Microsoft® Smooth Streaming Plugin for Open Source Media Framework

Contents

Overview

The Microsoft® Smooth Streaming plugin for Open Source Media Framework 2.0 (SS for OSMF) extends the default capabilities of OSMF and adds Microsoft® Smooth Streaming content playback to new and existing OSMF players. The plugin also adds Smooth Streaming playback capabilities to Strobe Media Playback (SMP).

SS for OSMF includes two versions of the plugin:

- Static Smooth Streaming plugin for OSMF (.swc)
- Dynamic Smooth Streaming plugin for OSMF (.swf)

This document assumes that you have a general knowledge of OSMF and OSMF plugins. For more information and details, please see the documentations on the official OSMF site.

Smooth Streaming plugin for OSMF 2.0

The plugin supports loading and playback of on-demand Smooth Streaming content with the following features:

- On-demand Smooth Streaming playback (Play, Pause, Seek, Stop)
- Live Smooth Streaming and DVR playback (Play, Pause, Seek, DVR, Go-to-live)
- Support for video codecs – H.264
- Support for Audio codecs – AAC
- Multiple audio language switching with OSMF built-in APIs
- Max playback quality selection with OSMF built-in APIs
- Adobe® Flash® Player 10.2 or higher.
- This version only supports OSMF 2.0

The following are unsupported features:

- VC-1 and WMA codec
- Content protection (PlayReady)
- Text and Sparse Tracks
- Trickplay (slow motion, fast-forward, and rewind)

The following is a list of known issues:

- Playback of Smooth Streaming content with 48KHz audio tracks have issues. Flash® player has a known issue for rendering 48KHz audio content. Because of this issue, Smooth Streaming content encoded with 48Khz settings might not work as expected. Please see: http://forums.adobe.com/message/4483498#4483498 and https://bugbase.adobe.com/index.cfm?event=bug&id=3210964 for more info.
- Multiple Smooth Streaming content playback on single page might cause issues. This is a known issue with OSMF.
- Playback of Stage video might cause problems and no video on some machines. As a workaround you can disable hardware acceleration or Stage video.

Loading Plugin

OSMF plugins can be loaded statically (at compile time) or dynamically (at run-time). Smooth Streaming plugin for OSMF includes both dynamic and static versions.

- Static loading: To load statically, a static library (SWC) file is required. Static plugins are added as a reference to the projects and merge inside the final output file at the compile time.
- Dynamic loading: To load dynamically, a precompiled (SWF) file is required. Dynamic plugins are loaded in the runtime and not included in the project output. (Compiled output) Dynamic plugins can be loaded using HTTP and FILE protocols.

For more information on static and dynamic loading, see the official OSMF plugin page here.

SS for OSMF static loading

The code snippet below shows how to load SS plugin for OSMF statically and play a basic video using the OSMF MediaFactory class. Before including the SS for OSMF code, please ensure that the project reference includes the "MSAdaptiveStreamingPlugin-v1.0.3-osmf2.0.swc" static plugin.

```
package
{
        import com.microsoft.azure.media.AdaptiveStreamingPluginInfo;

        import flash.display.*;
        import org.osmf.media.*;
        import org.osmf.containers.MediaContainer;
        import org.osmf.events.MediaErrorEvent;
        import org.osmf.events.MediaFactoryEvent;
        import org.osmf.events.MediaPlayerStateChangeEvent;
        import org.osmf.layout.*;
```

```actionscript
    [SWF(width="1024", height="768", backgroundColor='#405050', frameRate="25")]
    public class TestPlayer extends Sprite
    {
            public var _container:MediaContainer;
            public var _mediaFactory:DefaultMediaFactory;
            private var _mediaPlayerSprite:MediaPlayerSprite;


            public function TestPlayer( )
            {
                    stage.quality = StageQuality.HIGH;

                    initMediaPlayer();


            }

            private function initMediaPlayer():void
            {

                    // Create the container (sprite) for managing display and layout
                    _mediaPlayerSprite = new MediaPlayerSprite();
                    _mediaPlayerSprite.addEventListener(MediaErrorEvent.MEDIA_ERROR,
onPlayerFailed);

        _mediaPlayerSprite.addEventListener(MediaPlayerStateChangeEvent.MEDIA_PLAYER_STATE_CHANGE
, onPlayerStateChange);
                    _mediaPlayerSprite.scaleMode = ScaleMode.NONE;
                    _mediaPlayerSprite.width = stage.stageWidth;
                    _mediaPlayerSprite.height = stage.stageHeight;
                    //Adds the container to the stage
                    addChild(_mediaPlayerSprite);

                    // Create a mediafactory instance
                    _mediaFactory = new DefaultMediaFactory();

                    // Add the listeners for PLUGIN_LOADING

        _mediaFactory.addEventListener(MediaFactoryEvent.PLUGIN_LOAD,onPluginLoaded);
                    _mediaFactory.addEventListener(MediaFactoryEvent.PLUGIN_LOAD_ERROR,
onPluginLoadFailed );

                    // Load the plugin class
                    loadAdaptiveStreamingPlugin( );

            }

            private function loadAdaptiveStreamingPlugin( ):void
            {
                    var pluginResource:MediaResourceBase;

                    pluginResource = new PluginInfoResource(new AdaptiveStreamingPluginInfo(
));
                    _mediaFactory.loadPlugin( pluginResource );
            }

            private function onPluginLoaded( event:MediaFactoryEvent ):void
            {
                    // The plugin is loaded successfully.
            // Your web server needs to host a valid crossdomain.xml file to allow plugin to
    download Smooth Streaming files.
                    loadMediaSource("http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest")

            }

            private function onPluginLoadFailed( event:MediaFactoryEvent ):void
            {
                    // The plugin is failed to load ...
            }
```

```
                private function onPlayerStateChange(event:MediaPlayerStateChangeEvent) : void
                {
                        var state:String;

                        state =  event.state;

                        switch (state)
                        {
                                case MediaPlayerState.LOADING:

                                        // A new source is started to load.

                                        break;

                                case  MediaPlayerState.READY :
                                        // Add code to deal with Player Ready when it is hit the
first load after a source is loaded.

                                        break;

                                case MediaPlayerState.BUFFERING :

                                        break;

                                case  MediaPlayerState.PAUSED :
                                        break;
                                // other states ...
                        }
                }

                private function onPlayerFailed(event:MediaErrorEvent) : void
                {
                        // Media Player is failed .
                }

                private function loadMediaSource(sourceURL : String):void
                {
                        // Take an URL of SmoothStreamingSource's manifest and add it to the page.

                        var resource:URLResource= new URLResource( sourceURL );

                        var element:MediaElement = _mediaFactory.createMediaElement( resource );
                        _mediaPlayerSprite.scaleMode = ScaleMode.LETTERBOX;
                        _mediaPlayerSprite.width = stage.stageWidth;
                        _mediaPlayerSprite.height = stage.stageHeight;

                        // Add the media element
                        _mediaPlayerSprite.media = element;
                }

        }
}
```

SS for OSMF dynamic loading

The code snippet below shows how to load SS plugin for OSMF dynamically and play a basic video using
the OSMF MediaFactory class. Before including the SS for OSMF code, copy the
"MSAdaptiveStreamingPlugin-v1.0.3-osmf2.0.swf" dynamic plugin to the project folder if you want to
load using FILE protocol, or copy under a web server for HTTP load. There is no need to include
"MSAdaptiveStreamingPlugin-v1.0.3-osmf2.0.swc" in the project references.

```
package
{

        import flash.display.*;
        import org.osmf.media.*;
        import org.osmf.containers.MediaContainer;
```

```actionscript
import org.osmf.events.MediaErrorEvent;
import org.osmf.events.MediaFactoryEvent;
import org.osmf.events.MediaPlayerStateChangeEvent;
import org.osmf.layout.*;
import flash.events.Event;
import flash.system.Capabilities;


//Sets the size of the SWF

[SWF(width="1024", height="768", backgroundColor='#405050', frameRate="25")]
public class TestPlayer extends Sprite
{
        public var _container:MediaContainer;
        public var _mediaFactory:DefaultMediaFactory;
        private var _mediaPlayerSprite:MediaPlayerSprite;


        public function TestPlayer( )
        {
                stage.quality = StageQuality.HIGH;
                initMediaPlayer();
        }

        private function initMediaPlayer():void
        {

                // Create the container (sprite) for managing display and layout
                _mediaPlayerSprite = new MediaPlayerSprite();
                _mediaPlayerSprite.addEventListener(MediaErrorEvent.MEDIA_ERROR,
onPlayerFailed);

        _mediaPlayerSprite.addEventListener(MediaPlayerStateChangeEvent.MEDIA_PLAYER_STATE_CHANGE
, onPlayerStateChange);

                //Adds the container to the stage
                addChild(_mediaPlayerSprite);

                // Create a mediafactory instance
                _mediaFactory = new DefaultMediaFactory();

                // Add the listeners for PLUGIN_LOADING

        _mediaFactory.addEventListener(MediaFactoryEvent.PLUGIN_LOAD,onPluginLoaded);
                _mediaFactory.addEventListener(MediaFactoryEvent.PLUGIN_LOAD_ERROR,
onPluginLoadFailed );

                // Load the plugin class
                loadAdaptiveStreamingPlugin( );

        }

        private function loadAdaptiveStreamingPlugin( ):void
        {
                var pluginResource:MediaResourceBase;
                var adaptiveStreamingPluginUrl:String;
        // Your dynamic plugin web server needs to host a valid crossdomain.xml file to
allow loading plugins.

                adaptiveStreamingPluginUrl = "http://yourdomain/MSAdaptiveStreamingPlugin-
v1.0.3-osmf2.0.swf";

                pluginResource = new URLResource(adaptiveStreamingPluginUrl);
                _mediaFactory.loadPlugin( pluginResource );

        }

        private function onPluginLoaded( event:MediaFactoryEvent ):void
        {
                // The plugin is loaded successfully.
```

```
            // Your web server needs to host a valid crossdomain.xml file to allow plugin to download
            Smooth Streaming files.

       loadMediaSource("http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest")
            }

            private function onPluginLoadFailed( event:MediaFactoryEvent ):void
            {
                    // The plugin is failed to load ...
            }


            private function onPlayerStateChange(event:MediaPlayerStateChangeEvent) : void
            {
                    var state:String;

                    state =  event.state;

                    switch (state)
                    {
                            case MediaPlayerState.LOADING:

                                    // A new source is started to load.

                                    break;

                            case  MediaPlayerState.READY :
                                    // Add code to deal with Player Ready when it is hit the
first load after a source is loaded.

                                    break;

                            case MediaPlayerState.BUFFERING :

                                    break;

                            case  MediaPlayerState.PAUSED :
                                    break;
                            // other states ...
                    }
            }

            private function onPlayerFailed(event:MediaErrorEvent) : void
            {
                    // Media Player is failed .
            }

            private function loadMediaSource(sourceURL : String):void
            {
                    // Take an URL of SmoothStreamingSource's manifest and add it to the page.

                    var resource:URLResource= new URLResource( sourceURL );

                    var element:MediaElement = _mediaFactory.createMediaElement( resource );
                    _mediaPlayerSprite.scaleMode = ScaleMode.LETTERBOX;
                    _mediaPlayerSprite.width = stage.stageWidth;
                    _mediaPlayerSprite.height = stage.stageHeight;
                    // Add the media element
                    _mediaPlayerSprite.media = element;
            }

      }
}
```

Strobe Media Playback with SS for OSMF dynamic plugin

The Smooth Streaming for OSMF dynamic plugin is compatible with Strobe Media Playback (SMP). You can use SS for OSMF plugin to add Smooth Streaming content playback to SMP. To do this, copy

"MSAdaptiveStreamingPlugin-v1.0.3-osmf2.0.swf" under a web server for HTTP load using the following steps:

1. Browse Strobe Media Playback setup page. (http://osmf.org/dev/2.0gm/setup.html)
2. Set the src to a Smooth Streaming source, (e.g. http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest)
3. Make the desired configuration changes and click **Preview and Update**.
   Note: Your content web server needs a valid crossdomain.xml.
4. Copy the preview code and paste the code to a simple HTML page using your favorite text editor, such as in the following example:

```
<html>
<body>
<object width="920" height="640">
<param name="movie" value="http://osmf.org/dev/2.0gm/StrobeMediaPlayback.swf"></param>
<param name="flashvars" value="src=http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest
&autoPlay=true"></param>
<param name="allowFullScreen" value="true"></param>
<param name="allowscriptaccess" value="always"></param>
<param name="wmode" value="direct"></param>
<embed src="http://osmf.org/dev/2.0gm/StrobeMediaPlayback.swf"
    type="application/x-shockwave-flash"
    allowscriptaccess="always"
    allowfullscreen="true"
    wmode="direct"
    width="920"
    height="640"
    flashvars=" src=http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest&autoPlay=true"></embed>
</object>
</body>
</html>
```

5. Add Smooth Streaming OSMF plugin to the embedded code and save.

```
<html>
<object width="920" height="640">
<param name="movie" value="http://osmf.org/dev/2.0gm/StrobeMediaPlayback.swf"></param>
<param name="flashvars"
value="src=http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest&autoPlay=true&plugin_AdaptiveStr
eamingPlugin=http://yourdomain/ MSAdaptiveStreamingPlugin-v1.0.3-
osmf2.0.swf&AdaptiveStreamingPlugin_retryLive=true&AdaptiveStreamingPlugin_retryInterval=10"></param>

<param name="allowFullScreen" value="true"></param>
<param name="allowscriptaccess" value="always"></param>
<param name="wmode" value="direct"></param>
<embed src="http://osmf.org/dev/2.0gm/StrobeMediaPlayback.swf"
    type="application/x-shockwave-flash"
    allowscriptaccess="always"
    allowfullscreen="true"
    wmode="direct"
    width="920"
    height="640"
    flashvars="src=http://devplatem.vo.msecnd.net/Sintel/Sintel_H264.ism/manifest&autoPlay=true&plugin_Ada
ptiveStreamingPlugin=http://yourdomain/ MSAdaptiveStreamingPlugin-v1.0.3-
osmf2.0.swf&AdaptiveStreamingPlugin_retryLive=true&AdaptiveStreamingPlugin_retryInterval=10"></embed>
```

```
</object>
</html>
```

6. Save your HTML page and publish to a web server. Browse to the published web page using your favorite Flash® Player enabled Internet browser (IE, Chrome, Firefox, so on).
7. Enjoy Smooth Streaming content inside Adobe® Flash® Player.

For more information on general OSMF development, please see [official OSMF development page](#).