

Release Notes



Havok Common

Version : 6.0.0 RC1

including all development since version 5.5.0 RC1

Demo Framework

Bugs

COM-411	Fixed	Increase Wii stack size	6.0.0 Beta 2
The Wii demos now use a stacksize of 128K. With the default stacksize of 64K, some demos would run past the end of the stack and start overwriting the sdata section.			

Geometry

Bugs

COM-393	Fixed	hkGeometryUtils methods don't use HK_CALL	6.0.0 Beta 2
The static methods in hkGeometry now use HK_CALL calling convention (__cdecl on Microsoft platforms).			

COM-398	Fixed	Incorrect dot product in hkPlaneEquationUtil::calculateIntersectionLine	5.5.1 RC1
hkPlaneEquationUtil::calculateIntersectionLine (which is called when using hkpShapeShrinker on hkpConvexVerticesShapes) was using the wrong dot product. This was only a problem on Wii.			

Graphics

Bugs

COM-408	Fixed	hkgSceneDataConverter::findDisplayObjectsUsing Mesh produces a corrupt list of objects	6.0.0 RC1
hkgSceneDataConverter::findDisplayObjectsUsingMesh incorrectly called setSize() on an array, followed by calls to pushBack(). It now calls reserve().			



hkBase

Bugs

COM-300	Fixed	hkPoolMemory has HK_WARN_ALWAYS macro which will print the TTY in release. hkPoolMemory::allocateRuntimeBlock no longer warns in Release builds.	6.0.0 Beta 1
COM-332	Fixed	hkBitField does not define copy behaviour Private copy constructor and assignment operators were added to hkBitField to prevent copying.	6.0.0 Beta 1
COM-341	Fixed	hkReferencedObject::addReference is not threadsafe hkReferencedObject::addReference can now be used in a threadsafe way. Check out the hkReferencedObject reference manual. In a nutshell: If you run Havok multithreaded you have to explicitly lock a referenceCount critical section (see hkReferencedObject::lockAll()) to be able to increase/decrease the reference count of one object. If you do not care about performance you might enable automatic locking (see hkReferencedObject::setLockPolicy())	6.0.0 Beta 1

Interface Change

COM-380	Fixed	Add hkLong to hkBaseTypes and use where appropriate (difference of pointers) hkLong was added to hkBaseTypes as the signed version of hkUlong. Methods such as hkAddByteOffset now use an hkLong for the offset instead of hkUlong.	6.0.0 RC1
----------------	-------	---	-----------

Interface Change

COM-384	Fixed	hkFreeListMemory with hkFixedMemoryBlockServer can cause infinite recursion in low memory situations This has been fixed.	5.5.1 RC1
COM-434	Fixed	Fix loading sparsely animated enum Fixed loading packfiles with meta-data containing hkxSparselyAnimatedEnum and hctAttributeDescription objects.	6.0.0 RC1

COM-257	Fixed	hkSmallArray does not define copy behaviour SmallArrays should not be copied - the assignment and copy constructor have been declared protected.	6.0.0 Beta 1
COM-366	Fixed	Havok worker threads should use the same value for hkThreadMemory::m_maxNumElemsOnFreeList as the main thread. Worker threads created by hkCpuJobThreadPool inherit the value of hkThreadMemory::m_maxNumElemsOnFreeList from the main thread.	6.0.0 Beta 1
COM-422	Fixed	hkSpu4WayCache doesn't check the size of DMA request when determining whether to fetch data Under rare circumstances, when the SPU code requested a main memory address from the hkSpu4WayCache with a certain size, then requested a similar address with a different size, the data would not be fully present in the cache. This occasionally caused DMA alignment errors in hkpListShape::getChildShapeImpl, or bad normals in hkpConvexVerticesShape::castRayImpl. hkSpu4WayCache now always transfers the full cacheline size to prevent this from occurring.	6.0.0 RC1
COM-134	Fixed	hkPseudoRandomGenerator has methods which are platform/compiler dependent. The methods have been rewritten to be identical regardless of compiler.	6.0.0 Beta 1
COM-297	Fixed	Move debug members to end of hkSpu4WayCache.h Class members marked with HK_ON_DEBUG have been moved to the bottom of the hkSpu4WayCache class.	6.0.0 Beta 1
COM-298	Fixed	hkSpuDmaSparseWriter can pass an invalid size to putToMainMemorySmall We fixed a potential DMA error in hkSpuDmaSparseWriter::putToMainMemorySmall128.	6.0.0 Beta 1
COM-347	Fixed	Crash in fixupStringsPpu on PS3 A new implementation now parses the elf image directly. Sections can be relocated now.	6.0.0 Beta 1

COM-403	Fixed	hkInplaceArrayAligned16<T> size may be incorrect if sizeof(T) < sizeof(float)	6.0.0 RC1
----------------	-------	---	-----------

There is now a compile time assert to ensure this never happens.

New Features

COM-351	Implemented	hkInternal and hkGeometryUtils library	6.0.0 Beta 1
----------------	-------------	---	--------------

Two new libraries have been added, in order to provide cross-product functionality, hkGeometryUtils and hkInternal.

COM-27	Implemented	Add the ability to name threads on platforms that support it	6.0.0 Beta 1
---------------	-------------	---	--------------

You can now specify the thread name on supported platforms via hkCpuJobThreadPoolCinfo::m_threadName. The worker thread function name was changed to hkWorkerThreadFunc to conform with the naming convention. The name to be used by the SPURS taskset can be specified via hkSpuJobThreadPoolCinfo::m_tasksetName.

COM-254	Implemented	HK_WARN_IF and HK_WARN_ONCE_IF macros	6.0.0 Beta 1
----------------	-------------	--	--------------

Two new warning macros are now available. HK_WARN_IF and HK_WARN_ONCE_IF operate as HK_WARN and HK_WARN_ONCE but take an extra condition parameter - the warning is only raised if the condition is met. The difference between this macro and simply writing if (condition) HK_WARN() is that, when using the macro, the condition will only be evaluated when compiling in DEBUG mode.

COM-274	Implemented	Use externally allocated memory with hkArray	6.0.0 Beta 2
----------------	-------------	---	--------------

hkArray can now use externally provided memory, falling back to heap allocations if the buffer overflows.

COM-307	Implemented	hkArray::spliceInto method	6.0.0 Beta 1
----------------	-------------	-----------------------------------	--------------

A method has been added to efficiently replace a part of an array with another array, possibly of different size.

COM-308	Implemented	hkVector2 class and utilities added.	6.0.0 Beta 1
----------------	-------------	---	--------------

Two component vector class added. Also utilities for 2d convex hull generation.

COM-349	Implemented Create hkStorageStringMap	6.0.0 Beta 1
----------------	--	--------------

hkStorageStringMap has similar functionality to hkStringMap except that it copies and manages string keys internally.

COM-370	Implemented hkStringMap::getOrInsert method	6.0.0 Beta 1
----------------	--	--------------

This is equivalent to `if(map.has_key(key) == false) { map.insert(key, ifNotFound) } return map.get(key);` but with a single hash lookup instead of three.

Improvements

COM-301	Implemented Support for dynamic port numbers in hkSpuUtil	6.0.0 Beta 1
----------------	--	--------------

All ports are now dynamically allocated through SPURs.

COM-442	Implemented Remove symbols from "release" PS3 SPU ELF.	6.0.0 RC1
----------------	---	-----------

Symbols are now automatically stripped from the release SPU elfs during building. If you encounter an SPU crash please try using the new debug versions of the elfs.

COM-246	Implemented Improve Multithreading Infrastructure	6.0.0 Beta 1
----------------	--	--------------

Several improvements have been made to the way in which Havok products run multithreaded code. The hkMultithreadedUtil has been removed and has been replaced by hkJobThreadPool classes, which operate on arbitrary workloads specified by jobs on the job queue. There is now a one line function in `hkpWorld::stepMultithreaded`, which can simply be used in most situations to step the world multithreaded. Issues with monitor buffer handling and SPU parameter passing are now handled transparently. The code needed to setup and run multithreading with Havok is now identical on Xbox360 and Playstation(R)3 (apart from some additional SPU setup). This is illustrated by the ConsoleExampleMt demo which can be found in the StandAloneDemos folder. The same job queue and job thread pool can be used to run all havok products multithreaded. Please refer to the demo and a new section of documentation in Common Havok Components, on multithreading for details.

Interface Change

COM-299	Implemented hkCriticalSection includes windows.h which defines min / max (easy fix)	6.0.0 RC1
----------------	--	-----------

hkwindows.h (which includes windows.h) now has many defines to prevent rarely used parts of the win32 api being defined. e.g. NOMINMAX, NOGDI etc.

COM-313	Implemented	hkStatisticsCollectorUtil used _fastcall calling convention on Microsoft Windows platforms	6.0.0 Beta 1
HK_CALL decorators were added to the static function in this class.			

COM-315	Implemented	hkPointerMap should assert if you give it too little memory	6.0.0 Beta 1
The hkPointerMapBase now asserts in its constructor that you have given it enough memory.			

COM-361	Implemented	Use CellSpurs*WithAttribute methods	6.0.0 RC1
hkSpuUtil now uses cellSpursCreateTasksetWithAttribute and cellSpursCreateTaskWithAttribute when starting SPURS tasks, and the Havok demos now use cellSpursInitializeWithAttribute. Additionally, we set the name of the taskset with cellSpursTasksetAttributeSetName.			

COM-381	Implemented	hkBitField should handle allocated data similar to hkArray when loaded from packfile.	6.0.0 Beta 2
The hkBitField class handles memory allocations automatically when loaded from a packfile and do not assume anymore that the data belongs to a hkPackfileData object.			

COM-382	Implemented	hkRefPtr class must have finish constructor.	6.0.0 Beta 2
Added finish constructor to the hkRefPtr class.			

Interface Change

COM-413	Implemented	Improvements to Wii Radix project files	6.0.0 Beta 2
The Fulldebug libraries for Wii Radix are now built with Optimization Level 0 and all "Fine Tuning" optimizations disabled. The Release libraries are now built with the "Automatically inline small functions" option enabled.			

COM-415	Implemented	HK_ERROR should trigger an HK_BREAKPOINT	6.0.0 RC1
The HK_ERROR macro will now trigger an HK_BREAKPOINT if the condition fails. Users can disable this behavior by forcing their implementation of hkError::message to return false, or by explicitly disabling the error ID.			

Math

Bugs

COM-328	Fixed	Order of arguments is incorrect on the PPC version of <code>hkMath::fselectGreaterZero</code> using intrinsics	5.5.1 RC1
----------------	-------	---	-----------

`hkMath::fselectGreaterZero` now calls its arguments in the right order.

COM-378	Fixed	Unaligned parameters in SSE <code>hkVector4Comparison::setAnd</code>	6.0.0 RC1
----------------	-------	---	-----------

In SSE (Win32 SIMD) builds, the arguments to `hkVector4Comparison::setAnd` would sometimes be incorrectly aligned and cause a crash. The arguments are now passed by reference to prevent this.

COM-394	Fixed	<code>hkQsTransform::isApproximatelyEqual()</code> broken for large angles.	6.0.0 Beta 2
----------------	-------	--	--------------

For large angles (close to 180 degrees), `isApproximatelyEqual()` could fail (reporting 'false' when it should report 'true') due to an incorrect sign comparison. This has been fixed.

Optimizations

COM-155	Implemented	Make quaternion multiplication operations alias-safe	6.0.0 Beta 2
----------------	-------------	---	--------------

All quaternion operations are now alias safe

COM-388	Implemented	Improvements to vector normalization on Xbox 360 and Playstation(R)3	6.0.0 RC1
----------------	-------------	---	-----------

`hkVector4::normalize3`, `length3`, `inverseLength3`, and `normalizeWithLength3` have all been optimized on Xbox360 and Playstation(R)3, as well as `normalize4`, etc.

Memory

Bugs

COM-444	Fixed	Values of <code>hkThreadMemory::m_maxNumElemsOnFreeList</code> should be consistent over all instances of <code>hkThreadMemory</code>	6.0.0 RC1
<p>The <code>maxNumElemsOnFreeList</code> parameter was previously specified in <code>hkThreadMemory</code>'s constructor. However, problems could occur if different instances of <code>hkThreadMemory</code> were using different values. The value is now set in <code>hkMemory</code>'s constructor and stored there, and <code>hkThreadMemory</code> instances will acquire the value from <code>hkMemory</code>. The default value in <code>hkMemory</code> is 16, which mimics the previous default from <code>hkThreadMemory</code>.</p>			

Interface Change

COM-9	Fixed	Error in <code>hkPoolMemory::printStatistics</code> with <code>hkThreadMemory</code>	5.5.1 RC1
<p>This has been fixed.</p>			

Improvements

COM-419	Implemented	Improved <code>hkPoolMemory</code> Reporting	5.5.1 RC1
<p>Reporting of allocations <code>hkThreadMemory</code> free lists improved so they are accounted for in <code>hkPoolMemory</code>'s reporting scheme.</p>			

Serialization

Bugs

COM-277	Fixed	<code>hkBinaryPackfileReader::getClassNameRegistry()</code> is not threadsafe	6.0.0 Beta 1
<p><code>hkBinaryPackfileReader::getClassNameRegistry()</code> is threadsafe. See COM-341 for more details.</p>			
COM-159	Fixed	<code>hkBinaryPackfileReader/hkPackfileData</code> usability issues.	6.0.0 RC1
<p>Updated the examples showing how to use the new interfaces in the Serialization chapter of the Havok Common docs. For details, please see the reference manual descriptions of the methods in the <code>hkResource</code> and <code>hkPackfileData</code> classes, and the functions in the <code>hkSerializeUtil</code> namespace.</p>			
COM-160	Fixed	<code>hkSphereShape</code> not versioned correctly for <code>hk461</code>	6.0.0 Beta 2
<p>Fixed loading packfiles with wrong signature for <code>hkSphereShape</code> class.</p>			

COM-294	Fixed	hkpCollisionFilter versioning is broken on 64-bit platforms. Fixed versioning of hkpCollisionFilter on 64-bit platforms from 510r1 to 550b1 version.	6.0.0 Beta 1
COM-321	Fixed	The non-serializable classes affect versioning and signature using the '+serialized(false)' annotation. Fixed usage of '+serialized(false)' for members of type of a non-serializable class.	6.0.0 Beta 1
COM-362	Fixed	Finish constructor must call parent's finish constructor. Fixed finish constructor implementations for reflected classes that did not call parent's finish constructor.	6.0.0 Beta 1
COM-373	Fixed	Class finish constructor must call member's finish constructor as required. Fixed class finish constructor implementations where class members were not always setup correctly.	6.0.0 Beta 2
COM-163	Fixed	Assert when calling hkPackfileReader::loadEntireFile and using hkCompat_None.cxx Fixed default class name registry access using hkCompat_None.cxx.	6.0.0 Beta 1
COM-164	Fixed	hkArray +nosave requires manual intervention It is now safe to not call the finish constructor for non-serialized class members of hkArray<T> type (with "+nosave" or "+serialized(false)" annotations).	6.0.0 Beta 2
COM-293	Fixed	hkEnum passed as variadic parameter. Fixed warning and runtime crash in hkVersionUtil::generateCppClassList() when built with gcc.	6.0.0 Beta 1

COM-383	Fixed	Built-in class name registry may be null when used in exporters.	6.0.0 Beta 2
----------------	-------	---	--------------

Fixed a crash in `hkBinaryPackfile::getClassNameRegistry()` when the built-in class name registry may be null, e.g. in the content tool exporters.

COM-428	Fixed	hkCompat_All.cxx defines hkVersionRegistry::StaticLinkedClassList instead of hkVersionRegistry::StaticLinkedClassRegistries.	6.0.0 RC1
----------------	-------	---	-----------

Fixed `hkCompat_All.cxx` defining `hkVersionRegistry::StaticLinkedClassRegistries` when `HK_LIST_CLASS_VERSIONS` is defined as non-zero.

New Features

COM-271	Implemented	Versioning should handle a NULL hkClass used as place-holders	6.0.0 Beta 2
----------------	-------------	--	--------------

Fixed versioning of `hkRootLevelContainer::NameVariant` objects.

COM-344	Implemented	Serialisation option '+reflected(False)' allows reflection to ignore class enums	6.0.0 Beta 1
----------------	-------------	---	--------------

Previously all enums in a reflected class were reflected. Now they can be selectively reflected.

COM-377	Implemented	Check class finish constructor implementation.	6.0.0 Beta 2
----------------	-------------	---	--------------

Updated reflection check unit test and reflection verify demo to check class finish constructor definitions.

COM-389	Implemented	Template hkPointerMultiMap on key type	6.0.0 Beta 2
----------------	-------------	---	--------------

`hkPointerMultiMap` now works for 64 bit keys.

COM-431	Implemented	New API for loading serialized objects.	6.0.0 RC1
----------------	-------------	--	-----------

Added `hkSerializeUtil` namespace as a substitute for the `hkLoader` class. Added interfaces to the `hkResource` class to access loaded packfile contents as a substitute for the similar `hkPackfileReader` interfaces.

Improvements

COM-170	Implemented	Improve versioning registration to avoid unclear link errors.	6.0.0 RC1
----------------	-------------	--	-----------

A single file, `hkKeyCodeClasses.h` now registers all Havok classes regardless of what products are in use. For more details please refer to the Serialization Chapter of the Havok Common manual.

COM-178	Implemented	Add aggressive and/or more informative asserts at load time to catch serialization problems	6.0.0 RC1
----------------	-------------	--	-----------

A section has been added to the platform-specific guides which explains how to register Havok's classes with the serialization registry (see HVK-3783). Added asserts if `hkTypeInfo` is missing required to finish a loaded object.

COM-312	Implemented	Information is not complete when reflecting non-serializable class members	6.0.0 Beta 1
----------------	-------------	---	--------------

Fixed usage of `'serialize(false)'`, see COM-321 issue for more details.

COM-331	Implemented	<code>hkBuiltinTypeRegistry::getInstance().addType()</code> should take const args	6.0.0 Beta 1
----------------	-------------	---	--------------

The `hkBuiltinTypeRegistry::getInstance().addType()` method takes const arguments.

Interface Change

COM-336	Implemented	Add <code>hkTypeInfoRegistry::getTypeInfo</code> method.	6.0.0 Beta 1
----------------	-------------	---	--------------

Added the `hkTypeInfoRegistry::getTypeInfo` method.

Interface Change

COM-337	Implemented	Add <code>hkVtableClassRegistry::getClasses</code> method, e.g. to iterate through them.	6.0.0 Beta 1
----------------	-------------	---	--------------

Added the `hkVtableClassRegistry::getClasses` method, e.g. to iterate only through a list of registered classes with vtable.

Interface Change

COM-345	Implemented	<code>hkVariant::m_class</code> should be set to non <code>HK_NULL</code> when loading packfiles without metadata	6.0.0 Beta 2
----------------	-------------	--	--------------

The `hkVariant::m_class` is restored when loading packfiles without metadata.

COM-409	Implemented	Versioning system does not warn if HK_CLASSES_FILE setting is not appropriate for loaded assets	6.0.0 Beta 2
		Assert when load packfile containing unregistered type.	

Documentation Changes

COM-316	Implemented	Document that the same hkPackfileReader should not be used to read different files or memory images	6.0.0 Beta 1
		Same hkBinaryPackfileReader/hkXmlPackfileReader should not be used to read different files.	

COM-197	Implemented	Need to document usage of hkCompat_None.cxx to remove dependency on hkcompat.lib	6.0.0 RC1
		The hkCompat section is added to the Serialization / Loading Game Data.	

COM-180	Implemented	Improve documentation on hkBuiltinTypeRegistry and custom usage of Havok Serialization	6.0.0 RC1
		Updated the Type Registration section in the Serialization Chapter of the Havok Common manual.	

COM-198	Implemented	Improve Serialization documentation	6.0.0 RC1
		Updated documentation and examples in the Serialization chapter of the Havok Common docs.	

Sub-tasks

COM-309	Implemented	hkBinaryPackfileWriter::writeAllObjects() writes out unnecessary class details, bloating file size.	6.0.0 Beta 2
		The binary packfile writer saves class names only for objects being stored in packfile.	

Visual Debugger

Improvements

COM-387 Implemented **Allow user to set size/scale of constraint viewers.** 6.0.0 Beta 2

The user can now set `hkpConstraintViewer::m_scale` in their code to globally override the size of all constraint display (e.g. in VDB). Default value is 1.0.