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Scaleform®

Scaleform LITE Customization

This document describes how to customize Scaleform to a lightweight configuration, Scaleform LITE.

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Autodesk® Scaleform® 4.4

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1 Scaleform 4.4 Customization Defines

Autodesk® Scaleform® is highly customizable and allows users to exclude many modules and functionalities in order to decrease the code size. This is especially important for game consoles, especially those which have a strict limitation on executable code size. This document details how to customize and use the lightweight version of Scaleform, known as "Scaleform LITE" and the various options defined in this version. Using the lightweight version of Scaleform, customers can build their own customized Scaleform libraries and achieve significant code size reduction in their size-critical console applications.

Configuration options are represented as "defines" in the header file Include/GFxConfig.h.
Scaleform provides two variants of the Scaleform library – regular (or full) and "lite". The "lite" version doesn't contain some features that the full version contains in order to decrease the code size.

Since modifying these defines requires source code changes and recompilation, this type of customization is available for source code customers only.

However, customers without source code can still remove items from their application at link-time, and benefit from decreased code size. See below for more details.

1.1 AS3 Class Registration

Scaleform 4.4 can also be customized by specifying exactly which AS3 classes are needed by the application. This is yet another way of using a lighter-weight version of the library. This is done by modifying the file "GFx\AS3\AS3_Global.h in the Src folder and commenting out the un-wanted classes and defines. The file gives developers some flexibility by providing pre-existing defines such as SF_AS3_VERSION_MULTITOUCH, SF_AS3_VERSION_XML, SF_AS3_VERSION_SOUND, SF_AS3_VERSION_NET, SF_AS3_VERSION_VIDEO, and SF_AS3_VERSION_IME.

Note: The inclusion of this file is mandatory for any application which uses Scaleform and AS3, since it defines the AS3 class registration table. This file should only be included once. To include the header file directly in the application class, use the following:

```
#include "GFx/AS3/AS3_Global.h"
```

Modification of the AS3 class registration table in AS3_Global.h does not require access to Scaleform 4.0 and higher source code and can be utilized by binary customers as well.

1.2 Virtual Machine Removal

In SF 4.0, support was added for both AS2 and AS3. By default, both VMs are enabled, but typically only one is actually needed, depending on your content development. If possible, removing unnecessary support for AS2 or AS3 can reduce code size.

If you have source code, you can undefine GFX_AS2_SUPPORT in Include\GFxConfig.h and rebuild to remove AS2 VM code from the libraries. For binary customers, you can also ensure that the AS2 VM is not linked in by not setting the state on the loader, i.e. don't call loader.SetAS2Support(). The same can be done for AS3.

2 Building and Using the "Lite" Version

To build the "Lite" version of Scaleform library, it is necessary to define a symbol 'SF_BUILD_LITE' and rebuild Scaleform and all corresponding libraries and source files.

If the "Lite" version of Scaleform library is used, it is necessary to define the symbol 'SF_BUILD_LITE' for the application project as well. This will make sure the same set of options is consistent between the application and all related modules during compilation. Otherwise, linker or compiler errors might show up.

Note that if using Scaleform PlayerTiny as the Scaleform player in Lite configurations, customers have to convert *Bin\Samples\Window.swf* using GFxExport into GFx format for use.

```
GFxExport_Release Window.swf -i DDS -d0 –gradients
```

As a result of this conversion, these files would be created: Window.gfx, Window_G0.dds, Window_G1.dds and Window_G2.dds. Use the *Window.gfx* instead of the original *Window.swf* as an input Flash file for Scaleform PlayerTiny for Lite configuration.

Below, each section contains a list of the options, grouped by category, along with a brief description and whether the option is defined in the regular and lite libraries.

2.1 General Options

SF_ENABLE_THREADS
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enables thread support. This option will also disable progressive loading and video playback.

SF_ENABLE_STATS
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enables statistics tracking if defined; this is useful for the final build.

SF_SAFE_DOUBLE
Regular Scaleform: Not Defined
"Lite" Scaleform: Not defined
Description: This define wraps the Double datatype into a struct and provides overrides for arithmetic operations that check for NaN (Not a Number) values. You must define this if SF_FLOATING_POINT_FAST is being used otherwise operations on Double types might lead to slightly incorrect results.

SF_FLOATING_POINT_FAST
Regular Scaleform: Not Defined
"Lite" Scaleform: Not defined
Description: If this macro is defined, then code can be compiled with non ANSI-compatible support of floating point numbers. (Example: /fp:fast on Windows). Together with SF_SAFE_DOUBLE, this define ensures that arithmetic operations on NaN (Not a Number) produce correct results.

SF_ENABLE_LIBJPEG
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enables use of LIBJPEG if defined. If disabled, makes JPEGUtil a no-op stub. If disabled, SWF JPEG image loading will stop functioning.

SF_CPP_LIBJPEG
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Define this macro if the whole JPEGLIB is compiled as C++ code. By default, libjpeg is a pure C library and public names are not mangled. Though, it might be necessary to mangle jpeglib's names in order to resolve names clashing issues (for example, with XBox360's xmedia.lib).

SF_ENABLE_ZLIB
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enables use of ZLIB and GFx::ZLibFile class if defined. If ZLIB is disabled, compressed SWF and GFX files will no longer load, as well as the lossless images embedded into SWF files. Use this option only if GFxExport is used to extract all images from the SWF file.

SF_ENABLE_LIBPNG

Regular Scaleform: Defined

"Lite" Scaleform: Not defined

Description: Enables use of LIBPNG. If disabled, SWF PNG image loading will not function.

SF_NO_WCTYPE

Regular Scaleform: Not defined

"Lite" Scaleform: Not defined

Description: Define this macro to eliminate custom wctype tables for functions like G_iswspace, SFtowlower, SFtowupper and so on. If this macro is defined, Scaleform will use system Unicode functions (which are incredibly slow on Microsoft Windows and work incorrectly on consoles).

GFX_AS_ENABLE_GC

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enables garbage collection for ActionScript. Note, if garbage collection is disabled then Scaleform may produce memory leaks in the case of circular references.

Here is an example of code that will produce a leak in the case where garbage collection is disabled, unless one of the object references is explicitly disconnected:

```
var o1 = new Object;
var o2 = new Object;
o1.a = o2;
o2.a = o1;
```

SF_ENABLE_SIMD

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable the use of SIMD optimized functions, if available. If the platform does not support a SIMD instruction set, then this option will be disabled in SF_SIMD.h. SIMD instructions are disabled in debug builds, because without function inlining, they are considerably slower.

SF_ENABLE_SOCKETS

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enables use of TCP/IP sockets; this is required for AMP and AS3 Net Sockets.

SF_ENABLE_PCRE

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable use of PCRE - Perl Compatible Regular Expressions.

SF_ENABLE_APP_DOMAIN
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enable AS3 Application Domain.

GFX_AS2_SUPPORT
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Defined if AS2 support is available, so you can create GFx::AS2Support class.

GFX_AS3_SUPPORT
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Defined if AS3 support is available, so you can create GFx::AS3Support class.

GFX_ASSERT_ON_GRADIENT_BITMAP_GEN
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Define this macro to throw an assertion if any gradient texture is generated during the runtime. It helps detect potential slow-downs in these type of operations on low-end platforms. GFxExport with the option "–gradients" should be used to avoid this assertion, if the macro is defined.

GFX_ASSERT_ON_RENDERER_RESAMPLING
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Define this macro to throw an assertion if any re-sampling occurred in the renderer during the runtime. It helps detect potential slow-downs on these types of operations on low-end platforms. The renderer may resample if non-power-of-2 textures are used on hardware that doesn't support it. Use GFxExport to avoid this assertion when the macro is defined.

GFX_ASSERT_ON_RENDERER_MIPMAP_GEN
Regular Scaleform: Not defined
"Lite"Scaleform: Not defined
Description: Define this macro to throw an assertion if any mipmap level generation occurred in the renderer during the runtime. It helps detect potential slow-downs in these type of operations on low-end platforms. Use GFxExport with the option "–i dds" to pre-generate mipmaps and to avoid this assertion when the macro is defined.

GFX_ASSERT_ON_IMPRECISE_FLOAT

Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Define this macro to throw assertion if fast math floating point model is used since it is not officially supported.

GFX_ENABLE_GRADIENT_GEN
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Define this macro to exclude gradient generation. If this option is defined, then gradient generation code is excluded from the build. GFxExport with the option "-gradients" should be used to avoid gradient rendering problems. The option **GFX_ASSERT_ON_GRADIENT_BITMAP_GEN** can be enabled to detect any attempts to generate gradients during run-time.

GFX_ENABLE_SOUND
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Define this macro to enable sound support (in the Scaleform core and ActionScript).

GFX_ENABLE_VIDEO
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Define this macro to enable video support (in the Scaleform core and ActionScript). Note, video support is automatically disabled if the macro SF_ENABLE_THREADS is defined, since video can be used only with multithreading support.

GFX_ENABLE_CSS
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable core and ActionScript CSS (style sheets) support.

GFX_ENABLE_XML
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable core and ActionScript XML support.

SF_NO_IME_SUPORT
Regular Scaleform: Not defined
"Lite" Scaleform: Defined
Description: Disable core and ActionScript IME support. If IME is disabled, then typing in Asian languages (Japanese, Korean, and Chinese) will be impossible. If Asian language typing is not required (the IME library is

not used) or **GFX_ENABLE_TEXT_INPUT / GFX_ENABLE_KEYBOARD** options are enabled, then it is safe to disable IME support.

GFX_ENABLE_BUILTIN_KOREAN_IME
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Enable the built-in core Korean IME logic, if defined. This option affects only the Windows Scaleform platform. Built-in Korean IME allows users to type in the Korean language without using a separate IME library. It is safe to disable this feature if Korean support is not required or if **GFX_ENABLE_TEXT_INPUT / GFX_ENABLE_KEYBOARD** options are enabled.

GFX_ENABLE_BIDIRECTIONAL_TEXT
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enable support for bidirectional text.

SF_ENABLE_ANE
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enable Adobe Native Extension support globally.

GFX_ENABLE_TEXTFIELD_EXTENSIONS
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable TextField ActionScript extension functions. If this option is disabled then the standard Scaleform Player's HUD will not work.

GFX_ENABLE_TEXT_INPUT
Regular Scaleform: Defined
"Lite" Scaleform: Not defined for consoles
Description: Enable text editing. When disabled, text selection will be disabled as well (since it is a part of text editing). This macro might be useful on consoles.

GFX_ENABLE_SCALE9_HITTEST
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enable define to perform Scale9 hit-testing. Disabling the define may result in incorrect Scale9 hit-testing.

GFX_ENABLE_DRAWTEXT

Regular Scaleform: Defined

"Lite" Scaleform: Not defined

Description: Enable the DrawText API.

GFX_ENABLE_KEYBOARD

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable keyboard support. When disabled, no Key AS class will be provided, HandleEvent with GFx::KeyEvent will not be supported; PAD keys on consoles will not work as well.

GFX_ENABLE_MOUSE

Regular Scaleform: Defined.

"Lite" Scaleform: Not defined for consoles other than Wii.

Description: Enable mouse support completely. When disabled, this option also disables the Mouse AS class (see **GFX_AS2_ENABLE_MOUSE**).

GFX_ENABLE_ANALOG_GAMEPAD

Regular Scaleform: Defined.

"Lite" Scaleform: Defined.

Description: Enable game pad analog input support.

GFX_MOUSE_SUPPORT_ENABLED

Regular Scaleform: Defined.

"Lite" Scaleform: Defined.

Description: Default mouse cursor support enable state for GFx. Enabling mouse is also dynamically controlled by GFx::Movie::SetMouseCursorCount.

GFX_MULTITOUCH_SUPPORT_ENABLE

Regular Scaleform: Defined.

"Lite" Scaleform: Defined.

Description: Enable multi-touch support.

GFX_GESTURE_RECOGNIZE

Regular Scaleform: Defined.

"Lite" Scaleform: Defined.

Description: Enable Scaleform gesture recognizer.

NATIVE_GESTURE_RECOGNIZE

Regular Scaleform: Defined.

"Lite" Scaleform: Defined.

Description: Enable native gesture recognizer (currently available only on iOS).

GFX_ENABLE_MOBILE_APP_SUPPORT

Regular Scaleform: Defined.

"Lite" Scaleform: Defined.

Description: Enable mobile app support features, such as orientation and lifecycle events.

2.2 Rendering Related Options

SF_RENDER_ENABLE_EDGEAA

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: If this macro is defined, Scaleform will include EdgeAA (anti-aliasing) support.

SF_RENDER_ENABLE_MORPHING

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable morphing (shape tween) support.

SF_RENDER_ENABLE_GLYPH_CACHE

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable this macro to include the dynamic glyph cache.

SF_RENDER_ENABLE_HAIRLINER

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: If this macro is defined the renderer will use Hairliner to generate thin lines. The Hairliner generates meshes about 3-4 times faster than the regular stroker and produces no overlaps in meshes. It also generates about 33% less triangles. Hairliner serves only 1-pixel anti-aliased strokes.

SF_RENDER_ENABLE_MOUNTAINS

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: If defined, Tessellator produces better triangles for the price of 2-4% of slowdown.

SF_RENDERER_PROFILE

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable this macro to profile view modes.

SF_RENDER_ENABLE_FILTERS

Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enable filters. Undefine this to disable rendering of all filters.

SF_RENDER_DARKEN_LIGHTEN_OLD_BEHAVIOR
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: In SF 4.3, the Lighten and Darken blend modes require render targets to render properly, and (since 4.3.26) require a parent clip to have a Layer blend mode.
Enable the define to return these blend modes to their pre-4.3 behavior where the Lighten and Darken blend modes are estimations and are not always correct.

2.3 Logging Related Options

GFX_VERBOSE_PARSE
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Define this macro to enable support for verbose parsing of input files. If this option is set, none of the verbose parse options are available, and the GFx::Loader::SetVerboseParse call will have no effect. Game production release builds should probably define this option.

GFX_ VERBOSE_PARSE_ACTION
Regular Scaleform: Defined if GFX_VERBOSE_PARSE is defined
"Lite" Scaleform: Not defined
Description: Define this macro to enable support for verbose parsing of actions (disables support for logging ActionScript disassembly during loading).

GFX_VERBOSE_PARSE_SHAPE
Regular Scaleform: Defined; defined if GFX_VERBOSE_PARSE is defined
"Lite" Scaleform: Not defined
Description: Define this macro to enable support for verbose parsing of shape character structures.

GFX_VERBOSE_PARSE_MORPHSHAPE
Regular Scaleform: Defined; defined if GFX_VERBOSE_PARSE is defined
"Lite" Scaleform: Not defined
Description: Define this macro to enable support for verbose parsing of morph shape character structures.

GFX_AS2_VERBOSE/GFX_AS3_VERBOSE
Regular Scaleform: Not defined in Debug and Debug Opt configuration; defined in Release configuration

"Lite" Scaleform: Not defined
Description: Define this macro to enable support for verbose logging of executed ActionScript opcodes. If this macro is undefined, GFx::Movie::SetVerboseAction will have no effect. This option is defined by default in the Release configuration.

GFX_AS2_VERBOSE_ERRORS
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Define this macro to enable support for verbose logging of ActionScript run-time errors. If this macro is undefined, GFx::Movie::SetVerboseActionErrors will have no effect. Game production release builds should probably undefine this option.

2.4 Font Related Options

GFX_ENABLE_GLYPH_PACKER
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Define this macro to exclude the Font Glyph Packer. The Font Glyph Packer is used only if the static font cache is used (when `"Loader.GetFontCacheManager()->EnableDynamicCache(false);"` is used). If the dynamic font cache is in use or if GFxExport with option "-fonts" was used to produce the .gfx file with pre-rendered font textures, then the Font Glyph Packer may be excluded safely, in order to save some code size.

GFX_ENABLE_FONT_COMPACTOR
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable the font compactor (compaction during the run-time). When disabled, fonts compacted by the GFxExport (with option " -fc") will work.

GFX_ENABLE_COMPACTED_FONTS
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable usage of compacted fonts (fonts, compacted by GFxExport (option "-fc")).

GFX_ASSERT_ON_FONT_BITMAP_GEN
Regular Scaleform: Not defined
"Lite" Scaleform: Not defined
Description: Define this macro to throw an assertion if any font texture is generated during the runtime. This option is useful to detect any run-time font texture generation for low-end platforms. GFxExport with the option "–fonts" should be used to avoid this assertion, if the macro is defined.

2.5 ActionScript Related Options

GFX_AS2_ENABLE_FILTERS
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable filter classes support, such as 'flash.filters.DropShadowFilter', 'flash.filters.BlurFilter', 'flash.filters.BitmapFilter', 'flash.filters.GlowFilter'. Note, currently these classes are supported only for TextFields.

GFX_AS2_ENABLE_DATE
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'Date' ActionScript class support.

GFX_AS2_ENABLE_POINT
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'flash.geom.Point' ActionScript class support. If the 'Point' class is used by another class (for example by 'flash.geom.Rectangle') then it will replaced by a regular Object with the members "x" and "y" set.

GFX_AS2_ENABLE_RECTANGLE
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'flash.geom.Rectangle' ActionScript class support. If the 'Rectangle' class is used by another class (for example by 'Stage') then it will be replaced by a regular Object with the members "x", "y", "width", "height" set.

GFX_AS2_ENABLE_TRANSFORM
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'flash.geom.Transform' ActionScript class support.

GFX_AS2_ENABLE_COLORTRANSFORM
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'flash.geom.ColorTransform' ActionScript class support.

GFX_AS2_ENABLE_MATRIX

Regular Scaleform: Defined
“Lite” Scaleform: Not defined
Description: Enable 'flash.geom.Matrix' ActionScript class support.

GFX_AS2_ENABLE_TEXTSNAPSHOT
Regular Scaleform: Defined
“Lite” Scaleform: Not defined
Description: Enable 'TextSnapshot' class support.

GFX_AS2_ENABLE_SHAREDOBJECT/GFX_AS3_ENABLE_SHAREDOBJECT
Regular Scaleform: Defined
“Lite” Scaleform: Not defined
Description: Enable 'SharedObject' class support.

GFX_AS2_ENABLE_MOVIECLIPLOADER
Regular Scaleform: Defined
“Lite” Scaleform: Not defined
Description: Enable 'MovieClipLoader' ActionScript class support.

GFX_AS2_ENABLE_LOADVARS
Regular Scaleform: Defined
“Lite” Scaleform: Not defined
Description: Enable 'LoadVars' ActionScript class support.

GFX_AS2_ENABLE_BITMAPDATA
Regular Scaleform: Defined
“Lite” Scaleform: Not defined
Description: Enable 'flash.display.BitmapData' ActionScript class support. Note, if the ‘BitmapData’ class is disabled then textfield will not support <IMG> HTML tags and image substitutions; ‘MovieClip.attachBitmap’ won’t work as well.

GFX_AS2_ENABLE_CAPABILITES
Regular Scaleform: Defined
“Lite”Scaleform: Not defined
Description: Enable 'System.capabilites' ActionScript class support.

GFX_AS2_ENABLE_COLOR
Regular Scaleform: Defined.
“Lite” Scaleform: Not defined
Description: Enable 'Color' ActionScript class support.

GFX_AS2_ENABLE_TEXTFORMAT
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'TextFormat' ActionScript class support.

GFX_AS2_ENABLE_SELECTION
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'Selection' ActionScript class support.

GFX_AS2_ENABLE_STAGE
Regular Scaleform: Defined
"Lite" Scaleform: Not defined
Description: Enable 'Stage' ActionScript class support. If disabled, Stage.height and Stage.width will not be supported as well.

GFX_AS2_ENABLE_MOUSE
Regular Scaleform: Defined
"Lite" Scaleform: Not defined for consoles other than Wii
Description: Enable 'Mouse' ActionScript class support.

SF_ENABLE_HTTP_LOADING
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: Enable HTTP requests for loading.

GFX_AS_ENABLE_USERDATA
Regular Scaleform: Defined
"Lite" Scaleform: Defined.
Description: Enable ActionScript object user data storage (GFx::Value::SetUserData/GetUserData).

SF_AS3_OBJ_CLONING
Regular Scaleform: Defined
"Lite" Scaleform: Defined
Description: This define instructs the VM to create a special "clone" object so that VM doesn't need to parse and interpret ABC section of byte code when it needs to create a new user-defined object; instead of that, it just allocates memory and "clones" (copies) data from a "clone" object. Enabling this define will likely speed up VM execution at the expense of memory consumption.

SF_AS3_OBJ_CLONING_COUNTER
Regular Scaleform: Defined
"Lite" Scaleform: Defined

Description: Creates an object clone after SF_AS3_OBJ_CLONING_COUNTER attempts. If SF_AS3_OBJ_CLONING_COUNTER is not defined, object clones will be created on first attempt.

SF_AS3_OBJ_POOLING

Regular Scaleform: Not defined

"Lite" Scaleform: Not defined

Description: This define instructs the VM to keep a copy of recently used objects in memory to speed up object creation. This is helpful in case of objects that are created and destroyed very frequently, such as Event objects. Enabling this define will likely speed up VM execution at the expense of memory consumption. Note that while the object pool itself will consume memory, there might be less memory fragmentation and the overall memory consumed by Scaleform might be lower. The actual performance improvement/memory savings are highly application and content specific.

SF_AS3_OBJ_POOLING_CLEAN_IN_GC

Regular Scaleform: Not defined

"Lite" Scaleform: Not defined

Description: Enable cleaning of object pool during garbage collection.

SF_AS3_MAX_PERFORMANCE

Regular Scaleform: Not defined

"Lite" Scaleform: Not defined

Description: Enable this define to boost performance. More memory will be used in this case. The following optimizations are enabled when this is defined:

- It enables Object Cloning and disables Object Cloning counter (sets it to 0), so clones will be created immediately.
- It enables Object Pooling and disables cleaning up of Object Pools during Garbage Collection.

SF_AS3_MIN_MEMORY

Regular Scaleform: Not defined

"Lite" Scaleform: Not defined

Description: Enable this define to minimize memory usage. This will affect performance. The following optimizations are disabled when this is defined:

- It disables Object Cloning.
- It disables Object Pooling.

GFX_AS_ENABLE_GFXVALUE_CLEANUP

Regular Scaleform: Defined

"Lite" Scaleform: Defined

Description: Enable cleanup of orphaned GFx::Value instances holding references to object in a Movie VM that is being destroyed. The GFx::Value instances will be set to UNDEFINED and its orphaned flag will be set.

GFX_AS3_SMOOTH_BMP_BY_DEFAULT true

Regular Scaleform: Defined

"Lite" Scaleform: Defined.

Description: Default setting for bitmap smoothing is set to true (AS3).

3 Appendix

Below is the table showing the list of defines defined in the normal and lite build of Scaleform:

Define	Whether defined in Regular Scaleform build	Whether defined in LITE Scaleform build
SF_ENABLE_THREADS	Yes	Yes
SF_ENABLE_STATS	Yes	No
SF_SAFE_DOUBLE	No	No
SF_FLOATING_POINT_FAST	No	No
SF_ENABLE_LIBJPEG	Yes	No
SF_CPP_LIBJPEG	No	No
SF_ENABLE_ZLIB	Yes	No
SF_ENABLE_LIBPNG	Yes	No
SF_NO_WCTYPE	No	No
GFX_AS_ENABLE_GC	Yes	Yes
SF_ENABLE_SIMD	Yes	Yes
SF_ENABLE_SOCKETS	Yes	Yes
SF_ENABLE_PCRE	Yes	Yes
SF_ENABLE_APP_DOMAIN	Yes	Yes
GFX_AS2_SUPPORT	Yes	Yes
GFX_AS3_SUPPORT	Yes	Yes
GFX_ASSERT_ON_GRADIENT_BITMAP_GEN	No	No
GFX_ASSERT_ON_RENDERER_RESAMPLING	No	No
GFX_ASSERT_ON_RENDERER_MIPMAP_GEN	No	No
GFX_ASSERT_ON_IMPRECISE_FLOAT	Yes	Yes
GFX_ENABLE_GRADIENT_GEN	No	No
GFX_ENABLE_SOUND	Yes	Yes
GFX_ENABLE_VIDEO	Yes	Yes
GFX_ENABLE_CSS	Yes	No
GFX_ENABLE_XML	Yes	No
SF_NO_IME_SUPORT	No	Yes
GFX_ENABLE_BUILTIN_KOREAN_IME	No	No
GFX_ENABLE_BIDIRECTIONAL_TEXT	Yes	Yes
SF_ENABLE_ANE	Yes	Yes
GFX_ENABLE_TEXTFIELD_EXTENSIONS	Yes	No
GFX_ENABLE_TEXT_INPUT	Yes	No
GFX_ENABLE_SCALE9_HITTEST	Yes	Yes

GFX_ENABLE_DRAWTEXT	Yes	No
GFX_ENABLE_KEYBOARD	Yes	Yes
GFX_ENABLE_MOUSE	Yes	No
GFX_ENABLE_ANALOG_GAMEPAD	Yes	Yes
GFX_MOUSE_SUPPORT_ENABLED	Yes	Yes
GFX_MULTITOUCH_SUPPORT_ENABLE	Yes	Yes
GFX_GESTURE_RECOGNIZE	Yes	Yes
NATIVE_GESTURE_RECOGNIZE	Yes	Yes
GFX_ENABLE_MOBILE_APP_SUPPORT	Yes	Yes
SF_RENDER_ENABLE_EDGEAA	Yes	Yes
SF_RENDER_ENABLE_MORPHING	Yes	Yes
SF_RENDER_ENABLE_GLYPH_CACHE	Yes	Yes
SF_RENDER_ENABLE_HAIRLINER	Yes	Yes
SF_RENDER_ENABLE_MOUNTAINS	Yes	Yes
SF_RENDERER_PROFILE	Yes	Yes
SF_RENDER_ENABLE_FILTERS	Yes	Yes
SF_RENDER_DARKEN_LIGHTEN_OLD_BEHAVIOR	No	No
GFX_VERBOSE_PARSE	Yes	No
GFX_ VERBOSE_PARSE_ACTION	Yes	No
GFX_VERBOSE_PARSE_SHAPE	Yes	No
GFX_VERBOSE_PARSE_MORPHSHAPE	Yes	No
GFX_AS2_VERBOSE/GFX_AS3_VERBOSE	Yes(for Release config)	No
GFX_AS2_VERBOSE_ERRORS	Yes	No
GFX_ENABLE_GLYPH_PACKER	No	No
GFX_ENABLE_FONT_COMPACTOR	Yes	No
GFX_ENABLE_COMPACTED_FONTS	Yes	No
GFX_ASSERT_ON_FONT_BITMAP_GEN	No	No
GFX_AS2_ENABLE_FILTERS	Yes	No
GFX_AS2_ENABLE_DATE	Yes	No
GFX_AS2_ENABLE_POINT	Yes	No
GFX_AS2_ENABLE_RECTANGLE	Yes	No
GFX_AS2_ENABLE_TRANSFORM	Yes	No
GFX_AS2_ENABLE_COLORTRANSFORM	Yes	No
GFX_AS2_ENABLE_MATRIX	Yes	No
GFX_AS2_ENABLE_TEXTSNAPSHOT	Yes	No
GFX_AS2_ENABLE_SHAREDOBJECT/GFX_AS3_ENABLE_SHAREDOBJECT	Yes	No
GFX_AS2_ENABLE_MOVIECLIPLOADER	Yes	No
GFX_AS2_ENABLE_LOADVARS	Yes	No
GFX_AS2_ENABLE_BITMAPDATA	Yes	No

GFX_AS2_ENABLE_CAPABILITES	Yes	No
GFX_AS2_ENABLE_COLOR	Yes	No
GFX_AS2_ENABLE_TEXTFORMAT	Yes	No
GFX_AS2_ENABLE_SELECTION	Yes	No
GFX_AS2_ENABLE_STAGE	Yes	No
GFX_AS2_ENABLE_MOUSE	Yes	No
SF_ENABLE_HTTP_LOADING	Yes	Yes
GFX_AS_ENABLE_USERDATA	Yes	Yes
SF_AS3_OBJ_CLONING	Yes	Yes
SF_AS3_OBJ_CLONING_COUNTER	Yes	Yes
SF_AS3_OBJ_POOLING	No	No
SF_AS3_OBJ_POOLING_CLEAN_IN_GC	No	No
SF_AS3_MAX_PERFORMANCE	No	No
SF_AS3_MIN_MEMORY	No	No
GFX_AS_ENABLE_GFXVALUE_CLEANUP	Yes	Yes
GFX_AS3_SMOOTH_BMP_BY_DEFAULT (for AS3)	Yes	Yes