x264 - MPEG-4 AVC/H.264 free library

公式サイト：	VideoLAN - x264
開発者：	x264 team
種別：	ビデオエンコードライブラリ
最新リリース：	Core 93, Rev.1542 5b86182 2010/04/14(JST)
プラットフォーム：	クロスプラットフォーム
ライセンス：	GNU General Public License

x264 は、動画像をMPEG-4 AVC/H.264ビデオストリーム にエンコードするためのライブラリ、またはマルチメディアフレームワーク。
入力にYUV 4:2:0 RAWバイトストリーム、YUV4MPEG YUV4:2:0(*.y4m)、AviSynth Script(*.avs)を、出力にH.264 RAWバイトストリーム(*.264)、Matroska Media（*.mkv）、MP4(*.mp4)をサポートする。（※MP4出力にはコンパイル時にGPACが必要）
公式サイトからの頒布はソースコードで行われているが、有志によりコマンドラインインターフェース用（以下、ここではcliと略す）のコンパイル済みバイナリや専用のフロントエンド、特定アプリケーション向けのプラグイン等が頒布されている。
かつてはvfw（Video for Windows）も公式プロジェクトに存在していたが、svn-r581より公式プロジェクトから削除された。
またsvn-r733より、エンコーダ側が処理すべきものではないとしてカラースペースコンバータが削除されたため、エンコーダへの入力前にYUV 4:2:0(YV12)に変換しておく必要がある。
なお、便宜的にコーデック（Codec: " co mpressor- dec ompressor"、" co der- dec oder" または " co mpression/ dec ompression"）と呼ばれているが、デコーダを含まないため厳密にはコーデックではない（デコーダもインプリメントしようという試みはあった）。
x264でエンコードされた動画を再生するためには、デコードエンジンを搭載しているソフトウェア（ffdshowなどのCodec含む）を導入するか、VLC media playerなどデコーダを自前で搭載しているソフトウェアを導入する必要がある。

ソース入手からインストールまでの一例（GNU/Linux）

```
[user@localdomain]$ git clone git://git.videolan.org/x264.git
Initialized empty Git repository in /home/user/x264/.git/
remote: Generating pack...
remote: Done counting 6984 objects.
remote: Deltifying 6984 objects...
remote:  100% (6984/6984) done
remote: Total 6984 (delta 5573), reused 150 (delta 123)
Receiving objects:  100% (6984/6984), 1.68MiB | 233 KiB/s, done.
Resolving deltas:  100% (5573/5573), done.
[user@localdomain]$ cd x264
[user@localdomain x264]$ ./configure
Platform:   X86
System:     LINUX
asm:        yes
avis input: no
mp4 output: no
pthread:    yes
gtk:        no
debug:      no
gprof:      no
PIC:        no
```

```
shared:     no
visualize:  no

You can run 'make' or 'make fprofiled' now.
[user@localdomain x264]$ make
長いので省略

[root@localdomain x264]# make install
install -d /usr/local/bin /usr/local/include
install -d /uer/local/lib /usr/local/lib/pkgconfig
install -m 644 x264.h /usr/local/include
install -m 644 libx264.a /usr/local/lib
install -m 644 x264.pc /usr/local/lib/pkgconfig
install x264 /usr/local/bin
ranlib /usr/local/lib/libx264.a
```

主なバイナリの頒布元

1. seraphyのプログラム公開所: AFS(自動フィールドシフト)に対応したWindows用cli版並びにAviUtl用プラグインが頒布されている。(for Windows XP/Vista 32bit)
2. Jarod: Windows用cli版が頒布されている。(for Windows XP/Vista 32bit)
3. VideoLAN: VLC media playerにエンコーダとしてインプリメントされている。(Cross-platform)
4. MPlayer -The Movie Player-: mencoderにエンコーダとしてインプリメントされている。(Cross-platform)
5. SourceForge.net: MeGUIおよびAviSynthをインストールしてアップデートを行うと、AviSynthプラグインやx264などのプログラム群が利用できるようになる。(for Windows XP/Vista 32bit)

fullhelp (コマンド一覧: x264 core:93 git-r1542 5b86182)

```
x264 core:93 r1542 5b86182
Syntax: x264 [options] -o outfile infile [widthxheight]

Infile can be raw YUV 4:2:0 (in which case resolution is required),
  or YUV4MPEG 4:2:0 (*.y4m),
  or Avisynth if compiled with support (yes).
  or libav* formats if compiled with lavf support (no) or ffms support (no).
Outfile type is selected by filename:
 .264 -> Raw bytestream
 .mkv -> Matroska
 .flv -> Flash Video
 .mp4 -> MP4 if compiled with GPAC support (no)

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 --crf 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               Force the limits of an H.264 profile [high]
                                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.
    --preset                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 --ref 1 --scenecut 0
                                  --subme 0 --trellis 0 --no-weightb
                                  --weightp 0
                                - superfast:
                                  --no-mbtree --me dia --no-mixed-refs
                                  --partitions i8x8,i4x4 --ref 1
                                  --subme 1 --trellis 0 --weightp 0
                                - veryfast:
                                  --no-mbtree --no-mixed-refs --ref 1
                                  --subme 2 --trellis 0 --weightp 0
                                - faster:
                                  --no-mixed-refs --rc-lookahead 20
                                  --ref 2 --subme 4 --weightp 1
                                - fast:
                                  --rc-lookahead 30 --ref 2 --subme 6
                                - medium:
                                  Default settings apply.
                                - slow:
                                  --b-adapt 2 --direct auto --me umh
                                  --rc-lookahead 50 --ref 5 --subme 8
                                - slower:
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                                --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 10
                                --trellis 2
    --tune                  Tune the settings for a particular type of source
                            or situation
                                Overridden by user settings.
                                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 --rc-lookahead 0
                                  --sync-lookahead 0 --sliced-threads
    --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>      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]
```

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      --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)
      --no-cabac              Disable CABAC
  -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
      --slice-max-size <integer> Limit the size of each slice in bytes
      --slice-max-mbs <integer> Limit the size of each slice in macroblocks
      --tff                   Enable interlaced mode (top field first)
      --bff                   Enable interlaced mode (bottom field first)
      --constrained-intra     Enable constrained intra prediction.

Ratecontrol:

  -q, --qp <integer>          Force constant QP (0-51, 0=lossless)
  -B, --bitrate <integer>     Set bitrate (kbit/s)
      --crf <float>           Quality-based VBR (0-51, 0=lossless) [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 [10]
      --qpmax <integer>       Set max QP [51]
      --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 (experimental)
      --aq-strength <float>   Reduces blocking and blurring in flat and
                              textured areas. [1.0]

  -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
```

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                                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 of -1 lets x264 choose. Frametypes: I,i,P,B,b.
                                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: Blind offset
                                    - 2: Smart analysis
      --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
      --psy-rd                  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. Requires CABAC. [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
                              Set both luma and chroma quant matrices
      --cqm4iy, --cqm4ic, --cqm4py, --cqm4pc
                              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
      --fullrange <string>    Specify full range samples setting ["off"]
                                  - off, on
      --colorprim <string>    Specify color primaries ["undef"]
                                  - undef, bt709, bt470m, bt470bg
                                    smpte170m, smpte240m, film
      --transfer <string>     Specify transfer characteristics ["undef"]
                                  - undef, bt709, bt470m, bt470bg, linear,
                                    log100, log316, smpte170m, smpte240m
      --colormatrix <string>  Specify color matrix setting ["undef"]
                                  - undef, bt709, fcc, bt470bg
                                    smpte170m, smpte240m, GBR, YCgCo
      --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)
      --pic-struct            Force pic_struct in Picture Timing SEI

Input/Output:

  -o, --output                Specify output file
      --muxer <string>        Specify output container format ["auto"]
                                  - auto, raw, mkv, flv
      --demuxer <string>      Specify input container format ["auto"]
                                  - auto, yuv, y4m, avs
      --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)

  -v, --verbose               Print stats for each frame
      --no-progress           Don't show the progress indicator while encoding
```

```
    --quiet                 Quiet Mode
    --psnr                  Enable PSNR computation
    --ssim                  Enable SSIM computation
    --threads <integer>     Force a specific number of 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
    --asm <integer>         Override CPU detection
    --no-asm                Disable all CPU optimizations
    --visualize             Show MB types overlayed on the encoded video
    --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
    --pulldown <string>     Use soft pulldown to change frame rate
                                - none, 22, 32, 64, double, triple, euro (requires cfr inp
```

関連ページ

- x264とは

コメントフォーム

訂正、追加情報、その他掲載したほうがいいような事項等があればご指摘ください。

◉名前:

書き込む