

# Autodesk® Scaleform®

## GFxExport Reference Guide

This document describes the GFxExport utility tool which preprocesses SWF files into an optimized GFx format for use with Scaleform.

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## Autodesk® Scaleform® 4.4

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# 1 Introduction

This document describes the GfXExport utility tool in Autodesk® Scaleform®. GfXExport helps accelerate the loading of Flash content by converting it into GfX files which is then loaded into the application.

GfXExport is a command line utility that processes SWF files into a format that is optimized for streamlined loading. During preprocessing, resources are stripped out and extracted into separate files. Textures can be compressed into a more efficient format. Once stripped and converted, the Flash files will have the .gfx extension and are only compatible with Scaleform. The GfX files will then rely on the external data files, which can be managed by the application's resource system.

The GfXExport utility tool has various options for preprocessing the SWF files into different formats which is described in detail in Section 2. When used with these different options, GfXExport can export font textures, compress images, load shared copy of images and so on.

**NOTE:** Please note that GfXEport tool is now a legacy tool and a new flexible and customizable GfXExport2 utility tool has been introduced in Scaleform 4.4. For more details on GfXExport2 and its configuration settings, please refer to [GfXExport2 Reference Guide](#).

## 2 Usage

The GfxExport tool is prebuilt for Win32 and located in the bin directory in your SDK. A typical path would be:

```
C:\Program Files\Scaleform\GFx SDK 4.4 \Bin\gfxexport.exe
```

GfxExport is used in the following way:

```
gfxexport [file.swf] [file(s)...] [options]
```

For the filenames, wildcards are supported, such as \*.swf.

To see the full list of command line options and usage instructions, execute gfxexport.exe without any additional arguments and help output will be printed.

### 2.1 Image Options

Images can be converted to DDS files with DXT texture compression for optimized loading and run-time memory savings. The ability to use external DDS files is the one of the most important advantages of GFx files over SWF files.

*-i <format>*

Specifies output format for exporting image data where <format> is one of the following:

- TGA - Truevision (Targa or TGA) (default).
- DDS - DirectDraw Surface (DDS).
- PVR – PVR compression format.
- ETC- Ericsson compression format.
- ORIG - Original format. If the original image format is a lossless bitmap then a TGA file will be produced. If the original image format is JPEG then a JPG file will be produced without re-compression; in the case of JPEG with alpha-channel, both JPG/TGA files will be produced.
- MULT – Images are exported to several formats TGA, DDS, PVR and SIF with ATITC compression. The appropriate format will be selected at runtime.
- BC7 - DirectX 11 block compressed format. This option requires texconv.exe - the tool that is included with Microsoft DirectXTex library (<http://directxtex.codeplex.com/>).

*-strip\_images*

Just strip images, do not write them to files.

*-share\_images*

Tries to reuse images in the destination directory rather than write new ones every time.

*-replace\_images*

Replace internal (embedded in SWF) images with external files based on the image linkage ID. For example, if image has linkage ID "myimage.png", it will be replaced with the image in *myimage.png* file. When used with *-pack* option, only images excluded from packing will be replaced. You can exclude image from packing by adding "\_nopack" or ".nopack" to image Linkage ID/Class name.

*-id*

Specifies the directory for the external images.

*-rescale <nearest | hi | low | nextlow | mult4> [filter]*

Optional filtering for rescaling (must follow mandatory rescale mode option):

- *Box*
- *Triangle*
- *Quadratic*
- *Cubic*
- *Catrom*
- *Mitchell*
- *Gaussian*
- *Sinc*
- *Bessel*
- *Hanning*
- *Hamming*
- *Blackman*
- *Kaiser*

*-sq*

Force *-rescale* and *-pack* options to produce square images.

*-pack* (Scaleform 3.1 and above)

Pack images into larger textures.

*-packsize<size>* (Scaleform 3.1 and above)

Set the maximum size for packed textures. Default value is 1024.

*-ptresize<no | p2 | mult4 | mult128 >* (Scaleform 3.1 and above)

Resize the packed textures. Used with the following options:

- *no* - No resize
- *p2* - Resize to a higher power of 2 (default)
- *mult4* - Resize to a higher multiple of 4.
- *mult128* - Resize to a higher multiple of 128.

*-pad*

Pad textures to power of 2 or multiple of 4 (set by *ptresize*). This option is the alias for *-pack -packsize 2*.

**Note:** To exclude images from packed texture, add “\_nopack” or “.nopack” to Linkage identifier of the image in the Flash Studio.

### 2.1.1 DDS related options ('-i DDS' specified)

*-d0*

Write uncompressed DDS

*-d1c*

Use DXT1 for RGB data without alpha channel.

*-d1a*

Use DXT1 for RGB data with alpha channel.

*-d3/-d5*

Use DXT3 (default) or DXT5 for RGB data with alpha channel.

*-qf, -quick*

Fast compression method.

*-qn, -quality\_normal*

Normal quality compression (default).

*-qp, -quality\_production*

Production quality compression.

*-qh, -quality\_highest*

Highest quality compression (this can be very slow).

**Note that starting from Scaleform 3.2, options for mipmaps has been changed. Mipmaps are not generated by default (except for font textures).**



*-mipmap*

Generate mipmap levels in DDS file (by default, mipmaps are generated only for fonts).

*-mipfilter < Box | Triangle | Kaiser >*

Select mipmap filter (Box is default).

*-fnomipmaps*

Do not generate mipmaps for fonts.

### 2.1.2 PVR related options ('*-i PVR*' specified)

*-pv2*

Use 2 bit per pixel compression.

*-pv4*

Use 4 bit per pixel compression.

Note that these options are available only for supported mobile and handheld platforms.

### 2.1.3 Platform options

Instead of choosing specific image format, you can choose target platform and GfxExport will select the appropriate format. However some of the platform options require dll plugin (comes with Scaleform SDK for the platform) and appropriate platform SDK tools. Some of the platform-specific images will be stored in SIF (Scaleform Image Format) container.

*-platform <3ds | iphone | vita | wiiu | x360 | android | ps3>*

- *3ds* – Nintendo 3DS.
- *vita* – Sony Playstation Vita (uses external `psp2gxt.exe` tool to produce gxt images)
- *iphone* – iOS devices.
- *wiiu* – Nintendo Wii U (Uses external `TexConv2.exe` tool to produce gtx images)
- *x360* – Microsoft Xbox360 (produces tiled images). Please note that regular dds files (produced with `-dds` option) will also work on Xbox360 and in some cases will have higher image quality.
- *android* – This option will produce several image files for the same image (TGA + DDS + PVR + SIF). The best file will be selected in runtime based on the supported format. Please note that including all the images may significantly increase package size. So depending on your content and target platforms you may want to choose to use `-i TGA` instead (it will work on all supported platforms) or

choose not to use gfxexport at all (SWF file typically will be smaller than .gfx file + uncompressed images).

- ps3 – Sony Playstation 3

*-pu*

This option will affect only ps3 and x360 option and will produce platform specific uncompressed images.

## **2.2 Files and Directories Related Options**

*-d <dirname>*

Set the destination directory for exported data files. If not specified, files are stored in the directory containing the SWF.

*-sd*

Create subdirectories for each SWF file using the SWF filename. Extracted files are placed in the corresponding subdirectories.

*-c*

Write compressed stripped .gfx file(s). In practice many developers compress multiple files generated by gfxexport within their own package system, using custom GFx::FileOpener to load them as necessary.

*-o*

Specify the directory to write .gfx files.

*-p <prefix>*

Specifies prefix to add to the name of each exported resource. By default, the original SWF filename is used as prefix.

*-lwr / -upr*

Force all exported files to have lowercase / uppercase names.

*-ne*

Tell gfxexport not to use export names when image file names are being formed.

*-modstamp*

Do not run if SWF file is older than existing gfx.

## 2.3 Font Options

GFxExport can be used to compress font vector data more efficiently and to reduce memory usage. It can also be used to pre-generate font textures, although this is not recommended except for low-end systems. Please refer to our [Font Configuration Overview](#) document for more information about the Scaleform font system.

### *-fonts*

Export font textures. If not specified, font textures will not be generated (allowing for either dynamic cache or packing at load time to be done instead).

### *-fntlst*

Export font list and textfield/font map (.fnt-file).

### *-fc*

Use compact fonts

### *-fcl <size>*

Set the normalized size of compact fonts (default size is 256).

### *-fcm*

Merge edges for compact fonts.

### *-fns <size>*

Set the nominal size of texture glyph in pixels (defaults to 48 if no size is specified). The nominal size is the maximum size of one glyph in a texture. Smaller characters are rendered at runtime by using tri-linear mip-map filtering.

### *-fontmap*

Export a list of textfield that starts with "\$" and corresponding fonts. This list can be used for creating font maps.

### *-fpp <n>*

Specifies the space, in pixels, to leave around the individual glyph image. The default value is 3.

### *-fts <WxH>*

Set the dimensions of the textures that the glyphs get packed into. Default size is 256x256. To specify a square texture, only one dimension can be specified, e.g.: '-fts 128' is 128x128. '-fts 512x128' specifies rectangle texture.

### *-fs*

Force separate textures for each font. By default, fonts share textures.

*-strip\_font\_shapes*

Do not write font shapes in resulting GFX file.

*-fi <format>*

Specifies output format for font textures, where <format> is one of the following:

TGA8 - 8-bit Targa TrueVision (grayscale)

TGA24 - 24-bit Targa TrueVision (grayscale)

TGA32 - 32-bit Targa TrueVision

DDS8 - 8-bit DDS A8

By default, if image format (-i option) is TGA then TGA8 is used for font textures; otherwise DDS A8 is used.

Please note, that -fns, -fpp, -fts, -fs, -fi should be used only with -fonts option

## **2.4 Info Options**

*-q*

Quiet mode (suppress output).

*-x*

Quiet progress mode (suppress progress output).

*-list*

Save list of generated files.

*-info*

Get information about exported images, but do not export them.

### **2.4.1 TextField Options**

*-det*

Export list of unique default values of dynamic/input textfields to the text file with .det extensions. Text file will be saved in UTF-8 encoding. Default text field values may be useful for localization.

*-ddt*

The same as -det option except it does not save values of input textfields. The output files will have .ddt extension.

## 2.4.2 Fscommand Options

*-fstree*

Export list of fscommands as a tree (.fst-file)

*-fslist*

Export list of fscommands as a sorted list (.fsl-file)

*-fsparams*

Save parameters of fscommands. This option works with *-fstree* and *-fslist* options and will save parameters of fscommands to .fst or .fsl file. However it will work only for hardcoded parameters.

## 2.5 Sound Options

*-s <extension>*

Specifies the extension for exporting sound files.

### 3 FAQs Related to GFxExport

This section contains few of the questions that developers may have when using the GFxExport tool.

#### **1. *What are the advantages of using GFX files over using SWF files?***

The main advantage is the ability to use external DDS (compressed texture) files. When SWF file is loaded, it typically contains embedded images in JPEG format internally; these JPEGs need to be decompressed before being used for rendering - a step that can easily turn 20K of data into 2M or so, depending on the target image size. With compressed textures, however, you can save 4x on video memory use - an amount that is significant (consider 20M used for images vs. 5M). In addition, JPEG decompression takes a lot of processing power during loading, although this cost can certainly be compared against the alternative - loading larger DDS files from disk. In the end, video memory considerations typically win for most developers.

For additional benefit, GFxExport includes some options that can be used to compress font vector data more efficiently to save RAM, such as "-fc" (font compaction). This is primarily significant for Asian fonts, as the SWF vector format is already reasonably compact for many cases. GFxExport can also be used to pre-generate font textures or gradients, although this is not recommended except for low-end systems.

#### **2. *Why is my GFX file larger than the original SWF?***

SWF files are compressed by default. You can use "-c" option to produce compressed GFX files. In practice, however, many developers often compress multiple GFX-generated files within their own package system or zip, using a custom GFX::FileOpener to load them as necessary.

#### **3. *GFxExport incorrectly exports text with special effects (glow, shadow, etc.). Why does this occur?***

You should not use "-fonts" option if you want to use effects like glow, shadow and blur. Please refer to the ["Font and Text Configuration Overview"](#) for more details.

#### **4. *I have my own texture format that my engine uses. How can I use GFX files with images in this format?***

After the export is finished, you can have your own custom tools on to convert the exported images into your own custom format.

After images are stored in your own texture format, you have to install the GFX::ImageCreator class to load those textures into Scaleform. A GFX::ImageCreator::CreateImage virtual function will get called for every

texture file. Here you can load your custom images, wrap them in `Render::ImageInfo` and return for `Scaleform` to use.

**5. *How can I make textures to be exported with names I want?***

You can set the name you want `GFxExport` to use in Linkage Properties of the image.

**6. *Our pack tool relies on images named [filename of .swf]\_[ID#], how can we make GFxExport use this name format even for images that are tagged "Export for ActionScript"?***

Use "`-ne`" option.

**7. *How do I exclude image from packed texture?***

You can add `_nopack` or `.nopack` to Linkage Identifier of the image in the Flash Studio.

**8. *How can we avoid re-exporting textures that we know did not change from the last export?***

You can make these files read-only.

**9. *GFxExport takes too long to process our files. Is there any way to speed it up?***

Default DDS compression quality is "normal". Using "`-qf`" option ("fast" quality setting) will significantly reduce processing time.

**10. *Where can we find more information on GFxExport?***

You can find additional information on `GFxExport` in the related [forum topic](#) on the Developer Section of our website. Also, refer to the ["Art and Assets"](#) and ["Using Custom Images, Icons and Dynamic Textures"](#) sections of our FAQ.