

# Autodesk® Scaleform®

## Getting Started with Scaleform SDK for Wii U

This document explains how to get up and running quickly with Scaleform 4.22 in Wii U.

Authors: Mustafa Thamer  
Version: 1.00  
Last Edited: May 30, 2012

# Copyright Notice

## Autodesk® Scaleform® 4.2

© 2012 Autodesk, Inc. All rights reserved. Except as otherwise permitted by Autodesk, Inc., this publication, or parts thereof, may not be reproduced in any form, by any method, for any purpose.

Certain materials included in this publication are reprinted with the permission of the copyright holder.

The following are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and other countries: 123D, 3ds Max, Algor, Alias, AliasStudio, ATC, AUGI, AutoCAD, AutoCAD Learning Assistance, AutoCAD LT, AutoCAD Simulator, AutoCAD SQL Extension, AutoCAD SQL Interface, Autodesk, Autodesk Homestyler, Autodesk Intent, Autodesk Inventor, Autodesk MapGuide, Autodesk Streamline, AutoLISP, AutoSketch, AutoSnap, AutoTrack, Backburner, Backdraft, Beast, Beast (design/logo) Built with ObjectARX (design/logo), Burn, Buzzsaw, CAiCE, CFdesign, Civil 3D, Cleaner, Cleaner Central, ClearScale, Colour Warper, Combustion, Communication Specification, Constructware, Content Explorer, Creative Bridge, Dancing Baby (image), DesignCenter, Design Doctor, Designer's Toolkit, DesignKids, DesignProf, DesignServer, DesignStudio, Design Web Format, Discreet, DWF, DWG, DWG (design/logo), DWG Extreme, DWG TrueConvert, DWG TrueView, DWFx, DXF, Ecotect, Evolver, Exposure, Extending the Design Team, Face Robot, FBX, Fempro, Fire, Flame, Flare, Flint, FMDesktop, Freewheel, GDX Driver, Green Building Studio, Heads-up Design, Heidi, Homestyler, HumanIK, i-drop, ImageModeler, iMOUT, Incinerator, Inferno, Instructables, Instructables (stylized robot design/logo), Inventor, Inventor LT, Kynapse, Kynogon, LandXplorer, Lustre, MatchMover, Maya, Mechanical Desktop, MIMI, Moldflow, Moldflow Plastics Advisers, Moldflow Plastics Insight, Moondust, MotionBuilder, Movimento, MPA, MPA (design/logo), MPI (design/logo), MPX, MPX (design/logo), Mudbox, Multi-Master Editing, Navisworks, ObjectARX, ObjectDBX, Opticore, Pipeplus, Pixlr, Pixlr-o-matic, PolarSnap, Powered with Autodesk Technology, Productstream, ProMaterials, RasterDWG, RealDWG, Real-time Roto, Recognize, Render Queue, Retimer, Reveal, Revit, RiverCAD, Robot, Scaleform, Scaleform GfX, Showcase, Show Me, ShowMotion, SketchBook, Smoke, Softimage, Sparks, SteeringWheels, Stitcher, Stone, StormNET, Tinkerbox, ToolClip, Topobase, Toxik, TrustedDWG, T-Splines, U-Vis, ViewCube, Visual, Visual LISP, Vtour, WaterNetworks, Wire, Wiretap, WiretapCentral, XSI.

All other brand names, product names or trademarks belong to their respective holders.

### Disclaimer

THIS PUBLICATION AND THE INFORMATION CONTAINED HEREIN IS MADE AVAILABLE BY AUTODESK, INC. "AS IS." AUTODESK, INC. DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING THESE MATERIALS.

## How to Contact Autodesk Scaleform:

---

Document	Getting Started with Scaleform SDK for Wii U
Address	Autodesk Scaleform Corporation 6305 Ivy Lane, Suite 310 Greenbelt, MD 20770, USA
Website	<a href="http://www.scaleform.com">www.scaleform.com</a>
Email	<a href="mailto:info@scaleform.com">info@scaleform.com</a>
Direct	(301) 446-3200
Fax	(301) 446-3199

# Table of Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
<b>2</b>	<b>Installation and Usage.....</b>	<b>2</b>
2.1	Flash Versions .....	2
2.2	SDK Installation .....	2
2.2.1	Installing Packages.....	2
2.2.2	Directory Structure .....	3
2.2.3	Building Scaleform .....	5
2.3	Scaleform SDK for Windows .....	9
2.4	Scaleform SDK for Wii U .....	11
2.5	Licensing .....	12
2.5.1	License Problems .....	12
<b>3</b>	<b>Additional Information.....</b>	<b>13</b>

# 1 Introduction

This brief guide describes what Autodesk® Scaleform® 4.2 is, how to use and install the Scaleform SDK with Wii U™, and where to look for additional information. Scaleform 4.2 and higher versions include several features designed to improve workflow, testing, debugging, and iteration time, as well as an entirely new multi-threaded core architecture and renderer.

Scaleform 4.2 Features and Add-ons:

- Scaleform CLIK - a set of readymade widget components.
- Scaleform Analyzer for Memory and Performance (AMP™) - a remote profiling and debugging tool.
- Support for ActionScript 3 as well as legacy support for ActionScript 2.
- Highly optimized, multi-threaded 2.5D rendering engine.
- Scaleform UI Kits - fully featured demos (code and data provided) that implement common UI use-cases.
- GFxExport - command line data processing tool.
- Extensive documentation and samples.
- Cross-platform compatibility with all major engines and platforms, including mobile devices.

## 2 Installation and Usage

### 2.1 Flash Versions

Scaleform 4.2 requires Adobe® Flash® Creative Suite® 4 (CS4) or newer. Scaleform 4.2 supports a broad range of Flash Player 10.1 and ActionScript™ (AS) features. While Scaleform 4.2 does not support every Flash or AS feature, the rare occurrence of an unsupported feature has little to no impact on development. Scaleform 4.2 supports both AS 2.0 and AS 3.0. For a complete list of Scaleform 4.2 supported Flash 10.1 and AS 2.0 and 3.0 features, please see the document entitled *Scaleform 4.2 – Flash Support Overview*.

### 2.2 SDK Installation

The Scaleform 4.2 SDK on Windows platform will by default be installed to: *C:\Program Files (x86)\Scaleform\GFx SDK 4.2*

If Scaleform 4.2 is installed to a different location, please make note of the location and take the new location into account when reading through the documentation included with the SDK.

Please refer to the *readme\_make.txt* and the specific *readme\_xx.txt* files for more information on the configurations and the compiler options.

The latest DirectX® SDK from Microsoft may need to be installed if it isn't already; however, the DirectX SDK is only necessary if compiling the Scaleform 4.2 Player. For testing of the prebuilt Scaleform 4.2 Player, only the DirectX runtime is needed. Once installation is complete, the Windows® Start menu will include links to commonly used SDK features, demos, tutorials and documents. For additional help, see the documentation in the Scaleform->GFx SDK 4.2->Documentation folder in the Windows Start menu, or via Windows Explorer: *C:\Program Files (x86)\Scaleform\GFx SDK 4.2\Doc*

#### 2.2.1 Installing Packages

Scaleform packages are provided in three different configurations, depending on the licensing arrangement:

1. Full source
2. Licensed Binary Libs

### 3. Evaluation Binary Libs

The evaluation packages require the use of a license key, which must be placed in the correct location for the runtime to find it. For more instructions on using the eval license key, please see the subsequent section on Licensing.

Scaleform uses several build configurations, which are a combination of features and compiler options. In most cases, at least four configurations are available:

Shipping	Optimized without checks
Release	Optimized without checks
Debug	With debug info and checks
DebugOpt	Optimized with debug info and checks

#### 2.2.2 Directory Structure

The Scaleform installation has a number of directories containing various subfolders and files such as examples, documentation, source, code, libraries, binaries, etc. Some directories may be specific to a particular platform and configuration. Here is a description of the major directories which comprise the Scaleform installation:

3rdParty/	3rd party packages
Apps/	
Samples	Demo application source files
Common	Common source files for most demos. Platform-specific setup and input handling
FxPlayer	Our main Flash player. Displays memory usage and performance counters.
GFxPlayerTiny	The simplest Scaleform application; a starting point for development
DrawText	Source code for the DrawText sample which demonstrates the DrawText API
ImageDelegate	Sample demonstrating image substitution using the ImageDelegate class.
RenderTexture	Source files for SWFToTexture and TextureInSWF samples.
Kits	Source file for Kits, which are functional use-cases of Scaleform
Tutorial	Source code and projects for the Scaleform tutorial

Bin/	Various binary files (executables, samples, etc).
WiiU	Binary executables (Scaleform Player, samples, etc) for WiiU
Data/AS2/Samples	Sample ActionScript2 Flash files
FxPlayer	Scaleform Player data files
RenderTexture	RenderTexture samples files
SWFToTexture	RenderTexture samples files
ImageDelegate	ImageDelegate sample files
Data/AS2/Kits	Sample data for ActionScript2 Kits
Data/AS3/Samples	Sample ActionScript3 Flash files
Data/AS3/Kits	Sample data for ActionScript3 Kits
Doc/	Documentation
Include/	Scaleform include files (C++ convenience headers)
Lib/	Scaleform libraries
WiiU	Libraries for all configurations
[Config]	Libraries specific to a particular platform and configuration
Obj/	Intermediate build files
WiiU	Platform- specific object files
Projects/	Build system support files (projects, make files, etc)
Common	Common make files
WiiU	Platform specific make files
Src/	Scaleform source code
GFx	Scaleform core SDK source code
Render	Source for sample renderers (included with all releases).
Sound	Source for sample sound renderers (included with all releases).
Platform	Source for platform specific application class.

Scaleform platform names and #defines

Scaleform Platform	Platform Names	#defines
Win32	Windows	SF_OS_WIN32
x64	Windows for x86_64	SF_OS_WIN32



WiiU	Wii U	SF_OS_WIIU
------	-------	------------

## Build Tools

	<b>Standard, often gcc</b>
Msvc80	Visual Studio 8.0 (2005)
Msvc90	Visual Studio 9.0 (2008)
Msvc10	Visual Studio 10.0 (2010)

[Platform] refers to one of the names in the first column above in the Directory structure, a slash, and an appropriate build tool; for example Win32/Msvc80. If the “standard” build tools are used, there is no suffix. Most platforms support only one of those build tools. When project files are supplied, they are always placed in a build tool directory even if the “standard” tools use the same underlying compiler.

## 2.2.3 Building Scaleform

Scaleform libraries and executables can be built with Visual Studio projects, most commonly, or with make, which supports platforms that don’t use the Visual Studio IDE. Projects and Solutions can be found in the ‘Projects’ directory and are organized by platform.

### 2.2.3.1 Using make

Wii U can be built using ‘make’, rather than using an IDE such as Visual Studio, although we expect VS 2010 support for Wii U to be available soon. The Scaleform SDK comes with a readme file, *readme\_make.txt*, which provides compiler instructions for make-based platforms.

Before building Scaleform with make, you should have a Linux tool set installed, including the make command itself. We recommend **cygwin** which can be downloaded and installed as follows:

1. Go to <http://www.cygwin.com/>, download setup.exe and run it
2. Choose ‘Install from Internet’
3. Set the root directory to whatever you want or use default (c:/cygwin)
4. Set the local package directory to whatever you want or use default (c:/cygwin)
5. Select internet connection or use default ‘Direct Connection’
6. Choose any server download site, and wait for download to complete
7. Under ‘Select Packages’, expand ‘Devel’, then check the boxes next to ‘binutils’ and ‘make’
8. Wait for download to complete and you are DONE

After that you can start the "Cygwin Bash Shell" from the Windows start menu and check for "ld" and "make".

```
$ make -v
GNU Make 3.81
Copyright (C) 2006 Free Software Foundation, Inc.
...
This program built for i686-pc-cygwin
$ ld -v
GNU ld (GNU Binutils) 2.18.50.20080625
===
```

Once the make utility is installed, you are now ready to build Scaleform.

Below are the steps for using make:

1. Run cafe.bat in the root of the CAFE\_SDK directory. This will open a Cygwin window with the correct environment, from which you can build (make P=WiiU).

As an alternative, you can set the Cygwin environment yourself by creating a Makeconfig file (from Makeconfig\_example) in the top level GFx directory, containing:

- a. If the GHS installer did not set GHS\_ROOT correctly, you must set that (either in the environment or in Makeconfig). CAFE\_ROOT must also be set.

These paths must be in posix format, with forward slashes and no drive letters with colons. Use /cygdrive/<drive letter>/...

For example, if CAFE\_SDK is installed to c:/CAFE\_SDK: "CAFE\_ROOT := /cygdrive/c/CAFE\_SDK".

2. To build a particular platform, or a configuration for a platform, using the following command line syntax, which specifies platform and configuration:

- a. `$ make P=WiiU`
- b. `$ make P=WiiU C=Debug`

Specify the configuration to build with C=<config> on the make command line. Separate multiple configuration names with "+". The flags used for each configuration are near the top of the root Make file, or at the top of a platform-specific make file in a subdirectory of Projects.

### 2.2.3.2 Example 'make' usage:

#### Common usage:

```
make P=WiiU C=Debug
```

```
make P=WiiU C=Debug+NoRTTI
make P=WiiU C=Release
```

### **Build with verbose output:**

```
make P=WiiU C=Shipping+NoRTTI VERBOSE=1
```

## **2.2.3.3 SCU Builds**

For some platforms and libraries, Scaleform builds using groups of files combined into single compilation units (SCUs). This technique is also called Lumping or Unity builds. SCU builds have the benefits of reduced compilation time and smaller library sizes. The Scaleform SDK generally provides debug symbols in all libraries so that developers can have more information when debugging. If debug symbols are not desired in an executable, they can be easily stripped at link time.

Without SCU builds, library sizes can grow significantly, since redundant debug symbol information is placed in the library by multiple files. Please note that even though the library size may increase or decrease depending on whether SCU builds are being used, the size is being affected by the amount of debugging symbols and not by Scaleform library code.

SCU builds combine a logical group of files into a single compilation unit, using a grouping file which ends in `_All.cpp`. The grouping file includes the other files using a series of `#include` statements. For example, here is the SCU grouping file for the AS3 Obj Accessibility directory:

```
Src/GFx/AS3/Obj/Accessibility/AS3_Obj_Accessibility_All.cpp
...
#include "AS3_Obj_Accessibility_ISearchableText.cpp"
#include "AS3_Obj_Accessibility_ISimpleTextSelection.cpp"
#include "AS3_Obj_Accessibility_Accessibility.cpp"
#include "AS3_Obj_Accessibility_AccessibilityImplementation.cpp"
#include "AS3_Obj_Accessibility_AccessibilityProperties.cpp"
```

This all happens behind the scenes, so developers shouldn't need to worry about it. However, it is possible to build without the SCU technique as well. In Visual Studio, when SCU builds are available, you will see two sets of projects, for example:

SCU Versions:

- AS2\_SCU
- AS3\_SCU
- AIR\_SCU

Non-SCU Versions:

- AS2
- AS3
- AIR

You can manually build the non-SCU projects if you would like.

When building with make, SCU builds are also automatically used for some platforms. In this case, if SCU builds are not desired, simply use the option 'SCU=0' as part of the make command line, for example:

```
make P=WiiU C=Release+NoRTTI SCU=0
```

## 2.3 Scaleform SDK for Windows

The Scaleform library is supported on Windows® XP (32 bit, SP3), Vista (32/64 bit, SP2) and Windows 7 (32/64 bit). Support for Windows 8, include Metro style apps is available in Scaleform 4.2. Scaleform is fully compatible with Visual Studio 2008 (9.0) and higher versions.

### 2.3.1.1 Scaleform Library Configurations

Linking your product against the correct Scaleform precompiled libs ensures smooth integration with the latest version of Scaleform.

Scaleform SDK precompiled libs are located by default in \Program Files\Scaleform\GFX SDK 4.2\Lib\WinU\MSVC Version\

The four sub folders under this directory describe the runtime library the libs were compiled against.

Debug	Scaleform Multi-threaded Debug libs
Runtime Library	Multi-threaded Debug (/MTd)
Debug Information Format	C7 Compatible (/Z7)
	Non optimized debug code

DebugOpt	Scaleform Multi-threaded Optimized Debug libs
Runtime Library	Multi-threaded (/MT)
Debug Information Format	C7 Compatible (/Z7)
Optimization	Full Optimization (/Ox)
	Optimized debug code

Release	Scaleform Multi-threaded Release libs
Runtime Library	Multi-threaded (/MT)
Debug Information Format	C7 Compatible (/Z7)
Optimization	Full Optimization (/Ox)
	Optimized release code

Shipping	Scaleform Multi-threaded Shipping libs
Runtime Library	Multi-threaded (/MT)
Debug Information Format	C7 Compatible (/Z7)
Optimization	Full Optimization (/Ox)
	Optimized release code with no logging, stats, etc

### 2.3.1.2 MSVC Project Settings

To properly execute the Scaleform sample demos (such as **SWFToTexture**, and **TextureInSWF**) you must change the "Working Directory" of the project to the data directory: C:\Program Files (x86)\Scaleform\GFX SDK 4.2\Bin\Data

To set the working directory, do the following:

1. Click on **Project** in the main menu
2. Click on **Properties** (last option)
3. Change **Configuration** combo box to All Configurations
4. Click on **Debugging** item
5. Paste in the appropriate **Working Directory**

## **2.4 Scaleform SDK for Wii U**

### **2.4.1.1 Requirements**

This software needs to be installed on your development computer for the proper operation of Scaleform.

- OS Windows Vista/7
- Recent Wii U SDK version

### **2.4.1.2 Installation**

Install the Scaleform SDK for Wii U by unzipping the package to a directory on your system. Listed below are the packages for the Wii U that need to be installed.

For evaluation purposes, install the latest versions of these eval packages:

- sf\_4.2\_eval\_wiiu.tar.bz2

Licensed source users should install these src packages:

- sf\_4.2\_src\_wiiu.tar.bz2

Licensed library (non-source) users should install these src packages:

- sf\_4.2\_lib\_wiiu.tar.bz2

### **2.4.1.3 Building the code**

After installing the Scaleform Wii U SDK, open Cygwin and go to the root of the Scaleform directory.

To build Scaleform (and samples):

```
$ make P=WiiU
```

Executables are placed in Bin/WiiU.

Please see section 2.2.9 above, for more details on building Scaleform with make.

### **2.4.1.4 Running Players and Samples**

Once built, the executables can be run from the Cygwin command line with the caferun command.

For example: `caferun Bin/WiiU/FxPlayerMobile.rpx`

Other samples included in the Wii U SDK are the HUD and Menu kit as well as the Wii U Demo. To view content in the player and the kits, content must be stored in specific locations:

Store Flash content to be displayed in the sample player(s) to a folder named FxPlayer in the content directory. For example: "cafe\_sdk\data\disc\content\FxPlayer"

Store Flash content to be displayed in the Kits (MenuKit and HudKit) to a folder named Kits in the content directory. For example: "cafe\_sdk\data\disc\content\Kits"

Store Flash content to be displayed in the Wii U Demo to a folder named WiiUDemo in the content directory. For example: cafe\_sdk\data\disc\content\WiiUDemo

If this is an Evaluation release, place the sf\_license.txt file in the FxPlayer folder as well.

#### **2.4.1.5 Evaluation Versions**

See section 2.5 for details on placement of the license key.

## **2.5 Licensing**

### **2.5.1 License Problems**

To run any application that is linked with Scaleform 4.2 Eval libs, please ensure the file sf\_license.txt is in one of the proper directories for the desired platform.

The file *sf\_license.txt* is a text file that contains the key in the following format—all uppercase alphanumeric characters with no spaces:

3AAAA1BB23B8ZCCCC4CCEOFSJCZ08DDDDDEF

If an early version of the game or application is released, the *sf\_license.txt* file may be distributed in the released package. Please note that Scaleform 4.2 searches the directories in the order they are listed below. Special consideration must be taken for an SDK installation with multiple platforms. If a valid *sf\_license.txt* is found in directory path two, but an expired *sf\_license.txt* is found before that in directory path one, the application will exit with the assumption that the evaluation license is expired.

When an evaluation expires, any Scaleform 4.2 application that finds the expired *sf\_license.txt* file will exit, displaying the message:



The Scaleform trial period expired on 1(m) 1(d) 2008, please contact Scaleform for an extension. Error: 106

If the application cannot find a *sf\_license.txt* in any of the locations listed below, the application will exit, displaying the message:

Failed to open the Scaleform license file, please make sure sf\_license.txt exists in the working directory. Error: 101

The directories checked and the order they are checked for **Wii U** are:

1. Copy sf\_license.txt to the FxPlayer directory in <café\_sdk> /data/disc/content/FxPlayer

### 3 Additional Information

Please refer to [Getting Started with Scaleform 4.2](#) for detailed information on how to use Scaleform.