x264 core:146 r2538 121396c
Syntax: x264 [options] -o outfile infile

Infile can be raw (in which case resolution is required),
  or YUV4MPEG (*.y4m),
  or Avisynth if compiled with support (yes).
  or libav* formats if compiled with lavf support (yes) or ffms support (no).
Outfile type is selected by filename:
 .264 -> Raw bytestream
 .mkv -> Matroska
 .flv -> Flash Video
 .mp4 -> MP4 if compiled with GPAC or L-SMASH support (no)
Output bit depth: 8 (configured at compile time)

Options:

  -h, --help   List basic options
      --longhelp   List more options
      --fullhelp   List all options

Example usage:

    Constant quality mode:
        x264 --crf 24 -o <output> <input>

    Two-pass with a bitrate of 1000kbps:
        x264 --pass 1 --bitrate 1000 -o <output> <input>
        x264 --pass 2 --bitrate 1000 -o <output> <input>

    Lossless:
        x264 --qp 0 -o <output> <input>

    Maximum PSNR at the cost of speed and visual quality:
        x264 --preset placebo --tune psnr -o <output> <input>

    Constant bitrate at 1000kbps with a 2 second-buffer:
        x264 --vbv-bufsize 2000 --bitrate 1000 -o <output> <input>

Presets:

    --profile <string>   Force the limits of an H.264 profile
                           Overrides all settings.
                           - baseline:
                             --no-8x8dct --bframes 0 --no-cabac
                             --cqm flat --weightp 0
                             No interlaced.
                             No lossless.
                           - main:
                             --no-8x8dct --cqm flat
                             No lossless.
                           - high:
                             No lossless.
                           - high10:

No lossless.
Support for bit depth 8-10.
- high422:
No lossless.
Support for bit depth 8-10.
Support for 4:2:0/4:2:2 chroma subsampling.
- high444:
Support for bit depth 8-10.
Support for 4:2:0/4:2:2/4:4:4 chroma subsampling.

--preset <string> Use a preset to select encoding settings [medium]
Overridden by user settings.
- ultrafast:
--no-8x8dct --aq-mode 0 --b-adapt 0
--bframes 0 --no-cabac --no-deblock
--no-mbtree --me dia --no-mixed-refs
--partitions none --rc-lookahead 0 --ref 1
--scenecut 0 --subme 0 --trellis 0
--no-weightb --weightp 0
- superfast:
--no-mbtree --me dia --no-mixed-refs
--partitions i8x8,i4x4 --rc-lookahead 0
--ref 1 --subme 1 --trellis 0 --weightp 1
- veryfast:
--no-mixed-refs --rc-lookahead 10
--ref 1 --subme 2 --trellis 0 --weightp 1
- faster:
--no-mixed-refs --rc-lookahead 20
--ref 2 --subme 4 --weightp 1
- fast:
--rc-lookahead 30 --ref 2 --subme 6
--weightp 1
- medium:
Default settings apply.
- slow:
--b-adapt 2 --direct auto --me umh
--rc-lookahead 50 --ref 5 --subme 8
- slower:
--b-adapt 2 --direct auto --me umh
--partitions all --rc-lookahead 60
--ref 8 --subme 9 --trellis 2
- veryslow:
--b-adapt 2 --bframes 8 --direct auto
--me umh --merange 24 --partitions all
--ref 16 --subme 10 --trellis 2
--rc-lookahead 60
- placebo:
--bframes 16 --b-adapt 2 --direct auto
--slow-firstpass --no-fast-pskip
--me tesa --merange 24 --partitions all
--rc-lookahead 60 --ref 16 --subme 11
--trellis 2

--tune <string> Tune the settings for a particular type of source
or situation
Overridden by user settings.

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                        Multiple tunings are separated by commas.
                        Only one psy tuning can be used at a time.
                        - film (psy tuning):
                          --deblock -1:-1 --psy-rd <unset>:0.15
                        - animation (psy tuning):
                          --bframes {+2} --deblock 1:1
                          --psy-rd 0.4:<unset> --aq-strength 0.6
                          --ref {Double if >1 else 1}
                        - grain (psy tuning):
                          --aq-strength 0.5 --no-dct-decimate
                          --deadzone-inter 6 --deadzone-intra 6
                          --deblock -2:-2 --ipratio 1.1
                          --pbratio 1.1 --psy-rd <unset>:0.25
                          --qcomp 0.8
                        - stillimage (psy tuning):
                          --aq-strength 1.2 --deblock -3:-3
                          --psy-rd 2.0:0.7
                        - psnr (psy tuning):
                          --aq-mode 0 --no-psy
                        - ssim (psy tuning):
                          --aq-mode 2 --no-psy
                        - fastdecode:
                          --no-cabac --no-deblock --no-weightb
                          --weightp 0
                        - zerolatency:
                          --bframes 0 --force-cfr --no-mbtree
                          --sync-lookahead 0 --sliced-threads
                          --rc-lookahead 0
    --slow-firstpass    Don't force these faster settings with --pass 1:
                        --no-8x8dct --me dia --partitions none
                        --ref 1 --subme {2 if >2 else unchanged}
                        --trellis 0 --fast-pskip

  Frame-type options:

    -I, --keyint <integer or "infinite"> Maximum GOP size [250]
    -i, --min-keyint <integer>  Minimum GOP size [auto]
        --no-scenecut       Disable adaptive I-frame decision
        --scenecut <integer>    How aggressively to insert extra I-frames [40]
        --intra-refresh     Use Periodic Intra Refresh instead of IDR frames
    -b, --bframes <integer>     Number of B-frames between I and P [3]
        --b-adapt <integer>     Adaptive B-frame decision method [1]
                            Higher values may lower threading efficiency.
                            - 0: Disabled
                            - 1: Fast
                            - 2: Optimal (slow with high --bframes)
        --b-bias <integer>      Influences how often B-frames are used [0]
        --b-pyramid <string>    Keep some B-frames as references [normal]
                            - none: Disabled
                            - strict: Strictly hierarchical pyramid
                            - normal: Non-strict (not Blu-ray compatible)
        --open-gop          Use recovery points to close GOPs
                        Only available with b-frames
        --no-cabac          Disable CABAC
```

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  -r, --ref <integer>         Number of reference frames [3]
      --no-deblock            Disable loop filter
  -f, --deblock <alpha:beta>  Loop filter parameters [0:0]
      --slices <integer>      Number of slices per frame; forces rectangular
                              slices and is overridden by other slicing options
      --slices-max <integer>  Absolute maximum slices per frame; overrides
                              slice-max-size/slice-max-mbs when necessary
      --slice-max-size <integer> Limit the size of each slice in bytes
      --slice-max-mbs <integer> Limit the size of each slice in macroblocks (max)
      --slice-min-mbs <integer> Limit the size of each slice in macroblocks (min)
      --tff                   Enable interlaced mode (top field first)
      --bff                   Enable interlaced mode (bottom field first)
      --constrained-intra     Enable constrained intra prediction.
      --pulldown <string>     Use soft pulldown to change frame rate
                              - none, 22, 32, 64, double, triple, euro (requires cfr input)
      --fake-interlaced       Flag stream as interlaced but encode progressive.
                              Makes it possible to encode 25p and 30p Blu-Ray
                              streams. Ignored in interlaced mode.
      --frame-packing <integer> For stereoscopic videos define frame arrangement
                              - 0: checkerboard - pixels are alternatively from L and R
                              - 1: column alternation - L and R are interlaced by column
                              - 2: row alternation - L and R are interlaced by row
                              - 3: side by side - L is on the left, R on the right
                              - 4: top bottom - L is on top, R on bottom
                              - 5: frame alternation - one view per frame
                              - 6: mono - 2D frame without any frame packing
                              - 7: tile format - L is on top-left, R split across

Ratecontrol:

  -q, --qp <integer>          Force constant QP (0-69, 0=lossless)
  -B, --bitrate <integer>     Set bitrate (kbit/s)
      --crf <float>           Quality-based VBR (0-51) [23.0]
      --rc-lookahead <integer> Number of frames for frametype lookahead [40]
      --vbv-maxrate <integer> Max local bitrate (kbit/s) [0]
      --vbv-bufsize <integer> Set size of the VBV buffer (kbit) [0]
      --vbv-init <float>      Initial VBV buffer occupancy [0.9]
      --crf-max <float>       With CRF+VBV, limit RF to this value
                              May cause VBV underflows!
      --qpmin <integer>       Set min QP [0]
      --qpmax <integer>       Set max QP [69]
      --qpstep <integer>      Set max QP step [4]
      --ratetol <float>       Tolerance of ABR ratecontrol and VBV [1.0]
      --ipratio <float>       QP factor between I and P [1.40]
      --pbratio <float>       QP factor between P and B [1.30]
      --chroma-qp-offset <integer>  QP difference between chroma and luma [0]
      --aq-mode <integer>     AQ method [1]
                              - 0: Disabled
                              - 1: Variance AQ (complexity mask)
                              - 2: Auto-variance AQ
                              - 3: Auto-variance AQ with bias to dark scenes
      --aq-strength <float>   Reduces blocking and blurring in flat and
                              textured areas. [1.0]
```

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 -p, --pass <integer>       Enable multipass ratecontrol
                            - 1: First pass, creates stats file
                            - 2: Last pass, does not overwrite stats file
                            - 3: Nth pass, overwrites stats file
     --stats <string>       Filename for 2 pass stats ["x264_2pass.log"]
     --no-mbtree            Disable mb-tree ratecontrol.
     --qcomp <float>        QP curve compression [0.60]
     --cplxblur <float>     Reduce fluctuations in QP (before curve compression) [20.0]
     --qblur <float>        Reduce fluctuations in QP (after curve compression) [0.5]
     --zones <zone0>/<zone1>/...  Tweak the bitrate of regions of the video
                         Each zone is of the form
                            <start frame>,<end frame>,<option>
                            where <option> is either
                               q=<integer> (force QP)
                            or  b=<float> (bitrate multiplier)
     --qpfile <string>      Force frametypes and QPs for some or all frames
                         Format of each line: framenumber frametype QP
                         QP is optional (none lets x264 choose). Frametypes: I,i,K,P,B,b.
                            K=<I or i> depending on open-gop setting
                         QPs are restricted by qpmin/qpmax.

Analysis:

 -A, --partitions <string>  Partitions to consider ["p8x8,b8x8,i8x8,i4x4"]
                            - p8x8, p4x4, b8x8, i8x8, i4x4
                            - none, all
                            (p4x4 requires p8x8. i8x8 requires --8x8dct.)
     --direct <string>      Direct MV prediction mode ["spatial"]
                            - none, spatial, temporal, auto
     --no-weightb           Disable weighted prediction for B-frames
     --weightp <integer>    Weighted prediction for P-frames [2]
                            - 0: Disabled
                            - 1: Weighted refs
                            - 2: Weighted refs + Duplicates
     --me <string>          Integer pixel motion estimation method ["hex"]
                            - dia: diamond search, radius 1 (fast)
                            - hex: hexagonal search, radius 2
                            - umh: uneven multi-hexagon search
                            - esa: exhaustive search
                            - tesa: hadamard exhaustive search (slow)
     --merange <integer>    Maximum motion vector search range [16]
     --mvrange <integer>    Maximum motion vector length [-1 (auto)]
     --mvrange-thread <int> Minimum buffer between threads [-1 (auto)]
 -m, --subme <integer>      Subpixel motion estimation and mode decision [7]
                            - 0: fullpel only (not recommended)
                            - 1: SAD mode decision, one qpel iteration
                            - 2: SATD mode decision
                            - 3-5: Progressively more qpel
                            - 6: RD mode decision for I/P-frames
                            - 7: RD mode decision for all frames
                            - 8: RD refinement for I/P-frames
                            - 9: RD refinement for all frames
                            - 10: QP-RD - requires trellis=2, aq-mode>0
                            - 11: Full RD: disable all early terminations
```

```
    --psy-rd <float:float>  Strength of psychovisual optimization ["1.0:0.0"]
                            #1: RD (requires subme>=6)
                            #2: Trellis (requires trellis, experimental)
    --no-psy                Disable all visual optimizations that worsen
                            both PSNR and SSIM.
    --no-mixed-refs         Don't decide references on a per partition basis
    --no-chroma-me          Ignore chroma in motion estimation
    --no-8x8dct             Disable adaptive spatial transform size
-t, --trellis <integer>     Trellis RD quantization. [1]
                            - 0: disabled
                            - 1: enabled only on the final encode of a MB
                            - 2: enabled on all mode decisions
    --no-fast-pskip         Disables early SKIP detection on P-frames
    --no-dct-decimate       Disables coefficient thresholding on P-frames
    --nr <integer>          Noise reduction [0]

    --deadzone-inter <int>  Set the size of the inter luma quantization deadzone [21]
    --deadzone-intra <int>  Set the size of the intra luma quantization deadzone [11]
                            Deadzones should be in the range 0 - 32.
    --cqm <string>          Preset quant matrices ["flat"]
                            - jvt, flat
    --cqmfile <string>      Read custom quant matrices from a JM-compatible file
                            Overrides any other --cqm* options.
    --cqm4 <list>           Set all 4x4 quant matrices
                            Takes a comma-separated list of 16 integers.
    --cqm8 <list>           Set all 8x8 quant matrices
                            Takes a comma-separated list of 64 integers.
    --cqm4i, --cqm4p, --cqm8i, --cqm8p <list>
                            Set both luma and chroma quant matrices
    --cqm4iy, --cqm4ic, --cqm4py, --cqm4pc <list>
                            Set individual quant matrices

  Video Usability Info (Annex E):
  The VUI settings are not used by the encoder but are merely suggestions to
  the playback equipment. See doc/vui.txt for details. Use at your own risk.

    --overscan <string>     Specify crop overscan setting ["undef"]
                            - undef, show, crop
    --videoformat <string>  Specify video format ["undef"]
                            - component, pal, ntsc, secam, mac, undef
    --range <string>        Specify color range ["auto"]
                            - auto, tv, pc
    --colorprim <string>    Specify color primaries ["undef"]
                            - undef, bt709, bt470m, bt470bg, smpte170m,
                              smpte240m, film, bt2020
    --transfer <string>     Specify transfer characteristics ["undef"]
                            - undef, bt709, bt470m, bt470bg, smpte170m,
                              smpte240m, linear, log100, log316,
                              iec61966-2-4, bt1361e, iec61966-2-1,
                              bt2020-10, bt2020-12
    --colormatrix <string>  Specify color matrix setting ["???"]
                            - undef, bt709, fcc, bt470bg, smpte170m,
                              smpte240m, GBR, YCgCo, bt2020nc, bt2020c
    --chromaloc <integer>   Specify chroma sample location (0 to 5) [0]
```

```
    --nal-hrd <string>      Signal HRD information (requires vbv-bufsize)
                            - none, vbr, cbr (cbr not allowed in .mp4)
    --filler                Force hard-CBR and generate filler (implied by
                            --nal-hrd cbr)
    --pic-struct            Force pic_struct in Picture Timing SEI
    --crop-rect <string>    Add 'left,top,right,bottom' to the bitstream-level
                            cropping rectangle

  Input/Output:

  -o, --output <string>       Specify output file
    --muxer <string>        Specify output container format ["auto"]
                            - auto, raw, mkv, flv
    --demuxer <string>      Specify input container format ["auto"]
                            - auto, raw, y4m, avs, lavf
    --input-fmt <string>    Specify input file format (requires lavf support)
    --input-csp <string>    Specify input colorspace format for raw input
                            - valid csps for `raw' demuxer:
                              i420, yv12, nv12, i422, yv16, nv16, i444, yv24, bgr, bgra, rgb
                            - valid csps for `lavf' demuxer:
                              yuv420p, yuyv422, rgb24, bgr24, yuv422p,
                              yuv444p, yuv410p, yuv411p, gray, monow, monob,
                              pal8, yuvj420p, yuvj422p, yuvj444p, xvmcmc,
                              xvmcidct, uyvy422, uyyvyy411, bgr8, bgr4,
                              bgr4_byte, rgb8, rgb4, rgb4_byte, nv12, nv21,
                              argb, rgba, abgr, bgra, gray16be, gray16le,
                              yuv440p, yuvj440p, yuva420p, vdpau_h264,
                              vdpau_mpeg1, vdpau_mpeg2, vdpau_wmv3,
                              vdpau_vc1, rgb48be, rgb48le, rgb565be,
                              rgb565le, rgb555be, rgb555le, bgr565be,
                              bgr565le, bgr555be, bgr555le, vaapi_moco,
                              vaapi_idct, vaapi_vld, yuv420p16le,
                              yuv420p16be, yuv422p16le, yuv422p16be,
                              yuv444p16le, yuv444p16be, vdpau_mpeg4,
                              dxva2_vld, rgb444le, rgb444be, bgr444le,
                              bgr444be, ya8, bgr48be, bgr48le, yuv420p9be,
                              yuv420p9le, yuv420p10be, yuv420p10le,
                              yuv422p10be, yuv422p10le, yuv444p9be,
                              yuv444p9le, yuv444p10be, yuv444p10le,
                              yuv422p9be, yuv422p9le, vda_vld, gbrp, gbrp9be,
                              gbrp9le, gbrp10be, gbrp10le, gbrp16be,
                              gbrp16le, yuva422p, yuva444p, yuva420p9be,
                              yuva420p9le, yuva422p9be, yuva422p9le,
                              yuva444p9be, yuva444p9le, yuva420p10be,
                              yuva420p10le, yuva422p10be, yuva422p10le,
                              yuva444p10be, yuva444p10le, yuva420p16be,
                              yuva420p16le, yuva422p16be, yuva422p16le,
                              yuva444p16be, yuva444p16le, vdpau, xyz12le,
                              xyz12be, nv16, nv20le, nv20be, rgba64be,
                              rgba64le, bgra64be, bgra64le, yvyu422, vda,
                              ya16be, ya16le, gbrap, gbrap16be, gbrap16le,
                              qsv
    --output-csp <string>   Specify output colorspace ["i420"]
                            - i420, i422, i444, rgb
```

```
    --input-depth <integer> Specify input bit depth for raw input
    --input-range <string>  Specify input color range ["auto"]
                            - auto, tv, pc
    --input-res <intxint>   Specify input resolution (width x height)
    --index <string>        Filename for input index file
    --sar width:height      Specify Sample Aspect Ratio
    --fps <float|rational>  Specify framerate
    --seek <integer>        First frame to encode
    --frames <integer>      Maximum number of frames to encode
    --level <string>        Specify level (as defined by Annex A)
    --bluray-compat         Enable compatibility hacks for Blu-ray support
    --avcintra-class <integer> Use compatibility hacks for AVC-Intra class
                            - 50, 100, 200
    --stitchable            Don't optimize headers based on video content
                            Ensures ability to recombine a segmented encode

-v, --verbose               Print stats for each frame
    --no-progress           Don't show the progress indicator while encoding
    --quiet                 Quiet Mode
    --log-level <string>    Specify the maximum level of logging ["info"]
                            - none, error, warning, info, debug
    --psnr                  Enable PSNR computation
    --ssim                  Enable SSIM computation
    --threads <integer>     Force a specific number of threads
    --lookahead-threads <integer> Force a specific number of lookahead threads
    --sliced-threads        Low-latency but lower-efficiency threading
    --thread-input          Run Avisynth in its own thread
    --sync-lookahead <integer> Number of buffer frames for threaded lookahead
    --non-deterministic     Slightly improve quality of SMP, at the cost of repeatability
    --cpu-independent       Ensure exact reproducibility across different cpus,
                            as opposed to letting them select different algorithms
    --asm <integer>         Override CPU detection
    --no-asm                Disable all CPU optimizations
    --opencl                Enable use of OpenCL
    --opencl-clbin <string> Specify path of compiled OpenCL kernel cache
    --opencl-device <integer> Specify OpenCL device ordinal
    --dump-yuv <string>     Save reconstructed frames
    --sps-id <integer>      Set SPS and PPS id numbers [0]
    --aud                   Use access unit delimiters
    --force-cfr             Force constant framerate timestamp generation
    --tcfile-in <string>    Force timestamp generation with timecode file
    --tcfile-out <string>   Output timecode v2 file from input timestamps
    --timebase <int/int>    Specify timebase numerator and denominator
            <integer>       Specify timebase numerator for input timecode file
                            or specify timebase denominator for other input
    --dts-compress          Eliminate initial delay with container DTS hack

  Filtering:

    --vf, --video-filter <filter0>/<filter1>/... Apply video filtering to the input file

    Filter options may be specified in <filter>:<option>=<value> format.

    Available filters:
```

crop:left,top,right,bottom
    removes pixels from the edges of the frame
resize:[width,height][,sar][,fittobox][,csp][,method]
    resizes frames based on the given criteria:
    - resolution only: resizes and adapts sar to avoid stretching
    - sar only: sets the sar and resizes to avoid stretching
    - resolution and sar: resizes to given resolution and sets the sar
    - fittobox: resizes the video based on the desired constraints
      - width, height, both
    - fittobox and sar: same as above except with specified sar
    - csp: convert to the given csp. syntax: [name][:depth]
      - valid csp names [keep current]: i420, yv12, nv12, i422, yv16, nv16, i444, yv24, bgr, bgra, rgb
      - depth: 8 or 16 bits per pixel [keep current]
    note: not all depths are supported by all csps.
    - method: use resizer method ["bicubic"]
      - fastbilinear, bilinear, bicubic, experimental, point,
      - area, bicublin, gauss, sinc, lanczos, spline
select_every:step,offset1[,...]
    apply a selection pattern to input frames
    step: the number of frames in the pattern
    offsets: the offset into the step to select a frame
    see: http://avisynth.nl/index.php/Select#SelectEvery