stream. Note that using `--cache` will always override this option.

**--cache-initial=<kBytes>**

Playback will start when the cache has been filled up with this many kilobytes of data (default: 0).

**--cache-seek-min=<kBytes>**

If a seek is to be made to a position within `<kBytes>` of the cache size from the current position, mpv will wait for the cache to be filled to this position rather than performing a stream seek (default: 500).

This matters for small forward seeks. With slow streams (especially HTTP streams) there is a tradeoff between skipping the data between current position and seek destination, or performing an actual seek. Depending on the situation, either of these might be slower than the other method. This option allows control over this.

**--cache-backbuffer=<kBytes>**

Size of the cache back buffer (default: 75000 KB). This will add to the total cache size, and reserved the amount for seeking back. The reserved amount will not be used for readahead, and instead preserves already read data to enable fast seeking back.

**--cache-file=<TMP|path>**

Create a cache file on the filesystem.

There are two ways of using this:

1. Passing a path (a filename). The file will always be overwritten. When the general cache is enabled, this file cache will be used to store whatever is read from the source stream.

This will always overwrite the cache file, and you can't use an existing cache file to resume playback of a stream. (Technically, mpv wouldn't even know which blocks in the file are valid and which not.)

The resulting file will not necessarily contain all data of the source stream. For example, if you seek, the parts that were skipped over are never read and consequently are not written to the cache. The skipped over parts are filled with zeros. This means that the cache file doesn't necessarily correspond to a full download of the source stream.

Both of these issues could be improved if there is any user interest.

### **Warning**

Causes random corruption when used with ordered chapters or with `--audio-file`.

2. Passing the string `TMP`. This will not be interpreted as filename. Instead, an invisible temporary file is created. It depends on your C library where this file is created (usually `/tmp/`), and whether filename is visible (the `tmpfile()` function is used). On some systems, automatic deletion of the cache file might not be guaranteed.

If you want to use a file cache, this mode is recommended, because it doesn't break ordered chapters or `--audio-file`. These modes open multiple cache streams, and using the same file for them obviously clashes.

Also see `--cache-file-size`.

#### **`--cache-file-size=<kBytes>`**

Maximum size of the file created with `--cache-file`. For read accesses above this size, the cache is simply not used.

Keep in mind that some use-cases, like playing ordered chapters with cache enabled, will actually create multiple cache files, each of which will use up to this much disk space.

(Default: 1048576, 1 GB.)

#### **`--no-cache`**

Turn off input stream caching. See `--cache`.

#### **`--cache-secs=<seconds>`**

How many seconds of audio/video to prefetch if the cache is active. This overrides the `--demuxer-readahead-secs` option if and only if the cache is enabled and the value is larger. (Default: 10.)

#### **`--cache-pause, --no-cache-pause`**

Whether the player should automatically pause when the cache runs low, and unpause once more data is available ("buffering").

## **Network**

#### **`--user-agent=<string>`**

Use `<string>` as user agent for HTTP streaming.

#### **`--cookies, --no-cookies`**

Support cookies when making HTTP requests. Disabled by default.

**--cookies-file=<filename>**

Read HTTP cookies from <filename>. The file is assumed to be in Netscape format.

**--http-header-fields=<field1,field2>**

Set custom HTTP fields when accessing HTTP stream.

### **Example**

```
mpv --http-header-fields='Field1: value1','Field2: value2' \  
http://localhost:1234
```

Will generate HTTP request:

```
GET / HTTP/1.0  
Host: localhost:1234  
User-Agent: MPlayer  
Icy-MetaData: 1  
Field1: value1  
Field2: value2  
Connection: close
```

**--tls-ca-file=<filename>**

Certificate authority database file for use with TLS. (Silently fails with older FFmpeg or Libav versions.)

**--tls-verify**

Verify peer certificates when using TLS (e.g. with `https://...`). (Silently fails with older FFmpeg or Libav versions.)

**--referrer=<string>**

Specify a referrer path or URL for HTTP requests.

**--network-timeout=<seconds>**

Specify the network timeout in seconds. This affects at least HTTP. The special value 0 (default) uses the FFmpeg/Libav defaults. If a protocol is used which does not support timeouts, this option is silently ignored.

**--rtsp-transport=<lavf|udp|tcp|http>**

Select RTSP transport method (default: tcp). This selects the underlying network transport when playing `rtsp://...` URLs. The value `lavf` leaves the decision to libavformat.

**--hls-bitrate=<no|min|max|<rate>>**

If HLS streams are played, this option controls what streams are selected by default. The option allows the following parameters:

- no:** Don't do anything special. Typically, this will simply pick the first audio/video streams it can find.
- min:** Pick the streams with the lowest bitrate.
- max:** Same, but highest bitrate. (Default.)

Additionally, if the option is a number, the stream with the highest rate equal or below the option value is selected.

The bitrate as used is sent by the server, and there's no guarantee it's actually meaningful.

## DVB

**--dvbin-card=<1-4>**

Specifies using card number 1-4 (default: 1).

**--dvbin-file=<filename>**

Instructs mpv to read the channels list from <filename>. The default is in the mpv configuration directory (usually `~/.config/mpv`) with the filename `channels.conf.{sat,ter,cbl,atsc}` (based on your card type) or `channels.conf` as a last resort. For DVB-S/2 cards, a VDR 1.7.x format channel list is recommended as it allows tuning to DVB-S2 channels, enabling subtitles and decoding the PMT (which largely improves the demuxing). Classic mplayer format channel lists are still supported (without these improvements), and for other card types, only limited VDR format channel list support is implemented (patches welcome). For channels with dynamic PID switching or incomplete `channels.conf`, `--dvbin-full-transponder` or the magic PID 8192 are recommended.

**--dvbin-timeout=<1-30>**

Maximum number of seconds to wait when trying to tune a frequency before giving up (default: 30).

**--dvbin-full-transponder=<yes|no>**

Apply no filters on program PIDs, only tune to frequency and pass full transponder to demuxer. This is useful to record multiple programs on a single transponder, or to work around issues in the `channels.conf`. It is also recommended to use this for channels which switch PIDs on-the-fly, e.g. for regional news.

Default: no

## PVR

**--pvr-...**

These options tune various encoding properties of the PVR capture module. It has to be used with any hardware MPEG encoder based card supported by the V4L2 driver. The Hauppauge WinTV PVR-150/250/350/500 and all IVTV based cards are known as PVR capture cards. Be aware that only Linux 2.6.18 kernel and above is able to handle MPEG stream through V4L2 layer. For hardware capture of an MPEG stream and watching it with mpv, use `pvr://` as media URL.

**--pvr-aspect=<0-3>**

Specify input aspect ratio:

- 0:** 1:1
- 1:** 4:3 (default)
- 2:** 16:9
- 3:** 2.21:1

**--pvr-arate=<32000-48000>**

Specify encoding audio rate (default: 48000 Hz, available: 32000, 44100 and 48000 Hz).

**--pvr-alayer=<1-3>**

Specify MPEG audio layer encoding (default: 2).

**--pvr-abitrate=<32-448>**

Specify audio encoding bitrate in kbps (default: 384).

**--pvr-amode=<value>**

Specify audio encoding mode. Available preset values are 'stereo', 'joint\_stereo', 'dual' and 'mono' (default: stereo).

**--pvr-vbitrate=<value>**



Specify average video bitrate encoding in Mbps (default: 6).

**--pvr-vmode=<value>**

Specify video encoding mode:

**vbr:** Variable Bit Rate (default)

**cbr:** Constant Bit Rate

**--pvr-vpeak=<value>**

Specify peak video bitrate encoding in Mbps (only useful for VBR encoding, default: 9.6).

**--pvr-fmt=<value>**

Choose an MPEG format for encoding:

**ps:** MPEG-2 Program Stream (default)

**ts:** MPEG-2 Transport Stream

**mpeg1:** MPEG-1 System Stream

**vcd:** Video CD compatible stream

**svcd:** Super Video CD compatible stream

**dvd:** DVD compatible stream

## Miscellaneous

**--display-tags=tag1,tag2,...**

Set the list of tags that should be displayed on the terminal. Tags that are in the list, but are not present in the played file, will not be shown. If a value ends with \*, all tags are matched by prefix (though there is no general globbing). Just passing \* essentially filtering.

The default includes a common list of tags, call mpv with **--list-options** to see it.

**--mc=<seconds/frame>**

Maximum A-V sync correction per frame (in seconds)

**--autosync=<factor>**

Gradually adjusts the A/V sync based on audio delay measurements. Specifying **--autosync=0**, the default, will cause frame timing to be based entirely on audio delay measurements. Specifying **--autosync=1** will do the same, but will subtly change the A/V correction algorithm. An uneven video framerate in a video which plays fine with **--no-audio** can often be helped by setting this to an integer value greater than 1. The higher the value, the closer the timing will be to **--no-audio**. Try **--autosync=30** to smooth out problems with sound drivers which do not implement a perfect audio delay measurement. With this value, if large A/V sync offsets occur, they will only take about 1 or 2 seconds to settle out. This delay in reaction time to sudden A/V offsets should be the only side-effect of turning this option on, for all sound drivers.

**--video-sync=<audio|...>**

How the player synchronizes audio and video.

The modes starting with **display-** try to output video frames completely synchronously to the display, using the detected display vertical refresh rate as a hint how fast frames will be displayed on average. These modes change video speed slightly to match the display. See **--video-sync-...** options for fine tuning. The robustness of this mode is further reduced by making some idealized assumptions, which may not always apply in reality. Behavior can depend on the VO and the system's video and audio drivers. Media files must use constant framerate. Section-wise VFR might work as well with some container formats (but not e.g. mkv). If the sync code detects severe A/V desync, or the framerate cannot be detected, the player automatically reverts to **audio** mode for some time or permanently.

The modes with **desync** in their names do not attempt to keep audio/video in sync. They will slowly (or quickly) desync, until e.g. the next seek happens. These modes are meant for testing, not serious use.

**audio:** Time video frames to audio. This is the most robust mode, because the player doesn't have to assume anything about how the display behaves. The disadvantage is that it can lead to occasional frame drops or repeats. If audio is disabled, this uses the system clock. This is the default mode.

**display-resample:** Resample audio to match the video. This mode will also try to adjust audio speed to compensate for other drift. (This means it will play the audio at a different speed every once in a while to reduce the A/V difference.)

**display-resample-vdrop:** Resample audio to match the video. Drop video frames to compensate for drift.

**display-resample-desync:** Like the previous mode, but no A/V compensation.

**display-vdrop:** Drop or repeat video frames to compensate desyncing video. (Although it should have the same effects as **audio**, the implementation is very different.)

**display-desync:** Sync video to display, and let audio play on its own.

**desync:** Sync video according to system clock, and let audio play on its own.

**--video-sync-max-video-change=<value>**  
 Maximum speed difference in percent that is applied to video with **--video-sync=display-...** (default: 1). Display sync mode will be disabled if the monitor and video refresh way do not match within the given range. It tries multiples as well: playing 30 fps video on a 60 Hz screen will duplicate every second frame. Playing 24 fps video on a 60 Hz screen will play video in a 2-3-2-3-... pattern.

The default settings are not loose enough to speed up 23.976 fps video to 25 fps. We consider the pitch change too extreme to allow this behavior by default. Set this option to a value of 5 to enable it.

Note that in the **--video-sync=display-resample** mode, audio speed will additionally be changed by a small amount if necessary for A/V sync. See **--video-sync-max-audio-change**.

**--video-sync-max-audio-change=<value>**  
 Maximum *additional* speed difference in percent that is applied to audio with **--video-sync=display-...** (default: 0.125). Normally, the player play the audio at the speed of the video. But if the difference between audio and video position is too high, e.g. due to drift or other timing errors, it will attempt to speed up or slow down audio by this additional factor. Too low values could lead to video frame dropping or repeating if the A/V desync cannot be compensated, too high values could lead to chaotic frame dropping due to the audio "overshooting" and skipping multiple video frames before the sync logic can react.

**--mf-fps=<value>**  
 Framerate used when decoding from multiple PNG or JPEG files with **mf://** (default: 1).

**--mf-type=<value>**  
 Input file type for **mf://** (available: jpeg, png, tga, sgi). By default, this is guessed from the file extension.

**--stream-capture=<filename>**  
 Allows capturing the primary stream (not additional audio tracks or other kind of streams) into the given file. Capturing can also be started and stopped by changing the filename with the **stream-capture** slave property. Generally this will not produce usable results for anything else than MPEG or raw streams, unless capturing includes the file headers and is not interrupted. Note that, due to cache latencies, captured data may begin and end somewhat delayed compared to what you see displayed.

The destination file is always appended. (Before mpv 0.8.0, the file was overwritten.)

**--stream-dump=<filename>**  
 Same as **--stream-capture**, but do not start playback. Instead, the entire file is dumped.

**--stream-lavf-o=opt1=value1,opt2=value2,...**  
 Set AVOptions on streams opened with libavformat. Unknown or misspelled options are silently ignored. (They are mentioned in the terminal output in verbose mode, i.e. **--v**. In general we can't print errors, because other options such as e.g. user agent are not available with all protocols, and printing errors for unknown options would end up being too noisy.)

**--priority=<prio>**

(Windows only.) Set process priority for mpv according to the predefined priorities available under Windows.

Possible values of <prio>: idle|belownormal|normal|abovenormal|high|realtime

### **Warning**

Using realtime priority can cause system lockup.

**--pts-association-mode=<decode|sort|auto>**

Select the method used to determine which container packet timestamp corresponds to a particular output frame from the video decoder. Normally you should not need to change this option.

**decoder:** Use decoder reordering functionality. Unlike in classic MPlayer and mplayer2, this includes a DTS fallback. (Default.)

**sort:** Maintain a buffer of unused pts values and use the lowest value for the frame.

**auto:** Try to pick a working mode from the ones above automatically.

You can also try to use `--no-correct-pts` for files with completely broken timestamps.

**--force-media-title=<string>**

Force the contents of the `media-title` property to this value. Useful for scripts which want to set a title, without overriding the user's setting in `--title`.

## **AUDIO OUTPUT DRIVERS**

Audio output drivers are interfaces to different audio output facilities. The syntax is:

**--ao=<driver1[:suboption1[=value]:...],driver2,...[,]>**

Specify a priority list of audio output drivers to be used.

If the list has a trailing ',', mpv will fall back on drivers not contained in the list. Suboptions are optional and can mostly be omitted.

You can also set defaults for each driver. The defaults are applied before the normal driver parameters.

**--ao-defaults=<driver1[:parameter1:parameter2:...],driver2,...>**

Set defaults for each driver.

### **Note**

See `--ao=help` for a list of compiled-in audio output drivers. The driver `--ao=alsa` is preferred. `--ao=pulse` is preferred on systems where PulseAudio is used. On Windows, `--ao=wasapi` is preferred, though it might cause trouble sometimes, in which case `--ao=dsound` should be used. On BSD systems, `--ao=oss` or `--ao=sndio` may work (the latter being experimental). On OS X systems, use `--ao=coreaudio`.

### **Examples**

- `--ao=alsa,oss`, Try the ALSA driver, then the OSS driver, then others.
- `--ao=alsa:resample=yes:device=[plughw:0,3]` Lets ALSA resample and sets the device-name as first card, fourth device.

Available audio output drivers are:

#### **alsa (Linux only)**

ALSA audio output driver

**device=<device>**

Sets the device name. For ac3 output via S/PDIF, use an "iec958" or "spdif" device, unless you really know how to set it correctly.

**resample=yes**

Enable ALSA resampling plugin. (This is disabled by default, because some drivers report incorrect audio delay in some cases.)

**mixer-device=<device>**

Set the mixer device used with `--no-softvol` (default: default).

**mixer-name=<name>**

Set the name of the mixer element (default: Master). This is for example PCM or Master.

**mixer-index=<number>**

Set the index of the mixer channel (default: 0). Consider the output of "amixer scontrols", then the index is the number that follows the name of the element.

**non-interleaved**

Allow output of non-interleaved formats (if the audio decoder uses this format). Currently disabled by default, because some popular ALSA plugins are utterly broken with non-interleaved formats.

**ignore-chmap**

Don't read or set the channel map of the ALSA device - only request the required number of channels, and then pass the audio as-is to it. This option most likely should not be used. It can be useful for debugging, or for static setups with a specially engineered ALSA configuration (in this case you should always force the same layout with `--audio-channels`, or it will work only for files which use the layout implicit to your ALSA device).

### **Note**

MPlayer and mplayer2 required you to replace any ',' with '.' and any ':' with '=' in the ALSA device name. mpv does not do this anymore. Instead, quote the device name:

```
--ao=alsa:device=[plug:surround50]
```

Note that the [ and ] simply quote the device name. With some shells (like zsh), you have to quote the option string to prevent the shell from interpreting the brackets instead of passing them to mpv.

Actually, you should use the `--audio-device` option, instead of setting the device directly.

## Warning

Handling of multichannel/surround audio changed in mpv 0.8.0 from the behavior in MPlayer/mplayer2 and older versions of mpv.

The old behavior is that the player always downmixed to stereo by default. The `--audio-channels` (or `--channels` before that) option had to be set to get multichannel audio. Then playing stereo would use the `default` device (which typically allows multiple programs to play audio at the same time via `dmix`), while playing anything with more channels would open one of the hardware devices, e.g. via the `surround51` alias (typically with exclusive access). Whether the player would use exclusive access or not would depend on the file being played.

The new behavior since mpv 0.8.0 always enables multichannel audio, i.e. `--audio-channels=auto` is the default. However, since ALSA provides no good way to play multichannel audio in a non-exclusive way (without blocking other applications from using audio), the player is restricted to the capabilities of the `default` device by default, which means it supports only stereo and mono (at least with current typical ALSA configurations). But if a hardware device is selected, then multichannel audio will typically work.

The short story is: if you want multichannel audio with ALSA, use `--audio-device` to select the device (use `--audio-device=help` to get a list of all devices and their mpv name).

You can also try [using the upmix plugin](#). This setup enables multichannel audio on the `default` device with automatic upmixing with shared access, so playing stereo and multichannel audio at the same time will work as expected.

## oss

OSS audio output driver

### <dsp-device>

Sets the audio output device (default: `/dev/dsp`).

### <mixer-device>

Sets the audio mixer device (default: `/dev/mixer`).

### <mixer-channel>

Sets the audio mixer channel (default: `pcm`). Other valid values include **vol**, **pcm**, **line**. For a complete list of options look for `SOUND_DEVICE_NAMES` in `/usr/include/linux/soundcard.h`.

## jack

JACK (Jack Audio Connection Kit) audio output driver

### port=<name>

Connects to the ports with the given name (default: physical ports).

### name=<client>

Client name that is passed to JACK (default: `mpv`). Useful if you want to have certain connections established automatically.

### (no-)autostart

Automatically start `jackd` if necessary (default: disabled). Note that this tends to be unreliable and will flood stdout with server messages.

### (no-)connect

Automatically create connections to output ports (default: enabled). When enabled, the maximum number of output channels will be limited to the number of available output ports.

**std-channel-layout=alsa|waveext|any**

Select the standard channel layout (default: alsa). JACK itself has no notion of channel layouts (i.e. assigning which speaker a given channel is supposed to map to) - it just takes whatever the application outputs, and reroutes it to whatever the user defines. This means the user and the application are in charge of dealing with the channel layout. `alsa` uses the old MPlayer layout, which is inspired by ALSA's standard layouts. In this mode, `ao_jack` will refuse to play 3 or 7 channels (because these do not really have a defined meaning in MPlayer). `waveext` uses `WAVE_FORMAT_EXTENSIBLE` order, which, even though it was defined by Microsoft, is the standard on many systems. The value `any` makes JACK accept whatever comes from the audio filter chain, regardless of channel layout and without reordering. This mode is probably not very useful, other than for debugging or when used with fixed setups.

#### **coreaudio (Mac OS X only)**

Native Mac OS X audio output driver using AudioUnits and the CoreAudio sound server.

Automatically redirects to `coreaudio_exclusive` when playing compressed formats.

**change-physical-format=<yes|no>**

Change the physical format to one similar to the requested audio format (default: no). This has the advantage that multichannel audio output will actually work. The disadvantage is that it will change the system-wide audio settings. This is equivalent to changing the `Format` setting in the `Audio Devices` dialog in the `Audio MIDI Setup` utility. Note that this does not effect the selected speaker setup.

#### **exclusive**

Use exclusive mode access. This merely redirects to `coreaudio_exclusive`, but should be preferred over using that AO directly.

#### **coreaudio\_exclusive (Mac OS X only)**

Native Mac OS X audio output driver using direct device access and exclusive mode (bypasses the sound server).

#### **openal**

Experimental OpenAL audio output driver

### **Note**

This driver is not very useful. Playing multi-channel audio with it is slow.

#### **pulse**

PulseAudio audio output driver

**[<host>][:<output sink>]**

Specify the host and optionally output sink to use. An empty `<host>` string uses a local connection, "localhost" uses network transfer (most likely not what you want).

**buffer=<1-2000|native>**

Set the audio buffer size in milliseconds. A higher value buffers more data, and has a lower probability of buffer underruns. A smaller value makes the audio stream react faster, e.g. to playback speed changes. Default: 250.

**latency-hacks=<yes|no>**

Enable hacks to workaround PulseAudio timing bugs (default: no). If enabled, mpv will do elaborate latency calculations on its own. If disabled, it will use PulseAudio automatically updated timing information. Disabling this might help with e.g. networked audio or some plugins, while enabling it might help in some unknown situations (it used to be required to get good behavior on old PulseAudio versions).

If you have stuttering video when using pulse, try to enable this option. (Or alternatively, try to update PulseAudio.)

#### **dsound (Windows only)**

DirectX DirectSound audio output driver

##### **Note**

This driver is for compatibility with old systems.

**device=<devicenum>**

Sets the device number to use. Playing a file with `-v` will show a list of available devices.

**buffersize=<ms>**

DirectSound buffer size in milliseconds (default: 200).

#### **sdl**

SDL 1.2+ audio output driver. Should work on any platform supported by SDL 1.2, but may require the `SDL_AUDIODRIVER` environment variable to be set appropriately for your system.

##### **Note**

This driver is for compatibility with extremely foreign environments, such as systems where none of the other drivers are available.

**buflen=<length>**

Sets the audio buffer length in seconds. Is used only as a hint by the sound system. Playing a file with `-v` will show the requested and obtained exact buffer size. A value of 0 selects the sound system default.

**bufcnt=<count>**

Sets the number of extra audio buffers in mpv. Usually needs not be changed.

#### **null**

Produces no audio output but maintains video playback speed. Use `--ao=null:untimed` for benchmarking.

**untimed**

Do not simulate timing of a perfect audio device. This means audio decoding will go as fast as possible, instead of timing it to the system clock.

**buffer**

Simulated buffer length in seconds.

**outburst**

Simulated chunk size in samples.

**speed**

Simulated audio playback speed as a multiplier. Usually, a real audio device will not go exactly as fast as the system clock. It will deviate just a little, and this option helps simulating this.

**latency**

Simulated device latency. This is additional to EOF.

**broken-eof**

Simulate broken audio drivers, which always add the fixed device latency to the reported audio playback position.

**broken-delay**

Simulate broken audio drivers, which don't report latency correctly.

**channel-layouts**

If not empty, this is a , separated list of channel layouts the AO allows. This can be used to test channel layout selection.

**pcm**

Raw PCM/WAVE file writer audio output

**(no-)waveheader**

Include or do not include the WAVE header (default: included). When not included, raw PCM will be generated.

**file=<filename>**

Write the sound to <filename> instead of the default audiodump.wav. If no-waveheader is specified, the default is audiodump.pcm.

**(no-)append**

Append to the file, instead of overwriting it. Always use this with the no-waveheader option - with waveheader it's broken, because it will write a WAVE header every time the file is opened.

**rsound**

Audio output to an RSound daemon

**Note**

Completely useless, unless you intend to run RSound. Not to be confused with RoarAudio, which is something completely different.

**host=<name/path>**

Set the address of the server (default: localhost). Can be either a network hostname for TCP connections or a Unix domain socket path starting with '/'.

**port=<number>**

Set the TCP port used for connecting to the server (default: 12345). Not used if connecting to a Unix domain socket.

**sndio**

Audio output to the OpenBSD sndio sound system

**Note**

Experimental. There are known bugs and issues.

(Note: only supports mono, stereo, 4.0, 5.1 and 7.1 channel layouts.)

**device=<device>**

sndio device to use (default: \$AUDIODEVICE, resp. snd0).

**wasapi**

Audio output to the Windows Audio Session API.



### **exclusive**

Requests exclusive, direct hardware access. By definition prevents sound playback of any other program until mpv exits.

### **device=<id>**

Uses the requested endpoint instead of the system's default audio endpoint. Both an ordinal number (0,1,2,...) and the GUID String are valid; the GUID string is guaranteed to not change unless the driver is uninstalled.

Also supports searching active devices by human readable name. If more than one device matches the name, refuses loading it.

This option is mostly deprecated in favour of the more general `--audio-device` option. That said, `--audio-device=help` will give a list of valid device GUIDs (prefixed with `wasapi/`), as well as their human readable names, which should work here.

## **VIDEO OUTPUT DRIVERS**

Video output drivers are interfaces to different video output facilities. The syntax is:

```
--vo=<driver1[:suboption1[=value]:...],driver2,...[,]>
```

Specify a priority list of video output drivers to be used.

If the list has a trailing ',', mpv will fall back on drivers not contained in the list. Suboptions are optional and can mostly be omitted.

You can also set defaults for each driver. The defaults are applied before the normal driver parameters.

```
--vo-defaults=<driver1[:parameter1:parameter2:...],driver2,...>
```

Set defaults for each driver.

### **Note**

See `--vo=help` for a list of compiled-in video output drivers.

The recommended output drivers are `--vo=vdpau` and `--vo=opengl-hq`. All other drivers are just for compatibility or special purposes.

### **Example**

```
--vo=opengl,xv,
```

Try the `opengl` driver, then the `xv` driver, then others.

Available video output drivers are:

#### **xv (X11 only)**

Uses the XVideo extension to enable hardware-accelerated display. This is the most compatible VO on X, but may be low-quality, and has issues with OSD and subtitle display.

## Note

This driver is for compatibility with old systems.

**adaptor=<number>**

Select a specific XVideo adapter (check xvinfo results).

**port=<number>**

Select a specific XVideo port.

**ck=<cur | use | set>**

Select the source from which the color key is taken (default: cur).

**cur**

The default takes the color key currently set in Xv.

**use**

Use but do not set the color key from mpv (use the `--colorkey` option to change it).

**set**

Same as use but also sets the supplied color key.

**ck-method=<man | bg | auto>**

Sets the color key drawing method (default: man).

**man**

Draw the color key manually (reduces flicker in some cases).

**bg**

Set the color key as window background.

**auto**

Let Xv draw the color key.

**colorkey=<number>**

Changes the color key to an RGB value of your choice. `0x000000` is black and `0xffffffff` is white.

**no-colorkey**

Disables color-keying.

**buffers=<number>**

Number of image buffers to use for the internal ringbuffer (default: 2). Increasing this will use more memory, but might help with the X server not responding quickly enough if video FPS is close to or higher than the display refresh rate.

**vdpaui (X11 only)**

Uses the VDPAU interface to display and optionally also decode video. Hardware decoding is used with `--hwdec=vdpaui`.

## Note

Earlier versions of mpv (and MPlayer, mplayer2) provided sub-options to tune vdpau post-processing, like `deint`, `sharpen`, `denoise`, `chroma-deint`, `pullup`, `hqscaling`. These sub-options are deprecated, and you should use the `vdpaupp` video filter instead.

**sharpen=<-1-1>**

(Deprecated. See note about `vdpaupp`.)

For positive values, apply a sharpening algorithm to the video, for negative values a blurring algorithm (default: 0).

**denoise=<0-1>**

(Deprecated. See note about `vdpaupp`.)

Apply a noise reduction algorithm to the video (default: 0; no noise reduction).

**deint=<-4-4>**

(Deprecated. See note about `vdpaupp`.)

Select deinterlacing mode (default: 0). In older versions (as well as MPlayer/mplayer2) you could use this option to enable deinterlacing. This doesn't work anymore, and deinterlacing is enabled with either the `D` key (by default mapped to the command `cycle deinterlace`), or the `--deinterlace` option. Also, to select the default deint mode, you should use something like `--vf-defaults=vdpaupp:deint-mode=temporal` instead of this sub-option.

**0**

Pick the `vdpaupp` video filter default, which corresponds to 3.

**1**

Show only first field.

**2**

Bob deinterlacing.

**3**

Motion-adaptive temporal deinterlacing. May lead to A/V desync with slow video hardware and/or high resolution.

**4**

Motion-adaptive temporal deinterlacing with edge-guided spatial interpolation. Needs fast video hardware.

**chroma-deint**

(Deprecated. See note about `vdpaupp`.)

Makes temporal deinterlacers operate both on luma and chroma (default). Use `no-chroma-deint` to solely use luma and speed up advanced deinterlacing. Useful with slow video memory.

**pullup**

(Deprecated. See note about `vdpaupp`.)

Try to apply inverse telecine, needs motion adaptive temporal deinterlacing.

**hqscaling=<0-9>**

(Deprecated. See note about `vdpaupp`.)

**0**

Use default VDPAU scaling (default).

**1-9**

Apply high quality VDPAU scaling (needs capable hardware).

**fps=<number>**

Override autodetected display refresh rate value (the value is needed for framedrop to allow video playback rates higher than display refresh rate, and for vsync-aware frame timing adjustments). Default 0 means use autodetected value. A positive value is interpreted as a refresh rate in Hz and overrides the autodetected value. A negative value disables all timing adjustment and framedrop logic.

**composite-detect**

NVIDIA's current VDPAU implementation behaves somewhat differently under a compositing window manager and does not give accurate frame timing information. With this option enabled, the player tries to detect whether a compositing window manager is active. If one is detected, the player disables timing adjustments as if the user had specified `fps=-1` (as they would be based on incorrect input). This means timing is somewhat less accurate than without compositing, but with the composited mode behavior of the NVIDIA driver, there is no hard playback speed limit even without the disabled logic. Enabled by default, use `no-composite-detect` to disable.

**queue\_time\_windowed=<number> and queue\_time\_fs=<number>**

Use VDPAU's presentation queue functionality to queue future video frame changes at most this many milliseconds in advance (default: 50). See below for additional information.

**output\_surfaces=<2-15>**

Allocate this many output surfaces to display video frames (default: 3). See below for additional information.

**colorkey=<#RRGGBB| #AARRGGBB>**

Set the VDPAU presentation queue background color, which in practice is the colorkey used if VDPAU operates in overlay mode (default: #020507, some shade of black). If the alpha component of this value is 0, the default VDPAU colorkey will be used instead (which is usually green).

**force-yuv**

Never accept RGBA input. This means mpv will insert a filter to convert to a YUV format before the VO. Sometimes useful to force availability of certain YUV-only features, like video equalizer or deinterlacing.

Using the VDPAU frame queuing functionality controlled by the queue\_time options makes mpv's frame flip timing less sensitive to system CPU load and allows mpv to start decoding the next frame(s) slightly earlier, which can reduce jitter caused by individual slow-to-decode frames. However, the NVIDIA graphics drivers can make other window behavior such as window moves choppy if VDPAU is using the blit queue (mainly happens if you have the composite extension enabled) and this feature is active. If this happens on your system and it bothers you then you can set the queue\_time value to 0 to disable this feature. The settings to use in windowed and fullscreen mode are separate because there should be no reason to disable this for fullscreen mode (as the driver issue should not affect the video itself).

You can queue more frames ahead by increasing the queue\_time values and the output\_surfaces count (to ensure enough surfaces to buffer video for a certain time ahead you need at least as many surfaces as the video has frames during that time, plus two). This could help make video smoother in some cases. The main downsides are increased video RAM requirements for the surfaces and laggy display response to user commands (display changes only become visible some time after they're queued). The graphics driver implementation may also have limits on the length of maximum queuing time or number of queued surfaces that work well or at all.

**direct3d\_shaders (Windows only)**

Video output driver that uses the Direct3D interface.

### **Note**

This driver is for compatibility with systems that don't provide proper OpenGL drivers.

**prefer-stretchrect**

Use `IDirect3DDevice9::StretchRect` over other methods if possible.

**disable-stretchrect**

Never render the video using `IDirect3DDevice9::StretchRect`.

**disable-textures**

Never render the video using D3D texture rendering. Rendering with textures + shader will still be allowed. Add `disable-shaders` to completely disable video rendering with textures.

**disable-shaders**

Never use shaders when rendering video.

**only-8bit**

Never render YUV video with more than 8 bits per component. Using this flag will force software conversion to 8-bit.

**disable-texture-align**

Normally texture sizes are always aligned to 16. With this option enabled, the video texture will always have exactly the same size as the video itself.

Debug options. These might be incorrect, might be removed in the future, might crash, might cause slow downs, etc. Contact the developers if you actually need any of these for performance or proper operation.

**force-power-of-2**

Always force textures to power of 2, even if the device reports non-power-of-2 texture sizes as supported.

**texture-memory=<mode>**

Only affects operation with shaders/texturing enabled, and (E)OSD. Possible values:

**default (default)**

Use `D3DPOOL_DEFAULT`, with a `D3DPOOL_SYSTEMMEM` texture for locking. If the driver supports `D3DDEVCAPS_TEXTURESYSTEMMEMORY`, `D3DPOOL_SYSTEMMEM` is used directly.

**default-pool**

Use `D3DPOOL_DEFAULT`. (Like default, but never use a shadow-texture.)

**default-pool-shadow**

Use `D3DPOOL_DEFAULT`, with a `D3DPOOL_SYSTEMMEM` texture for locking. (Like default, but always force the shadow-texture.)

**managed**

Use `D3DPOOL_MANAGED`.

**scratch**

Use `D3DPOOL_SCRATCH`, with a `D3DPOOL_SYSTEMMEM` texture for locking.

**swap-discard**

Use `D3DSWAPEFFECT_DISCARD`, which might be faster. Might be slower too, as it must(?) clear every frame.

**exact-backbuffer**

Always resize the backbuffer to window size.

**direct3d (Windows only)**

Same as `direct3d_shaders`, but with the options `disable-textures` and `disable-shaders` forced.

**Note**

This driver is for compatibility with old systems.

opengl

OpenGL video output driver. It supports extended scaling methods, dithering and color management. By default, it tries to use fast and fail-safe settings. Use the alias `opengl-hq` to use this driver with defaults set to high quality rendering.

Requires at least OpenGL 2.1.

Some features are available with OpenGL 3 capable graphics drivers only (or if the necessary extensions are available).

OpenGL ES 2.0 and 3.0 are supported as well.

Hardware decoding over OpenGL-interop is supported to some degree. Note that in this mode, some corner case might not be gracefully handled, and color space conversion and chroma upsampling is generally in the hand of the hardware decoder APIs.

`opengl` makes use of FBOs by default. Sometimes you can achieve better quality or performance by changing the `fbo-format` suboption to `rgb16f`, `rgb32f` or `rgb`. Known problems include Mesa/Intel not accepting `rgb16`, Mesa sometimes not being compiled with float texture support, and some OS X setups being very slow with `rgb16` but fast with `rgb32f`. If you have problems, you can also try passing the `dumb-mode=yes` sub-option.

**`dumb-mode=<yes|no>`**

This mode is extremely restricted, and will disable most extended OpenGL features. This includes high quality scalers and custom shaders!

It is intended for hardware that does not support FBOs (including GLES, which supports it insufficiently), or to get some more performance out of bad or old hardware.

This mode is forced automatically if needed, and this option is mostly useful for debugging.

**`scale=<filter>`**

**`bilinear`**

Bilinear hardware texture filtering (fastest, very low quality). This is the default for compatibility reasons.

**`spline36`**

Mid quality and speed. This is the default when using `opengl-hq`.

**`lanczos`**

Lanczos scaling. Provides mid quality and speed. Generally worse than `spline36`, but it results in a slightly sharper image which is good for some content types. The number of taps can be controlled with `scale-radius`, but is best left unchanged.

This filter corresponds to the old `lanczos3` alias if the default radius is used, while `lanczos2` corresponds to a radius of 2.

(This filter is an alias for `sinc-windowed sinc`)

**`ewa_lanczos`**

Elliptic weighted average Lanczos scaling. Also known as Jinc. Relatively slow, but very good quality. The radius can be controlled with `scale-radius`. Increasing the radius makes the filter sharper but adds more ringing.

(This filter is an alias for `jinc-windowed jinc`)

**`ewa_lanczossharp`**

A slightly sharpened version of `ewa_lanczos`, preconfigured to use an ideal radius and parameter. If your hardware can run it, this is probably what you should use by default.

**`mitchell`**

Mitchell-Netravali. The `B` and `C` parameters can be set with `scale-param1` and `scale-param2`. This filter is very good at downscaling (see `dscale`).

**oversample**

A version of nearest neighbour that (naively) oversamples pixels, so that pixels overlapping edges get linearly interpolated instead of rounded. This essentially removes the small imperfections and judder artifacts caused by nearest-neighbour interpolation, in exchange for adding some blur. This filter is good at temporal interpolation, and also known as "smoothmotion" (see `tscale`).

**custom**

A user-defined custom shader (see `scale-shader`).

There are some more filters, but most are not as useful. For a complete list, pass `help` as value, e.g.:

```
mpv --vo=opengl:scale=help
```

**scale-param1=<value>, scale-param2=<value>**

Set filter parameters. Ignored if the filter is not tunable. Currently, this affects the following filter parameters:

**bcspline**

Spline parameters (`B` and `C`). Defaults to 0.5 for both.

**gaussian**

Scale parameter (`t`). Increasing this makes the result blurrier. Defaults to 1.

**sharpen3, sharpen5**

Sharpening strength. Increasing this makes the image sharper but adds more ringing and aliasing. Defaults to 0.5.

**oversample**

Minimum distance to an edge before interpolation is used. Setting this to 0 will always interpolate edges, whereas setting it to 0.5 will never interpolate, thus behaving as if the regular nearest neighbour algorithm was used. Defaults to 0.0.

**scale-blur=<value>**

Kernel scaling factor (also known as a blur factor). Decreasing this makes the result sharper, increasing it makes it blurrier (default 0). If set to 0, the kernel's preferred blur factor is used. Note that setting this too low (eg. 0.5) leads to bad results. It's generally recommended to stick to values between 0.8 and 1.2.

**scale-radius=<value>**

Set radius for filters listed below, must be a float number between 0.5 and 16.0. Defaults to the filter's preferred radius if not specified.

`sinc` and derivatives, `jinc` and derivatives, `gaussian`, `box` and `triangle`

Note that depending on filter implementation details and video scaling ratio, the radius that actually being used might be different (most likely being increased a bit).

**scale-antiring=<value>**

Set the antirring strength. This tries to eliminate ringing, but can introduce other artifacts in the process. Must be a float number between 0.0 and 1.0. The default value of 0.0 disables antirring entirely.

Note that this doesn't affect the special filters `bilinear`, `bicubic_fast` or `sharpen`.

**scale-window=<window>**

(Advanced users only) Choose a custom windowing function for the kernel. Defaults to the filter's preferred window if unset. Use `scale-window=help` to get a list of supported windowing functions.

**scale-wparam=<window>**

(Advanced users only) Configure the parameter for the window function given by `scale-window`. Ignored if the window is not tunable. Currently, this affects the following window parameters:

**kaiser**

Window parameter (alpha). Defaults to 6.33.

**blackman**

Window parameter (alpha). Defaults to 0.16.

**gaussian**

Scale parameter (t). Increasing this makes the window wider. Defaults to 1.

**scaler-resizes-only**

Disable the scaler if the video image is not resized. In that case, `bilinear` is used instead whatever is set with `scale`. Bilinear will reproduce the source image perfectly if no scaling is performed. Note that this option never affects `cscale`.

**pbo**

Enable use of PBOs. This is slightly faster, but can sometimes lead to sporadic and temporary image corruption (in theory, because reupload is not retried when it fails), and perhaps actually triggers slower paths with drivers that don't support PBOs properly.

**dither-depth=<N|no|auto>**

Set dither target depth to N. Default: no.

**no**

Disable any dithering done by mpv.

**auto**

Automatic selection. If output bit depth cannot be detected, 8 bits per component are assumed.

**8**

Dither to 8 bit output.

Note that the depth of the connected video display device can not be detected. Often, LCD panels will do dithering on their own, which conflicts with `opengl`'s dithering and leads to ugly output.

**dither-size-fruit=<2-8>**

Set the size of the dither matrix (default: 6). The actual size of the matrix is  $(2^N) \times (2^N)$  for an option value of N, so a value of 6 gives a size of 64x64. The matrix is generated at startup time, and a large matrix can take rather long to compute (seconds).

Used in `dither=fruit` mode only.

**dither=<fruit|ordered|no>**

Select dithering algorithm (default: fruit). (Normally, the `dither-depth` option controls whether dithering is enabled.)

**temporal-dither**

Enable temporal dithering. (Only active if dithering is enabled in general.) This changes between 8 different dithering pattern on each frame by changing the orientation of the tiled dithering matrix. Unfortunately, this can lead to flicker on LCD displays, since these have a high reaction time.

**temporal-dither-period=<1-128>**

Determines how often the dithering pattern is updated when `temporal-dither` is in use. 1 (the default) will update on every video frame, 2 on every other frame, etc.

**debug**



Check for OpenGL errors, i.e. call `glGetError()`. Also request a debug OpenGL context (which does nothing with current graphics drivers as of this writing).

#### **interpolation**

Reduce stuttering caused by mismatches in the video fps and display refresh rate (also known as judder).

This essentially attempts to interpolate the missing frames by convoluting the video along the temporal axis. The filter used can be controlled using the `tscale` setting.

Note that this relies on vsync to work, see `swapinterval` for more information.

#### **swapinterval=<n>**

Interval in displayed frames between two buffer swaps. 1 is equivalent to enable VSYNC, 0 to disable VSYNC. Defaults to 1 if not specified.

Note that this depends on proper OpenGL vsync support. On some platforms and drivers, this only works reliably when in fullscreen mode. It may also require driver-specific hacks if using multiple monitors, to ensure mpv syncs to the right one. Compositing window managers can also lead to bad results, as can missing or incorrect display FPS information (see `--display-fps`).

#### **dscale=<filter>**

Like `scale`, but apply these filters on downscaling instead. If this option is unset, the filter implied by `scale` will be applied.

#### **cscale=<filter>**

As `scale`, but for interpolating chroma information. If the image is not subsampled, this option is ignored entirely.

#### **tscale=<filter>**

The filter used for interpolating the temporal axis (frames). This is only used if `interpolation` is enabled. The only valid choices for `tscale` are separable convolution filters (use `tscale=help` to get a list). The default is `oversample`.

Note that the maximum supported filter radius is currently 3, due to limitations in the number of video textures that can be loaded simultaneously.

#### **tscale-clamp**

Clamp the `tscale` filter kernel's value range to [0-1]. This reduces excessive ringing artifacts in the temporal domain (which typically manifest themselves as short flashes or fringes of black, mostly around moving edges) in exchange for potentially adding more blur.

#### **dscale-radius, cscale-radius, tscale-radius, etc.**

Set filter parameters for `dscale`, `cscale` and `tscale`, respectively.

See the corresponding options for `scale`.

#### **linear-scaling**

Scale in linear light. It should only be used with a `fbo-format` that has at least 16 bit precision.

#### **fancy-downscaling**

When using convolution based filters, extend the filter size when downscaling. Trades quality for reduced downscaling performance.

This is automatically disabled for anamorphic video, because this feature doesn't work correctly with different scale factors in different directions.

#### **pre-shaders=<files>, post-shaders=<files>, scale-shader=<file>**

Custom GLSL fragment shaders.

#### **pre-shaders (list)**

These get applied after conversion to RGB and before linearization and upscaling. Operates on non-linear RGB (same as input). This is the best place to put things like sharpen filters.

#### **scale-shader**

This gets used instead of `scale/cscale` when those options are set to `custom`. The colorspace it operates on depends on the values of `linear-scaling` and `sigmoid-upscaling`, so no assumptions should be made here.

#### **post-shaders (list)**

These get applied after upscaling and subtitle blending (when `blend-subtitles` is enabled), but before color management. Operates on linear RGB if `linear-scaling` is in effect, otherwise non-linear RGB. This is the best place for colorspace transformations (eg. saturation mapping).

These files must define a function with the following signature:

```
vec4 sample(sampler2D tex, vec2 pos, vec2 tex_size)
```

The meanings of the parameters are as follows:

#### **sampler2D tex**

The source texture for the shader.

#### **vec2 pos**

The position to be sampled, in coordinate space [0-1].

#### **vec2 tex\_size**

The size of the texture, in pixels. This may differ from `image_size`, eg. for subsampled content or for post-shaders.

In addition to these parameters, the following uniforms are also globally available:

#### **float random**

A random number in the range [0-1], different per frame.

#### **int frame**

A simple count of frames rendered, increases by one per frame and never resets (regardless of seeks).

#### **vec2 image\_size**

The size in pixels of the input image.

For example, a shader that inverts the colors could look like this:

```
vec4 sample(sampler2D tex, vec2 pos, vec2 tex_size)
{
    vec4 color = texture(tex, pos);
    return vec4(1.0 - color.rgb, color.a);
}
```

#### **deband**

Enable the debanding algorithm. This greatly reduces the amount of visible banding, blocking and other quantization artifacts, at the expensive of very slightly blurring some of the finest details. In practice, it's virtually always an improvement - the only reason to disable it would be for performance.

**deband-iterations=<1..16>**

The number of debanding steps to perform per sample. Each step reduces a bit more banding, but takes time to compute. Note that the strength of each step falls off very quickly, so high numbers are practically useless. (Default 4)

If the performance hit of debanding is too great, you can reduce this to 2 or 1 with marginal visual quality loss.

**deband-threshold=<0..4096>**

The debanding filter's cut-off threshold. Higher numbers increase the debanding strength dramatically but progressively diminish image details. (Default 64)

**deband-range=<1..64>**

The debanding filter's initial radius. The radius increases linearly for each iteration. A higher radius will find more gradients, but a lower radius will smooth more aggressively. (Default 8)

**deband-grain=<0..4096>**

Add some extra noise to the image. This significantly helps cover up remaining quantization artifacts. Higher numbers add more noise. (Default 48)

**sigmoid-upscaling**

When upscaling, use a sigmoidal color transform to avoid emphasizing ringing artifacts. This also implies `linear-scaling`.

**sigmoid-center**

The center of the sigmoid curve used for `sigmoid-upscaling`, must be a float between 0.0 and 1.0. Defaults to 0.75 if not specified.

**sigmoid-slope**

The slope of the sigmoid curve used for `sigmoid-upscaling`, must be a float between 1.0 and 20.0. Defaults to 6.5 if not specified.

**glfinish**

Call `glFinish()` before and after swapping buffers (default: disabled). Slower, but might help getting better results when doing framedropping. Can completely ruin performance. The details depend entirely on the OpenGL driver.

**waitvsync**

Call `glXWaitVideoSyncSGI` after each buffer swap (default: disabled). This may or may not help with video timing accuracy and frame drop. It's possible that this makes video output slower, or has no effect at all.

X11/GLX only.

**dwmflush=<no|windowed|yes>**

Calls `DwmFlush` after swapping buffers on Windows (default: no). It also sets `SwapInterval(0)` to ignore the OpenGL timing. Values are: no (disabled), windowed (only in windowed mode), yes (also in full screen). This may help getting more consistent frame intervals, especially with high-fps clips - which might also reduce dropped frames. Typically a value of `windowed` should be enough since full screen may bypass the DWM.

Windows only.

**sw**

Continue even if a software renderer is detected.

**backend=<sys>**

The value `auto` (the default) selects the windowing backend. You can also pass `help` to get a complete list of compiled in backends (sorted by autoprobe order).

**auto**

auto-select (default)

**cocoa**

Cocoa/OS X

**win**

Win32/WGL

**x11**

X11/GLX

**wayland**

Wayland/EGL

**x11egl**

X11/EGL

**es**

Force or prefer GLES2/3 over desktop OpenGL, if supported.

**fbo-format=<fmt>**

Selects the internal format of textures used for FBOs. The format can influence performance and quality of the video output. `fmt` can be one of: `rgb`, `rgba`, `rgb8`, `rgb10`, `rgb10_a2`, `rgb16`, `rgb16f`, `rgb32f`, `rgba12`, `rgba16`, `rgba16f`, `rgba32f`. Default: `rgba16`.

**gamma=<0.1..2.0>**

Set a gamma value (default: 1.0). If gamma is adjusted in other ways (like with the `--gamma` option or key bindings and the `gamma` property), the value is multiplied with the other gamma value.

Recommended values based on the environmental brightness:

**1.0**

Brightly illuminated (default)

**0.9**

Slightly dim

**0.8**

Pitch black room

**gamma-auto**

Automatically corrects the gamma value depending on ambient lighting conditions (adding a gamma boost for dark rooms).

With ambient illuminance of 64lux, mpv will pick the 1.0 gamma value (no boost), and slightly increase the boost up until 0.8 for 16lux.

NOTE: Only implemented on OS X.

**target-prim=<value>**

Specifies the primaries of the display. Video colors will be adapted to this colorspace if necessary. Valid values are:

**auto**

Disable any adaptation (default)

**bt.470m**

ITU-R BT.470 M

**bt.601-525**

ITU-R BT.601 (525-line SD systems, eg. NTSC), SMPTE 170M/240M

**bt.601-625**

ITU-R BT.601 (625-line SD systems, eg. PAL/SECAM), ITU-R BT.470 B/G

**bt.709**

ITU-R BT.709 (HD), IEC 61966-2-4 (sRGB), SMPTE RP177 Annex B

**bt.2020**

ITU-R BT.2020 (UHD)

**apple**

Apple RGB

**adobe**

Adobe RGB (1998)

**prophoto**

ProPhoto RGB (ROMM)

**cie1931**

CIE 1931 RGB (not to be confused with CIE XYZ)

**target-trc=<value>**

Specifies the transfer characteristics (gamma) of the display. Video colors will be adjusted to this curve. Valid values are:

**auto**

Disable any adaptation (default)

**bt.1886**

ITU-R BT.1886 curve, without the brightness drop (approx. 1.961)

**srgb**

IEC 61966-2-4 (sRGB)

**linear**

Linear light output

**gamma1.8**

Pure power curve (gamma 1.8), also used for Apple RGB

**gamma2.2**

Pure power curve (gamma 2.2)

**gamma2.8**

Pure power curve (gamma 2.8), also used for BT.470-BG

**prophoto**

ProPhoto RGB (ROMM)

**icc-profile=<file>**

Load an ICC profile and use it to transform linear RGB to screen output. Needs LittleCMS 2 support compiled in. This option overrides the `target-prim`, `target-trc` and `icc-profile-auto` options.

**icc-profile-auto**

Automatically select the ICC display profile currently specified by the display settings of the operating system.

NOTE: Only implemented on OS X and X11

**icc-cache-dir=<dirname>**

Store and load the 3D LUTs created from the ICC profile in this directory. This can be used to speed up loading, since LittleCMS 2 can take a while to create a 3D LUT. Note that these files contain uncompressed LUTs. Their size depends on the `3dlut-size`, and can be very big.

NOTE: This is not cleaned automatically, so old, unused cache files may stick around indefinitely.

**icc-intent=<value>**

Specifies the ICC intent used for the color transformation (when using `icc-profile`).

**0**

perceptual

**1**

relative colorimetric (default)

**2**

saturation

**3**

absolute colorimetric

**3dlut-size=<r>x<g>x<b>**

Size of the 3D LUT generated from the ICC profile in each dimension. Default is 128x256x64. Sizes must be a power of two, and 512 at most.

**blend-subtitles=<yes | video | no>**

Blend subtitles directly onto upscaled video frames, before interpolation and/or color management (default: no). Enabling this causes subtitles to be affected by `icc-profile`, `target-prim`, `target-trc`, `interpolation`, `gamma` and `post-shader`. It also increases subtitle performance when using `interpolation`.

The downside of enabling this is that it restricts subtitles to the visible portion of the video, so you can't have subtitles exist in the black margins below a video (for example).

If `video` is selected, the behavior is similar to `yes`, but subs are drawn at the video's native resolution, and scaled along with the video.

### **Warning**

This changes the way subtitle colors are handled. Normally, subtitle colors are assumed to be in sRGB and color managed as such. Enabling this makes them treated as being in the video's color space instead. This is good if you want things like softsubbed ASS signs to match the video colors, but may cause SRT subtitles or similar to look slightly off.

**alpha=<blend | yes | no>**

Decides what to do if the input has an alpha component (default: blend).

**blend**

Blend the frame against a black background.

**yes**

Try to create a framebuffer with alpha component. This only makes sense if the video contains alpha information (which is extremely rare). May not be supported on all platforms. If alpha framebuffers are unavailable, it silently falls back on a normal framebuffer. Note that if you set the `fbo-format` option to a non-default value, a format with alpha must be specified, or this won't work.

**no**

Ignore alpha component.

**rectangle-textures**

Force use of rectangle textures (default: no). Normally this shouldn't have any advantages over normal textures. Note that hardware decoding overrides this flag.

**background=<color>**

Color used to draw parts of the mpv window not covered by video. See `--osd-color` option how colors are defined.

#### **opengl-hq**

Same as `opengl`, but with default settings for high quality rendering.

This is equivalent to:

```
--vo=opengl:scale=spline36:cscale=spline36:dscale=mitchell:dither-depth=auto:fancy-downscaling:sigmoid-upscaling:pbo:deband
```

Note that some cheaper LCDs do dithering that gravely interferes with `opengl`'s dithering. Disabling dithering with `dither-depth=no` helps.

#### **sdl**

SDL 2.0+ Render video output driver, depending on system with or without hardware acceleration. Should work on all platforms supported by SDL 2.0. For tuning, refer to your copy of the file `SDL_hints.h`.

#### **Note**

This driver is for compatibility with systems that don't provide proper graphics drivers, or which support GLES only.

#### **sw**

Continue even if a software renderer is detected.

#### **switch-mode**

Instruct SDL to switch the monitor video mode when going fullscreen.

#### **vaapi**

Intel VA API video output driver with support for hardware decoding. Note that there is absolutely no reason to use this, other than wanting to use hardware decoding to save power on laptops, or possibly preventing video tearing with some setups.

#### **Note**

This driver is for compatibility with crappy systems. You can use `vaapi` hardware decoding with `--vo=opengl` too.

#### **scaling=<algorithm>**

##### **default**

Driver default (mpv default as well).

##### **fast**

Fast, but low quality.

##### **hq**

Unspecified driver dependent high-quality scaling, slow.

##### **nla**

non-linear anamorphic scaling

#### **deint-mode=<mode>**

Select deinterlacing algorithm. Note that by default deinterlacing is initially always off, and needs to be enabled with the `D` key (default key binding for `cycle deinterlace`).

This option doesn't apply if libva supports video post processing (vpp). In this case, the default for `deint-mode` is `no`, and enabling deinterlacing via user interaction using the methods mentioned above actually inserts the `vavpp` video filter. If vpp is not actually supported with the libva backend in use, you can use this option to forcibly enable VO based deinterlacing.

**no**

Don't allow deinterlacing (default for newer libva).

**first-field**

Show only first field (going by `--field-dominance`).

**bob**

bob deinterlacing (default for older libva).

**scaled-osd=<yes|no>**

If enabled, then the OSD is rendered at video resolution and scaled to display resolution. By default, this is disabled, and the OSD is rendered at display resolution if the driver supports it.

**null**

Produces no video output. Useful for benchmarking.

Usually, it's better to disable video with `--no-video` instead.

**fps=<value>**

Simulate display FPS. This artificially limits how many frames the VO accepts per second.

**caca**

Color ASCII art video output driver that works on a text console.

**Note**

This driver is a joke.

**image**

Output each frame into an image file in the current directory. Each file takes the frame number padded with leading zeros as name.

**format=<format>**

Select the image file format.

**jpg**

JPEG files, extension `.jpg`. (Default.)

**jpeg**

JPEG files, extension `.jpeg`.

**png**

PNG files.

**ppm**

Portable bitmap format.

**pgm**

Portable graymap format.

**pgmyuv**

Portable graymap format, using the YV12 pixel format.

**tga**

Truevision TGA.



**png-compression=<0-9>**

PNG compression factor (speed vs. file size tradeoff) (default: 7)

**png-filter=<0-5>**

Filter applied prior to PNG compression (0 = none; 1 = sub; 2 = up; 3 = average; 4 = Paeth; 5 = mixed) (default: 5)

**jpeg-quality=<0-100>**

JPEG quality factor (default: 90)

**(no-) jpeg-progressive**

Specify standard or progressive JPEG (default: no).

**(no-) jpeg-baseline**

Specify use of JPEG baseline or not (default: yes).

**jpeg-optimize=<0-100>**

JPEG optimization factor (default: 100)

**jpeg-smooth=<0-100>**

smooth factor (default: 0)

**jpeg-dpi=<1->**

JPEG DPI (default: 72)

**outdir=<dirname>**

Specify the directory to save the image files to (default: . /).

**wayland (Wayland only)**

Wayland shared memory video output as fallback for `opengl`.

### **Note**

This driver is for compatibility with systems that don't provide working OpenGL drivers.

**alpha**

Use a buffer format that supports videos and images with alpha information

**rgb565**

Use RGB565 as buffer format. This format is implemented on most platforms, especially on embedded where it is far more efficient than RGB8888.

**triple-buffering**

Use 3 buffers instead of 2. This can lead to more fluid playback, but uses more memory.

**opengl-cb**

For use with libmpv direct OpenGL embedding; useless in any other contexts. (See `<mpv/opengl_cb.h>`.) Usually, `opengl-cb` renders frames asynchronously by client and this can cause some frame drops. In order to provide a way to handle this situation, `opengl-cb` has its own frame queue and calls update callback more frequently if the queue is not empty regardless of existence of new frame. Once the queue is filled, `opengl-cb` drops frames automatically.

With default options, `opengl-cb` renders only the latest frame and drops all frames handed over while waiting render function after update callback.

**frame-queue-size=<1..100>**

The maximum count of frames which the frame queue can hold (default: 1)

**frame-drop-mode=<pop|clear|block>**

Select the behavior when the frame queue is full.

**pop**

Drop the oldest frame in the frame queue.

**clear**

Drop all frames in the frame queue.

**block**

Wait for a short time, behave like `clear` on timeout. (default)

This also supports many of the suboptions the `opengl` VO has. Run `mpv --vo=opengl-cb:help` for a list.

This also supports the `vo_cmdline` command.

**rpi (Raspberry Pi)**

Native video output on the Raspberry Pi using the MMAL API.

**display=<number>**

Select the display number on which the video overlay should be shown (default: 0).

**layer=<number>**

Select the dispmanx layer on which the video overlay should be shown (default: -10). Note that mpv will also use the 2 layers above the selected layer, to handle the window background and OSD. Actual video rendering will happen on the layer above the selected layer.

**background=<yes | no>**

Whether to render a black background behind the video (default: no). Normally it's better to kill the console framebuffer instead, which gives better performance.

**drm (Direct Rendering Manager)**

Video output driver using Kernel Mode Setting / Direct Rendering Manager. Does not support hardware acceleration. Should be used when one doesn't want to install full-blown graphical environment (e.g. no X).

**connector=<number>**

Select the connector to use (usually this is a monitor.) If set to -1, mpv renders the output on the first available connector. (default: -1)

**devpath=<filename>**

Path to graphic card device. (default: /dev/dri/card0)

**mode=<number>**

Mode ID to use (resolution, bit depth and frame rate). (default: 0)

## AUDIO FILTERS

Audio filters allow you to modify the audio stream and its properties. The syntax is:

**--af=<filter1[=parameter1:parameter2:...],filter2,...>**

Setup a chain of audio filters.

### Note

To get a full list of available audio filters, see `--af=help`.

Also, keep in mind that most actual filters are available via the `lavfi` wrapper, which gives you access to most of libavfilter's filters. This includes all filters that have been ported from MPlayer to libavfilter.

You can also set defaults for each filter. The defaults are applied before the normal filter parameters.

**--af-defaults=<filter1[=parameter1:parameter2:...],filter2,...>**

Set defaults for each filter.

Audio filters are managed in lists. There are a few commands to manage the filter list:

**--af-add=<filter1[,filter2,...]>**

Appends the filters given as arguments to the filter list.

**--af-pre=<filter1[,filter2,...]>**

Prepends the filters given as arguments to the filter list.

**--af-del=<index1[,index2,...]>**

Deletes the filters at the given indexes. Index numbers start at 0, negative numbers address the end of the list (-1 is the last).

**--af-clr**

Completely empties the filter list.

Available filters are:

**lavrresample[=option1:option2:...]**

This filter uses libavresample (or libswresample, depending on the build) to change sample rate, sample format, or channel layout of the audio stream. This filter is automatically enabled if the audio output does not support the audio configuration of the file being played.

It supports only the following sample formats: u8, s16, s32, float.

**filter-size=<length>**

Length of the filter with respect to the lower sampling rate. (default: 16)

**phase-shift=<count>**

Log2 of the number of polyphase entries. (... , 10->1024, 11->2048, 12->4096, ...) (default: 10->1024)

**cutoff=<cutoff>**

Cutoff frequency (0.0-1.0), default set depending upon filter length.

**linear**

If set then filters will be linearly interpolated between polyphase entries. (default: no)

**no-detach**

Do not detach if input and output audio format/rate/channels match. (If you just want to set defaults for this filter that will be used even by automatically inserted lavrresample instances, you should prefer setting them with --af-defaults=lavrresample:...)

**normalize=<yes|no>**

Whether to normalize when remixing channel layouts (default: yes). This is e.g. applied when downmixing surround audio to stereo. The advantage is that this guarantees that no clipping can happen. Unfortunately, this can also lead to too low volume levels. Whether you enable or disable this is essentially a matter of taste, but the default uses the safer choice.

**o=<string>**

Set AVOptions on the SwrContext or AVAudioResampleContext. These should be documented by FFmpeg or Libav.

**lavcac3enc[=tospdif[:bitrate[:minch]]]**

Encode multi-channel audio to AC-3 at runtime using libavcodec. Supports 16-bit native-endian input format, maximum 6 channels. The output is big-endian when outputting a raw AC-3 stream, native-endian when outputting to S/PDIF. If the input sample rate is not 48 kHz, 44.1 kHz or 32 kHz, it will be resampled to 48 kHz.

**tospdif=<yes|no>**

Output raw AC-3 stream if `no`, output to S/PDIF for pass-through if `yes` (default).

**bitrate=<rate>**

The bitrate use for the AC-3 stream. Set it to 384 to get 384 kbps.

The default is 640. Some receivers might not be able to handle this.

Valid values: 32, 40, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576, 640.

The special value `auto` selects a default bitrate based on the input channel number:

<b>1ch:</b>	96
<b>2ch:</b>	192
<b>3ch:</b>	224
<b>4ch:</b>	384
<b>5ch:</b>	448
<b>6ch:</b>	448

**minch=<n>**

If the input channel number is less than `<minch>`, the filter will detach itself (default: 3).

**equalizer=g1:g2:g3:....:g10**

10 octave band graphic equalizer, implemented using 10 IIR band-pass filters. This means that it works regardless of what type of audio is being played back. The center frequencies for the 10 bands are:

No.	frequency
0	31.25 Hz
1	62.50 Hz
2	125.00 Hz
3	250.00 Hz
4	500.00 Hz
5	1.00 kHz
6	2.00 kHz
7	4.00 kHz
8	8.00 kHz
9	16.00 kHz

If the sample rate of the sound being played is lower than the center frequency for a frequency band, then that band will be disabled. A known bug with this filter is that the characteristics for the uppermost band are not completely symmetric if the sample rate is close to the center frequency of that band. This problem can be worked around by upsampling the sound using a resampling filter before it reaches this filter.

**<g1>:<g2>:<g3>:....:<g10>**

floating point numbers representing the gain in dB for each frequency band (-12-12)

### **Example**

```
mpv --af=equalizer=11:11:10:5:0:-12:0:5:12:12 media.avi
```

Would amplify the sound in the upper and lower frequency region while canceling it almost completely around 1 kHz.

**channels=nch[:routes]**

Can be used for adding, removing, routing and copying audio channels. If only `<nch>` is given, the default routing is used. It works as follows: If the number of output channels is greater than the number of input channels, empty channels are inserted (except when mixing from mono to stereo; then the mono channel is duplicated). If the number of output channels is less than the number of input channels, the exceeding channels are truncated.

**<nch>**

number of output channels (1-8)

**<routes>**

List of `,` separated routes, in the form `from1-to1,from2-to2,...`. Each pair defines where to route each channel. There can be at most 8 routes. Without this argument, the default routing is used. Since `,` is also used to separate filters, you must quote this argument with `[...]` or similar.

## Examples

**mpv --af=channels=4:[0-1,1-0,0-2,1-3] media.avi**

Would change the number of channels to 4 and set up 4 routes that swap channel 0 and channel 1 and leave channel 2 and 3 intact. Observe that if media containing two channels were played back, channels 2 and 3 would contain silence but 0 and 1 would still be swapped.

**mpv --af=channels=6:[0-0,0-1,0-2,0-3] media.avi**

Would change the number of channels to 6 and set up 4 routes that copy channel 0 to channels 0 to 3. Channel 4 and 5 will contain silence.

## Note

You should probably not use this filter. If you want to change the output channel layout, try the `format` filter, which can make mpv automatically up- and downmix standard channel layouts.

**format=format:srate:channels:out-format:out-srate:out-channels**

Does not do any format conversion itself. Rather, it may cause the filter system to insert necessary conversion filters before or after this filter if needed. It is primarily useful for controlling the audio format going into other filters. To specify the format for audio output, see `--audio-format`, `--audio-samplerate`, and `--audio-channels`. This filter is able to force a particular format, whereas `--audio-*` may be overridden by the ao based on output compatibility.

All parameters are optional. The first 3 parameters restrict what the filter accepts as input. They will therefore cause conversion filters to be inserted before this one. The `out-` parameters tell the filters or audio outputs following this filter how to interpret the data without actually doing a conversion. Setting these will probably just break things unless you really know you want this for some reason, such as testing or dealing with broken media.

**<format>**

Force conversion to this format. Use `--af=format=format=help` to get a list of valid formats.

**<srate>**

Force conversion to a specific sample rate. The rate is an integer, 48000 for example.

**<channels>**

Force mixing to a specific channel layout. See `--audio-channels` option for possible values.

**<out-format>****<out-srate>****<out-channels>**

*NOTE:* this filter used to be named `force`. The old `format` filter used to do conversion itself, unlike this one which lets the filter system handle the conversion.

**volume[=<volumedb>[:...]]**

Implements software volume control. Use this filter with caution since it can reduce the signal to noise ratio of the sound. In most cases it is best to use the *Master* volume control of your sound card or the volume knob on your amplifier.

*NOTE:* This filter is not reentrant and can therefore only be enabled once for every audio stream.

**<volumedb>**

Sets the desired gain in dB for all channels in the stream from -200 dB to +60 dB, where -200 dB mutes the sound completely and +60 dB equals a gain of 1000 (default: 0).

**replaygain-track**

Adjust volume gain according to the track-gain replaygain value stored in the file metadata.

**replaygain-album**

Like `replaygain-track`, but using the album-gain value instead.

**replaygain-preamp**

Pre-amplification gain in dB to apply to the selected replaygain gain (default: 0).

**replaygain-clip=yes|no**

Prevent clipping caused by replaygain by automatically lowering the gain (default). Use `replaygain-clip=no` to disable this.

**replaygain-fallback**

Gain in dB to apply if the file has no replay gain tags. This option is always applied if the replaygain logic is somehow inactive. If this is applied, no other replaygain options are applied.

**softclip**

Turns soft clipping on. Soft-clipping can make the sound more smooth if very high volume levels are used. Enable this option if the dynamic range of the loudspeakers is very low.

*WARNING:* This feature creates distortion and should be considered a last resort.

**s16**

Force S16 sample format if set. Lower quality, but might be faster in some situations.

**detach**

Remove the filter if the volume is not changed at audio filter config time. Useful with `replaygain`: if the current file has no replaygain tags, then the filter will be removed if this option is enabled. (If `--softvol=yes` is used and the player volume controls are used during playback, a different volume filter will be inserted.)

## Example

```
mpv --af=volume=10.1 media.avi
```

Would amplify the sound by 10.1 dB and hard-clip if the sound level is too high.

**pan=n:[<matrix>]**

Mixes channels arbitrarily. Basically a combination of the volume and the channels filter that can be used to down-mix many channels to only a few, e.g. stereo to mono, or vary the "width" of the center speaker in a surround sound system. This filter is hard to use, and will require some tinkering before the desired result is obtained. The number of options for this filter depends on the number of output channels. An example how to downmix a six-channel file to two channels with this filter can be found in the examples section near the end.

**<n>**

Number of output channels (1-8).

**<matrix>**

A list of values [L00,L01,L02,...,L10,L11,L12,...,Ln0,Ln1,Ln2,...], where each element  $L_{ij}$  means how much of input channel  $i$  is mixed into output channel  $j$  (range 0-1). So in principle you first have  $n$  numbers saying what to do with the first input channel, then  $n$  numbers that act on the second input channel etc. If you do not specify any numbers for some input channels, 0 is assumed. Note that the values are separated by `,`, which is already used by the option parser to separate filters. This is why you must quote the value list with `[...]` or similar.

## Examples

```
mpv --af=pan=1:[0.5,0.5] media.avi
```

Would downmix from stereo to mono.

```
mpv --af=pan=3:[1,0,0.5,0,1,0.5] media.avi
```

Would give 3 channel output leaving channels 0 and 1 intact, and mix channels 0 and 1 into output channel 2 (which could be sent to a subwoofer for example).

## Note

If you just want to force remixing to a certain output channel layout, it is easier to use the `format` filter. For example, `mpv '--af=format=channels=5.1' '--audio-channels=5.1'` would always force remixing audio to 5.1 and output it like this.

**delay=[ch1,ch2,...]**

Delays the sound to the loudspeakers such that the sound from the different channels arrives at the listening position simultaneously. It is only useful if you have more than 2 loudspeakers.

**[ch1,ch2,...]**

The delay in ms that should be imposed on each channel (floating point number between 0 and 1000).

To calculate the required delay for the different channels, do as follows:

1. Measure the distance to the loudspeakers in meters in relation to your listening position, giving you the distances  $s_1$  to  $s_5$  (for a 5.1 system). There is no point in compensating for the subwoofer (you will not hear the difference anyway).
2. Subtract the distances  $s_1$  to  $s_5$  from the maximum distance, i.e.  
 $s[i] = \max(s) - s[i]; i = 1 \dots 5.$
3. Calculate the required delays in ms as  $d[i] = 1000 * s[i] / 342; i = 1 \dots 5.$

### **Example**

```
mpv --af=delay=[10.5,10.5,0,0,7,0] media.avi
```

Would delay front left and right by 10.5 ms, the two rear channels and the subwoofer by 0 ms and the center channel by 7 ms.

**drc[=method:target]**

Applies dynamic range compression. This maximizes the volume by compressing the audio signal's dynamic range. (Formerly called `volnorm`.)

**<method>**

Sets the used method.

**1**

Use a single sample to smooth the variations via the standard weighted mean over past samples (default).

**2**

Use several samples to smooth the variations via the standard weighted mean over past samples.

**<target>**

Sets the target amplitude as a fraction of the maximum for the sample type (default: 0.25).

### **Note**

This filter can cause distortion with audio signals that have a very large dynamic range.

**scaletempo[=option1:option2:...]**

Scales audio tempo without altering pitch, optionally synced to playback speed (default).

This works by playing 'stride' ms of audio at normal speed then consuming 'stride\*scale' ms of input audio. It pieces the strides together by blending 'overlap'% of stride with audio following the previous stride. It optionally performs a short statistical analysis on the next 'search' ms of audio to determine the best overlap position.

**scale=<amount>**

Nominal amount to scale tempo. Scales this amount in addition to speed. (default: 1.0)

**stride=<amount>**

Length in milliseconds to output each stride. Too high of a value will cause noticeable skips at high scale amounts and an echo at low scale amounts. Very low values will alter pitch. Increasing improves performance. (default: 60)

**overlap=<percent>**



Percentage of stride to overlap. Decreasing improves performance. (default: .20)

**search=<amount>**

Length in milliseconds to search for best overlap position. Decreasing improves performance greatly. On slow systems, you will probably want to set this very low. (default: 14)

**speed=<tempo|pitch|both|none>**

Set response to speed change.

**tempo**

Scale tempo in sync with speed (default).

**pitch**

Reverses effect of filter. Scales pitch without altering tempo. Add this to your `input.conf` to step by musical semi-tones:

```
[ multiply speed 0.9438743126816935
] multiply speed 1.059463094352953
```

### ***Warning***

Loses sync with video.

**both**

Scale both tempo and pitch.

**none**

Ignore speed changes.

### ***Examples***

**mpv --af=scaletempo --speed=1.2 media.ogg**

Would play media at 1.2x normal speed, with audio at normal pitch. Changing playback speed would change audio tempo to match.

**mpv --af=scaletempo=scale=1.2:speed=none --speed=1.2 media.ogg**

Would play media at 1.2x normal speed, with audio at normal pitch, but changing playback speed would have no effect on audio tempo.

**mpv --af=scaletempo=stride=30:overlap=.50:search=10 media.ogg**

Would tweak the quality and performance parameters.

**mpv --af=format=float,scaletempo media.ogg**

Would make scaletempo use float code. Maybe faster on some platforms.

**mpv --af=scaletempo=scale=1.2:speed=pitch audio.ogg**

Would play media at 1.2x normal speed, with audio at normal pitch. Changing playback speed would change pitch, leaving audio tempo at 1.2x.

**rubberband**

High quality pitch correction with librubberband. This can be used in place of `scaletempo`, and will be used to adjust audio pitch when playing at speed different from normal.

This filter has a number of sub-options. You can list them with `mpv --af=rubberband=help`. This will also show the default values for each option. The options are not documented here, because they are merely passed to `librubberband`. Look at the `librubberband` documentation to learn what each option does: [http://breakfastquay.com/rubberband/code-doc/classRubberBand\\_1\\_1RubberBandStretcher.html](http://breakfastquay.com/rubberband/code-doc/classRubberBand_1_1RubberBandStretcher.html) (The mapping of the `mpv` rubberband filter sub-option names and values to those of `librubberband` follows a simple pattern: "Option" + Name + Value.)

#### **lavfi=graph**

Filter audio using FFmpeg's libavfilter.

##### **<graph>**

Libavfilter graph. See `lavfi` video filter for details - the graph syntax is the same.

### **Warning**

Don't forget to quote libavfilter graphs as described in the `lavfi` video filter section.

**o=<string>**

AVOptions.

## **VIDEO FILTERS**

Video filters allow you to modify the video stream and its properties. The syntax is:

**--vf=<filter1[=parameter1:parameter2:...],filter2,...>**

Setup a chain of video filters.

You can also set defaults for each filter. The defaults are applied before the normal filter parameters.

**--vf-defaults=<filter1[=parameter1:parameter2:...],filter2,...>**

Set defaults for each filter.

### **Note**

To get a full list of available video filters, see `--vf=help`.

Also, keep in mind that most actual filters are available via the `lavfi` wrapper, which gives you access to most of `libavfilter`'s filters. This includes all filters that have been ported from `MPlayer` to `libavfilter`.

Video filters are managed in lists. There are a few commands to manage the filter list.

**--vf-add=<filter1[,filter2,...]>**

Appends the filters given as arguments to the filter list.

**--vf-pre=<filter1[,filter2,...]>**

Prepends the filters given as arguments to the filter list.

**--vf-del=<index1[,index2,...]>**

Deletes the filters at the given indexes. Index numbers start at 0, negative numbers address the end of the list (-1 is the last).

**--vf-clr**

Completely empties the filter list.

With filters that support it, you can access parameters by their name.

**--vf=<filter>=help**

Prints the parameter names and parameter value ranges for a particular filter.

**--vf=<filter=named\_parameter1=value1[:named\_parameter2=value2:...]>**

Sets a named parameter to the given value. Use on and off or yes and no to set flag parameters.

Available filters are:

**crop[=w:h:x:y]**

Crops the given part of the image and discards the rest. Useful to remove black bands from widescreen videos.

**<w>,<h>**

Cropped width and height, defaults to original width and height.

**<x>,<y>**

Position of the cropped picture, defaults to center.

**expand[=w:h:x:y:aspect:round]**

Expands (not scales) video resolution to the given value and places the unscaled original at coordinates x, y.

**<w>,<h>**

Expanded width,height (default: original width,height). Negative values for w and h are treated as offsets to the original size.

### ***Example***

**expand=0:-50:0:0**

Adds a 50 pixel border to the bottom of the picture.

**<x>,<y>**

position of original image on the expanded image (default: center)

**<aspect>**

Expands to fit an aspect instead of a resolution (default: 0).

### ***Example***

**expand=800::::4/3**

Expands to 800x600, unless the source is higher resolution, in which case it expands to fill a 4/3 aspect.

**<round>**

Rounds up to make both width and height divisible by <r> (default: 1).

**flip**

Flips the image upside down.

**mirror**

Mirrors the image on the Y axis.

**rotate[=0|90|180|270]**

Rotates the image by a multiple of 90 degrees clock-wise.

**scale[=w:h:param:param2:chr-drop:noup:arnd**

Scales the image with the software scaler (slow) and performs a YUV<->RGB color space conversion (see also `--sws`).

All parameters are optional.

**<w>: <h>**

scaled width/height (default: original width/height)

- 0:** scaled d\_width/d\_height
- 1:** original width/height
- 2:** Calculate w/h using the other dimension and the prescaled aspect ratio.
- 3:** Calculate w/h using the other dimension and the original aspect ratio.
- (n+8):** Like -n above, but rounding the dimension to the closest multiple of 16.

**<param>[ :<param2>] (see also `--sws`)**

Set some scaling parameters depending on the type of scaler selected with `--sws`:

```
--sws=2 (bicubic):  B (blurring) and C (ringing)
                   0.00:0.60 default
                   0.00:0.75 VirtualDub's "precise bicubic"
                   0.00:0.50 Catmull-Rom spline
                   0.33:0.33 Mitchell-Netravali spline
                   1.00:0.00 cubic B-spline

--sws=7 (Gaussian): sharpness (0 (soft) - 100 (sharp))

--sws=9 (Lanczos):  filter length (1-10)
```

**<chr-drop>**

chroma skipping

- 0:** Use all available input lines for chroma (default).
- 1:** Use only every 2. input line for chroma.
- 2:** Use only every 4. input line for chroma.
- 3:** Use only every 8. input line for chroma.

**<noup>**

Disallow upscaling past the original dimensions.

- 0:** Allow upscaling (default).
- 1:** Disallow upscaling if one dimension exceeds its original value.
- 2:** Disallow upscaling if both dimensions exceed their original values.

**<arnd>**

Accurate rounding for the vertical scaler, which may be faster or slower than the default rounding.

**no:** Disable accurate rounding (default).

**yes:** Enable accurate rounding.

**dsize[=w:h:aspect-method:r:aspect]**

Changes the intended display size/aspect at an arbitrary point in the filter chain. Aspect can be given as a fraction (4/3) or floating point number (1.33). Alternatively, you may specify the exact display width and height desired. Note that this filter does *not* do any scaling itself; it just affects what later scalers (software or hardware) will do when auto-scaling to the correct aspect.

**<w>, <h>**

New display width and height.

Can also be these special values:

- 0:** original display width and height
- 1:** original video width and height (default)
- 2:** Calculate w/h using the other dimension and the original display aspect ratio.
- 3:** Calculate w/h using the other dimension and the original video aspect ratio.

### ***Example***

**dsize=800:-2**

Specifies a display resolution of 800x600 for a 4/3 aspect video, or 800x450 for a 16/9 aspect video.

#### **<aspect-method>**

Modifies width and height according to original aspect ratios.

- 1:** Ignore original aspect ratio (default).
- 0:** Keep display aspect ratio by using <w> and <h> as maximum resolution.
- 1:** Keep display aspect ratio by using <w> and <h> as minimum resolution.
- 2:** Keep video aspect ratio by using <w> and <h> as maximum resolution.
- 3:** Keep video aspect ratio by using <w> and <h> as minimum resolution.

### ***Example***

**dsize=800:600:0**

Specifies a display resolution of at most 800x600, or smaller, in order to keep aspect.

#### **<r>**

Rounds up to make both width and height divisible by <r> (default: 1).

#### **<aspect>**

Force an aspect ratio.

**format=fmt=<value>:colormatrix=<value>:...**

Restricts the color space for the next filter without doing any conversion. Use together with the scale filter for a real conversion.

### ***Note***

For a list of available formats, see `format=fmt=help`.

#### **<fmt>**

Format name, e.g. rgb15, bgr24, 420p, etc. (default: don't change).

#### **<outfmt>**

Format name that should be substituted for the output. If they do not have the same bytes per pixel and chroma subsampling, it will fail.

#### <colormatrix>

Controls the YUV to RGB color space conversion when playing video. There are various standards. Normally, BT.601 should be used for SD video, and BT.709 for HD video. (This is done by default.) Using incorrect color space results in slightly under or over saturated and shifted colors.

These options are not always supported. Different video outputs provide varying degrees of support. The `opengl` and `vdpa` video output drivers usually offer full support. The `xv` output can set the color space if the system video driver supports it, but not input and output levels. The `scale` video filter can configure color space and input levels, but only if the output format is RGB (if the video output driver supports RGB output, you can force this with `-vf scale,format=rgba`).

If this option is set to `auto` (which is the default), the video's color space flag will be used. If that flag is unset, the color space will be selected automatically. This is done using a simple heuristic that attempts to distinguish SD and HD video. If the video is larger than 1279x576 pixels, BT.709 (HD) will be used; otherwise BT.601 (SD) is selected.

Available color spaces are:

- auto:** automatic selection (default)
- bt.601:** ITU-R BT.601 (SD)
- bt.709:** ITU-R BT.709 (HD)
- bt.2020-ncl:** ITU-R BT.2020 non-constant luminance system
- bt.2020-cl:** ITU-R BT.2020 constant luminance system
- smpTE-240m:** SMPTE-240M

#### <colorlevels>

YUV color levels used with YUV to RGB conversion. This option is only necessary when playing broken files which do not follow standard color levels or which are flagged wrong. If the video does not specify its color range, it is assumed to be limited range.

The same limitations as with <colormatrix> apply.

Available color ranges are:

- auto:** automatic selection (normally limited range) (default)
- limited:** limited range (16-235 for luma, 16-240 for chroma)
- full:** full range (0-255 for both luma and chroma)

#### <outputlevels>

RGB color levels used with YUV to RGB conversion. Normally, output devices such as PC monitors use full range color levels. However, some TVs and video monitors expect studio RGB levels. Providing full range output to a device expecting studio level input results in crushed blacks and whites, the reverse in dim gray blacks and dim whites.

The same limitations as with <colormatrix> apply.

Available color ranges are:

- auto:** automatic selection (equals to full range) (default)
- limited:** limited range (16-235 per component), studio levels
- full:** full range (0-255 per component), PC levels

## Note

It is advisable to use your graphics driver's color range option instead, if available.

### <primaries>

RGB primaries the source file was encoded with. Normally this should be set in the file header, but when playing broken or mistagged files this can be used to override the setting.

This option only affects video output drivers that perform color management, for example `opengl` with the `target-prim` or `icc-profile` suboptions set.

If this option is set to `auto` (which is the default), the video's primaries flag will be used. If that flag is unset, the color space will be selected automatically, using the following heuristics: If the `<colormatrix>` is set or determined as BT.2020 or BT.709, the corresponding primaries are used. Otherwise, if the video height is exactly 576 (PAL), BT.601-625 is used. If it's exactly 480 or 486 (NTSC), BT.601-525 is used. If the video resolution is anything else, BT.709 is used.

Available primaries are:

- auto:** automatic selection (default)
- bt.601-525:** ITU-R BT.601 (SD) 525-line systems (NTSC, SMPTE-C)
- bt.601-625:** ITU-R BT.601 (SD) 625-line systems (PAL, SECAM)
- bt.709:** ITU-R BT.709 (HD) (same primaries as sRGB)
- bt.2020:** ITU-R BT.2020 (UHD)
- apple:** Apple RGB
- adobe:** Adobe RGB (1998)
- prophoto:** ProPhoto RGB (ROMM)
- cie1931:** CIE 1931 RGB

### <gamma>

Gamma function the source file was encoded with. Normally this should be set in the file header, but when playing broken or mistagged files this can be used to override the setting.

This option only affects video output drivers that perform color management.

If this option is set to `auto` (which is the default), the gamma will be set to BT.1886 for YCbCr content, sRGB for RGB content and Linear for XYZ content.

Available gamma functions are:

- auto:** automatic selection (default)
- bt.1886:** ITU-R BT.1886 (approximation of BT.601/BT.709/BT.2020 curve)
- srgb:** IEC 61966-2-4 (sRGB)
- linear:** Linear light
- gamma1.8:** Pure power curve (gamma 1.8)
- gamma2.2:** Pure power curve (gamma 2.2)
- gamma2.8:** Pure power curve (gamma 2.8)
- prophoto:** ProPhoto RGB (ROMM) curve

### <stereo-in>

Set the stereo mode the video is assumed to be encoded in. Takes the same values as the `--video-stereo-mode` option.

#### **<stereo-out>**

Set the stereo mode the video should be displayed as. Takes the same values as the `--video-stereo-mode` option.

#### **<rotate>**

Set the rotation the video is assumed to be encoded with in degrees. The special value `-1` uses the input format.

#### **<dw>, <dh>**

Set the display size. Note that setting the display size such that the video is scaled in both directions instead of just changing the aspect ratio is an implementation detail, and might change later.

#### **<dar>**

Set the display aspect ratio of the video frame. This is a float, but values such as `[16:9]` can be passed too (`[...]` for quoting to prevent the option parser from interpreting the `:` character).

#### **noformat [=fmt]**

Restricts the color space for the next filter without doing any conversion. Unlike the `format` filter, this will allow any color space except the one you specify.

### **Note**

For a list of available formats, see `noformat=fmt=help`.

#### **<fmt>**

Format name, e.g. `rgb15`, `bgr24`, `420p`, etc. (default: `420p`).

#### **lavfi=graph[:sws-flags[:o=opts]]**

Filter video using FFmpeg's libavfilter.

#### **<graph>**

The libavfilter graph string. The filter must have a single video input pad and a single video output pad.

See <https://ffmpeg.org/ffmpeg-filters.html> for syntax and available filters.

### **Warning**

If you want to use the full filter syntax with this option, you have to quote the filter graph in order to prevent mpv's syntax and the filter graph syntax from clashing.

### **Examples**

```
-vf lavfi=[gradfun=20:30,vflip]
```

`gradfun` filter with nonsense parameters, followed by a `vflip` filter. (This demonstrates how libavfilter takes a graph and not just a single filter.) The filter graph string is quoted with `[` and `]`. This requires no additional quoting or escaping with some shells (like `bash`), while others (like `zsh`) require additional `"` quotes around the option string.

```
'--vf=lavfi="gradfun=20:30,vflip"'
```



Same as before, but uses quoting that should be safe with all shells. The outer ' quotes make sure that the shell does not remove the " quotes needed by mpv.

```
'--vf=lavfi=graph="gradfun=radius=30:strength=20,vflip"'
```

Same as before, but uses named parameters for everything.

#### <sws-flags>

If libavfilter inserts filters for pixel format conversion, this option gives the flags which should be passed to libswscale. This option is numeric and takes a bit-wise combination of SWS\_ flags.

See <http://git.videolan.org/?p=ffmpeg.git;a=blob;f=libswscale/swscale.h>.

#### <o>

Set AVFilterGraph options. These should be documented by FFmpeg.

### **Example**

```
'--vf=lavfi=yadif:o="threads=2,thread_type=slice"'
```

forces a specific threading configuration.

**eq[=gamma:contrast:brightness:saturation:rg:gg:bg:weight]**

Software equalizer that uses lookup tables (slow), allowing gamma correction in addition to simple brightness and contrast adjustment. The parameters are given as floating point values.

<0.1-10>

initial gamma value (default: 1.0)

<-2-2>

initial contrast, where negative values result in a negative image (default: 1.0)

<-1-1>

initial brightness (default: 0.0)

<0-3>

initial saturation (default: 1.0)

<0.1-10>

gamma value for the red component (default: 1.0)

<0.1-10>

gamma value for the green component (default: 1.0)

<0.1-10>

gamma value for the blue component (default: 1.0)

<0-1>

The weight parameter can be used to reduce the effect of a high gamma value on bright image areas, e.g. keep them from getting overamplified and just plain white. A value of 0.0 turns the gamma correction all the way down while 1.0 leaves it at its full strength (default: 1.0).

**pullup[=jl:jr:jt:jb:sb:mp]**

Pulldown reversal (inverse telecine) filter, capable of handling mixed hard-telecine, 24000/1001 fps progressive, and 30000/1001 fps progressive content. The pullup filter makes use of future context in making its decisions. It is stateless in the sense that it does not lock onto a pattern to

follow, but it instead looks forward to the following fields in order to identify matches and rebuild progressive frames.

#### **j1, jr, jt, and jb**

These options set the amount of "junk" to ignore at the left, right, top, and bottom of the image, respectively. Left/right are in units of 8 pixels, while top/bottom are in units of 2 lines. The default is 8 pixels on each side.

#### **sb (strict breaks)**

Setting this option to 1 will reduce the chances of `pullup` generating an occasional mismatched frame, but it may also cause an excessive number of frames to be dropped during high motion sequences. Conversely, setting it to -1 will make `pullup` match fields more easily. This may help processing of video where there is slight blurring between the fields, but may also cause there to be interlaced frames in the output.

#### **mp (metric plane)**

This option may be set to `u` or `v` to use a chroma plane instead of the luma plane for doing `pullup`'s computations. This may improve accuracy on very clean source material, but more likely will decrease accuracy, especially if there is chroma noise (rainbow effect) or any grayscale video. The main purpose of setting `mp` to a chroma plane is to reduce CPU load and make `pullup` usable in realtime on slow machines.

#### **yadif=[mode:interlaced-only]**

Yet another deinterlacing filter

**<mode>**

**frame:** Output 1 frame for each frame.

**field:** Output 1 frame for each field.

**frame-nospatial:** Like `frame` but skips spatial interlacing check.

**field-nospatial:** Like `field` but skips spatial interlacing check.

**<interlaced-only>**

**no:** Deinterlace all frames (default).

**yes:** Only deinterlace frames marked as interlaced (default if this filter is inserted via `deinterlace` property).

This filter, is automatically inserted when using the `D` key (or any other key that toggles the `deinterlace` property or when using the `--deinterlace` switch), assuming the video output does not have native deinterlacing support.

If you just want to set the default mode, put this filter and its options into `--vf-defaults` instead, and enable deinterlacing with `D` or `--deinterlace`.

Also note that the `D` key is stupid enough to insert an interlacer twice when inserting `yadif` with `--vf`, so using the above methods is recommended.

#### **sub=[bottom-margin:top-margin]**

Moves subtitle rendering to an arbitrary point in the filter chain, or force subtitle rendering in the video filter as opposed to using video output OSD support.

**<bottom-margin>**

Adds a black band at the bottom of the frame. The SSA/ASS renderer can place subtitles there (with `--sub-use-margins`).

**<top-margin>**

Black band on the top for toptitles (with `--sub-use-margins`).

## Examples

**--vf=sub,eq**

Moves sub rendering before the eq filter. This will put both subtitle colors and video under the influence of the video equalizer settings.

**stereo3d[=in:out]**

Stereo3d converts between different stereoscopic image formats.

**<in>**

Stereoscopic image format of input. Possible values:

**sbsl or side\_by\_side\_left\_first**

side by side parallel (left eye left, right eye right)

**sbsr or side\_by\_side\_right\_first**

side by side crosseye (right eye left, left eye right)

**abl or above\_below\_left\_first**

above-below (left eye above, right eye below)

**abr or above\_below\_right\_first**

above-below (right eye above, left eye below)

**ab2l or above\_below\_half\_height\_left\_first**

above-below with half height resolution (left eye above, right eye below)

**ab2r or above\_below\_half\_height\_right\_first**

above-below with half height resolution (right eye above, left eye below)

**<out>**

Stereoscopic image format of output. Possible values are all the input formats as well as:

**arcg or anaglyph\_red\_cyan\_gray**

anaglyph red/cyan gray (red filter on left eye, cyan filter on right eye)

**arch or anaglyph\_red\_cyan\_half\_color**

anaglyph red/cyan half colored (red filter on left eye, cyan filter on right eye)

**arcc or anaglyph\_red\_cyan\_color**

anaglyph red/cyan color (red filter on left eye, cyan filter on right eye)

**arcd or anaglyph\_red\_cyan\_dubois**

anaglyph red/cyan color optimized with the least-squares projection of Dubois (red filter on left eye, cyan filter on right eye)

**agmg or anaglyph\_green\_magenta\_gray**

anaglyph green/magenta gray (green filter on left eye, magenta filter on right eye)

**agmh or anaglyph\_green\_magenta\_half\_color**

anaglyph green/magenta half colored (green filter on left eye, magenta filter on right eye)

**agmc or anaglyph\_green\_magenta\_color**

anaglyph green/magenta colored (green filter on left eye, magenta filter on right eye)

**aybg or anaglyph\_yellow\_blue\_gray**

anaglyph yellow/blue gray (yellow filter on left eye, blue filter on right eye)

**aybh or anaglyph\_yellow\_blue\_half\_color**

anaglyph yellow/blue half colored (yellow filter on left eye, blue filter on right eye)

**aybc** or **anaglyph\_yellow\_blue\_color**

anaglyph yellow/blue colored (yellow filter on left eye, blue filter on right eye)

**irl** or **interleave\_rows\_left\_first**

Interleaved rows (left eye has top row, right eye starts on next row)

**irr** or **interleave\_rows\_right\_first**

Interleaved rows (right eye has top row, left eye starts on next row)

**ml** or **mono\_left**

mono output (left eye only)

**mr** or **mono\_right**

mono output (right eye only)

**gradfun**[=**strength**[:**radius**][:**size**=<**size**>]]

Fix the banding artifacts that are sometimes introduced into nearly flat regions by truncation to 8-bit color depth. Interpolates the gradients that should go where the bands are, and dithers them.

<**strength**>

Maximum amount by which the filter will change any one pixel. Also the threshold for detecting nearly flat regions (default: 1.5).

<**radius**>

Neighborhood to fit the gradient to. Larger radius makes for smoother gradients, but also prevents the filter from modifying pixels near detailed regions (default: disabled).

<**size**>

size of the filter in percent of the image diagonal size. This is used to calculate the final radius size (default: 1).

**dlopen**=**dll**[:**a0**[:**a1**[:**a2**[:**a3**]]]]

Loads an external library to filter the image. The library interface is the `vf_dlopen` interface specified using `libmpcodecs/vf_dlopen.h`.

### ***Warning***

This filter is deprecated.

**dll**=<**library**>

Specify the library to load. This may require a full file system path in some cases. This argument is required.

**a0**=<**string**>

Specify the first parameter to pass to the library.

**a1**=<**string**>

Specify the second parameter to pass to the library.

**a2**=<**string**>

Specify the third parameter to pass to the library.

**a3**=<**string**>

Specify the fourth parameter to pass to the library.

**vapoursynth**=**file**:**buffered-frames**:**concurrent-frames**

Loads a VapourSynth filter script. This is intended for streamed processing: mpv actually provides a source filter, instead of using a native VapourSynth video source. The mpv source will answer frame requests only within a small window of frames (the size of this window is controlled with the

`buffered-frames` parameter), and requests outside of that will return errors. As such, you can't use the full power of VapourSynth, but you can use certain filters.

If you just want to play video generated by a VapourSynth (i.e. using a native VapourSynth video source), it's better to use `vspipe` and a FIFO to feed the video to mpv. The same applies if the filter script requires random frame access (see `buffered-frames` parameter).

This filter is experimental. If it turns out that it works well and is used, it will be ported to libavfilter. Otherwise, it will be just removed.

#### **file**

Filename of the script source. Currently, this is always a python script. The variable `video_in` is set to the mpv video source, and it is expected that the script reads video from it. (Otherwise, mpv will decode no video, and the video packet queue will overflow, eventually leading to audio being stopped.) The script is also expected to pass through timestamps using the `_DurationNum` and `_DurationDen` frame properties.

#### **Example:**

```
import vapoursynth as vs
core = vs.get_core()
core.std.AddBorders(video_in, 10, 10, 20, 20).set_output()
```

#### **Warning**

The script will be reloaded on every seek. This is done to reset the filter properly on discontinuities.

#### **buffered-frames**

Maximum number of decoded video frames that should be buffered before the filter (default: 4). This specifies the maximum number of frames the script can request backwards. E.g. if `buffered-frames=5`, and the script just requested frame 15, it can still request frame 10, but frame 9 is not available anymore. If it requests frame 30, mpv will decode 15 more frames, and keep only frames 25-30.

The actual number of buffered frames also depends on the value of the `concurrent-frames` option. Currently, both option values are multiplied to get the final buffer size.

(Normally, VapourSynth source filters must provide random access, but mpv was made for playback, and does not provide frame-exact random access. The way this video filter works is a compromise to make simple filters work anyway.)

#### **concurrent-frames**

Number of frames that should be requested in parallel. The level of concurrency depends on the filter and how quickly mpv can decode video to feed the filter. This value should probably be proportional to the number of cores on your machine. Most time, making it higher than the number of cores can actually make it slower.

By default, this uses the special value `auto`, which sets the option to the number of detected logical CPU cores.

The following variables are defined by mpv:

#### **video\_in**

The mpv video source as vapoursynth clip. Note that this has no length set, which confuses many filters. Using `Trim` on the clip with a high dummy length can turn it into a finite clip.

#### **video\_in\_dw, video\_in\_dh**

Display size of the video. Can be different from video size if the video does not use square pixels (e.g. DVD).

#### **container\_fps**

FPS value as reported by file headers. This value can be wrong or completely broken (e.g. 0 or NaN). Even if the value is correct, if another filter changes the real FPS (by dropping or inserting frames), the value of this variable might not be useful. Note that the `--fps` command line option overrides this value.

Useful for some filters which insist on having a FPS.

#### **display\_fps**

Refresh rate of the current display. Note that this value can be 0.

#### **vapoursynth-lazy**

The same as `vapoursynth`, but doesn't load Python scripts. Instead, a custom backend using Lua and the raw VapourSynth API is used. The syntax is completely different, and absolutely no convenience features are provided. There's no type checking either, and you can trigger crashes.

#### ***Example:***

```
video_out = invoke("morpho", "Open", {clip = video_in})
```

The special variable `video_in` is the mpv video source, while the special variable `video_out` is used to read video from. The 1st argument is the plugin (queried with `getPluginByNs`), the 2nd is the filter name, and the 3rd argument is a table with the arguments. Positional arguments are not supported. The types must match exactly. Since Lua is terrible and can't distinguish integers and floats, integer arguments must be prefixed with `i_`, in which case the prefix is removed and the argument is cast to an integer. Should the argument's name start with `i_`, you're out of luck.

Clips (`VSNodeRef`) are passed as light userdata, so trying to pass any other userdata type will result in hard crashes.

#### **vavpp**

VA-AP-API video post processing. Works with `--vo=vaapi` and `--vo=opengl` only. Currently deinterlaces. This filter is automatically inserted if deinterlacing is requested (either using the `D` key, by default mapped to the command `cycle deinterlace`, or the `--deinterlace` option).

#### **deint=<method>**

Select the deinterlacing algorithm.

##### **no**

Don't perform deinterlacing.

##### **first-field**

Show only first field (going by `--field-dominance`).

##### **bob**

bob deinterlacing (default).

##### **weave, motion-adaptive, motion-compensated**

Advanced deinterlacing algorithms. Whether these actually work depends on the GPU hardware, the GPU drivers, driver bugs, and mpv bugs.

**<interlaced-only>**

**no:** Deinterlace all frames.

**yes:** Only deinterlace frames marked as interlaced (default).

#### **vdpaupp**

VDPAU video post processing. Works with `--vo=vdpa` and `--vo=opengl` only. This filter is automatically inserted if deinterlacing is requested (either using the `D` key, by default mapped to the command `cycle deinterlace`, or the `--deinterlace` option). When enabling deinterlacing, it is always preferred over software deinterlacer filters if the `vdpa` VO is used, and also if `opengl` is used and hardware decoding was activated at least once (i.e. `vdpa` was loaded).

**sharpen=<-1-1>**

For positive values, apply a sharpening algorithm to the video, for negative values a blurring algorithm (default: 0).

**denoise=<0-1>**

Apply a noise reduction algorithm to the video (default: 0; no noise reduction).

**deint=<yes|no>**

Whether deinterlacing is enabled (default: no). If enabled, it will use the mode selected with `deint-mode`.

**deint-mode=<first-field|bob|temporal|temporal-spatial>**

Select deinterlacing mode (default: temporal). All modes respect `--field-dominance`.

Note that there's currently a mechanism that allows the `vdpa` VO to change the `deint-mode` of auto-inserted `vdpaupp` filters. To avoid confusion, it's recommended not to use the `--vo=vdpa` suboptions related to filtering.

#### **first-field**

Show only first field.

#### **bob**

Bob deinterlacing.

#### **temporal**

Motion-adaptive temporal deinterlacing. May lead to A/V desync with slow video hardware and/or high resolution.

#### **temporal-spatial**

Motion-adaptive temporal deinterlacing with edge-guided spatial interpolation. Needs fast video hardware.

#### **chroma-deint**

Makes temporal deinterlacers operate both on luma and chroma (default). Use `no-chroma-deint` to solely use luma and speed up advanced deinterlacing. Useful with slow video memory.

#### **pullup**

Try to apply inverse telecine, needs motion adaptive temporal deinterlacing.

**interlaced-only=<yes|no>**

If `yes` (default), only deinterlace frames marked as interlaced.

**hqscaling=<0-9>**

**0**

Use default VDPAU scaling (default).

**1-9**

Apply high quality VDPAU scaling (needs capable hardware).

### **vdpaurb**

VDPAU video read back. Works with `--vo=vdpau` and `--vo=opengl` only. This filter will read back frames decoded by VDPAU so that other filters, which are not normally compatible with VDPAU, can be used like normal. This filter must be specified before `vdpaupp` in the filter chain if `vdpaupp` is used.

### **buffer=<num>**

Buffer `<num>` frames in the filter chain. This filter is probably pretty useless, except for debugging. (Note that this won't help smoothing out latencies with decoding, because the filter will never output a frame if the buffer isn't full, except on EOF.)

## **ENCODING**

You can encode files from one format/codec to another using this facility.

### **--o=<filename>**

Enables encoding mode and specifies the output file name.

### **--of=<format>**

Specifies the output format (overrides autodetection by the file name extension of the file specified by `-o`). This can be a comma separated list of possible formats to try. See `--of=help` for a full list of supported formats.

### **--ofopts=<options>**

Specifies the output format options for libavformat. See `--ofopts=help` for a full list of supported options.

Options are managed in lists. There are a few commands to manage the options list.

### **--ofopts-add=<options1[,options2,...]>**

Appends the options given as arguments to the options list.

### **--ofopts-pre=<options1[,options2,...]>**

Prepends the options given as arguments to the options list.

### **--ofopts-del=<index1[,index2,...]>**

Deletes the options at the given indexes. Index numbers start at 0, negative numbers address the end of the list (-1 is the last).

### **--ofopts-clr**

Completely empties the options list.

### **--ofps=<float value>**

Specifies the output format time base (default: 24000). Low values like 25 limit video fps by dropping frames.

### **--oautofps**

Sets the output format time base to the guessed frame rate of the input video (simulates MEncoder behavior, useful for AVI; may cause frame drops). Note that not all codecs and not all formats support VFR encoding, and some which do have bugs when a target bitrate is specified - use `--ofps` or `--oautofps` to force CFR encoding in these cases.

### **--omaxfps=<float value>**

Specifies the minimum distance of adjacent frames (default: 0, which means unset). Content of lower frame rate is not readjusted to this frame rate; content of higher frame rate is decimated to this frame rate.

### **--oharddup**

If set, the frame rate given by `--ofps` is attained not by skipping time codes, but by duplicating frames (constant frame rate mode).

### **--oneverdrop**



If set, frames are never dropped. Instead, time codes of video are readjusted to always increase. This may cause AV desync, though; to work around this, use a high-fps time base using `--ofps` and absolutely avoid `--oautofps`.

**`--oac=<codec>`**

Specifies the output audio codec. This can be a comma separated list of possible codecs to try. See `--oac=help` for a full list of supported codecs.

**`--ooffset=<value>`**

Shifts audio data by the given time (in seconds) by adding/removing samples at the start.

**`--oacopts=<options>`**

Specifies the output audio codec options for libavcodec. See `--oacopts=help` for a full list of supported options.

### ***Example***

```
"--oac=libmp3lame --oacopts=b=128000"
  selects 128 kbps MP3 encoding.
```

Options are managed in lists. There are a few commands to manage the options list.

**`--oacopts-add=<options1[,options2,...]>`**

Appends the options given as arguments to the options list.

**`--oacopts-pre=<options1[,options2,...]>`**

Prepends the options given as arguments to the options list.

**`--oacopts-del=<index1[,index2,...]>`**

Deletes the options at the given indexes. Index numbers start at 0, negative numbers address the end of the list (-1 is the last).

**`--oacopts-clr`**

Completely empties the options list.

**`--oafirst`**

Force the audio stream to become the first stream in the output. By default the order is unspecified.

**`--ovc=<codec>`**

Specifies the output video codec. This can be a comma separated list of possible codecs to try. See `--ovc=help` for a full list of supported codecs.

**`--ovoffset=<value>`**

Shifts video data by the given time (in seconds) by shifting the pts values.

**`--ovcopts <options>`**

Specifies the output video codec options for libavcodec. See `--ovcopts=help` for a full list of supported options.

### ***Examples***

```
"--ovc=mpeg4 --ovcopts=qscale=5"
  selects constant quantizer scale 5 for MPEG-4 encoding.

"--ovc=libx264 --ovcopts=crf=23"
  selects VBR quality factor 23 for H.264 encoding.
```

Options are managed in lists. There are a few commands to manage the options list.

**--ovcopts-add=<options1[,options2,...]>**

Appends the options given as arguments to the options list.

**--ovcopts-pre=<options1[,options2,...]>**

Prepends the options given as arguments to the options list.

**--ovcopts-del=<index1[,index2,...]>**

Deletes the options at the given indexes. Index numbers start at 0, negative numbers address the end of the list (-1 is the last).

**--ovcopts-clr**

Completely empties the options list.

**--ovfirst**

Force the video stream to become the first stream in the output. By default the order is unspecified.

**--ocopyts**

Copies input pts to the output video (not supported by some output container formats, e.g. AVI). Discontinuities are still fixed. By default, audio pts are set to playback time and video pts are synchronized to match audio pts, as some output formats do not support anything else.

**--orawts**

Copies input pts to the output video (not supported by some output container formats, e.g. AVI). In this mode, discontinuities are not fixed and all pts are passed through as-is. Never seek backwards or use multiple input files in this mode!

**--no-ometadata**

Turns off copying of metadata from input files to output files when encoding (which is enabled by default).

## COMMAND INTERFACE

The mpv core can be controlled with commands and properties. A number of ways to interact with the player use them: key bindings (`input.conf`), OSD (showing information with properties), JSON IPC, the client API (`libmpv`), and the classic slave mode.

### input.conf

The `input.conf` file consists of a list of key bindings, for example:

```
s screenshot      # take a screenshot with the s key
LEFT seek 15      # map the left-arrow key to seeking forward by 15 seconds
```

Each line maps a key to an input command. Keys are specified with their literal value (upper case if combined with `Shift`), or a name for special keys. For example, `a` maps to the `a` key without shift, and `A` maps to `a` with shift.

The file is located in the mpv configuration directory (normally at `~/.config/mpv/input.conf` depending on platform). The default bindings are defined here:

```
https://github.com/mpv-player/mpv/blob/master/etc/input.conf
```

A list of special keys can be obtained with

```
mpv --input-keylist
```

In general, keys can be combined with `Shift`, `Ctrl` and `Alt`:

```
ctrl+q quit
```

**mpv** can be started in input test mode, which displays key bindings and the commands they're bound to on the OSD, instead of executing the commands:

```
mpv --input-test --force-window --idle
```

(Only closing the window will make **mpv** exit, pressing normal keys will merely display the binding, even if mapped to quit.)

## General Input Command Syntax

```
[Shift+][Ctrl+][Alt+][Meta+]<key> [{<section>}] [<prefixes>] <command> (<argument>)* [; <
```

Note that by default, the right Alt key can be used to create special characters, and thus does not register as a modifier. The option `--no-input-right-alt-gr` changes this behavior.

Newlines always start a new binding. `#` starts a comment (outside of quoted string arguments). To bind commands to the `#` key, `SHARP` can be used.

`<key>` is either the literal character the key produces (ASCII or Unicode character), or a symbolic name (as printed by `--input-keylist`).

`<section>` (braced with `{` and `}`) is the input section for this command.

Arguments are separated by whitespace. This applies even to string arguments. For this reason, string arguments should be quoted with `"`. Inside quotes, C-style escaping can be used.

You can bind multiple commands to one key. For example:

```
a show-text "command 1" ; show-text "command 2"
```

It's also possible to bind a command to a sequence of keys:

```
a-b-c show-text "command run after a, b, c have been pressed"
```

(This is not shown in the general command syntax.)

If `a` or `a-b` or `b` are already bound, this will run the first command that matches, and the multi-key command will never be called. Intermediate keys can be remapped to `ignore` in order to avoid this issue. The maximum number of (non-modifier) keys for combinations is currently 4.

## List of Input Commands

### **ignore**

Use this to "block" keys that should be unbound, and do nothing. Useful for disabling default bindings, without disabling all bindings with `--no-input-default-bindings`.

**seek** `<seconds>` [`relative`|`absolute`|`absolute-percent`|`relative-percent`|`exact`|`keyframes`]

Change the playback position. By default, seeks by a relative amount of seconds.

The second argument consists of flags controlling the seek mode:

#### **relative (default)**

Seek relative to current position (a negative value seeks backwards).

#### **absolute**

Seek to a given time.

#### **absolute-percent**

Seek to a given percent position.

#### **relative-percent**

Seek relative to current position in percent.

### **keyframes**

Always restart playback at keyframe boundaries (fast).

### **exact**

Always do exact/hr/precise seeks (slow).

Multiple flags can be combined, e.g.: `absolute+keyframes`.

By default, `keyframes` is used for relative seeks, and `exact` is used for absolute seeks.

Before mpv 0.9, the `keyframes` and `exact` flags had to be passed as 3rd parameter (essentially using a space instead of +). The 3rd parameter is still parsed, but is considered deprecated.

### **revert-seek [mode]**

Undoes the `seek` command, and some other commands that seek (but not necessarily all of them). Calling this command once will jump to the playback position before the seek. Calling it a second time undoes the `revert-seek` command itself. This only works within a single file.

The first argument is optional, and can change the behavior:

#### **mark**

Mark the current time position. The next normal `revert-seek` command will seek back to this point, no matter how many seeks happened since last time.

Using it without any arguments gives you the default behavior.

### **frame-step**

Play one frame, then pause. Does nothing with audio-only playback.

### **frame-back-step**

Go back by one frame, then pause. Note that this can be very slow (it tries to be precise, not fast), and sometimes fails to behave as expected. How well this works depends on whether precise seeking works correctly (e.g. see the `--hr-seek-demuxer-offset` option). Video filters or other video post-processing that modifies timing of frames (e.g. deinterlacing) should usually work, but might make backstepping silently behave incorrectly in corner cases. Using `--hr-seek-framedrop=no` should help, although it might make precise seeking slower.

This does not work with audio-only playback.

### **set <property> "<value>"**

Set the given property to the given value.

### **add <property> [<value>]**

Add the given value to the property. On overflow or underflow, clamp the property to the maximum. If `<value>` is omitted, assume 1.

### **cycle <property> [up|down]**

Cycle the given property. `up` and `down` set the cycle direction. On overflow, set the property back to the minimum, on underflow set it to the maximum. If `up` or `down` is omitted, assume `up`.

### **multiply <property> <factor>**

Multiplies the value of a property with the numeric factor.

### **screenshot [subtitles|video|window|- [single|each-frame]]**

Take a screenshot.

First argument:

#### **<subtitles> (default)**

Save the video image, in its original resolution, and with subtitles. Some video outputs may still include the OSD in the output under certain circumstances.

#### **<video>**

Like `subtitles`, but typically without OSD or subtitles. The exact behavior depends on the selected video output.

**<window>**

Save the contents of the mpv window. Typically scaled, with OSD and subtitles. The exact behavior depends on the selected video output, and if no support is available, this will act like `video`.

**<each-frame>**

Take a screenshot each frame. Issue this command again to stop taking screenshots. Note that you should disable frame-dropping when using this mode - or you might receive duplicate images in cases when a frame was dropped. This flag can be combined with the other flags, e.g. `video+each-frame`.

**screenshot-to-file** "<filename>" [`subtitles`|`video`|`window`]

Take a screenshot and save it to a given file. The format of the file will be guessed by the extension (and `--screenshot-format` is ignored - the behavior when the extension is missing or unknown is arbitrary).

The second argument is like the first argument to `screenshot`.

If the file already exists, it's overwritten.

Like all input command parameters, the filename is subject to property expansion as described in [Property Expansion](#).

**playlist-next** [`weak`|`force`]

Go to the next entry on the playlist.

**weak (default)**

If the last file on the playlist is currently played, do nothing.

**force**

Terminate playback if there are no more files on the playlist.

**playlist-prev** [`weak`|`force`]

Go to the previous entry on the playlist.

**weak (default)**

If the first file on the playlist is currently played, do nothing.

**force**

Terminate playback if the first file is being played.

**loadfile** "<file>" [`replace`|`append`|`append-play` [`options`]]

Load the given file and play it.

Second argument:

**<replace> (default)**

Stop playback of the current file, and play the new file immediately.

**<append>**

Append the file to the playlist.

**<append-play>**

Append the file, and if nothing is currently playing, start playback. (Always starts with the added file, even if the playlist was not empty before running this command.)

The third argument is a list of options and values which should be set while the file is playing. It is of the form `opt1=value1,opt2=value2,...`. Not all options can be changed this way. Some options require a restart of the player.

**loadlist** "<playlist>" [`replace`|`append`]

Load the given playlist file (like `--playlist`).

### **playlist-clear**

Clear the playlist, except the currently played file.

### **playlist-remove** `current` | `<index>`

Remove the playlist entry at the given index. Index values start counting with 0. The special value `current` removes the current entry. Note that removing the current entry also stops playback and starts playing the next entry.

### **playlist-move** `<index1>` `<index2>`

Move the playlist entry at `index1`, so that it takes the place of the entry `index2`. (Paradoxically, the moved playlist entry will not have the index value `index2` after moving if `index1` was lower than `index2`, because `index2` refers to the target entry, not the index the entry will have after moving.)

### **playlist-shuffle**

Shuffle the playlist. This is similar to what is done on start if the `--shuffle` option is used.

### **run** `"command"` `"arg1"` `"arg2"` ...

Run the given command. Unlike in MPlayer/mplayer2 and earlier versions of mpv (0.2.x and older), this doesn't call the shell. Instead, the command is run directly, with each argument passed separately. Each argument is expanded like in [Property Expansion](#). Note that there is a static limit of (as of this writing) 9 arguments (this limit could be raised on demand).

The program is run in a detached way. mpv doesn't wait until the command is completed, but continues playback right after spawning it.

To get the old behavior, use `/bin/sh` and `-c` as the first two arguments.

### **Example**

```
run "/bin/sh" "-c" "echo ${title} > /tmp/playing"
```

This is not a particularly good example, because it doesn't handle escaping, and a specially prepared file might allow an attacker to execute arbitrary shell commands. It is recommended to write a small shell script, and call that with `run`.

### **quit** [`<code>`]

Exit the player. If an argument is given, it's used as process exit code.

### **quit-watch-later** [`<code>`]

Exit player, and store current playback position. Playing that file later will seek to the previous position on start. The (optional) argument is exactly as in the `quit` command.

### **sub-add** `"<file>"` [`<flags>`] [`<title>`] [`<lang>`]]]

Load the given subtitle file. It is selected as current subtitle after loading.

The `flags` args is one of the following values:

`<select>`

Select the subtitle immediately.

`<auto>`

Don't select the subtitle. (Or in some special situations, let the default stream selection mechanism decide.)

`<cached>`

Select the subtitle. If a subtitle with the same filename was already added, that one is selected, instead of loading a duplicate entry. (In this case, title/language are ignored, and if the was changed since it was loaded, these changes won't be reflected.)

The `title` argument sets the track title in the UI.

The `lang` argument sets the track language, and can also influence stream selection with `flags` set to `auto`.

**sub-remove** [`<id>`]

Remove the given subtitle track. If the `id` argument is missing, remove the current track. (Works on external subtitle files only.)

**sub-reload** [`<id>`]

Reload the given subtitle tracks. If the `id` argument is missing, reload the current track. (Works on external subtitle files only.)

This works by unloading and re-adding the subtitle track.

**sub-step** `<skip>`

Change subtitle timing such, that the subtitle event after the next `<skip>` subtitle events is displayed. `<skip>` can be negative to step backwards.

**sub-seek** `<skip>`

Seek to the next (skip set to 1) or the previous (skip set to -1) subtitle. This is similar to `sub-step`, except that it seeks video and audio instead of adjusting the subtitle delay.

Like with `sub-step`, this works with external text subtitles only. For embedded text subtitles (like with Matroska), this works only with subtitle events that have already been displayed.

**osd** [`<level>`]

Toggle OSD level. If `<level>` is specified, set the OSD mode (see `--osd-level` for valid values).

**print-text** "`<string>`"

Print text to stdout. The string can contain properties (see [Property Expansion](#)).

**show-text** "`<string>`" [`<duration>`|- [`<level>`]]

Show text on the OSD. The string can contain properties, which are expanded as described in [Property Expansion](#). This can be used to show playback time, filename, and so on.

**<duration>**

The time in ms to show the message for. By default, it uses the same value as `--osd-duration`.

**<level>**

The minimum OSD level to show the text at (see `--osd-level`).

**show-progress**

Show the progress bar, the elapsed time and the total duration of the file on the OSD.

**write-watch-later-config**

Write the resume config file that the `quit-watch-later` command writes, but continue playback normally.

**stop**

Stop playback and clear playlist. With default settings, this is essentially like `quit`. Useful for the client API: playback can be stopped without terminating the player.

**mouse** `<x>` `<y>` [`<button>` [`single|double`]]

Send a mouse event with given coordinate (`<x>`, `<y>`).

Second argument:

**<button>**

The button number of clicked mouse button. This should be one of 0-19. If `<button>` is omitted, only the position will be updated.

Third argument:

**<single> (default)**

The mouse event represents regular single click.

**<double>**

The mouse event represents double-click.

**keypress <key\_name>**

Send a key event through mpv's input handler, triggering whatever behavior is configured to that key. `key_name` uses the `input.conf` naming scheme for keys and modifiers. Useful for the client API: key events can be sent to libmpv to handle internally.

**keydown <key\_name>**

Similar to `keypress`, but sets the `KEYDOWN` flag so that if the key is bound to a repeatable command, it will be run repeatedly with mpv's key repeat timing until the `keyup` command is called.

**keyup [<key\_name>]**

Set the `KEYUP` flag, stopping any repeated behavior that had been triggered. `key_name` is optional. If `key_name` is not given or is an empty string, `KEYUP` will be set on all keys. Otherwise, `KEYUP` will only be set on the key specified by `key_name`.

**audio-add "<file>" [<flags> [<title> [<lang>]]]**

Load the given audio file. See `sub-add` command.

**audio-remove [<id>]**

Remove the given audio track. See `sub-remove` command.

**audio-reload [<id>]**

Reload the given audio tracks. See `sub-reload` command.

**rescan-external-files [<mode>]**

Rescan external files according to the current `--sub-auto` and `--audio-file-auto` settings. This can be used to auto-load external files *after* the file was loaded.

The `mode` argument is one of the following:

**<reselect> (default)**

Select the default audio and subtitle streams, which typically selects external files with highest preference. (The implementation is not perfect, and could be improved on request.)

**<keep-selection>**

Do not change current track selections.

## Input Commands that are Possibly Subject to Change

**af set|add|toggle|del|clr "filter1=params,filter2,..."**

Change audio filter chain. See `vf` command.

**vf set|add|toggle|del|clr "filter1=params,filter2,..."**

Change video filter chain.

The first argument decides what happens:

**set**

Overwrite the previous filter chain with the new one.

**add**

Append the new filter chain to the previous one.

**toggle**

Check if the given filter (with the exact parameters) is already in the video chain. If yes, remove the filter. If no, add the filter. (If several filters are passed to the command, this is done for each filter.)



## **del**

Remove the given filters from the video chain. Unlike in the other cases, the second parameter is a comma separated list of filter names or integer indexes. 0 would denote the first filter. Negative indexes start from the last filter, and -1 denotes the last filter.

## **clr**

Remove all filters. Note that like the other sub-commands, this does not control automatically inserted filters.

You can assign labels to filter by prefixing them with @name: (where name is a user-chosen arbitrary identifier). Labels can be used to refer to filters by name in all of the filter chain modification commands. For add, using an already used label will replace the existing filter.

The vf command shows the list of requested filters on the OSD after changing the filter chain. This is roughly equivalent to show-text \${vf}. Note that auto-inserted filters for format conversion are not shown on the list, only what was requested by the user.

Normally, the commands will check whether the video chain is recreated successfully, and will undo the operation on failure. If the command is run before video is configured (can happen if the command is run immediately after opening a file and before a video frame is decoded), this check can't be run. Then it can happen that creating the video chain fails.

### ***Example for input.conf***

- a vf set flip turn video upside-down on the a key
- b vf set "" remove all video filters on b
- c vf toggle lavfi=gradfun toggle debanding on c

**cycle-values** ["!reverse"] <property> "<value1>" "<value2>" ...

Cycle through a list of values. Each invocation of the command will set the given property to the next value in the list. The command maintains an internal counter which value to pick next, and which is initially 0. It is reset to 0 once the last value is reached.

The internal counter is associated using the property name and the value list. If multiple commands (bound to different keys) use the same name and value list, they will share the internal counter.

The special argument !reverse can be used to cycle the value list in reverse. Compared with a command that just lists the value in reverse, this command will actually share the internal counter with the forward-cycling key binding (as long as the rest of the arguments are the same).

Note that there is a static limit of (as of this writing) 10 arguments (this limit could be raised on demand).

**enable-section** "<section>" [flags]

Enable all key bindings in the named input section.

The enabled input sections form a stack. Bindings in sections on the top of the stack are preferred to lower sections. This command puts the section on top of the stack. If the section was already on the stack, it is implicitly removed beforehand. (A section cannot be on the stack more than once.)

The flags parameter can be a combination (separated by +) of the following flags:

#### **<exclusive>**

All sections enabled before the newly enabled section are disabled. They will be re-enabled as soon as all exclusive sections above them are removed. In other words, the new section shadows all previous sections.

#### **<allow-hide-cursor>**

This feature can't be used through the public API.

#### **<allow-vo-dragging>**

Same.

#### **disable-section "<section>"**

Disable the named input section. Undoes `enable-section`.

#### **define-section "<section>" "<contents>" [default|forced]**

Create a named input section, or replace the contents of an already existing input section. The `contents` parameter uses the same syntax as the `input.conf` file (except that using the section syntax in it is not allowed), including the need to separate bindings with a newline character.

If the `contents` parameter is an empty string, the section is removed.

The section with the name `default` is the normal input section.

In general, input sections have to be enabled with the `enable-section` command, or they are ignored.

The last parameter has the following meaning:

##### **<default> (also used if parameter omitted)**

Use a key binding defined by this section only if the user hasn't already bound this key to a command.

##### **<forced>**

Always bind a key. (The input section that was made active most recently wins if there are ambiguities.)

#### **overlay-add <id> <x> <y> "<file>" <offset> "<fmt>" <w> <h> <stride>**

Add an OSD overlay sourced from raw data. This might be useful for scripts and applications controlling mpv, and which want to display things on top of the video window.

Overlays are usually displayed in screen resolution, but with some VOs, the resolution is reduced to that of the video's. You can read the `osd-width` and `osd-height` properties. At least with `--vo-xv` and anamorphic video (such as DVD), `osd-par` should be read as well, and the overlay should be aspect-compensated. (Future directions: maybe mpv should take care of some of these things automatically, but it's hard to tell where to draw the line.)

`id` is an integer between 0 and 63 identifying the overlay element. The ID can be used to add multiple overlay parts, update a part by using this command with an already existing ID, or to remove a part with `overlay-remove`. Using a previously unused ID will add a new overlay, while reusing an ID will update it. (Future directions: there should be something to ensure different programs wanting to create overlays don't conflict with each others, should that ever be needed.)

`x` and `y` specify the position where the OSD should be displayed.

`file` specifies the file the raw image data is read from. It can be either a numeric UNIX file descriptor prefixed with `@` (e.g. `@4`), or a filename. The file will be mapped into memory with `mmap()`. Some VOs will pass the mapped pointer directly to display APIs (e.g. `opengl` or `vdpa`), so no actual copying is involved. Truncating the source file while the overlay is active will crash the player. You shouldn't change the data while the overlay is active, because the data is essentially accessed at random points. Instead, call `overlay-add` again (preferably with a different memory region to prevent tearing).

It is also possible to pass a raw memory address for use as bitmap memory by passing a memory address as integer prefixed with an `&` character. Passing the wrong thing here will crash the player. This mode might be useful for use with `libmpv`. The `offset` parameter is simply added to the memory address (since mpv 0.8.0, ignored before).

`offset` is the byte offset of the first pixel in the source file. (The current implementation always `mmap`'s the whole file from position 0 to the end of the image, so large offsets should be avoided.

Before mpv 0.8.0, the offset was actually passed directly to `mmap`, but it was changed to make using it easier.)

`fmt` is a string identifying the image format. Currently, only `bgra` is defined. This format has 4 bytes per pixels, with 8 bits per component. The least significant 8 bits are blue, and the most significant 8 bits are alpha (in little endian, the components are B-G-R-A, with B as first byte). This uses premultiplied alpha: every color component is already multiplied with the alpha component. This means the numeric value of each component is equal to or smaller than the alpha component. (Violating this rule will lead to different results with different VOs: numeric overflows resulting from blending broken alpha values is considered something that shouldn't happen, and consequently implementations don't ensure that you get predictable behavior in this case.)

`w`, `h`, and `stride` specify the size of the overlay. `w` is the visible width of the overlay, while `stride` gives the width in bytes in memory. In the simple case, and with the `bgra` format, `stride==4*w`. In general, the total amount of memory accessed is `stride * h`. (Technically, the minimum size would be `stride * (h - 1) + w * 4`, but for simplicity, the player will access all `stride * h` bytes.)

### **Warning**

When updating the overlay, you should prepare a second shared memory region (e.g. make use of the offset parameter) and add this as overlay, instead of reusing the same memory every time. Otherwise, you might get the equivalent of tearing, when your application and mpv write/read the buffer at the same time. Also, keep in mind that mpv might access an overlay's memory at random times whenever it feels the need to do so, for example when redrawing the screen.

#### **overlay-remove <id>**

Remove an overlay added with `overlay-add` and the same ID. Does nothing if no overlay with this ID exists.

#### **script-message "<arg1>" "<arg2>" ...**

Send a message to all clients, and pass it the following list of arguments. What this message means, how many arguments it takes, and what the arguments mean is fully up to the receiver and the sender. Every client receives the message, so be careful about name clashes (or use `script_message_to`).

#### **script-message-to "<target>" "<arg1>" "<arg2>" ...**

Same as `script_message`, but send it only to the client named `<target>`. Each client (scripts etc.) has a unique name. For example, Lua scripts can get their name via `mp.get_script_name()`.

#### **script-binding "<name>"**

Invoke a script-provided key binding. This can be used to remap key bindings provided by external Lua scripts.

The argument is the name of the binding.

It can optionally be prefixed with the name of the script, using `/` as separator, e.g. `script_binding scriptname/bindingname`.

For completeness, here is how this command works internally. The details could change any time. On any matching key event, `script_message_to` or `script_message` is called (depending on whether the script name is included), where the first argument is the string `key-binding`, the second argument is the name of the binding, and the third argument is the key state as string. The key state consists of a number of letters. The first letter is one of `d` (key was pressed down), `u` (was released), `r` (key is still down, and was repeated; only if key repeat is enabled for this binding), `p` (key was pressed; happens if up/down can't be tracked). The second letter whether the event originates from the mouse, either `m` (mouse button) or `-` (something else).

### **ab-loop**

Cycle through A-B loop states. The first command will set the `A` point (the `ab-loop-a` property); the second the `B` point, and the third will clear both points.

### **vo-cmdline "<args>"**

Reset the sub-option of the current VO. Currently works with `opengl` (including `opengl-hq`). The argument is the sub-option string usually passed to the VO on the command line. Not all sub-options can be set, but those which can will be reset even if they don't appear in the argument. This command might be changed or removed in the future.

### **drop-buffers**

Drop audio/video/demuxer buffers, and restart from fresh. Might help with unseekable streams that are going out of sync. This command might be changed or removed in the future.

### **screenshot-raw [subtitles|video|window]**

Return a screenshot in memory. This can be used only through the client API. The `MPV_FORMAT_NODE_MAP` returned by this command has the `w`, `h`, `stride` fields set to obvious contents. A `format` field is set to `bgr0` by default. This format is organized as `B8G8R8X8` (where `B` is the LSB). The contents of the padding `x` is undefined. The `data` field is of type `MPV_FORMAT_BYTE_ARRAY` with the actual image data. The image is freed as soon as the result node is freed.

Undocumented commands: `tv-last-channel` (TV/DVB only), `ao-reload` (experimental/internal).

## **Hooks**

Hooks are synchronous events between player core and a script or similar. This applies to client API (including the Lua scripting interface). Normally, events are supposed to be asynchronous, and the hook API provides an awkward and obscure way to handle events that require stricter coordination. There are no API stability guarantees made. Not following the protocol exactly can make the player freeze randomly. Basically, nobody should use this API.

There are two special commands involved. Also, the client must listen for client messages (`MPV_EVENT_CLIENT_MESSAGE` in the C API).

### **hook-add <hook-name> <id> <priority>**

Subscribe to the hook identified by the first argument (basically, the name of event). The `id` argument is an arbitrary integer chosen by the user. `priority` is used to sort all hook handlers globally across all clients. Each client can register multiple hook handlers (even for the same hook-name). Once the hook is registered, it cannot be unregistered.

When a specific event happens, all registered handlers are run serially. This uses a protocol every client has to follow explicitly. When a hook handler is run, a client message (`MPV_EVENT_CLIENT_MESSAGE`) is sent to the client which registered the hook. This message has the following arguments:

1. the string `hook_run`
2. the `id` argument the hook was registered with as string (this can be used to correctly handle multiple hooks registered by the same client, as long as the `id` argument is unique in the client)
3. something undefined, used by the hook mechanism to track hook execution (currently, it's the hook-name, but this might change without warning)

Upon receiving this message, the client can handle the event. While doing this, the player core will still react to requests, but playback will typically be stopped.

When the client is done, it must continue the core's hook execution by running the `hook-ack` command.

### **hook-ack <string>**

Run the next hook in the global chain of hooks. The argument is the 3rd argument of the client message that starts hook execution for the current client.

The following hooks are currently defined:

#### **on\_load**

Called when a file is to be opened, before anything is actually done. For example, you could read and write the `stream-open-filename` property to redirect an URL to something else (consider support for streaming sites which rarely give the user a direct media URL), or you could set per-file options with by setting the property `file-local-options/<option name>`. The player will wait until all hooks are run.

#### **on\_unload**

Run before closing a file, and before actually uninitializing everything. It's not possible to resume playback in this state.

## Input Command Prefixes

These prefixes are placed between key name and the actual command. Multiple prefixes can be specified. They are separated by whitespace.

#### **osd-auto (default)**

Use the default behavior for this command.

#### **no-osd**

Do not use any OSD for this command.

#### **osd-bar**

If possible, show a bar with this command. Seek commands will show the progress bar, property changing commands may show the newly set value.

#### **osd-msg**

If possible, show an OSD message with this command. Seek command show the current playback time, property changing commands show the newly set value as text.

#### **osd-msg-bar**

Combine `osd-bar` and `osd-msg`.

#### **raw**

Do not expand properties in string arguments. (Like "`${property-name}`".)

#### **expand-properties (default)**

All string arguments are expanded as described in [Property Expansion](#).

#### **repeatable**

For some commands, keeping a key pressed doesn't run the command repeatedly. This prefix forces enabling key repeat in any case.

All of the `osd` prefixes are still overridden by the global `--osd-level` settings.

## Input Sections

Input sections group a set of bindings, and enable or disable them at once. In `input.conf`, each key binding is assigned to an input section, rather than actually having explicit text sections.

Also see `enable_section` and `disable_section` commands.

Predefined bindings:

#### **default**

Bindings without input section are implicitly assigned to this section. It is enabled by default during normal playback.

#### **encode**

Section which is active in encoding mode. It is enabled exclusively, so that bindings in the `default` sections are ignored.

# Properties

Properties are used to set mpv options during runtime, or to query arbitrary information. They can be manipulated with the `set/add/cycle` commands, and retrieved with `show-text`, or anything else that uses property expansion. (See [Property Expansion](#).)

The property name is annotated with RW to indicate whether the property is generally writable.

If an option is referenced, the property will normally take/return exactly the same values as the option. In these cases, properties are merely a way to change an option at runtime.

## Property list

### **osd-level (RW)**

See `--osd-level`.

### **osd-scale (RW)**

OSD font size multiplier, see `--osd-scale`.

### **loop (RW)**

See `--loop`.

### **loop-file (RW)**

See `--loop-file` (uses `yes/no`).

### **speed (RW)**

See `--speed`.

### **audio-speed-correction, video-speed-correction**

Factor multiplied with `speed` at which the player attempts to play the file. Usually it's exactly 1. (Display sync mode will make this useful.)

OSD formatting will display it in the form of `+1.23456%`, with the number being  $(\text{raw} - 1) * 100$  for the given raw property value.

### **display-sync-active**

Return whether `--video-sync=display` is actually active.

### **filename**

Currently played file, with path stripped. If this is an URL, try to undo percent encoding as well. (The result is not necessarily correct, but looks better for display purposes. Use the `path` property to get an unmodified filename.)

### **file-size**

Length in bytes of the source file/stream. (This is the same as `${stream-end}`. For ordered chapters and such, the size of the currently played segment is returned.)

### **estimated-frame-count**

Total number of frames in current file.

### **Note**

This is only an estimate. (It's computed from two unreliable quantities: fps and stream length.)

### **estimated-frame-number**

Number of current frame in current stream.

## **Note**

This is only an estimate. (It's computed from two unreliable quantities: fps and possibly rounded timestamps.)

### **path**

Full path of the currently played file.

### **media-title**

If the currently played file has a `title` tag, use that.

Otherwise, if the media type is DVD, return the volume ID of DVD.

Otherwise, return the `filename` property.

### **file-format**

Symbolic name of the file format. In some cases, this is a comma-separated list of format names, e.g. mp4 is `mov,mp4,m4a,3gp,3g2,mj2` (the list may grow in the future for any format).

### **demuxer**

Name of the current demuxer. (This is useless.)

### **stream-path**

Filename (full path) of the stream layer filename. (This is probably useless. It looks like this can be different from `path` only when using e.g. ordered chapters.)

### **stream-pos (RW)**

Raw byte position in source stream.

### **stream-end**

Raw end position in bytes in source stream.

### **duration**

Duration of the current file in seconds. If the duration is unknown, the property is unavailable. Note that the file duration is not always exactly known, so this is an estimate.

This replaces the `length` property, which was deprecated after the mpv 0.9 release. (The semantics are the same.)

### **avsync**

Last A/V synchronization difference. Unavailable if audio or video is disabled.

### **total-avsync-change**

Total A-V sync correction done. Unavailable if audio or video is disabled.

### **drop-frame-count**

Video frames dropped by decoder, because video is too far behind audio (when using `--framedrop=decoder`). Sometimes, this may be incremented in other situations, e.g. when video packets are damaged, or the decoder doesn't follow the usual rules. Unavailable if video is disabled.

### **vo-drop-frame-count**

Frames dropped by VO (when using `--framedrop=vo`).

### **percent-pos (RW)**

Position in current file (0-100). The advantage over using this instead of calculating it out of other properties is that it properly falls back to estimating the playback position from the byte position, if the file duration is not known.

### **time-pos (RW)**

Position in current file in seconds.

**time-start**

Return the start time of the file. (Usually 0, but some kind of files, especially transport streams, can have a different start time.)

**time-remaining**

Remaining length of the file in seconds. Note that the file duration is not always exactly known, so this is an estimate.

**playtime-remaining**

`time-remaining` scaled by the current speed.

**playback-time (RW)**

The playback time, which is the time relative to playback start. (This can be different from the `time-pos` property if the file does not start at position 0, in which case `time-pos` is the source timestamp.)

**chapter (RW)**

Current chapter number. The number of the first chapter is 0.

**edition (RW)**

Current MKV edition number. Setting this property to a different value will restart playback. The number of the first edition is 0.

**disc-titles**

Number of BD/DVD titles.

This has a number of sub-properties. Replace `N` with the 0-based edition index.

**disc-titles/count**

Number of titles.

**disc-titles/id**

Title ID as integer. Currently, this is the same as the title index.

**disc-titles/length**

Length in seconds. Can be unavailable in a number of cases (currently it works for libdvdnav only).

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each edition)
    "id"                MPV_FORMAT_INT64
    "length"            MPV_FORMAT_DOUBLE
```

**disc-title-list**

List of BD/DVD titles.

**disc-title (RW)**

Current BD/DVD title number. Writing works only for `dvdnav://` and `bd://` (and aliases for these).

**chapters**

Number of chapters.

**editions**

Number of MKV editions.

**edition-list**

List of editions, current entry marked. Currently, the raw property value is useless.

This has a number of sub-properties. Replace `N` with the 0-based edition index.



#### **edition-list/count**

Number of editions. If there are no editions, this can be 0 or 1 (1 if there's a useless dummy edition).

#### **edition-list/N/id**

Edition ID as integer. Use this to set the `edition` property. Currently, this is the same as the edition index.

#### **edition-list/N/default**

`yes` if this is the default edition, `no` otherwise.

#### **edition-list/N/title**

Edition title as stored in the file. Not always available.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each edition)
    "id"                MPV_FORMAT_INT64
    "title"             MPV_FORMAT_STRING
    "default"           MPV_FORMAT_FLAG
```

#### **ab-loop-a, ab-loop-b (RW)**

Set/get A-B loop points. See corresponding options and `ab_loop` command. The special value `no` on either of these properties disables looping.

#### **angle (RW)**

Current DVD angle.

#### **metadata**

Metadata key/value pairs.

If the property is accessed with Lua's `mp.get_property_native`, this returns a table with metadata keys mapping to metadata values. If it is accessed with the client API, this returns a `MPV_FORMAT_NODE_MAP`, with tag keys mapping to tag values.

For OSD, it returns a formatted list. Trying to retrieve this property as a raw string doesn't work.

This has a number of sub-properties:

##### **metadata/by-key/<key>**

Value of metadata entry `<key>`.

##### **metadata/list/count**

Number of metadata entries.

##### **metadata/list/N/key**

Key name of the Nth metadata entry. (The first entry is 0).

##### **metadata/list/N/value**

Value of the Nth metadata entry.

##### **metadata/<key>**

Old version of `metadata/by-key/<key>`. Use is discouraged, because the metadata key string could conflict with other sub-properties.

The layout of this property might be subject to change. Suggestions are welcome how exactly this property should work.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_MAP
(key and string value for each metadata entry)
```

#### **filtered-metadata**

Like `metadata`, but includes only fields listed in the `--display-tags` option. This is the same set of tags that is printed to the terminal.

#### **chapter-metadata**

Metadata of current chapter. Works similar to `metadata` property. It also allows the same access methods (using sub-properties).

Per-chapter metadata is very rare. Usually, only the chapter name (`title`) is set.

For accessing other information, like chapter start, see the `chapter-list` property.

#### **vf-metadata/<filter-label>**

Metadata added by video filters. Accessed by the filter label, which if not explicitly specified using the `@filter-label:` syntax, will be `<filter-name>NN`.

Works similar to `metadata` property. It allows the same access methods (using sub-properties).

An example of these kind of metadata are the cropping parameters added by `--vf=lavfi=cropdetect`.

#### **af-metadata/<filter-label>**

Equivalent to `vf-metadata/<filter-label>`, but for audio filters.

#### **pause (RW)**

Pause status. This is usually `yes` or `no`. See `--pause`.

#### **idle**

Return `yes` if no file is loaded, but the player is staying around because of the `--idle` option.

#### **core-idle**

Return `yes` if the playback core is paused, otherwise `no`. This can be different `pause` in special situations, such as when the player pauses itself due to low network cache.

This also returns `yes` if playback is restarting or if nothing is playing at all. In other words, it's only `no` if there's actually video playing. (Behavior since mpv 0.7.0.)

#### **cache**

Network cache fill state (0-100.0).

#### **cache-size (RW)**

Network cache size in KB. This is similar to `--cache`. This allows to set the cache size at runtime. Currently, it's not possible to enable or disable the cache at runtime using this property, just to resize an existing cache.

This does not include the backbuffer size (changed after mpv 0.10.0).

Note that this tries to keep the cache contents as far as possible. To make this easier, the cache resizing code will allocate the new cache while the old cache is still allocated.

Don't use this when playing DVD or Blu-ray.

#### **cache-free (R)**

Total free cache size in KB.

#### **cache-used (R)**

Total used cache size in KB.

#### **cache-idle (R)**

Returns `yes` if the cache is idle, which means the cache is filled as much as possible, and is currently not reading more data.

**demuxer-cache-duration**

Approximate duration of video buffered in the demuxer, in seconds. The guess is very unreliable, and often the property will not be available at all, even if data is buffered.

**demuxer-cache-time**

Approximate time of video buffered in the demuxer, in seconds. Same as `demuxer-cache-duration` but returns the last timestamp of buffered data in demuxer.

**demuxer-cache-idle**

Returns `yes` if the demuxer is idle, which means the demuxer cache is filled to the requested amount, and is currently not reading more data.

**paused-for-cache**

Returns `yes` when playback is paused because of waiting for the cache.

**cache-buffering-state**

Return the percentage (0-100) of the cache fill status until the player will unpause (related to `paused-for-cache`).

**eof-reached**

Returns `yes` if end of playback was reached, `no` otherwise. Note that this is usually interesting only if `--keep-open` is enabled, since otherwise the player will immediately play the next file (or exit or enter idle mode), and in these cases the `eof-reached` property will logically be cleared immediately after it's set.

**seeking**

Returns `yes` if the player is currently seeking, or otherwise trying to restart playback. (It's possible that it returns `yes` while a file is loaded, or when switching ordered chapter segments. This is because the same underlying code is used for seeking and resyncing.)

**pts-association-mode (RW)**

See `--pts-association-mode`.

**hr-seek (RW)**

See `--hr-seek`.

**volume (RW)**

Current volume (see `--volume` for details).

**mute (RW)**

Current mute status (`yes/no`).

**audio-delay (RW)**

See `--audio-delay`.

**audio-codec**

Audio codec selected for decoding.

**audio-codec-name**

Audio codec.

**audio-params**

Audio format as output by the audio decoder. This has a number of sub-properties:

**audio-params/format**

The sample format as string. This uses the same names as used in other places of mpv.

**audio-params/samplerate**

Samplerate.

**audio-params/channels**

The channel layout as a string. This is similar to what the `--audio-channels` accepts.

**audio-params/hr-channels**

As `channels`, but instead of the possibly cryptic actual layout sent to the audio device, return a hopefully more human readable form. (Usually only `audio-out-params/hr-channels` makes sense.)

#### **audio-params/channel-count**

Number of audio channels. This is redundant to the `channels` field described above.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

MPV_FORMAT_NODE_MAP	
"format"	MPV_FORMAT_STRING
"samplerate"	MPV_FORMAT_INT64
"channels"	MPV_FORMAT_STRING
"channel-count"	MPV_FORMAT_INT64
"hr-channels"	MPV_FORMAT_STRING

#### **audio-out-params**

Same as `audio-params`, but the format of the data written to the audio API.

#### **aid (RW)**

Current audio track (similar to `--aid`).

#### **audio (RW)**

Alias for `aid`.

#### **balance (RW)**

Audio channel balance. (The implementation of this feature is rather odd. It doesn't change the volumes of each channel, but instead sets up a pan matrix to mix the left and right channels.)

#### **fullscreen (RW)**

See `--fullscreen`.

#### **deinterlace (RW)**

See `--deinterlace`.

#### **field-dominance (RW)**

See `--field-dominance`

#### **colormatrix (R)**

Redirects to `video-params/colormatrix`. This parameter (as well as similar ones) can be overridden with the `format video` filter.

#### **colormatrix-input-range (R)**

See `colormatrix`.

#### **colormatrix-output-range (R)**

See `colormatrix`.

#### **colormatrix-primaries (R)**

See `colormatrix`.

#### **ontop (RW)**

See `--ontop`.

#### **border (RW)**

See `--border`.

#### **on-all-workspaces (RW)**

See `--on-all-workspaces`. Unsetting may not work on all WMs.

#### **framedrop (RW)**

See `--framedrop`.

**gamma (RW)**

See `--gamma`.

**brightness (RW)**

See `--brightness`.

**contrast (RW)**

See `--contrast`.

**saturation (RW)**

See `--saturation`.

**hue (RW)**

See `--hue`.

**hwdec (RW)**

Reflects the `--hwdec` option.

Writing to it may change the currently used hardware decoder, if possible. (Internally, the player may reinitialize the decoder, and will perform a seek to refresh the video properly.) You can watch the other hwdec properties to see whether this was successful.

Unlike in mpv 0.9.x and before, this does not return the currently active hardware decoder.

**hwdec-active**

Return `yes` or `no`, depending on whether any type of hardware decoding is actually in use.

**hwdec-detected**

If software decoding is active, this returns the hardware decoder in use. Otherwise, it returns either `no`, or if applicable, the currently loaded hardware decoding API. This is known only once the VO has opened (and possibly later). With some VOs (like `opengl`), this is never known in advance, but only when the decoder attempted to create the hw decoder successfully. Also, hw decoders with `-copy` suffix will return `no` while no video is being decoded. All this reflects how detecting hw decoders are detected and used internally in mpv.

**panscan (RW)**

See `--panscan`.

**video-format**

Video format as string.

**video-codec**

Video codec selected for decoding.

**width, height**

Video size. This uses the size of the video as decoded, or if no video frame has been decoded yet, the (possibly incorrect) container indicated size.

**video-params**

Video parameters, as output by the decoder (with overrides like `aspect` etc. applied). This has a number of sub-properties:

**video-params/pixelformat**

The pixel format as string. This uses the same names as used in other places of mpv.

**video-params/average-bpp**

Average bits-per-pixel as integer. Subsampled planar formats use a different resolution, which is the reason this value can sometimes be odd or confusing. Can be unavailable with some formats.

**video-params/plane-depth**

Bit depth for each color component as integer. This is only exposed for planar or single-component formats, and is unavailable for other formats.

**video-params/w, video-params/h**

Video size as integers, with no aspect correction applied.

**video-params/dw, video-params/dh**

Video size as integers, scaled for correct aspect ratio.

**video-params/aspect**

Display aspect ratio as float.

**video-params/par**

Pixel aspect ratio.

**video-params/colormatrix**

The colormatrix in use as string. (Exact values subject to change.)

**video-params/colorlevels**

The colorlevels as string. (Exact values subject to change.)

**video-params/primaries**

The primaries in use as string. (Exact values subject to change.)

**video-params/gamma**

The gamma function in use as string. (Exact values subject to change.)

**video-params/chroma-location**

Chroma location as string. (Exact values subject to change.)

**video-params/rotate**

Intended display rotation in degrees (clockwise).

**video-params/stereo-in**

Source file stereo 3D mode. (See `--video-stereo-mode` option.)

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

MPV_FORMAT_NODE_MAP	
"pixelformat"	MPV_FORMAT_STRING
"w"	MPV_FORMAT_INT64
"h"	MPV_FORMAT_INT64
"dw"	MPV_FORMAT_INT64
"dh"	MPV_FORMAT_INT64
"aspect"	MPV_FORMAT_DOUBLE
"par"	MPV_FORMAT_DOUBLE
"colormatrix"	MPV_FORMAT_STRING
"colorlevels"	MPV_FORMAT_STRING
"primaries"	MPV_FORMAT_STRING
"chroma-location"	MPV_FORMAT_STRING
"rotate"	MPV_FORMAT_INT64
"stereo-in"	MPV_FORMAT_STRING

**dwidth, dheight**

Video display size. This is the video size after filters and aspect scaling have been applied. The actual video window size can still be different from this, e.g. if the user resized the video window manually.

These have the same values as `video-out-params/dw` and `video-out-params/dh`.

**video-out-params**

Same as `video-params`, but after video filters have been applied. If there are no video filters in use, this will contain the same values as `video-params`. Note that this is still not necessarily what

the video window uses, since the user can change the window size, and all real VOs do their own scaling independently from the filter chain.

Has the same sub-properties as `video-params`.

#### **fps**

Container FPS. This can easily contain bogus values. For videos that use modern container formats or video codecs, this will often be incorrect.

#### **estimated-vf-fps**

Estimated/measured FPS of the video filter chain output. (If no filters are used, this corresponds to decoder output.) This uses the average of the 10 past frame durations to calculate the FPS. It will be inaccurate if frame-dropping is involved (such as when framedrop is explicitly enabled, or after precise seeking). Files with imprecise timestamps (such as Matroska) might lead to unstable results.

#### **window-scale (RW)**

Window size multiplier. Setting this will resize the video window to the values contained in `dwidth` and `dheight` multiplied with the value set with this property. Setting `1` will resize to original video size (or to be exact, the size the video filters output). `2` will set the double size, `0.5` halves the size.

#### **window-minimized**

Return whether the video window is minimized or not.

#### **display-names**

Names of the displays that the mpv window covers. On X11, these are the xrandr names (LVDS1, HDMI1, DP1, VGA1, etc.).

#### **display-fps**

The refresh rate of the current display. Currently, this is the lowest FPS of any display covered by the video, as retrieved by the underlying system APIs (e.g. xrandr on X11). It is not the measured FPS. It's not necessarily available on all platforms. Note that any of the listed facts may change any time without a warning.

#### **video-aspect (RW)**

Video aspect, see `--video-aspect`.

#### **osd-width, osd-height**

Last known OSD width (can be 0). This is needed if you want to use the `overlay_add` command. It gives you the actual OSD size, which can be different from the window size in some cases.

#### **osd-par**

Last known OSD display pixel aspect (can be 0).

#### **vid (RW)**

Current video track (similar to `--vid`).

#### **video (RW)**

Alias for `vid`.

#### **video-align-x, video-align-y (RW)**

See `--video-align-x` and `--video-align-y`.

#### **video-pan-x, video-pan-y (RW)**

See `--video-pan-x` and `--video-pan-y`.

#### **video-zoom (RW)**

See `--video-zoom`.

#### **video-unscaled (W)**

See `--video-unscaled`.

#### **program (W)**

Switch TS program (write-only).

**sid (RW)**

Current subtitle track (similar to `--sid`).

**secondary-sid (RW)**

Secondary subtitle track (see `--secondary-sid`).

**sub (RW)**

Alias for `sid`.

**sub-delay (RW)**

See `--sub-delay`.

**sub-pos (RW)**

See `--sub-pos`.

**sub-visibility (RW)**

See `--sub-visibility`.

**sub-forced-only (RW)**

See `--sub-forced-only`.

**sub-scale (RW)**

Subtitle font size multiplier.

**ass-force-margins (RW)**

See `--ass-force-margins`.

**sub-use-margins (RW)**

See `--sub-use-margins`.

**ass-vsfilter-aspect-compat (RW)**

See `--ass-vsfilter-aspect-compat`.

**ass-style-override (RW)**

See `--ass-style-override`.

**stream-capture (RW)**

A filename, see `--stream-capture`. Setting this will start capture using the given filename. Setting it to an empty string will stop it.

**tv-brightness, tv-contrast, tv-saturation, tv-hue (RW)**

TV stuff.

**playlist-pos (RW)**

Current position on playlist. The first entry is on position 0. Writing to the property will restart playback at the written entry.

**playlist-count**

Number of total playlist entries.

**playlist**

Playlist, current entry marked. Currently, the raw property value is useless.

This has a number of sub-properties. Replace `N` with the 0-based playlist entry index.

**playlist/count**

Number of playlist entries (same as `playlist-count`).

**playlist/N/filename**

Filename of the Nth entry.

**playlist/N/current, playlist/N/playing**

`yes` if this entry is currently playing (or being loaded). Unavailable or `no` otherwise. When changing files, `current` and `playing` can be different, because the currently playing file



hasn't been unloaded yet; in this case, `current` refers to the new selection. (Since mpv 0.7.0.)

#### **playlist/N/title**

Name of the Nth entry. Only available if the playlist file contains such fields, and only if mpv's parser supports it for the given playlist format.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each playlist entry)
    "filename"  MPV_FORMAT_STRING
    "current"   MPV_FORMAT_FLAG (might be missing; since mpv 0.7.0)
    "playing"   MPV_FORMAT_FLAG (same)
    "title"     MPV_FORMAT_STRING (optional)
```

#### **track-list**

List of audio/video/sub tracks, current entry marked. Currently, the raw property value is useless.

This has a number of sub-properties. Replace `N` with the 0-based track index.

##### **track-list/count**

Total number of tracks.

##### **track-list/N/id**

The ID as it's used for `-sid/--aid/--vid`. This is unique within tracks of the same type (sub/audio/video), but otherwise not.

##### **track-list/N/type**

String describing the media type. One of `audio`, `video`, `sub`.

##### **track-list/N/src-id**

Track ID as used in the source file. Not always available.

##### **track-list/N/title**

Track title as it is stored in the file. Not always available.

##### **track-list/N/lang**

Track language as identified by the file. Not always available.

##### **track-list/N/audio-channels**

For audio tracks, the number of audio channels in the audio stream. Not always accurate (depends on container hints). Not always available.

##### **track-list/N/albumart**

`yes` if this is a video track that consists of a single picture, `no` or unavailable otherwise. This is used for video tracks that are really attached pictures in audio files.

##### **track-list/N/default**

`yes` if the track has the default flag set in the file, `no` otherwise.

##### **track-list/N/forced**

`yes` if the track has the forced flag set in the file, `no` otherwise.

##### **track-list/N/codec**

The codec name used by this track, for example `h264`. Unavailable in some rare cases.

##### **track-list/N/external**

`yes` if the track is an external file, `no` otherwise. This is set for separate subtitle files.

##### **track-list/N/external-filename**

The filename if the track is from an external file, unavailable otherwise.

#### **track-list/N/selected**

yes if the track is currently decoded, no otherwise.

#### **track-list/N/ff-index**

The stream index as usually used by the FFmpeg utilities. Note that this can be potentially wrong if a demuxer other than libavformat (`--demuxer=lavf`) is used. For mkv files, the index will usually match even if the default (builtin) demuxer is used, but there is no hard guarantee.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each track)
    "id"                MPV_FORMAT_INT64
    "type"               MPV_FORMAT_STRING
    "src-id"             MPV_FORMAT_INT64
    "title"              MPV_FORMAT_STRING
    "lang"               MPV_FORMAT_STRING
    "audio-channels"     MPV_FORMAT_INT64
    "albumart"           MPV_FORMAT_FLAG
    "default"            MPV_FORMAT_FLAG
    "forced"             MPV_FORMAT_FLAG
    "external"           MPV_FORMAT_FLAG
    "external-filename"  MPV_FORMAT_STRING
    "codec"              MPV_FORMAT_STRING
```

#### **chapter-list**

List of chapters, current entry marked. Currently, the raw property value is useless.

This has a number of sub-properties. Replace `N` with the 0-based chapter index.

##### **chapter-list/count**

Number of chapters.

##### **chapter-list/N/title**

Chapter title as stored in the file. Not always available.

##### **chapter-list/N/time**

Chapter start time in seconds as float.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each chapter)
    "title" MPV_FORMAT_STRING
    "time"  MPV_FORMAT_DOUBLE
```

#### **af (RW)**

See `--af` and the `af` command.

#### **vf (RW)**

See `--vf` and the `vf` command.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each filter entry)
```

"name"	MPV_FORMAT_STRING
"label"	MPV_FORMAT_STRING [optional]
"params"	MPV_FORMAT_NODE_MAP [optional]
"key"	MPV_FORMAT_STRING
"value"	MPV_FORMAT_STRING

It's also possible to write the property using this format.

#### **video-rotate (RW)**

See `--video-rotate` option.

#### **seekable**

Return whether it's generally possible to seek in the current file.

#### **partially-seekable**

Return `yes` if the current file is considered seekable, but only because the cache is active. This means small relative seeks may be fine, but larger seeks may fail anyway. Whether a seek will succeed or not is generally not known in advance.

If this property returns true, `seekable` will also return true.

#### **playback-abort**

Return whether playback is stopped or is to be stopped. (Useful in obscure situations like during `on_load` hook processing, when the user can stop playback, but the script has to explicitly end processing.)

#### **cursor-autohide (RW)**

See `--cursor-autohide`. Setting this to a new value will always update the cursor, and reset the internal timer.

#### **osd-sym-cc**

Inserts the current OSD symbol as opaque OSD control code (cc). This makes sense only with the `show-text` command or options which set OSD messages. The control code is implementation specific and is useless for anything else.

#### **osd-ass-cc**

`${osd-ass-cc/0}` disables escaping ASS sequences of text in OSD, `${osd-ass-cc/1}` enables it again. By default, ASS sequences are escaped to avoid accidental formatting, and this property can disable this behavior. Note that the properties return an opaque OSD control code, which only makes sense for the `show-text` command or options which set OSD messages.

### ***Example***

- `--osd-status-msg='This is ${osd-ass-cc/0}{\\b1}bold text'`
- `show-text "This is ${osd-ass-cc/0}{\b1}bold text"`

Any ASS override tags as understood by libass can be used.

Note that you need to escape the `\` character, because the string is processed for C escape sequences before passing it to the OSD code.

A list of tags can be found here: [http://docs.aegisub.org/latest/ASS\\_Tags/](http://docs.aegisub.org/latest/ASS_Tags/)

#### **vo-configured**

Return whether the VO is configured right now. Usually this corresponds to whether the video window is visible. If the `--force-window` option is used, this is usually always returns `yes`.

### **video-bitrate, audio-bitrate, sub-bitrate**

Bitrate values calculated on the packet level. This works by dividing the bit size of all packets between two keyframes by their presentation timestamp distance. (This uses the timestamps are stored in the file, so e.g. playback speed does not influence the returned values.) In particular, the video bitrate will update only per keyframe, and show the "past" bitrate. To make the property more UI friendly, updates to these properties are throttled in a certain way.

The unit is bits per second. OSD formatting turns these values in kilobits (or megabits, if appropriate), which can be prevented by using the raw property value, e.g. with `${=video-bitrate}`.

Note that the accuracy of these properties is influenced by a few factors. If the underlying demuxer rewrites the packets on demuxing (done for some file formats), the bitrate might be slightly off. If timestamps are bad or jittery (like in Matroska), even constant bitrate streams might show fluctuating bitrate.

How exactly these values are calculated might change in the future.

In earlier versions of mpv, these properties returned a static (but bad) guess using a completely different method.

### **packet-video-bitrate, packet-audio-bitrate, packet-sub-bitrate**

Old and deprecated properties for `video-bitrate`, `audio-bitrate`, `sub-bitrate`. They behave exactly the same, but return a value in kilobits. Also, they don't have any OSD formatting, though the same can be achieved with e.g. `${=video-bitrate}`.

These properties shouldn't be used anymore.

### **audio-device-list**

Return the list of discovered audio devices. This is mostly for use with the client API, and reflects what `--audio-device=help` with the command line player returns.

When querying the property with the client API using `MPV_FORMAT_NODE`, or with Lua `mp.get_property_native`, this will return a `mpv_node` with the following contents:

```
MPV_FORMAT_NODE_ARRAY
  MPV_FORMAT_NODE_MAP (for each device entry)
    "name"             MPV_FORMAT_STRING
    "description"      MPV_FORMAT_STRING
```

The `name` is what is to be passed to the `--audio-device` option (and often a rather cryptic audio API-specific ID), while `description` is human readable free form text. The description is an empty string if none was received.

The special entry with the name set to `auto` selects the default audio output driver and the default device.

The property can be watched with the property observation mechanism in the client API and in Lua scripts. (Technically, change notification is enabled the first time this property is read.)

### **audio-device (RW)**

Set the audio device. This directly reads/writes the `--audio-device` option, but on write accesses, the audio output will be scheduled for reloading.

Writing this property while no audio output is active will not automatically enable audio. (This is also true in the case when audio was disabled due to reinitialization failure after a previous write access to `audio-device`.)

This property also doesn't tell you which audio device is actually in use.

How these details are handled may change in the future.

### **current-vo**

Current video output driver (name as used with `--vo`).

**current-ao**

Current audio output driver (name as used with `--ao`).

**audio-out-detected-device**

Return the audio device selected by the AO driver (only implemented for some drivers: currently only `coreaudio`).

**working-directory**

Return the working directory of the mpv process. Can be useful for JSON IPC users, because the command line player usually works with relative paths.

**protocol-list**

List of protocol prefixes potentially recognized by the player. They are returned without trailing `://` suffix (which is still always required). In some cases, the protocol will not actually be supported (consider `https` if `ffmpeg` is not compiled with TLS support).

**mpv-version**

Return the mpv version/copyright string. Depending on how the binary was built, it might contain either a release version, or just a git hash.

**mpv-configuration**

Return the configuration arguments which were passed to the build system (typically the way `./waf configure ...` was invoked).

**options/<name> (RW)**

Read-only access to value of option `--<name>`. Most options can be changed at runtime by writing to this property. Note that many options require reloading the file for changes to take effect. If there is an equivalent property, prefer setting the property instead.

**file-local-options/<name>**

Similar to `options/<name>`, but when setting an option through this property, the option is reset to its old value once the current file has stopped playing. Trying to write an option while no file is playing (or is being loaded) results in an error.

(Note that if an option is marked as file-local, even `options/` will access the local value, and the old value, which will be restored on end of playback, can not be read or written until end of playback.)

**option-info/<name>**

Additional per-option information.

This has a number of sub-properties. Replace `<name>` with the name of a top-level option. No guarantee of stability is given to any of these sub-properties - they may change radically in the future.

**option-info/<name>/name**

Returns the name of the option.

**option-info/<name>/type**

Return the name of the option type, like `String` or `Integer`. For many complex types, this isn't very accurate.

**option-info/<name>/set-from-commandline**

Return `yes` if the option was set from the mpv command line, `no` otherwise. What this is set to if the option is e.g. changed at runtime is left undefined (meaning it could change in the future).

**option-info/<name>/set-locally**

Return `yes` if the option was set per-file. This is the case with automatically loaded profiles, file-dir configs, and other cases. It means the option value will be restored to the value before playback start when playback ends.

**option-info/<name>/default-value**

The default value of the option. May not always be available.

**option-info/<name>/min, option-info/<name>/max**

Integer minimum and maximum values allowed for the option. Only available if the options are numeric, and the minimum/maximum has been set internally. It's also possible that only one of these is set.

**option-info/<name>/choices**

If the option is a choice option, the possible choices. Choices that are integers may or may not be included (they can be implied by `min` and `max`). Note that options which behave like choice options, but are not actual choice options internally, may not have this info available.

**property-list**

Return the list of top-level properties.

## Property Expansion

All string arguments to input commands as well as certain options (like `--term-playing-msg`) are subject to property expansion. Note that property expansion does not work in places where e.g. numeric parameters are expected. (For example, the `add` command does not do property expansion. The `set` command is an exception and not a general rule.)

### *Example for input.conf*

```
i show-text "Filename: ${filename}"
```

shows the filename of the current file when pressing the `i` key

Within `input.conf`, property expansion can be inhibited by putting the `raw` prefix in front of commands.

The following expansions are supported:

**`${NAME}`**

Expands to the value of the property `NAME`. If retrieving the property fails, expand to an error string. (Use `${NAME:}` with a trailing `:` to expand to an empty string instead.) If `NAME` is prefixed with `=`, expand to the raw value of the property (see section below).

**`${NAME:STR}`**

Expands to the value of the property `NAME`, or `STR` if the property cannot be retrieved. `STR` is expanded recursively.

**`${?NAME:STR}`**

Expands to `STR` (recursively) if the property `NAME` is available.

**`${!NAME:STR}`**

Expands to `STR` (recursively) if the property `NAME` cannot be retrieved.

**`${?NAME==VALUE:STR}`**

Expands to `STR` (recursively) if the property `NAME` expands to a string equal to `VALUE`. You can prefix `NAME` with `=` in order to compare the raw value of a property (see section below). If the property is unavailable, or other errors happen when retrieving it, the value is never considered equal. Note that `VALUE` can't contain any of the characters `:` or `}`. Also, it is possible that escaping with `"` or `%` might be added in the future, should the need arise.

**`${!NAME==VALUE:STR}`**

Same as with the `?` variant, but `STR` is expanded if the value is not equal. (Using the same semantics as with `?`.)

**`$$`**

Expands to `$`.

`$}`

Expands to `}`. (To produce this character inside recursive expansion.)

`$>`

Disable property expansion and special handling of `$` for the rest of the string.

In places where property expansion is allowed, C-style escapes are often accepted as well. Example:

- `\n` becomes a newline character
- `\\` expands to `\`

## Raw and Formatted Properties

Normally, properties are formatted as human-readable text, meant to be displayed on OSD or on the terminal. It is possible to retrieve an unformatted (raw) value from a property by prefixing its name with `=`. These raw values can be parsed by other programs and follow the same conventions as the options associated with the properties.

### *Examples*

- `${time-pos}` expands to `00:14:23` (if playback position is at 14 minutes 23 seconds)
- `${=time-pos}` expands to `863.4` (same time, plus 400 milliseconds - milliseconds are normally not shown in the formatted case)

Sometimes, the difference in amount of information carried by raw and formatted property values can be rather big. In some cases, raw values have more information, like higher precision than seconds with `time-pos`. Sometimes it is the other way around, e.g. `aid` shows track title and language in the formatted case, but only the track number if it is raw.

## ON SCREEN CONTROLLER

The On Screen Controller (short: OSC) is a minimal GUI integrated with mpv to offer basic mouse-controllability. It is intended to make interaction easier for new users and to enable precise and direct seeking.

The OSC is enabled by default if mpv was compiled with Lua support. It can be disabled entirely using the `--osc=no` option.

## Using the OSC

By default, the OSC will show up whenever the mouse is moved inside the player window and will hide if the mouse is not moved outside the OSC for 0.5 seconds or if the mouse leaves the window.

## The Interface

```
+-----+-----+-----+
| playlist prev | title | playlist next |
+-----+-----+-----+
| audio | skip | seek | | seek | skip | full |
+-----+ back | back | play | frwd | frwd | screen |
| sub | | | | | | |
+-----+-----+-----+
| seekbar |
+-----+-----+-----+
| time passed | cache status | time remaining |
+-----+-----+-----+
```

### playlist prev

left-click	play previous file in playlist
shift+L-click	show playlist

### title

Displays current media-title or filename

left-click	show playlist position and length and full title
right-click	show filename

### playlist next

left-click	play next file in playlist
shift+L-click	show playlist

### audio and sub

Displays selected track and amount of available tracks

left-click	cycle audio/sub tracks forward
right-click	cycle audio/sub tracks backwards
shift+L-click	show available audio/sub tracks

### skip back

left-click	go to beginning of chapter / previous chapter
shift+L-click	show chapters

### seek back

left-click	skip back 5 seconds
right-click	skip back 30 seconds
shift-L-click	skip back 1 frame

### play

left-click	toggle play/pause
------------	-------------------

### seek frwd



left-click	skip forward 10 seconds
right-click	skip forward 60 seconds
shift-L-click	skip forward 1 frame

#### skip frwd

left-click	go to next chapter
shift+L-click	show chapters

#### fullscreen

left-click	toggle fullscreen
------------	-------------------

#### seekbar

Indicates current playback position and position of chapters

left-click	seek to position
------------	------------------

#### time passed

Shows current playback position timestamp

left-click	toggle displaying timecodes with milliseconds
------------	---

#### cache status

Shows current cache fill status (only visible when below 45%)

#### time remaining

Shows remaining playback time timestamp

left-click	toggle between total and remaining time
------------	---

### Key Bindings

These key bindings are active by default if nothing else is already bound to these keys. In case of collision, the function needs to be bound to a different key. See the [Script Commands](#) section.

del	Hide the OSC permanently until mpv is restarted.
-----	--

## Configuration

The OSC offers limited configuration through a config file `lua-settings/osc.conf` placed in mpv's user dir and through the `--script-opts` command-line option. Options provided through the command-line will override those from the config file.

### Config Syntax

The config file must exactly follow the following syntax:

```
# this is a comment
optionA=value1
optionB=value2
```

# can only be used at the beginning of a line and there may be no spaces around the = or anywhere else.

## Command-line Syntax

To avoid collisions with other scripts, all options need to be prefixed with `osc-`.

Example:

```
--script-opts=osc-optionA=value1,osc-optionB=value2
```

## Configurable Options

### **showwindowed**

Default: yes  
Enable the OSC when windowed

### **showfullscreen**

Default: yes  
Enable the OSC when fullscreen

### **scalewindowed**

Default: 1.0  
Scale factor of the OSC when windowed

### **scalefullscreen**

Default: 1.0  
Scale factor of the OSC when fullscreen

### **scaleforcedwindow**

Default: 2.0  
Scale factor of the OSC when rendered on a forced (dummy) window

### **vidscale**

Default: yes  
Scale the OSC with the video  
`no` tries to keep the OSC size constant as much as the window size allows

### **valign**

Default: 0.8  
Vertical alignment, -1 (top) to 1 (bottom)

### **halign**

Default: 0.0  
Horizontal alignment, -1 (left) to 1 (right)

### **boxalpha**

Default: 80  
Alpha of the background box, 0 (opaque) to 255 (fully transparent)

### **hidetimeout**

Default: 500  
Duration in ms until the OSC hides if no mouse movement, negative value disables auto-hide

### **fadeduration**

Default: 200  
Duration of fade out in ms, 0 = no fade

### **deadzonesize**

Default: 0

Size of the deadzone. The deadzone is an area that makes the mouse act like leaving the window. Movement there won't make the OSC show up and it will hide immediately if the mouse enters it. The deadzone starts at the window border opposite to the OSC and the size controls how much of the window it will span. Values between 0 and 1.

#### **minmousemove**

Default: 3

Minimum amount of pixels the mouse has to move between ticks to make the OSC show up

#### **layout**

Default: box

The layout for the OSC. Currently available are: box, slimbox, bottombar and topbar.

#### **seekbarstyle**

Default: slider

Sets the style of the seekbar, slider (diamond marker) or bar (fill)

#### **timetotal**

Default: no

Show total time instead of time remaining

#### **timems**

Default: no

Display timecodes with milliseconds

## ***Script Commands***

The OSC script listens to certain script commands. These commands can bound in `input.conf`, or sent by other scripts.

#### **enable-osc**

Undoes `disable-osc` or the effect of the `del` key.

#### **disable-osc**

Hide the OSC permanently. This is also what the `del` key does.

#### **osc-message**

Show a message on screen using the OSC. First argument is the message, second the duration in seconds.

#### **Example**

You could put this into `input.conf` to hide the OSC with the `a` key and to unhide it with `b`:

```
a script_message disable-osc
b script_message enable-osc
```

## **LUA SCRIPTING**

mpv can load Lua scripts. Scripts passed to the `--script` option, or found in the `scripts` subdirectory of the mpv configuration directory (usually `~/.config/mpv/scripts/`) will be loaded on program start. mpv also appends the `scripts` subdirectory to the end of Lua's path so you can import scripts from there too. Since it's added to the end, don't name scripts you want to import the same as Lua libraries because they will be overshadowed by them.

mpv provides the built-in module `mp`, which contains functions to send commands to the mpv core and to retrieve information about playback state, user settings, file information, and so on.

These scripts can be used to control mpv in a similar way to slave mode. Technically, the Lua code uses the client API internally.

## Example

A script which leaves fullscreen mode when the player is paused:

```
function on_pause_change(name, value)
    if value == true then
        mp.set_property("fullscreen", "no")
    end
end
mp.observe_property("pause", "bool", on_pause_change)
```

## Details on the script initialization and lifecycle

Your script will be loaded by the player at program start from the `scripts` configuration subdirectory, or from a path specified with the `--script` option. Some scripts are loaded internally (like `--osc`). Each script runs in its own thread. Your script is first run "as is", and once that is done, the event loop is entered. This event loop will dispatch events received by mpv and call your own event handlers which you have registered with `mp.register_event`, or timers added with `mp.add_timeout` or similar.

When the player quits, all scripts will be asked to terminate. This happens via a `shutdown` event, which by default will make the event loop return. If your script got into an endless loop, mpv will probably behave fine during playback (unless the player is suspended, see `mp.suspend`), but it won't terminate when quitting, because it's waiting on your script.

Internally, the C code will call the Lua function `mp_event_loop` after loading a Lua script. This function is normally defined by the default prelude loaded before your script (see `player/lua/defaults.lua` in the mpv sources). The event loop will wait for events and dispatch events registered with `mp.register_event`. It will also handle timers added with `mp.add_timeout` and similar (by waiting with a timeout).

Since mpv 0.6.0, the player will wait until the script is fully loaded before continuing normal operation. The player considers a script as fully loaded as soon as it starts waiting for mpv events (or it exits). In practice this means the player will more or less hang until the script returns from the main chunk (and `mp_event_loop` is called), or the script calls `mp_event_loop` or `mp.dispatch_events` directly. This is done to make it possible for a script to fully setup event handlers etc. before playback actually starts. In older mpv versions, this happened asynchronously.

## mp functions

The `mp` module is preloaded, although it can be loaded manually with `require 'mp'`. It provides the core client API.

### `mp.command(string)`

Run the given command. This is similar to the commands used in `input.conf`. See [List of Input Commands](#).

By default, this will show something on the OSD (depending on the command), as if it was used in `input.conf`. See [Input Command Prefixes](#) how to influence OSD usage per command.

Returns `true` on success, or `nil, error` on error.

### `mp.commandv(arg1, arg2, ...)`

Similar to `mp.command`, but pass each command argument as separate parameter. This has the advantage that you don't have to care about quoting and escaping in some cases.

Example:

```
mp.command("loadfile " .. filename .. " append")
mp.commandv("loadfile", filename, "append")
```

These two commands are equivalent, except that the first version breaks if the filename contains spaces or certain special characters.

Note that properties are *not* expanded. You can use either `mp.command`, the `expand-properties` prefix, or the `mp.get_property` family of functions.

Unlike `mp.command`, this will not use OSD by default either (except for some OSD-specific commands).

**`mp.command_native(table [,def])`**

Similar to `mp.commandv`, but pass the argument list as `table`. This has the advantage that in at least some cases, arguments can be passed as native types.

Returns a result table on success (usually empty), or `def, error` on error. `def` is the second parameter provided to the function, and is `nil` if it's missing.

**`mp.get_property(name [,def])`**

Return the value of the given property as string. These are the same properties as used in `input.conf`. See [Properties](#) for a list of properties. The returned string is formatted similar to `${=name}` (see [Property Expansion](#)).

Returns the string on success, or `def, error` on error. `def` is the second parameter provided to the function, and is `nil` if it's missing.

**`mp.get_property_osd(name [,def])`**

Similar to `mp.get_property`, but return the property value formatted for OSD. This is the same string as printed with `${name}` when used in `input.conf`.

Returns the string on success, or `def, error` on error. `def` is the second parameter provided to the function, and is an empty string if it's missing. Unlike `get_property()`, assigning the return value to a variable will always result in a string.

**`mp.get_property_bool(name [,def])`**

Similar to `mp.get_property`, but return the property value as Boolean.

Returns a Boolean on success, or `def, error` on error.

**`mp.get_property_number(name [,def])`**

Similar to `mp.get_property`, but return the property value as number.

Note that while Lua does not distinguish between integers and floats, mpv internals do. This function simply request a double float from mpv, and mpv will usually convert integer property values to float.

Returns a number on success, or `def, error` on error.

**`mp.get_property_native(name [,def])`**

Similar to `mp.get_property`, but return the property value using the best Lua type for the property. Most time, this will return a string, Boolean, or number. Some properties (for example `chapter-list`) are returned as tables.

Returns a value on success, or `def, error` on error. Note that `nil` might be a possible, valid value too in some corner cases.

**`mp.set_property(name, value)`**

Set the given property to the given string value. See `mp.get_property` and [Properties](#) for more information about properties.

Returns `true` on success, or `nil, error` on error.

**`mp.set_property_bool(name, value)`**

Similar to `mp.set_property`, but set the given property to the given Boolean value.

**mp.set\_property\_number(name, value)**

Similar to `mp.set_property`, but set the given property to the given numeric value.

Note that while Lua does not distinguish between integers and floats, mpv internals do. This function will test whether the number can be represented as integer, and if so, it will pass an integer value to mpv, otherwise a double float.

**mp.set\_property\_native(name, value)**

Similar to `mp.set_property`, but set the given property using its native type.

Since there are several data types which can not be represented natively in Lua, this might not always work as expected. For example, while the Lua wrapper can do some guesswork to decide whether a Lua table is an array or a map, this would fail with empty tables. Also, there are not many properties for which it makes sense to use this, instead of `set_property`, `set_property_bool`, `set_property_number`. For these reasons, this function should probably be avoided for now, except for properties that use tables natively.

**mp.get\_time()**

Return the current mpv internal time in seconds as a number. This is basically the system time, with an arbitrary offset.

**mp.add\_key\_binding(key, name|fn [,fn [,flags]])**

Register callback to be run on a key binding. The binding will be mapped to the given `key`, which is a string describing the physical key. This uses the same key names as in `input.conf`, and also allows combinations (e.g. `ctrl+a`).

After calling this function, key presses will cause the function `fn` to be called (unless the user remapped the key with another binding).

The `name` argument should be a short symbolic string. It allows the user to remap the key binding via `input.conf` using the `script_message` command, and the name of the key binding (see below for an example). The name should be unique across other bindings in the same script - if not, the previous binding with the same name will be overwritten. You can omit the name, in which case a random name is generated internally.

The last argument is used for optional flags. This is a table, which can have the following entries:

**repeatable**

If set to `true`, enables key repeat for this specific binding.

**complex**

If set to `true`, then `fn` is called on both key up and down events (as well as key repeat, if enabled), with the first argument being a table. This table has an `event` entry, which is set to one of the strings `down`, `repeat`, `up` or `press` (the latter if key up/down can't be tracked). It further has an `is_mouse` entry, which tells whether the event was caused by a mouse button.

Internally, key bindings are dispatched via the `script_message_to` or `script_binding` input commands and `mp.register_script_message`.

Trying to map multiple commands to a key will essentially prefer a random binding, while the other bindings are not called. It is guaranteed that user defined bindings in the central `input.conf` are preferred over bindings added with this function (but see `mp.add_forced_key_binding`).

Example:

```
function something_handler()
    print("the key was pressed")
end
mp.add_key_binding("x", "something", something_handler)
```

This will print the message `the key was pressed` when `x` was pressed.

The user can remap these key bindings. Then the user has to put the following into his `input.conf` to remap the command to the `y` key:

```
y script_binding something
```

This will print the message when the key `y` is pressed. (`x` will still work, unless the user remaps it.)

You can also explicitly send a message to a named script only. Assume the above script was using the filename `fooscript.lua`:

```
y script_binding fooscript.something
```

#### **`mp.add_forced_key_binding(...)`**

This works almost the same as `mp.add_key_binding`, but registers the key binding in a way that will overwrite the user's custom bindings in his `input.conf`. (`mp.add_key_binding` overwrites default key bindings only, but not those by the user's `input.conf`.)

#### **`mp.remove_key_binding(name)`**

Remove a key binding added with `mp.add_key_binding` or `mp.add_forced_key_binding`. Use the same name as you used when adding the bindings. It's not possible to remove bindings for which you omitted the name.

#### **`mp.register_event(name, fn)`**

Call a specific function when an event happens. The event name is a string, and the function `fn` is a Lua function value.

Some events have associated data. This is put into a Lua table and passed as argument to `fn`. The Lua table by default contains a `name` field, which is a string containing the event name. If the event has an error associated, the `error` field is set to a string describing the error, on success it's not set.

If multiple functions are registered for the same event, they are run in registration order, which the first registered function running before all the other ones.

Returns true if such an event exists, false otherwise.

See [Events](#) and [List of events](#) for details.

#### **`mp.unregister_event(fn)`**

Undo `mp.register_event(..., fn)`. This removes all event handlers that are equal to the `fn` parameter. This uses normal Lua `==` comparison, so be careful when dealing with closures.

#### **`mp.observe_property(name, type, fn)`**

Watch a property for changes. If the property `name` is changed, then the function `fn(name)` will be called. `type` can be `nil`, or be set to one of `none`, `native`, `bool`, `string`, or `number`. `none` is the same as `nil`. For all other values, the new value of the property will be passed as second argument to `fn`, using `mp.get_property_<type>` to retrieve it. This means if `type` is for example `string`, `fn` is roughly called as in `fn(name, mp.get_property_string(name))`.

If possible, change events are coalesced. If a property is changed a bunch of times in a row, only the last change triggers the change function. (The exact behavior depends on timing and other things.)

In some cases the function is not called even if the property changes. Whether this can happen depends on the property.

If the `type` is `none` or `nil`, sporadic property change events are possible. This means the change function `fn` can be called even if the property doesn't actually change.

#### **`mp.unobserve_property(fn)`**

Undo `mp.observe_property(..., fn)`. This removes all property handlers that are equal to the `fn` parameter. This uses normal Lua `==` comparison, so be careful when dealing with closures.

#### **`mp.add_timeout(seconds, fn)`**

Call the given function `fn` when the given number of seconds has elapsed. Note that the number of seconds can be fractional. For now, the timer's resolution may be as low as 50 ms, although this will be improved in the future.

This is a one-shot timer: it will be removed when it's fired.

Returns a timer object. See `mp.add_periodic_timer` for details.

#### **`mp.add_periodic_timer(seconds, fn)`**

Call the given function periodically. This is like `mp.add_timeout`, but the timer is re-added after the function `fn` is run.

**Returns a timer object. The timer object provides the following methods:**

##### **`stop()`**

Disable the timer. Does nothing if the timer is already disabled. This will remember the current elapsed time when stopping, so that `resume()` essentially unpauses the timer.

##### **`kill()`**

Disable the timer. Resets the elapsed time. `resume()` will restart the timer.

##### **`resume()`**

Restart the timer. If the timer was disabled with `stop()`, this will resume at the time it was stopped. If the timer was disabled with `kill()`, or if it's a previously fired one-shot timer (added with `add_timeout()`), this starts the timer from the beginning, using the initially configured timeout.

##### **`timeout (RW)`**

This field contains the current timeout period. This value is not updated as time progresses. It's only used to calculate when the timer should fire next when the timer expires.

If you write this, you can call `t:kill()` ; `t:resume()` to reset the current timeout to the new one. (`t:stop()` won't use the new timeout.)

##### **`oneshot (RW)`**

Whether the timer is periodic (`false`) or fires just once (`true`). This value is used when the timer expires (but before the timer callback function `fn` is run).

Note that these are method, and you have to call them using `:` instead of `.` (Refer to <http://www.lua.org/manual/5.2/manual.html#3.4.9>.)

Example:

```
seconds = 0
timer = mp.add_periodic_timer(1, function()
    print("called every second")
    # stop it after 10 seconds
    seconds = seconds + 1
    if seconds >= 10 then
        timer:kill()
    end
end)
```

#### **`mp.get_opt(key)`**

Return a setting from the `--script-opts` option. It's up to the user and the script how this mechanism is used. Currently, all scripts can access this equally, so you should be careful about collisions.

#### **`mp.get_script_name()`**

Return the name of the current script. The name is usually made of the filename of the script, with directory and file extension removed. If there are several script which would have the same name, it's made unique by appending a number.



## Example

The script `/path/to/fooscript.lua` becomes `fooscript`.

### **`mp.osd_message(text [,duration])`**

Show an OSD message on the screen. `duration` is in seconds, and is optional (uses `--osd-duration` by default).

## Advanced mp functions

These also live in the `mp` module, but are documented separately as they are useful only in special situations.

### **`mp.suspend()`**

Suspend the mpv main loop. There is a long-winded explanation of this in the C API function `mpv_suspend()`. In short, this prevents the player from displaying the next video frame, so that you don't get blocked when trying to access the player.

This is automatically called by the event handler.

### **`mp.resume()`**

Undo one `mp.suspend()` call. `mp.suspend()` increments an internal counter, and `mp.resume()` decrements it. When 0 is reached, the player is actually resumed.

### **`mp.resume_all()`**

This resets the internal suspend counter and resumes the player. (It's like calling `mp.resume()` until the player is actually resumed.)

You might want to call this if you're about to do something that takes a long time, but doesn't really need access to the player (like a network operation). Note that you still can access the player at any time.

### **`mp.get_wakeup_pipe()`**

Calls `mpv_get_wakeup_pipe()` and returns the read end of the wakeup pipe. (See `client.h` for details.)

### **`mp.get_next_timeout()`**

Return the relative time in seconds when the next timer (`mp.add_timeout` and similar) expires. If there is no timer, return `nil`.

### **`mp.dispatch_events([allow_wait])`**

This can be used to run custom event loops. If you want to have direct control what the Lua script does (instead of being called by the default event loop), you can set the global variable `mp_event_loop` to your own function running the event loop. From your event loop, you should call `mp.dispatch_events()` to dequeue and dispatch mpv events.

If the `allow_wait` parameter is set to `true`, the function will block until the next event is received or the next timer expires. Otherwise (and this is the default behavior), it returns as soon as the event loop is emptied. It's strongly recommended to use `mp.get_next_timeout()` and `mp.get_wakeup_pipe()` if you're interested in properly working notification of new events and working timers.

This function calls `mp.suspend()` and `mp.resume_all()` on its own.

### **`mp.enable_messages(level)`**

Set the minimum log level of which mpv message output to receive. These messages are normally printed to the terminal. By calling this function, you can set the minimum log level of messages

which should be received with the `log-message` event. See the description of this event for details. The level is a string, see `msg.log` for allowed log levels.

#### **`mp.register_script_message(name, fn)`**

This is a helper to dispatch `script_message` or `script_message_to` invocations to Lua functions. `fn` is called if `script_message` or `script_message_to` (with this script as destination) is run with `name` as first parameter. The other parameters are passed to `fn`. If a message with the given name is already registered, it's overwritten.

Used by `mp.add_key_binding`, so be careful about name collisions.

#### **`mp.unregister_script_message(name)`**

Undo a previous registration with `mp.register_script_message`. Does nothing if the `name` wasn't registered.

## **mp.msg functions**

This module allows outputting messages to the terminal, and can be loaded with `require 'mp.msg'`.

#### **`msg.log(level, ...)`**

The level parameter is the message priority. It's a string and one of `fatal`, `error`, `warn`, `info`, `v`, `debug`. The user's settings will determine which of these messages will be visible. Normally, all messages are visible, except `v` and `debug`.

The parameters after that are all converted to strings. Spaces are inserted to separate multiple parameters.

You don't need to add newlines.

**`msg.fatal(...)`, `msg.error(...)`, `msg.warn(...)`, `msg.info(...)`, `msg.verbose(...)`, `msg.debug(...)`**

All of these are shortcuts and equivalent to the corresponding `msg.log(level, ...)` call.

## **mp.options functions**

mpv comes with a built-in module to manage options from config-files and the command-line. All you have to do is to supply a table with default options to the `read_options` function. The function will overwrite the default values with values found in the config-file and the command-line (in that order).

#### **`options.read_options(table [, identifier])`**

A `table` with key-value pairs. The type of the default values is important for converting the values read from the config file or command-line back. Do not use `nil` as a default value!

The `identifier` is used to identify the config-file and the command-line options. These needs to be unique to avoid collisions with other scripts. Defaults to `mp.get_script_name()`.

Example implementation:

```
require 'mp.options'
local options = {
    optionA = "defaultvalueA",
    optionB = -0.5,
    optionC = true,
}
read_options(options, "myscript")
print(options.optionA)
```

The config file will be stored in `lua-settings/identifier.conf` in mpv's user folder. Comment lines can be started with `#` and stray spaces are not removed. Boolean values will be represented with `yes/no`.

Example config:

```
# comment
optionA=Hello World
optionB=9999
optionC=no
```

Command-line options are read from the `--script-opts` parameter. To avoid collisions, all keys have to be prefixed with `identifier-`.

Example command-line:

```
--script-opts=myscript-optionA=TEST,myscript-optionB=0,myscript-optionC=yes
```

## mp.utils options

This built-in module provides generic helper functions for Lua, and have strictly speaking nothing to do with mpv or video/audio playback. They are provided for convenience. Most compensate for Lua's scarce standard library.

Be warned that any of these functions might disappear any time. They are not strictly part of the guaranteed API.

**utils.getcwd()**

Returns the directory that mpv was launched from. On error, `nil`, `error` is returned.

**utils.readdir(path [, filter])**

Enumerate all entries at the given path on the filesystem, and return them as array. Each entry is a directory entry (without the path). The list is unsorted (in whatever order the operating system returns it).

If the `filter` argument is given, it must be one of the following strings:

**files**

List regular files only. This excludes directories, special files (like UNIX device files or FIFOs), and dead symlinks. It includes UNIX symlinks to regular files.

**dirs**

List directories only, or symlinks to directories. `.` and `..` are not included.

**normal**

Include the results of both `files` and `dirs`. (This is the default.)

**all**

List all entries, even device files, dead symlinks, FIFOs, and the `.` and `..` entries.

On error, `nil`, `error` is returned.

**utils.split\_path(path)**

Split a path into directory component and filename component, and return them. The first return value is always the directory. The second return value is the trailing part of the path, the directory entry.

**utils.join\_path(p1, p2)**

Return the concatenation of the 2 paths. Tries to be clever. For example, if `p2` is an absolute path, `p2` is returned without change.

**utils.subprocess(t)**

Runs an external process and waits until it exits. Returns process status and the captured output.

The parameter `t` is a table. The function reads the following entries:

**args**

Array of strings. The first array entry is the executable. This can be either an absolute path, or a filename with no path components, in which case the `PATH` environment variable is used to resolve the executable. The other array elements are passed as command line arguments.

**cancellable**

Optional. If set to `true` (default), then if the user stops playback or goes to the next file while the process is running, the process will be killed.

**max\_size**

Optional. The maximum size in bytes of the data that can be captured from stdout. (Default: 16 MB.)

The function returns a table as result with the following entries:

**status**

The raw exit status of the process. It will be negative on error.

**stdout**

Captured output stream as string, limited to `max_size`.

**error**

`nil` on success. The string `killed` if the process was terminated in an unusual way. The string `init` if the process could not be started.

On Windows, `killed` is only returned when the process has been killed by mpv as a result of `cancellable` being set to `true`.

**killed\_by\_us**

Set to `true` if the process has been killed by mpv as a result of `cancellable` being set to `true`.

In all cases, `mp.resume_all()` is implicitly called.

**utils.parse\_json(str [, trail])**

Parses the given string argument as JSON, and returns it as a Lua table. On error, returns `nil`, `error`. (Currently, `error` is just a string reading error, because there is no fine-grained error reporting of any kind.)

The returned value uses similar conventions as `mp.get_property_native()` to distinguish empty objects and arrays.

If the `trail` parameter is `true` (or any value equal to `true`), then trailing non-whitespace text is tolerated by the function, and the trailing text is returned as 3rd return value. (The 3rd return value is always there, but with `trail` set, no error is raised.)

**utils.format\_json(v)**

Format the given Lua table (or value) as a JSON string and return it. On error, returns `nil`, `error`. (Errors usually only happen on value types incompatible with JSON.)

The argument value uses similar conventions as `mp.set_property_native()` to distinguish empty objects and arrays.

**utils.to\_string(v)**

Turn the given value into a string. Formats tables and their contents. This doesn't do anything special; it is only needed because Lua is terrible.

## Events

Events are notifications from player core to scripts. You can register an event handler with `mp.register_event`.

Note that all scripts (and other parts of the player) receive events equally, and there's no such thing as blocking other scripts from receiving events.

Example:

```
function my_fn(event)
    print("start of playback!")
end

mp.register_event("file-loaded", my_fn)
```

## List of events

### **start-file**

Happens right before a new file is loaded. When you receive this, the player is loading the file (or possibly already done with it).

### **end-file**

Happens after a file was unloaded. Typically, the player will load the next file right away, or quit if this was the last file.

The event has the `reason` field, which takes one of these values:

#### **eof**

The file has ended. This can (but doesn't have to) include incomplete files or broken network connections under circumstances.

#### **stop**

Playback was ended by a command.

#### **quit**

Playback was ended by sending the quit command.

#### **error**

An error happened. In this case, an `error` field is present with the error string.

#### **redirect**

Happens with playlists and similar. Details see `MPV_END_FILE_REASON_REDIRECT` in the C API.

#### **unknown**

Unknown. Normally doesn't happen, unless the Lua API is out of sync with the C API. (Likewise, it could happen that your script gets reason strings that did not exist yet at the time your script was written.)

### **file-loaded**

Happens after a file was loaded and begins playback.

### **seek**

Happens on seeking. (This might include cases when the player seeks internally, even without user interaction. This includes e.g. segment changes when playing ordered chapters Matroska files.)

### **playback-restart**

Start of playback after seek or after file was loaded.

### **idle**

Idle mode is entered. This happens when playback ended, and the player was started with `--idle` or `--force-window`. This mode is implicitly ended when the `start-file` or `shutdown` events happen.

### **tick**

Called after a video frame was displayed. This is a hack, and you should avoid using it. Use timers instead and maybe watch pausing/unpausing events to avoid wasting CPU when the player is paused.

#### **shutdown**

Sent when the player quits, and the script should terminate. Normally handled automatically. See [Details on the script initialization and lifecycle](#).

#### **log-message**

Receives messages enabled with `mp.enable_messages`. The message data is contained in the table passed as first parameter to the event handler. The table contains, in addition to the default event fields, the following fields:

##### **prefix**

The module prefix, identifies the sender of the message. This is what the terminal player puts in front of the message text when using the `--v` option, and is also what is used for `--msg-level`.

##### **level**

The log level as string. See `msg.log` for possible log level names. Note that later versions of mpv might add new levels or remove (undocumented) existing ones.

##### **text**

The log message. The text will end with a newline character. Sometimes it can contain multiple lines.

Keep in mind that these messages are meant to be hints for humans. You should not parse them, and prefix/level/text of messages might change any time.

#### **get-property-reply**

Undocumented (not useful for Lua scripts).

#### **set-property-reply**

Undocumented (not useful for Lua scripts).

#### **command-reply**

Undocumented (not useful for Lua scripts).

#### **client-message**

Undocumented (used internally).

#### **video-reconfig**

Happens on video output or filter reconfig.

#### **audio-reconfig**

Happens on audio output or filter reconfig.

The following events also happen, but are deprecated: `tracks-changed`, `track-switched`, `pause`, `unpause`, `metadata-update`, `chapter-change`. Use `mp.observe_property()` instead.

## **Extras**

This documents experimental features, or features that are "too special" to guarantee a stable interface.

#### **mp.add\_hook(type, priority, fn)**

Add a hook callback for `type` (a string identifying a certain kind of hook). These hooks allow the player to call script functions and wait for their result (normally, the Lua scripting interface is asynchronous from the point of view of the player core). `priority` is an arbitrary integer that allows ordering among hooks of the same kind. Using the value 50 is recommended as neutral default value. `fn` is the function that will be called during execution of the hook.

See [Hooks](#) for currently existing hooks and what they do - only the hook list is interesting; handling hook execution is done by the Lua script function automatically.

# JSON IPC

mpv can be controlled by external programs using the JSON-based IPC protocol. It can be enabled by specifying the path to a unix socket using the option `--input-unix-socket`. Clients can connect to this socket and send commands to the player or receive events from it.

## Warning

This is not intended to be a secure network protocol. It is explicitly insecure: there is no authentication, no encryption, and the commands themselves are insecure too. For example, the `run` command is exposed, which can run arbitrary system commands. The use-case is controlling the player locally. This is not different from the MPlayer slave protocol.

## Socat example

You can use the `socat` tool to send commands (and receive reply) from the shell. Assuming mpv was started with:

```
mpv file.mkv --input-unix-socket=/tmp/mpvsocket
```

Then you can control it using `socat`:

```
> echo '{ "command": ["get_property", "playback-time"] }' | socat - /tmp/mpvsocket
{"data":190.482000,"error":"success"}
```

In this case, `socat` copies data between `stdin/stdout` and the mpv socket connection.

See the `--idle` option how to make mpv start without exiting immediately or playing a file.

It's also possible to send `input.conf` style text-only commands:

```
> echo 'show_text ${playback-time}' | socat - /tmp/mpvsocket
```

But you won't get a reply over the socket. (This particular command shows the playback time on the player's OSD.)

## Protocol

Clients can execute commands on the player by sending JSON messages of the following form:

```
{ "command": ["command_name", "param1", "param2", ...] }
```

where `command_name` is the name of the command to be executed, followed by a list of parameters. Parameters must be formatted as native JSON values (integers, strings, booleans, ...). Every message **must** be terminated with `\n`. Additionally, `\n` must not appear anywhere inside the message. In practice this means that messages should be minified before being sent to mpv.

mpv will then send back a reply indicating whether the command was run correctly, and an additional field holding the command-specific return data (it can also be null).

```
{ "error": "success", "data": null }
```

mpv will also send events to clients with JSON messages of the following form:

```
{ "event": "event_name" }
```

where `event_name` is the name of the event. Additional event-specific fields can also be present. See [List of events](#) for a list of all supported events.

Because events can occur at any time, it may be difficult at times to determine which response goes with which command. Commands may optionally include a `request_id` which, if provided in the command request, will be copied verbatim into the response. mpv does not interpret the `request_id` in any way; it is solely for the use of the requester.

For example, this request:

```
{ "command": ["get_property", "time-pos"], "request_id": 100 }
```

Would generate this response:

```
{ "error": "success", "data": 1.468135, "request_id": 100 }
```

All commands, replies, and events are separated from each other with a line break character (`\n`).

If the first character (after skipping whitespace) is not `{`, the command will be interpreted as non-JSON text command, as they are used in `input.conf` (or `mpv_command_string()` in the client API). Additionally, line starting with `#` and empty lines are ignored.

Currently, embedded 0 bytes terminate the current line, but you should not rely on this.

## Commands

Additionally to the commands described in [List of Input Commands](#), a few extra commands can also be used as part of the protocol:

### **client\_name**

Return the name of the client as string. This is the string `ipc-N` with N being an integer number.

### **get\_time\_us**

Return the current mpv internal time in microseconds as a number. This is basically the system time, with an arbitrary offset.

### **get\_property**

Return the value of the given property. The value will be sent in the data field of the replay message.

Example:

```
{ "command": ["get_property", "volume"] }  
{ "data": 50.0, "error": "success" }
```

### **get\_property\_string**

Like `get_property`, but the resulting data will always be a string.

Example:

```
{ "command": ["get_property_string", "volume"] }  
{ "data": "50.000000", "error": "success" }
```

### **set\_property**

Set the given property to the given value. See [Properties](#) for more information about properties.

Example:



```
{ "command": ["set_property", "pause", true] }
{ "error": "success" }
```

### **set\_property\_string**

Like `set_property`, but the argument value must be passed as string.

Example:

```
{ "command": ["set_property_string", "pause", "yes"] }
{ "error": "success" }
```

### **observe\_property**

Watch a property for changes. If the given property is changed, then an event of type `property-change` will be generated

Example:

```
{ "command": ["observe_property", 1, "volume"] }
{ "error": "success" }
{ "event": "property-change", "id": 1, "data": 52.0, "name": "volume" }
```

### **observe\_property\_string**

Like `observe_property`, but the resulting data will always be a string.

Example:

```
{ "command": ["observe_property_string", 1, "volume"] }
{ "error": "success" }
{ "event": "property-change", "id": 1, "data": "52.000000", "name": "volume" }
```

### **unobserve\_property**

Undo `observe_property` or `observe_property_string`. This requires the numeric id passed to the observe command as argument.

Example:

```
{ "command": ["unobserve_property", 1] }
{ "error": "success" }
```

### **request\_log\_messages**

Enable output of mpv log messages. They will be received as events. The parameter to this command is the log-level (see `mpv_request_log_messages` C API function).

Log message output is meant for humans only (mostly for debugging). Attempting to retrieve information by parsing these messages will just lead to breakages with future mpv releases. Instead, make a feature request, and ask for a proper event that returns the information you need.

### **enable\_event, disable\_event**

Enables or disables the named event. Mirrors the `mpv_request_event` C API function. If the string `all` is used instead of an event name, all events are enabled or disabled.

By default, most events are enabled, and there is not much use for this command.

### **suspend**

Suspend the mpv main loop. There is a long-winded explanation of this in the C API function `mpv_suspend()`. In short, this prevents the player from displaying the next video frame, so that you don't get blocked when trying to access the player.

### **resume**

Undo one `suspend` call. `suspend` increments an internal counter, and `resume` decrements it. When 0 is reached, the player is actually resumed.

#### **get\_version**

Returns the client API version the C API of the remote mpv instance provides. (Also see `DOCS/client-api-changes.rst`.)

## **UTF-8**

Normally, all strings are in UTF-8. Sometimes it can happen that strings are in some broken encoding (often happens with file tags and such, and filenames on many Unixes are not required to be in UTF-8 either). This means that mpv sometimes sends invalid JSON. If that is a problem for the client application's parser, it should filter the raw data for invalid UTF-8 sequences and perform the desired replacement, before feeding the data to its JSON parser.

mpv will not attempt to construct invalid UTF-8 with broken escape sequences.

## **CHANGELOG**

There is no real changelog, but you can look at the following things:

- The release changelog, which should contain most user-visible changes, including new features and bug fixes:

<https://github.com/mpv-player/mpv/releases>

- The git log, which is the "real" changelog
- The file `mplayer-changes.rst` in the `DOCS` sub directory on the git repository, which used to be in place of this section. It documents some changes that happened since mplayer2 forked off MPlayer.

## **ENVIRONMENT VARIABLES**

There are a number of environment variables that can be used to control the behavior of mpv.

#### **HOME, XDG\_CONFIG\_HOME**

Used to determine mpv config directory. If `XDG_CONFIG_HOME` is not set, `$HOME/.config/mpv` is used.

`$HOME/.mpv` is always added to the list of config search paths with a lower priority.

#### **XDG\_CONFIG\_DIRS**

If set, XDG-style system configuration directories are used. Otherwise, the UNIX convention (`PREFIX/etc/mpv/`) is used.

#### **TERM**

Used to determine terminal type.

#### **MPV\_HOME**

Directory where mpv looks for user settings. Overrides `HOME`, and mpv will try to load the config file as `$MPV_HOME/mpv.conf`.

#### **MPV\_VERBOSE (see also `-v` and `--msg-level`)**

Set the initial verbosity level across all message modules (default: 0). This is an integer, and the resulting verbosity corresponds to the number of `--v` options passed to the command line.

#### **MPV\_LEAK\_REPORT**

If set to 1, enable internal `talloc` leak reporting. Note that this can cause trouble with multithreading, so only developers should use this.

#### **LADSPA\_PATH**

Specifies the search path for LADSPA plugins. If it is unset, fully qualified path names must be used.

#### **DISPLAY**

Standard X11 display name to use.

#### **FFmpeg/Libav:**

This library accesses various environment variables. However, they are not centrally documented, and documenting them is not our job. Therefore, this list is incomplete.

Notable environment variables:

##### **http\_proxy**

URL to proxy for `http://` and `https://` URLs.

##### **no\_proxy**

List of domain patterns for which no proxy should be used. List entries are separated by `,`. Patterns can include `*`.

#### **libdvdcss:**

##### **DVDCSS\_CACHE**

Specify a directory in which to store title key values. This will speed up descrambling of DVDs which are in the cache. The `DVDCSS_CACHE` directory is created if it does not exist, and a subdirectory is created named after the DVD's title or manufacturing date. If `DVDCSS_CACHE` is not set or is empty, `libdvdcss` will use the default value which is `${HOME}/.dvdcss/` under Unix and the roaming application data directory (`%APPDATA%`) under Windows. The special value "off" disables caching.

##### **DVDCSS\_METHOD**

Sets the authentication and decryption method that `libdvdcss` will use to read scrambled discs. Can be one of `title`, `key` or `disc`.

##### **key**

is the default method. `libdvdcss` will use a set of calculated player keys to try and get the disc key. This can fail if the drive does not recognize any of the player keys.

##### **disc**

is a fallback method when `key` has failed. Instead of using player keys, `libdvdcss` will crack the disc key using a brute force algorithm. This process is CPU intensive and requires 64 MB of memory to store temporary data.

##### **title**

is the fallback when all other methods have failed. It does not rely on a key exchange with the DVD drive, but rather uses a crypto attack to guess the title key. On rare cases this may fail because there is not enough encrypted data on the disc to perform a statistical attack, but on the other hand it is the only way to decrypt a DVD stored on a hard disc, or a DVD with the wrong region on an RPC2 drive.

##### **DVDCSS\_RAW\_DEVICE**

Specify the raw device to use. Exact usage will depend on your operating system, the Linux utility to set up raw devices is `raw(8)` for instance. Please note that on most operating systems, using a raw device requires highly aligned buffers: Linux requires a 2048 bytes alignment (which is the size of a DVD sector).

##### **DVDCSS\_VERBOSE**

Sets the `libdvdcss` verbosity level.

- 0:** Outputs no messages at all.
- 1:** Outputs error messages to `stderr`.
- 2:** Outputs error messages and debug messages to `stderr`.

##### **DVDREAD\_NOKEYS**

Skip retrieving all keys on startup. Currently disabled.

**HOME**

FIXME: Document this.

## EXIT CODES

Normally **mpv** returns 0 as exit code after finishing playback successfully. If errors happen, the following exit codes can be returned:

- 1: Error initializing mpv. This is also returned if unknown options are passed to mpv.
- 2: The file passed to mpv couldn't be played. This is somewhat fuzzy: currently, playback of a file is considered to be successful if initialization was mostly successful, even if playback fails immediately after initialization.
- 3: There were some files that could be played, and some files which couldn't (using the definition of success from above).
- 4: Quit due to a signal, Ctrl+c in a VO window (by default), or from the default quit key bindings in encoding mode.

Note that quitting the player manually will always lead to exit code 0, overriding the exit code that would be returned normally. Also, the `quit` input command can take an exit code: in this case, that exit code is returned.

## FILES

For Windows-specifics, see [FILES ON WINDOWS](#) section.

**/usr/local/etc/mpv/mpv.conf**

mpv system-wide settings (depends on `--prefix` passed to configure - mpv in default configuration will use `/usr/local/etc/mpv/` as config directory, while most Linux distributions will set it to `/etc/mpv/`).

**~/.config/mpv/mpv.conf**

mpv user settings (see [CONFIGURATION FILES](#) section)

**~/.config/mpv/input.conf**

key bindings (see [INPUT.CONF](#) section)

**~/.config/mpv/scripts/**

All files in this directory are loaded as if they were passed to the `--script` option. They are loaded in alphabetical order, and sub-directories and files with no `.lua` extension are ignored. The `--load-scripts=no` option disables loading these files.

**~/.config/mpv/watch\_later/**

Contains temporary config files needed for resuming playback of files with the watch later feature. See for example the `Q` key binding, or the `quit_watch_later` input command.

Each file is a small config file which is loaded if the corresponding media file is loaded. It contains the playback position and some (not necessarily all) settings that were changed during playback. The filenames are hashed from the full paths of the media files. It's in general not possible to extract the media filename from this hash. However, you can set the `--write-filename-in-watch-later-config` option, and the player will add the media filename to the contents of the resume config file.

**~/.config/mpv/lua-settings/osc.conf**

This is loaded by the OSC script. See the [ON SCREEN CONTROLLER](#) docs for details.

Other files in this directory are specific to the corresponding scripts as well, and the mpv core doesn't touch them.

Note that the environment variables `$XDG_CONFIG_HOME` and `$MPV_HOME` can override the standard directory `~/.config/mpv/`.

Also, the old config location at `~/.mpv/` is still read, and if the XDG variant does not exist, will still be preferred.

## FILES ON WINDOWS

On win32 (if compiled with MinGW, but not Cygwin), the default config file locations are different. They are generally located under `%APPDATA%/mpv/`. For example, the path to `mpv.conf` is `%APPDATA%/mpv/mpv.conf`, which maps to a system and user-specific path, for example

```
C:\users\USERNAME\Application Data\mpv\mpv.conf
```

You can find the exact path by running `echo %APPDATA%\mpv\mpv.conf` in `cmd.exe`.

Other config files (such as `input.conf`) are in the same directory. See the [FILES](#) section above.

The environment variable `$MPV_HOME` completely overrides these, like on UNIX.

If a directory named `portable_config` next to the `mpv.exe` exists, all config will be loaded from this directory only. Watch later config files are written to this directory as well. (This exists on Windows only and is redundant with `$MPV_HOME`. However, since Windows is very scripting unfriendly, a wrapper script just setting `$MPV_HOME`, like you could do it on other systems, won't work. `portable_config` is provided for convenience to get around this restriction.)

Config files located in the same directory as `mpv.exe` are loaded with lower priority. Some config files are loaded only once, which means that e.g. of 2 `input.conf` files located in two config directories, only the one from the directory with higher priority will be loaded.

A third config directory with lowest priority is the directory named `mpv` in the same directory as `mpv.exe`. This used to be the directory with highest priority, but is now discouraged to use and might be removed in the future.

Note that `mpv` likes to mix `/` and `\` path separators for simplicity. `kernel32.dll` accepts this, but `cmd.exe` does not.

## EXAMPLES OF MPV USAGE

### Blu-ray playback:

- `mpv bd:///path/to/disc`
- `mpv bd:// --bluray-device=/path/to/disc`

### Play in Japanese with English subtitles:

```
mpv dvd://1 --alang=ja --slang=en
```

### Play only chapters 5, 6, 7:

```
mpv dvd://1 --chapter=5-7
```

### Play only titles 5, 6, 7:

```
mpv dvd://5-7
```

### Play a multi-angle DVD:

```
mpv dvd://1 --dvd-angle=2
```

### Play from a different DVD device:

```
mpv dvd://1 --dvd-device=/dev/dvd2
```

### Play DVD video from a directory with VOB files:

```
mpv dvd://1 --dvd-device=/path/to/directory/
```

### Stream from HTTP:

```
mpv http://example.com/example.avi
```

**Stream using RTSP:**

```
mpv rtsp://server.example.com/streamName
```

**Play a libavfilter graph:**

```
mpv avdevice://lavfi:mandelbrot
```

## AUTHORS

mpv is a MPlayer fork based on mplayer2, which in turn is a fork of MPlayer.

MPlayer was initially written by Arpad Gereoffy. See the `AUTHORS` file for a list of some of the many other contributors.

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This man page was written mainly by Gabucino, Jonas Jermann and Diego Biurrun.