

Wwise 2013.1

Release Notes

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1 New Features

1.1 HDR Audio

High Dynamic Range audio provides a revolutionary way of looking at the audio reproduction of high dynamic scenes by increasing the standard 96 dB of dynamic range found in 16 bit systems to as high as 200 dB. HDR audio is a dynamic mixing system in which the loudest playing sound automatically lowers the volume of the other playing sounds. The resulting effect is a more focused mix and a better voice count which enhances run-time performance.

1.2 Source Loudness Normalization

Wwise now offers non-destructive loudness normalization of audio sources. Normalization is transparent to all volume-based logic (virtual voices, HDR) and to the new Voice Monitor profiling view, simplifying mixing and visualization.

1.3 Meters: Loudness, True Peak, Peak and RMS

Wwise now has two types of meter views:

1. Standard Meter view: Peak, True Peak or RMS.
2. Loudness Meter view: based on ITU-R BS.1770-3 and EBU R 128 standards. The loudness short and momentary values can also be monitored over time in the Performance Monitor view which helps spot level problems occurring during a game play session.

1.4 Source Editing

It is now possible to make non-destructive edits on audio sources in Wwise after import. Here's an overview of the supported workflow:

- Trim: It is possible to trim the beginning and ending of sounds. The trimmed parts are removed from the files at conversion time which reduces the SoundBank sizes.
- Fade: Fade in & out can be added to the beginning and ending portions of the file.
- Crossfade: Loop markers can be moved in the file and crossfade can be added to fix difficult loops.
- HDR Envelope: Active range envelopes can be authored to customize the HDR effect of selected files.

1.5 View: Voice Monitor

The Voice Monitor profiling view shows the voice volume of all playing sounds compared to one another. When the view is used to monitor HDR audio, it shows either the volume of each sound and the effect of the moving window at the input of the HDR bus, or the resulting volumes for each sound after the HDR effect at the output of this same bus.

1.6 Limbo

The award-winning game Limbo is now available from the Wwise installer for anyone interested in studying the Wwise project while connected to the game. You can come up with your own sound design of the game by replacing the audio files, object properties and behaviors.

1.7 Bus: Positioning and Channel Configuration

Two new features for performance enhancements and mixing have been added to busses and auxiliary busses:

Channel Configuration:

By default, busses use the channel configuration set by the game (typically 2.0 or 5.1). Now, 1.0, 2.0, 4.0 and 5.1 can specifically be set per bus which opens up creative avenues while using less resources, for example when a bus with inserted effects forces a mixdown.

2DPositioning:

Center % and 2D panner can now be used to pan the output of busses and auxiliary busses in the surround field.

1.8 'Single-Click' Workflow

No need to double-click to explore the object properties if you prefer activate-on-selection. Simply enable the option 'Inspect object when selection changes' in the User Preferences and then you will be able to update views like the Project Explorer or List View with mouse single-click or by changing selection using the keyboard arrows.

1.9 New Property: Initial Delay

All sounds and containers now have the 'Initial Delay' property that can make certain scenarios such as adding delay between sounds trivial. There is no longer the need to using 'Play' action delays or inserting silence in hierarchies.

1.10 New platforms

Wwise now supports the following three new platforms:

- PlayStation®4
- Windows Phone
- Windows 8:
 - Desktop
 - Windows Store App on Intel devices and on ARM tablets

1.11 Performance Enhancements

Android now runs 10% faster. Vorbis and many effects have been optimized on several platforms. Here's an overview of the performance factors (as a reference, 1x represents status quo while 2x means that an effect runs twice faster than before):

	Xbox 360	PS3	Wii U
Matrix Reverb	-	-	4.6x
Flanger	1.1x to 1.8x	1.3x	1.5x to 2.4x
LPF	1.2x	1.8x	1.1x
Time Stretch	1.1x to 2.4x	1.3x to 1.6x	2.5x to 3x
Convolution Reverb	1.3x to 1.7x	1.1x to 1.3x	8x to 10x
Guitar Distortion	1.4x to 1.7x	1.1x to 1.5x	1.4x to 2x
Tremolo	5.5x	1.25x	4.4x
Harmonizer	1.1x to 1.2x	1.3x	1.5x to 2.2x
Vorbis	Up to 2%	Up to 4.5%	10 to 15%

1.12 Interactive Music: New Switch Assignment System

Switch transition rules across different state groups are now feasible with the new switch assignment UI. This new system is inspired by the dynamic dialogue events and allows the same type of features like the fallback mechanism and the weighting.

1.13 Miscellaneous

- 2D/3D : It's now possible to set both 2D and 3D positioning settings on audio objects and change at runtime with a RTPC. This feature can eliminate the duplication of audio structures for objects shared between the main character and NPCs for example.
- Attenuation Editor: Aux Send Volumes curve is now split in "User-Defined" and "Game-Defined" curves.
- Support for VC2012.
- List View: Expand/collapse have been added to show children of the selected objects.

- Plug-in API improvement: Full game object position info now exposed to source and insert effect audio plugins.
- Position info includes:
 - Authored positioning type
 - Listener associations
 - Listener positions
 - Scaling ratios
 - Absolute game object positions expressed in Cartesian coordinates
 - Game object positions relative to listeners expressed in spherical coordinates

2 Important Migration Notes (2013.1)

2.1 SetAuxBusVolumes function removed from the API.

The function `AK::SoundEngine::SetAuxBusVolumes()` was removed from the API. This feature was replaced by an optional callback which allows not only to override the output volume per channel, but also the channel to channel volume assignment. You can register the callbacks by calling `AK::SoundEngine::RegisterBusVolumeCallback()` for every bus or Auxiliary bus for which you want to control the volume output.

Also, it is now possible to adjust the positioning of the bus directly from the Wwise Authoring application (the property view for busses now displays the Positioning tab).

Migration iOS:

- iOS SDK now uses a new header `AkiOSSoundEngine.h`. You need to include this new header instead of `AkMacSoundEngine.h`.
- API Change:
 - Added a new API to handle audio session interruption at the app level.
 - Updated `AkPlatformInitSettings` for iOS to allow users to select whether to handle audio session interruptions at the app level or not.

2.2 Volume API changed.

- `SetAuxBusVolumes` was removed from the API. Volume callback on busses should be used instead.
- `AkSpeakerVolumeMatrixCallbackInfo` format changed, the callback now only contains one volume matrix for the positioning (previously two: one dry and one wet) and separate floating point values for the dry attenuation, Game defined Aux Send attenuation and User defined Aux Send Attenuation.

2.3 Calling `AK::SoundEngine::UnloadBank` function change

Unloading a bank that was not previously successfully loaded will now return a failure code instead of returning success. This was made to ensure that people using wrong parameters to unload a bank from an in-memory location failed; the memory is potentially still in use.

see [API Changes](#) for more API changes.

2.4 Wwise Licensing

A new Licensing mechanism was added in Wwise. The licensing keys can be obtained from your account when logged in the Audiokinetic website. Using a key is necessary to unlock unrestricted generation of SoundBanks, and to enable Wwise for commercial use. For more information concerning licensing, visit <http://audiokinetic.com/licensing>

3 Requirements and Other Important Information

We have compiled a list of specific requirements and other important information that you should know before working with Wwise.

3.1 General

External components required for installation. The following external components are required to run Wwise:

- Microsoft® .Net Framework Version 2.0, which is included in the installation package.
- DirectX® February 2010 or later, which is required to run the Game Object 3D Viewer in Wwise and the Xbox 360 controller on Windows. To update your version of DirectX, visit the Microsoft web site (<http://www.microsoft.com/directx>).

Note: If you have an older version of DirectX, Wwise will run normally, but the Game Object 3D Viewer will not be available and you will not be able to test motion in Wwise.

Visual Studio DLL Dependencies. The following versions of Microsoft Visual Studio are used to build the Wwise libraries:

- VC 2008 version: 9.0.30729.6161 Wwise libraries have a dependency on a specific version of the CRT DLL. If you are using a different version of Visual Studio, or if you do not want your game to depend on that version of the CRT DLL, you can link to the libraries from the Debug (StaticCRT), Profile (StaticCRT) and Release (StaticCRT) folders instead. For more information on the Visual Studio DLL dependencies, refer to the “Platform Requirements” section of the SDK documentation.

3.2 Motion Devices

Connect game controllers to high power USB ports. Motion devices need to be connected to a high power USB port. If the USB port does not have sufficient power to run the motion device, the system will unmount the device to protect both the operating system and the device itself. The USB ports in the front of a computer are generally not powerful enough to run a motion device, so you should connect them to the USB ports at the back of the computer.

3.3 Project Migration

Wwise Installation and Migration Guide. When you are ready to upgrade to a newer version of Wwise, you need to follow a coordinated protocol to ensure that your projects created in the previous version are migrated smoothly to the newer version. For more information, it is strongly recommended that you refer to the Wwise Installation and Migration Guide, before you upgrade.

3.4 SoundBanks

SoundBanks version has been updated. The version of the SoundBanks has been updated since the previous Wwise versions. This means that you will need to regenerate all your SoundBanks so that they are compatible with the current version of Wwise.

4 Known Issues and Limitations

Audiokinetic is constantly working to provide you with the highest quality software; however, you should be aware of the limitations and issues in this version of Wwise.

4.1 Wwise Known Limitations

The following list describes the limitations in this version of Wwise.

- Audio Busses
 - If you are ducking a bus that is playing a series of short sounds within a looped sequence container set to Continuous, you may experience a loss in ducking between the short sounds or at the loop point of the container. To avoid this behavior, you can either add sample accurate transitions between the sounds within the container, or set the ducking recovery time to anything but zero.
- Audio File Management
 - The audio pipeline uses real-time sample rate conversion nodes when playing sounds that differ from the platform's native sample rate (48 kHz for Windows, Xbox 360 and PLAYSTATION 3). To prevent possible conversion rate aliasing artefacts, content that does not require pitch-shifting such as music should be converted to match that of the native platform. For Windows, it is also possible to have a native format of 24 kHz using the audio quality option that is available from the SDK.
 - The Vorbis encoder library may result in poor audio quality for sounds using sample rates below 16 kHz. The Vorbis codec was specifically tuned for higher sample rates and performs very well above 16kHz. Audio quality below the 16kHz sampling rate, however, can vary considerably depending on the encoding settings used and the audio asset itself.
 - Minor artefacts may result when the Wwise loop fixing algorithm specified in some formats' conversion settings is applied. These artefacts, which result from slight time-stretching or pitch-shifting in the algorithm, are less noticeable for sources with a long duration.
 - During the audio conversion process, loop regions that are shorter than the sample boundaries (format-specific) are removed.
 - Looping music clips may lose timing accuracy each time the loop point is crossed due to loop fixing. However, the Play and Stop position in the segment are always sample accurate.
 - It is not recommended to try to align the last and the first samples of two contiguous XMA-converted clips.
- Containers
 - Although you may use a switch container as a child of a random or sequence container with sample accurate transitions, transitions will not be sample accurate if the switch container plays more than one sound simultaneously.

- The maximum number of children in any type of container is 65535. Although Wwise lets you create more than 65535 in the authoring application, no parent-child link can be made between the parent and the child above this limit. Without the link, these child objects cannot receive any notification updates during playback, including changes to volume, positioning, and so on.
 - There are several restrictions and limitations that currently exist when using the crossfade, sample accurate, and trigger rate transitions with random and sequence containers. For a complete list, refer to the [Wwise Knowledge Base](#).
 - If the playback instance limit is reached for a random or sequence container using Trigger Rate as the transition type, the currently playing sound as well as the container itself will be killed.
 - Sample accurate transitions of random or sequence containers are ignored on the Wii platform with source plug-ins and Vorbis formats.
- Effects
 - Since you cannot apply a crossfade when bypassing or un-bypassing an effect, you may experience clicking when using the Enable/Disable Bypass event action.
- Interactive Music
 - A music switch transition rule cannot use both the options “Sync To - Same Time as Playing Segment” and “Use transition segment”. Whenever “Use transition segment” is enabled, “Sync To - Entry Cue” is used instead.
 - The Break event action has no effect on objects of the Interactive Music hierarchy. Its functionality may be reproduced with the help of a music switch container.
 - The empty space on a track before a clip will be considered as the clip’s pre-entry, possibly causing music transitions to occur later.
 - Run-time sample rate conversion makes sounds longer by approximately 12 samples per minute, causing slight inconsistencies for music objects. Sources in the following sample rates are affected: 44100Hz, 22050Hz, 11025Hz.
 - The wave data displayed in the Music Segment Editor for a converted file represents the original file and not the converted file.
- Live Edition
 - Some operations are not allowed during playback or when connected to a game, but are erroneously possible to edit using the List View or the Multi-Edit features. These operations include:
 - * Modifying the Output bus or the Override bus option.
 - * Enabling/Disabling voice limitation system.
 - Editing these during playback could cause instability in the game and could require restarting the sound engine to recover.
- PlayStation 3 platform
 - In order for streamed Vorbis files to play correctly on the PlayStation 3, the granularity of the I/O must be a multiple of 16 bytes.
- Positioning
 - If you add or remove a point along the path during playback, the sound will continue to play, but there will be no propagation. The next time you play back the sound, the changes that you made will be applied.

- Wwise uses an “equal power” schema to ensure that no audio source exceeds 0dB in any speaker. As a result, all stereo sounds set to 2D positioning will be played 3dB quieter by Wwise. To maintain the same mixing reference, boost the 2D sounds by 3dB.
- Projects
 - When a project is saved to a mapped network drive, performance may be seriously affected. If you decide to save your projects to a mapped network drive, Audiokinetic will not support these projects.
 - When “User Account Control” (UAC) is enabled on Windows Vista more recent versions, Wwise sample projects installed under “Program Files” or “Program Files (x86)” can’t be opened with the 64-bit version of the Wwise authoring application because of permission issues. While these projects can be opened with the 32-bit version of the Wwise authoring application even when UAC is enabled, we strongly advise against it as the cache, Originals, and GeneratedSoundBanks folders will be “virtualized”, and will thus be using the wrong folders. To workaroud this issue, do one of the following:
 - * Move the project to a location where you have full read/write permissions. Note that the IntegrationDemo executable will search for SoundBanks in the relative path where they would normally be generated, so you should also move the IntegrationDemo executable, if you plan to use it. (This option is recommended).
 - * Disable UAC. Since UAC is a security feature introduced in Windows Vista, we do not suggest disabling it as it may render your computer vulnerable to malicious software and other forms of attacks.
- Remote Connections
 - If the IP address of a computer changes while the Remote Connections dialog box is open, the computer will be displayed in the Available list using the LAN IP address instead of the usual “Local Host” IP address. If you connect to this computer, this computer will be added to the History list using the LAN IP address even if the same computer is already in the list using the “Local Host” IP address. Wwise doesn’t recognize that these two entries are the same remote computer. The next time you use Wwise, both entries will remain in the History list. Despite the duplication, you can connect to the computer using either entry.
 - Refer to this Wwise Knowledge Base article for information on troubleshooting the remote connection: <http://kb.gowwise.com/questions/137>
- SDK
 - Debug versions of the Wwise SDK sample effect and source plug-ins cannot be used with the Wwise authoring tool.
- SoundBanks
 - If a sound exists in more than one SoundBank, a transition will not be applied between the two instances of the sound when one SoundBank is unloaded and another one is loaded. In this case, the first instance of the sound will stop and the second instance will start from the beginning.
 - Note: Using the PrepareEvent mechanism will prevent this sort of problem from happening.
- Streaming
 - If the hard disk on the Xbox 360 and the PlayStation 3 have not been read for a while, you may experience longer read times than normal. When this occurs during critical streaming situations, notifications of source starvation will be sent to the Wwise error log.

- Wii platform
 - The value returned by `AK::StreamMgr::IAkLowLevelIOHook::GetBlockSize()` must be a multiple of 32 (bytes) in order to play back ADPCM files.
 - On the Wii platform, streamed audio files with file and loop lengths of less than 20ms may not play correctly.

4.2 Wwise Known Issues

The following list describes the relevant outstanding issues that could not be resolved in this version of Wwise.

- Android
 - **WG-20084**: Android sources must be compiled on a path containing no space. The default installation is in `'C:\Program Files\Audiokinetic'` and contains a space character. It will not compile for the Android platform.
- Audio Conversion
 - **WG-19165**: AAC encoding may crash or stall when run from a remote desktop.
- Audio Files
 - **WG-11260**: Audio from file with too many markers fails to play. If the marker data chunk in the file header is larger than the granularity of the file streaming, the code fails to read the header.
- Blend Containers
 - **WG-15729**: Playback may fail when chaining multiple containers in continuous mode and step mode and finally Blend Containers with multiple sounds.
- Contents Editor
 - **WG-14785**: Objects displayed in the Contents Editor are not sorted alphabetically, which can make it difficult to find objects quickly.
- Effects
 - **WG-14931**: Rendered effects are not listed in the Edit tab of the SoundBank Editor.
- Game Object 3D Viewer
 - **WG-15054**: Game objects with multiple positions are not shown in the Game Object 3D viewer.
 - **WG-16246**: The Game Sync Monitor doesn't update as expected until you add or remove a watch from the Watches list.
- Game Simulator
 - **WG-16071**: Game Simulator is not detecting game pad inputs on Vista 64 bit.

- General
 - **WG-15941:** When using certain UI schemes in Vista, the property sliders may not react as expected.
- Integrity Report
 - **WG-15569:** The integrity report message “Streamed XMA files do not support region loops” may be displayed even when the audio file doesn’t contain a region loop.
- Interactive Music
 - **WG-14711:** Two ‘bar’, ‘beat’ or ‘grid’ notifications may be sent in a row at segment synchronization points.
 - **WG-15728:** When a transition segment is added to the Any to Any transition and then removed, the music segment and corresponding media file is still included in the SoundBank, in error.
 - **WG-16261:** If a double switch reversal occurs during the playback of a music switch container that has music switch containers as children, the wrong music segment may be played.
 - **WG-16269:** Effect tails are trimmed when effects are inserted in objects of the interactive music hierarchy.
- Keyboard Shortcut manager
 - **WG-19947:** OS keyboard shortcuts using the "Windows" key can’t be remapped in Wwise.
- Motion
 - **WG-14852:** Motion FX objects do not work as expected within a Dialogue Event.
- Multi-Channel Creator
 - **WG-16302:** Sample loop markers within a source file are not kept in the multi-channel files generated by the Multi-Channel Creator.
- Obstruction/Occlusion
 - **WG-15678:** When updating the Obstruction/Occlusion curves in Wwise while connected to a game, the curve information is not propagated to the game, as expected.
- Playback Limit
 - **WG-15124:** Playback limit involving Motion busses may continue to be applied even though it is greyed out in the Wwise application.
- Profiler
 - **WG-14176:** The RR and RL columns on the Listeners tab of the Advanced Profiler are inverted.
 - **WG-15476:** Error message missing in the profiler when Wwise detects two similar media files that don’t have the same size.
 - **WG-15617:** When an error occurs in the profiler, Wwise displays the event ID, but not the event name.
 - **WG-19418:** Hitting repetitively reconnect when connecting on the HIO device ends up popping "Wrong protocol version". Simply ignore and reconnect.

- Projects
 - **WG-14579:** Projects may become corrupted when migrating a project that contains a missing plug-in.
- RTPCs
 - **WG-14506:** Audio glitches may occur when using a Peak Limiter as well as a Parametric EQ that has an output level driven by an RTPC.
- SDK/Sound Engine
 - **WG-15501:** Memory address may be reused by switch container after a game object is unregistered causing Wwise to play a different sound than is expected.
 - **WG-16185:** Speaker volume matrix callback is not called for 2D sounds in `IsInitiallyUnderThreshold`.
- SoundBanks
 - **WG-13305:** SoundBank output text files become inconsistent when a project contains two switches/states with the same name in two different groups.
 - **WG-14186:** When SoundBanks are generated, Wwise loses registered game objects registered by the SoundFrame preventing sounds from playing.
 - **WG-19736:** (PS3 only) When duplicate sounds are respectively tagged RSX and regular stream, bank generation randomly tags the file as RSX or not.
 - **WG-22373:** Occasional crash in `AkCopyStreamedFiles` when exporting stream files. Solution: in "Project Settings/SoundBanks/Post-Generation Step" replace the "`-hideprogressui $(IsRunningFromCmdLine)`" part of the command line with "`-hideprogressui true`".
- Source Plug-ins
 - **WG-16232:** Clipping may occur when using the Pink or Red noise color setting within the SoundSeed Air - Woosh source plug-in.
- Wii
 - **WG-15250:** Glitches may occur when pausing music segments on the Wii platform due to inconsistencies between the music and lower engines.
 - **WG-17439:** Breaking a looping and streaming sound with a very small looping region on the Wii can cause the sound to stop with the error: "File or loop region is too small to be played properly".
- Workgroups
 - **WG-15558:** When using the Perforce plug-in, the file history scrolls unnecessarily as the information is received.
 - **WG-15559:** When using the Perforce plug-in, the history returned by P4 truncates the description removing useful information.
 - **WG-16257:** Wwise may crash when loading a work unit that includes an audio source with a space at the beginning of its filename.
 - **WG-20587:** Issues may arise when creating nested Work Units whose path on disk exceeds `MAX_PATH` (255) characters.

5 Complete Changelist

The following sections list and describe the changes made to Wwise between version 2012.2.2 and version 2013.1.

5.1 Platform SDK updates

- Perforce SDK was updated to version 2012.2
- Mac/iOS: Updated to Xcode 4.6 (LLVM 4.2)
- iOS: Updated to SDK 6.1 (supported architectures are now armv7 and armv7s)
- 3DS: Updated to CTR-SDK 4.2.4
- PS3: Updated to SDK 430.001
- Xbox 360: Updated to XDK November 2012 (build 21250.1)
- Wii U: Updated to Cafe SDK 2.08.13 and Multi 5.3.19
- Android: Updated to NDK r8d

5.2 New Features

- **WG-21536** Now possible to add randomizers on the loop count of random and sequence containers.
- **WG-21707** Added low-level I/O sample code for loading SoundBanks within Android APKs. Android IntegrationDemo now deploys SoundBanks as part of the APK.
- **WG-21723** It is now possible to add custom speaker volume gains per listener to internal spatialized volume computations.
- **WG-21995** Positioning behavior (2D/3D) can be selected with RTPC.
- **WG-22283** Attenuation based on distance can now be controlled independently when using Game defined Aux Sends and User Defined Aux Sends.
- **WG-22538** A limited version of music switch container seeking is now available.
- **WG-22657** Finer granularity now supported in music grid (1/16 and 1/32).

5.3 API Changes

- **WG-14431** On Windows, XAudio2 is now the default audio API used for audio output, with a fallback to DirectSound when not available. The new `AkPlatformInitSettings::eSinkType` parameter can be used to modify this behavior.
- **WG-21251** It is now required to specify a valid memory pool ID to the initialization of the sound engine to use the prepare media mechanism. We removed the default behavior (allocation in the Default memory pool when not specified) as it was only causing confusion.
- **WG-21251** (Xbox360 Only) The Default memory pool memory is now allocated using `malloc` instead of `PhysicalAlloc`.
- **WG-21615** Removed `in_ulListenerIndex` from `SetPosition()`. Workaround is to set the position of the game object directly to that of the corresponding listener.

- **WG-21635** Migration iOS:
 - Migration: iOS SDK now uses a new header `AkiOSSoundEngine.h`. You need to include this new header instead of `AkMacSoundEngine.h`.
 - API Change:
 - * Added a new API to handle audio session interruption at the app level.
 - * Updated `AkPlatformInitSettings` for iOS to allow users to select whether to handle audio session interruptions at the app level or not.
- **WG-21759** Added methods to the `SoundFrame` API:
 - `AK::SoundFrame::IGameParameter::Default` returns the default value of the game parameter
 - `AK::SoundFrame::ISoundFrame::GetConversionSettingsList` lists all available conversion settings
 - `AK::SoundFrame::ISoundFrame::ConvertExternalSources` performs conversion of specified input source files
 - `AK::SoundFrame::ISoundFrame::ResetRTPCValue` provides functionality matching `AK::SoundEngine::ResetRTPCValue`
- **WG-21803** `AK::SoundEngine::Unloadbank` prototype changed:
 - When loading banks using an in-memory location, it is now allowed to load the same bank from two different memory locations simultaneously. Also, when loading banks from in-memory locations, it is now required to unload the bank using the same in-memory pointer that was used at the load call. This new requirement allows selecting which of the in-memory banks must be unloaded. To avoid confusion upon migration, the new parameter is now mandatory and `NULL` should be specified if the bank was not loaded from an in-memory location.
 - When multiple banks are sharing the same media and media is duplicated in memory, priority is given to the media from the latest loaded bank.
- **WG-22001** Source and insert effect plugins are now able to access the Playing ID and Game Object ID associated to the sound structure on which they are playing, as well as the game object and listener positions in cartesian and spherical coordinates.
- **WG-22259** New API: `AK::SoundEngine::Wii::SetDRCVolume()` can be used to set the volume of the DRC audio mix.
- **WG-22527** Calling `AK::SoundEngine::UnloadBank` with a specified bank not previously loaded now returns `AK_UnknownBankID` instead of `AK_Success`.

5.4 Behavior Changes

- **WG-21393** Volume threshold evaluation now takes bus gains of all signal paths into account and takes the maximum. This means that a voice will become virtual if both its dry and wet paths are below threshold. Also, voices routed to a mixing bus will become virtual when the output bus volume is brought down.
- **WG-21803**
 - When loading banks using an in-memory location, it is now allowed to load the same bank from two different memory locations simultaneously. Also, when loading banks from in-memory locations, it is now required to unload the bank using the same in-memory pointer that was used at the load call. This new requirement allows selecting which of the in memory banks must be unloaded.

- When multiple banks are sharing the same media and media is duplicated in memory, the media from the latest loaded bank has priority.
- **WG-22164** Sources now restart with perfect synchronization after source starvation has occurred under the interactive music hierarchy. The counterpart is that the starving source remains silent for some time (the track's look-ahead time) before restarting.

5.5 Performance Changes

Android now runs 10% faster. Vorbis and many effects have been optimized on several platforms. Here's an overview of the performance factors (as a reference, 1x represents status quo while 2x means that an effect runs twice as fast as before):

	Xbox 360	PS3	Wii U
Matrix Reverb	-	-	4.6x
Flanger	1.1x to 1.8x	1.3x	1.5x to 2.4x
LPF	1.2x	1.8x	1.1x
Time Stretch	1.1x to 2.4x	1.3x to 1.6x	2.5x to 3x
Convolution Reverb	1.3x to 1.7x	1.1x to 1.3x	8x to 10x
Guitar Distortion	1.4x to 1.7x	1.1x to 1.5x	1.4x to 2x
Tremolo	5.5x	1.25x	4.4x
Harmonizer	1.1x to 1.2x	1.3x	1.5x to 2.2x
Vorbis	Up to 2%	Up to 4.5%	10 to 15%

5.6 Miscellaneous Changes

- **WG-21619** Migration support for Wwise projects saved with Wwise prior to version 2007.2 has been removed.

- **WG-21728** Removed useless Windows files from Mac/iOS installers.
- **WG-21878** WwiseCLI can now perform project migration when -Save option is specified.

5.7 Bug Fixes

- **WG-14797** Fixed: Occasional assertion in AkContextualSequencer.cpp when playing XMA in interactive music.
- **WG-15390** Fixed a situation where playing a blend container with multiple children will stop playing if one of its children fails to play.
- **WG-21299** Mac/iOS: GameSimulator docsets are now copied to Xcode documentation folders during installation.
- **WG-21573** Fixed: Stereo delay channel crossfeed results in unstable feedback.
- **WG-21596** Fixed: DRC Surround mode always processes 6 channels, even when the game doesn't support it. Stereo is now used in this case.
- **WG-21599** Fixed: Spread curve is evaluated against total distance instead of distance that is projected on the listener's plane.
- **WG-21603** Fixed: Music context leaks in a very rare scenario.
- **WG-21628** Fixed: XMA decoder starvation with in-memory XMA in interactive music.
- **WG-21638** Fixed: Possible crash when using Mbox/M-Audio when sound card is set with multi-channel.
- **WG-21700** Fixed misplaced HUD of IntegrationDemo on iOS6 (armv7s).
- **WG-21709** Fixed: SoundEngine API symbols DLL-exported in StaticCRT configurations.
- **WG-21716** Race condition between AX and audio thread when initializing, possible crash.
- **WG-21736** Fixed: Silent output (NaN) on 32 bit Windows and Mac in rare cases.
- **WG-21741** NaN created in 3D User Defined positioning code, when multiple listeners used, with No Follow Listener. Output is silent.
- **WG-21772** Fixed: crash when trying to resolve Dialogue Event containing no arguments.
- **WG-21786** Fixed an assert when resizing AkArray instance to zero.
- **WG-21798** Fixed: Muting of Aux busses using the authoring tool's monitoring features is inconsistent on PS3.
- **WG-21804** Fixed: Custom listener spatialization ignores sources channel count.
- **WG-21816** Fixed a warning in SWIG-generated API: WwiseObjectIDext.cs.
- **WG-21833** Fixed a situation where Soundframe::IGameParameter getGUID returns invalid GUID.
- **WG-21838** Fixed: Fade out is abruptly cut off during music transition while it should continue across next segment inside fading playlist. This is a regression since Wwise 2011.2.
- **WG-21877** iZotope Fixes:
 - 4.0 support added to all plugins on all platforms.

- Buffering bug fix to the Box Modeler allowing it to be used with the low latency builds of Wwise.
 - Fixing the phase inversion of several distortions: Clip Control, Delicate Harmonics and Smooth Fuzz.
- **WG-21907** Bug Fix: Fixed an issue where opening a Wwise project in 2012.2 results in project migration. The bug occurs if the project is migrated on computer A, then opened on computer B. The problem shows up only in some projects. It is caused by a temporary file left on computer A that was not migrated with the project. A common case where this could happen is when using source control for the Wwise project and updating on a separate computer while having a leftover, non-migrated PROJECT.USERNAME.wsettings file in the project directory.
- **WG-21957** Fixed: Any global stop action on a specific element target which is "missing" will act like a global stop all event, but only on continuous items.
- **WG-21994** Fixed: SoundBanks containing impulse responses for Convolution Reverb on busses are always generated.
- **WG-22240** Fixed crash with rumble on WiiU Controller Pro.
- **WG-22254** Fixed: Android IntegrationDemo resets to main menu and loses all audio when switching the app between foreground and background.
- **WG-22266** In Android IntegrationDemo, sounds are now paused and resumed when user switches the demo between foreground and background.
- **WG-22268** Fixed: Meters on PS3 are insensitive to bus gains.
- **WG-22313** Fixed: Crash while playing sound with corrupt State Groups.
- **WG-22331** Fixed: crash when playing back a specific WAV file in Wwise.
- **WG-22501** Fixed: Positioning-related RTPC may be erroneously applied on nodes that do not define positioning.
- **WG-22505** Fixed: Capture log indicates "Filter" instead of "segment" when a transition is scheduled from anywhere but a music cue.
- **WG-22506** Fixed: Expander initial state behaves as if the input was above threshold instead of below threshold (as silence should be).
- **WG-22726** Fixed: Situation where instance limiters were over limiting when launching multiple times the same sound in the same frame.
- **WG-22793** Fixed: 3D User-Defined sounds with "follow listener" option are not silent when active listener mask on game object is 0.
- **WG-22794** Fixed: Listener scaling factor not taken into account for sounds in 3D User Defined positioning mode.
- **WG-22795** Fixed: Listener spatialization not taken into account for sounds in 3D User Defined positioning mode.
- **WG-22833** Fixed: CAkDeviceDeferredLinedUp::Init() returns AK_Success even if IO thread creation fails.
- **WG-22890** Fixed: 3D User-Defined positioning in "no follow" mode is invalid when used with multiple listeners.
- **WG-22939** Fixed: GetSourcePlayPosition() is broken with time stretch effect.

6 Need Help?

6.1 Using Help

Wwise Help contains detailed information on each interface element in Wwise.

To open Help from within Wwise, do one of the following:

- Click the Help icon in the title bar of any of the views or dialog boxes.
- From the menu bar, click **Help** > **Wwise Help**.
- Press **F1**.

6.2 Contacting Support

Audiokinetic has established a complete [online support center](#) for our maintenance and evaluation customers. The following resources are available:

- A [feedback form](#) to submit details about bugs, crashes, and/or to suggest a feature, or make any general inquiries.
- Access to all the latest product [downloads](#).
- The [Wwise Knowledge Base](#) with knowledge base articles, tips, and tricks.
- [Video tutorials](#).

You can also contact us directly at: support@audiokinetic.com.

Note: Email support is only available for maintenance and registered evaluation customers.

6.3 Got Comments?

We'd appreciate any comments or suggestions you may have about these release notes or any other piece of our documentation. Just send them to [documentation](#).