DDS Utilities Executables User Guide

Command Line Texture Tools

Introduction

In addition to the nvDXT libraries, DDS Utilities includes the following four command line executable texture tools.

nvDXT.exe - command line tool providing convenient access to nvDXTlib functionality, including creating maps, .DDS files and batch processing of image compression.

detach.exe - extracts the MIP maps from a .DDS file

stitch.exe - stitches together multiple MIP levels to form one .DDS file

readDXT.exe - reads compressed .DDS image and writes a .TGA file (source)

The latest release includes several improvements:

- Texture sizes up to 8k by 4K are now supported (previously 2k x 2k was the limit)
- Support for DXT5_NM (compressed normal maps)
- The “Fastest” quality mode has been significantly improved
- Internal calculations are now performed using floating point arithmetic, resulting in higher quality textures.

nvDXT.exe

This program
  compresses images
  creates normal maps from color or alpha
  creates DuDv map
  creates cube maps
  writes out .dds file
  does batch processing
  reads .tga, .bmp, .gif, .ppm, .jpg, .tif, .cel, .dds, .png, .psd, .rgb, *.bw and .rgba
  filters MIP maps

Options:
 -profile <profile name> : Read a profile created from the Photoshop plugin
 -quick : use fast compression method
 -quality_normal : normal quality compression
 -quality_production : production quality compression
 -quality_highest : highest quality compression (this can be very slow)
 -rms_threshold <int> : quality RMS error. Above this, an extensive search is performed.
 -prescale <int> <int>: rescale image to this size first
 -rescale <nearest | hi | lo | next_lo>: rescale image to nearest, next highest or next lowest power of two
 -rel_scale <float, float> : relative scale of original image. 0.5 is half size Default 1.0, 1.0

Optional Filtering for rescaling. Default cube filter:
 -RescalePoint
 -RescaleBox
 -RescaleTriangle
 -RescaleQuadratic
 -RescaleCubic
 -RescaleCatrom
 -RescaleMitchell
 -RescaleGaussian
 -RescaleSinc
 -RescaleBessel
 -RescaleHanning
 -RescaleHamming
 -RescaleBlackman
 -RescaleKaiser
 -clamp <int, int> : maximum image size. image width and height are clamped
 -clampScale <int, int> : maximum image size. image width and height are scaled
 -window <left, top, right, bottom> : window of original window to compress
 -nomipmap : don't generate MIP maps

-nmips <int> : specify the number of MIP maps to generate
-rgbe : Image is RGBE format
-dither : add dithering
-sharpenMethod <method>: sharpen method MIP maps
<method> is
    None
    Negative
    Lighter
    Darker
    ContrastMore
    ContrastLess
    Smoothen
    SharpenSoft
    SharpenMedium
    SharpenStrong
    FindEdges
    Contour
    EdgeDetect
    EdgeDetectSoft
    Emboss
    MeanRemoval
    UnSharp <radius, amount, threshold>
    XSharpen <xsharpen_strength, xsharpen_threshold>
    Custom
-pause : wait for keyboard on error
-flip : flip top to bottom
-timestamp : Update only changed files
-list <filename> : list of files to convert
-cubeMap : create cube map.
  Cube faces specified with individual files with -list option
  The file order is:
      positive x, negative x, positive y, negative y, positive z, negative z
  Use -output option to specify filename
 Cube faces specified in one file.
  Use -file to specify input filename
-volumeMap : create volume texture.
 Volume slices specified with individual files with -list option
  Use -output option to specify filename
 Volume specified in one file.
  Use -file to specify input filename
-all : all image files in current directory
-outdir <directory>: output directory
-deep [directory]: include all subdirectories
-outsamedir : output directory same as input
-overwrite : if input is .dds file, overwrite old file
-forcewrite : write over readonly files

-file <filename> : input file to process. Accepts wild cards
-output <filename> : filename to write to [-outfile can also be specified]
-append <filename_append> : append this string to output filename
-8 <dxt1c | dxt1a | dxt3 | dxt5 | u1555 | u4444 | u565 | u8888 | u888 | u555 | L8 | A8> : compress 8 bit images with this format
-16 <dxt1c | dxt1a | dxt3 | dxt5 | u1555 | u4444 | u565 | u8888 | u888 | u555 | A8L8> : compress 16 bit images with this format
-24 <dxt1c | dxt1a | dxt3 | dxt5 | u1555 | u4444 | u565 | u8888 | u888 | u555> : compress 24 bit images with this format
-32 <dxt1c | dxt1a | dxt3 | dxt5 | u1555 | u4444 | u565 | u8888 | u888 | u555> : compress 32 bit images with this format
-swap : swap rgb
-gamma <float value>: gamma correcting during filtering
-outputScale <float, float, float, float>: scale the output by this (r,g,b,a)
-outputBias <float, float, float, float>: bias the output by this amount (r,g,b,a)
-outputWrap : wraps overflow values modulo the output format
-inputScale <float, float, float, float>: scale the inpput by this (r,g,b,a)
-inputBias <float, float, float, float>: bias the input by this amount (r,g,b,a)
-binaryalpha : treat alpha as 0 or 1
-alpha_threshold <byte>: [0-255] alpha reference value
-alphaborder : border images with alpha = 0
-alphaborderLeft : border images with alpha (left) = 0
-alphaborderRight : border images with alpha (right)= 0
-alphaborderTop : border images with alpha (top) = 0
-alphaborderBottom : border images with alpha (bottom)= 0
-fadeamount <int>: percentage to fade each MIP level. Default 15
-fadecolor : fade map (color, normal or DuDv) over MIP levels
-fadetocolor <hex color> : color to fade to
-custom_fade <n> <n fadeamounts> : set custom fade amount. n is number number of fade amounts. fadeamount are [0,1]
-fadealpha : fade alpha over MIP levels
-fadetoalpha <byte>: [0-255] alpha to fade to
-border : border images with color
-bordercolor <hex color> : color for border
-force4 : force DXT1c to use always four colors
-weight <float, float, float>: Compression weightings for R G and B
-luminance : convert color values to luminance for L8 formats
-greyScale : Convert to grey scale
-greyScaleWeights <float, float, float, float>: override greyscale conversion weights of (0.3086, 0.6094, 0.0820, 0)
-brightness <float, float, float, float>: per channel brightness. Default 0.0 usual range [0,1]
-contrast <float, float, float, float>: per channel contrast. Default 1.0 usual range [0.5, 1.5]

Texture Format Default DXT3:

-dxt1c : DXT1 (color only)
-dxt1a : DXT1 (one bit alpha)
-dxt3 : DXT3
-dxt5 : DXT5

-u1555 : uncompressed 1:5:5:5
-u4444 : uncompressed 4:4:4:4
-u565 : uncompressed 5:6:5
-u8888 : uncompressed 8:8:8:8
-u888 : uncompressed 0:8:8:8
-u555 : uncompressed 0:5:5:5
-p8c : paletted 8 bit (256 colors)
-p8a : paletted 8 bit (256 colors with alpha)
-p4c : paletted 4 bit (16 colors)
-p4a : paletted 4 bit (16 colors with alpha)
-a8 : 8 bit alpha channel
-cxv8u8 : normal map format
-v8u8 : EMBM format (8, bit two component signed)
-v16u16 : EMBM format (16 bit, two component signed)
-A8L8 : 8 bit alpha channel, 8 bit luminance
-fp32x4 : fp32 four channels (A32B32G32R32F)
-fp32 : fp32 one channel (R32F)
-fp16x4 : fp16 four channels (A16B16G16R16F)
-dxt5nm : dxt5 style normal map
-g16r16 : 16 bit in, two component
-g16r16f : 16 bit float, two components

Mip Map Filtering Options. Default box filter:
-Point
-Box
-Triangle
-Quadratic
-Cubic
-Catrom
-Mitchell
-Gaussian
-Sinc
-Bessel
-Hanning
-Hamming
-Blackman
-Kaiser

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To make a normal or dudv map, specify one of
-n4 : normal map 4 sample

-n3x3 : normal map 3x3 filter
-n5x5 : normal map 5x5 filter
-n7x7 : normal map 7x7 filter
-n9x9 : normal map 9x9 filter
-dudv : DuDv

and source of height info:
-alpha : alpha channel
-rgb : average rgb
-biased : average rgb biased
-red : red channel
-green : green channel
-blue : blue channel
-max : max of (r,g,b)
-colorspace : mix of r,g,b

-norm : normalize mip maps (source is a normal map)

-toHeight : create a height map (source is a normal map)

Normal/DuDv Map dxt:
-aheight : store calculated height in alpha field
-aclear : clear alpha channel
-awhite : set alpha channel = 1.0
-scale <float> : scale of height map. Default 1.0
-wrap : wrap texture around. Default off
-minz <int> : minimum value for up vector [0-255]. Default 0

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To make a depth sprite, specify:
-depth

and source of depth info:
-alpha : alpha channel
-rgb : average rgb (default)
-red : red channel
-green : green channel
-blue : blue channel
-max : max of (r,g,b)
-colorspace : mix of r,g,b

Depth Sprite dxt:
-aheight : store calculated depth in alpha channel
-aclear : store 0.0 in alpha channel
-awhite : store 1.0 in alpha channel

-scale <float> : scale of depth sprite (default 1.0)
-alpha_modulate : multiplies color by alpha during filtering
-pre_modulate : multiplies color by alpha before processing

Examples:

```
nvdxt -cubeMap -list cubemapfile.lst -output cubemap.dds
nvdxt -cubeMap -file cubemapfile.tga
nvdxt -file test.tga -dxt1c
nvdxt -file *.tga
nvdxt -file c:\temp\*.tga
nvdxt -file temp\*.tga
nvdxt -file height_field_in_alpha.tga -n3x3 -alpha -scale 10 -wrap
nvdxt -file grey_scale_height_field.tga -n5x5 -rgb -scale 1.3
nvdxt -file normal_map.tga -norm
nvdxt -file image.tga -dudv -fade -fadeamount 10
nvdxt -all -dxt3 -gamma -outdir .\dds_dir -time
nvdxt -file *.tga -depth -max -scale 0.5
```

detach.exe

Usage: detach <base_filename>

<base_filename> - DDS file you want to extract MIP maps from. Do not include the .DDS extension

Example: To extract MIP maps from wood.dds use the following command.

detach wood

stitch.exe

Usage: stitch <base_filename>

<base_filename> - DDS base filename of the MIP maps you want to stitch together. Do not include the .DDS extension

Example: To recombine MIP maps from wood_00.dds,.. wood_01.dds,...

stitch wood

readDXT.exe

Usage: readDXT <base_filename>

<base_filename> - the compressed DDS file to generate .TGA. Do not include the .DDS extension

Example: To generate .TGA from compressed DDS file wood.dds

readdxt wood

Contact

Please send comments, feature requests, and bug reports to texturetools@nvidia.com.

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