

Autodesk® Scaleform®

Scaleform LITE Customization

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

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Autodesk®
GAMEWARE 

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Autodesk® Scaleform® 4.3

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1 Scaleform 4.3 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 4.3 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_NO_DOUBLE

Regular Scaleform: Not defined

"Lite" Scaleform: Not defined

Description: This macro needs to be defined if it is necessary to avoid the use of the "double" type – double precision floating point type. Some platforms support only single precision – "float". In that case, all references to "double" will be replaced by "float". However, this substitution might cause some unexpected results in ActionScript logic, especially when arithmetic operations are followed by comparisons for equality with hardcoded values.

NOTE: By default, PS2 and PSP define this if not manually defined here.

NOTE: The use of this option may cause differences in behavior as compared to Adobe Flash and is therefore not recommended. It was originally introduced for legacy systems without double support and may be removed in future versions of the SDK.

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 needed for AMP.

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_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_NOIME_SUPPORT

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_KOREANIME

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.

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_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_RENDER_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.

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 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).

GFX_AS_ENABLE_GFXTYPE_CLEANUP

Regular Scaleform: Not defined

“Lite” Scaleform: Not defined.

Description: Enable cleanup of orphaned GFx::Type instances holding references to object in a Movie VM that is being destroyed. The GFx::Type 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_NO_DOUBLE	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_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_NOIME_SUPPORT	No	Yes
GFX_ENABLE_BUILTIN_KOREANIME	No	No
GFX_ENABLE_BIDIRECTIONALTEXT	Yes	Yes
GFX_ENABLE_TEXTFIELD_EXTENSIONS	Yes	No
GFX_ENABLE_TEXT_INPUT	Yes	No
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
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_ENA BLE_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
GFX_AS_ENABLE_GFXVALUE_CLEANUP	No	No
GFX_AS3_SMOOTH_BMP_BY_DEFAULT (for AS3)	Yes	Yes