iOS, tvOS and watchOS Library Release Notes

> *As of version 5 the comScore libraries use a new public API.*
>
> *Upgrading existing implementations of versions 2 and 3 of the comScore library will require a small amount of code changes.*
>
> *These code changes are explained in an appendix of the implementation guides.*

Library Version 5.6.1.170922

Release Date: September 28, 2017

Application Tag Data Collection Model Version: 2.17

Streaming Tag Data Collection Model Version: 5.9

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x, 11.x

Supported tvOS Versions: 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAGDARW-92] Add a *dynamic library* deliverable.

   The CocoaPod has been updated to deliver the dynamic library instead of the previously delivered static library, which will seamlessly update in existing implementations using CocoaPods.

2. [TAGLDARW-111] Improve storage access to persist collected data.

Bug fixes:

1. [TAGLDARW-82] Ensure the library can be linked to a test target from the project's main target for applications developed using *Test Driven Development*.

   This relates to the addition of a dynamic library deliverable which is introduced with [TAGLDARW-92] as of this version.

2. [TAGLDARW-89] Prevent *UI API called from background thread* warnings in Xcode 9 by making the three routines which access a UI API execute on the main thread.

3. [TAGLDARW-100] Ensure unnecessary notifications are suppressed when the application project uses the flag `-Weverything` on the `WARNING_CFLAGS` compiler setting.

   This flag will make the compiler generate warnings about anything it finds, including subjective suggestions about coding. If this flag is combined with `GCC_TREAT_WARNINGS_AS_ERRORS = YES` then warnings are treated as errors, resulting in failed compilation.

4. [TAGLDARW-101] Ensure objects which need to be shared for executing tasks on differ ent threads are manipulated in a thread-safe way.

5. [TAGLDARW-107] Ensure the `name` label is populated with the correct value from the top-most *ViewController*.

Known issues and limitations:

- There were no known issues for this release.

Library Version 5.5.2.170706

Release Date: July 10, 2017

Application Tag Data Collection Model Version: 2.15

Streaming Tag Data Collection Model Version: 5.9

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAGLCPPS-25] Improve support for DVR streams.
2. [TAGLCPPS-26] Improve Streaming Tag elapsed time calculation.
3. [TAGLDARW-77, TAGLDARW-83] Improve support for dynamically disabling the vCE component.

Bug fixes:

1. [TAGLCPPS-28, 34] Improve internal handling of state transitions and extra notification methods.
2. [TAGLCPPS-41] Prevent the destruction of the core object while storage is being accessed from causing a crash.
3. [TAGLCPPS-42] Prevent a deadlock when the task executor is shutdown while a task is still being removed.
4. [TAGLCPPS-45] Prevent incorrect incrementing of Streaming Tag playback counters.
5. [TAGLCPPS-46] Prevent network requests from blocking the task executor thread on devices with iOS 6.x.
6. [TAGLCPPS-47] Prevent accessing a stored Streaming Tag asset while another asset is being created from causing a crash.
7. [TAGLCPPS-48] Prevent calls to `setLiveTransmissionMode()`, `setCacheMode()` or `setKeepAliveEnabled()` on the configuration prior to starting the library from causing a crash.
8. [TAGLDARW-54] Prevent crashes that could occur in the vCE component due to changes in the view hierarchy of a view controller while - or just before - the view controller is being deallocated.
9. [TAGLDARW-64, TAGLDARW-65, TAGLDARW-66] Apply multiple improvements to the data collected by the vCE component.
10. [TAGLDARW-67, TAGLDARW-68, TAGLDARW-87] Prevent crashes in the vCE component when updating metadata.
11. [TAGLDARW-74] Ensure the tvOS and watchOS frameworks have all required header files defined in their umbrella header file.
12. [TAGLDARW-76] Improve the solution introduced with version 5.4.1.170515 for [TAGLDARW-52].
13. [TAGLDARW-78] Remove the use of private APIs `_UIWebViewScrollView` and `WKScrollViewDo`.
14. [TAGLDARW-81] Revert the accidental change of the iOS deployment target with version 5.3.0.170406 back to 6.0.

Known issues and limitations:

- There were no known issues for this release.

Library Version 5.4.1.170515

Release Date: May 24, 2017

Application Tag Data Collection Model Version: 2.14

Streaming Tag Data Collection Model Version: 5.8

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAGLDARW-61] Improve viewability and meta information processing in the vCE component.
2. [TAGLCPPS-31] Treat 301 and 302 HTTP response codes as successful transmission when `httpRedirectCaching` is turned off in the library configuration.
3. [TAGQA-1178] Add support for Common Visibility Measurement (CVM) to the vCE component.

Bug fixes:

1. [TAGLDARW-43] Improve application state change detection.
2. [TAGLDARW-49] Ensure the vCE component fires all pixels in the VAST manifest as expected.
3. [TAGLDARW-50, TAGLDARW-60] Ensure the vCE component correctly parses pixel URLs.
4. [TAGLDARW-52] Ensure the vCE component responds correctly to refreshing or tracking native ads in the background.
5. [TAGLCPPS-23] Ensure negative playback rate values are accepted by the `setPlaybackRate` method of the `StreamingAnalytics` class.
6. [TAGLCPPS-36] Prevent a crash from the system clock jump detection functionality when an implementation destroys its `StreamingAnalytics` object.
7. [TAGQA-1103] Ensure the vCE component calculates screen dimensions and device resolution values with the same logic as the Application Tag component.
8. [TAGQA-1139] Ensure the vCE component discovers ads which are shown just after the application is started.
9. [TAGQA-1159] Ensure the `ns_ak` label values are encoded correctly in HTTP requests from the vCE component.
10. [TAGQA-1169] Ensure the vCE component computes values between `0` and `1` for label `ns_ad_vi`.

Known issues and limitations:

- There were no known issues for this release.

Library Version 5.3.0.170406

Release Date: April 12, 2017

Application Tag Data Collection Model Version: 2.13

Streaming Tag Data Collection Model Version: 5.8

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAGLDARW-34, TAGLDARW-43] Allow processing of API notification methods calls prior to configuring and starting the library to improve data collection.
2. [TAGLDARW-36] Add collection of library environment properties.
3. [TAGLDARW-35] Add API method for implementing Activation.
4. [TAGLDARW-37] Modify processing of provided `PublisherConfiguration` to immediately generate the publisher-specific unique device ID.

Bug fixes:

1. [TAGLDARW-39] Ensure cross-publisher unique device ID is (re)generated each time its value is retrieved.
2. [TAGLDARW-55] Ensure the library cancels any queued tasks when it is disabled and that `clearOfflineCache` and `clearInternalData` API method calls are performed synchronously.

Known issues and limitations:

- There were no known issues for this release.

Library Version 5.2.0.170216

Release Date: February 23, 2017

Application Tag Data Collection Model Version: 2.11

Streaming Tag Data Collection Model Version: 5.8

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAGLDARW-15] Add API methods for clearing all stored data and clearing the offline cache without flushing it to support advanced implementation scenarios.
2. [TAG-2937] Improve collection of automatically calculated Streaming Tag positions and unique playing time for players which support changing the playback rate. The library will now account for playback speed using the values provided for playback rate change notification method calls (if these calls appear in the implementation).
Please note that playback rates can be *negative* to indicate reverse playback. The library uses the playback rate to calculate the current position in between playback state change notifications. Depending on the player's exact reverse playback capabilities, the playback scenario and execution timings, reverse playback past position 0 could cause the calculated position be a negative value.
3. [TAG-2939] Implement system clock jump detection to mitigate the effect of clock jumps on Streaming Tag collected positions, playing time and unique playback.
4. [TAG-2946] Add an API method to disable internal updates of the Streaming Tag current position and position-related metrics based on the progress of natural time.

Bug fixes:

1. [TAGCPPS-6] Prevent seeking while a stream is paused from being counted as playback in Streaming Tag measurement requests.

2. [TAGLDARW-13] Ensure any available `PartnerConfigurations` cause a separate *stack* on measurement requests.

3. [TAGLDARW-14] Prevent multiple successive calls to add the same `ClientConfiguration` from causing crashes.

4. [TAGLDARW-16] Prevent a known `NSURLSession` issue related to deallocation from causing crashes.

5. [TAGLDARW-32] Ensure Application Tag usage timings labels do not appear on Streaming Tag measurement requests.

6. [TAG-2985] Ensure Streaming Tag asset load counter is reset when a new `Asset` is provided to the `StreamingAnalytics` API.

Known issues and limitations:

▪ There were no known issues for this release.

Library Version 5.1.11.161223

Release Date: January 20, 2017

Application Tag Data Collection Model Version: 2.11

Streaming Tag Data Collection Model Version: 5.7

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAGLDARW-12] Include label `ns_ap_sd` label which reports the device display resolution.

Bug fixes:

1. [TAGLDARW-5, TAGQA-1093] Prevent cyclic call chains - which create room for crashes - from occurring when the vCE component and code from the application or another library is trying to be a delegate to web views at the same time and forward calls in both directions. This resolves a known issue of version 5.1.10.161109 of the library.

2. [TAGLDARW-8] Ensure the live transmission mode is correctly applied when networking traffic from the device connection uses the cellular network.

3. [TAGLDARW-9] Ensure start event measurements are sent with an event counter value of 1.

4. [TAGLDARW-12] Ensure the `ns_ap_res` label accounts for the screen scale factor in the application screen dimensions value.

5. [TAGLCPPS-1] Prevent label values which represent numerical values beyond 999999 from being collected in scientific notation.

6. [TAGLCPPS-2] Ensure the library starts transmitting data when a `PublisherConfiguration` and `PartnerConfiguration` is added after the configuration windows is closed and the library was started without a `PublisherConfiguration` and `PartnerConfiguration`.

7. [TAGLCPPS-3] Ensure calls to `notifyBufferStop` to transition from *buffering during playback* state to *playing* state resume the collection of playing time.

Known issues and limitations:

▪ There were no known issues for this release.

Library Version 5.1.10.161109

Release Date: November 10, 2016

Data Collection Model Version: 2.11

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

▪ No feature requests were included in this release.

Bug fixes:

1. [TAG-2850] Prevent calls to the `Aggregate` method from interpreting labels which are not provided in the arguments of the calls.
2. [TAG-2864] Provide the `notifyCustomEvent` method on the `StreamingAnalytics` class.
3. [TAG-2860] Rename the `notifyBufferEnd` method on the `StreamingAnalytics` class to `notifyBufferStop` to align with implementation documents and the API on other platforms.
4. [TAG-2848] Improve the logic for consuming `PublisherConfigurations` and `PartnerConfigurations` to ensure boolean configuration settings are applied correctly.
5. [TAG-2857] Ensure usage data is immediately stored to prevent the collected values from being corrupted.

Known issues and limitations:

1. [TAGQA-1093] When the vCE component and code from the application or another library are trying to be a delegate to web views at the same time and forward calls in both directions this can cause a cyclic call chain which creates room for crashes to occur.

Library Version 5.1.8.161026

Release Date: November 1, 2016

Data Collection Model Version: 2.11

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. [TAG-2827] Add the armv7s slice separately in the iOS deliverable to support applications specifically developed for and targeting only the armv7s architecture.

2. [TAG-2803] Ensure the vCE component is immediately disabled - or not started - as soon as a provided `PublisherConfiguration` disables the vCE component.

Bug fixes:

1. [TAG-2831] Prevent the library from crashing when `start` is called without providing a `PublisherConfiguration` or `PartnerConfiguration`.
2. [TAG-2833] Ensure appropriate usage data is collected when the library migrates existing stored values.
3. [TAG-2835] Prevent the library from crashing if *Persistent Labels* are updated on an existing - i.e., already applied - `PublisherConfiguration` or `PartnerConfiguration`.

Known issues and limitations:

- There were no known issues for this release.

Library Version 5.1.7.161004

Release Date: October 10, 2016

Data Collection Model Version: 2.11

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

- No feature requests were included in this release.

Bug fixes:

1. [TAG-2770] Remove an undocumented unnecessary value in the enum used to indicate *ContentType* when using the streaming tag wrapper class for reduced requirements implementations.
2. [TAG-2807] Prevent the deployment of the tvOS library on a 9.0 target from triggering warnings inside Xcode.
3. [TAGQA-1041] Prevent applications of which the implementation uses the vCE component from crashing on iOS 10 when the application offers native video playback, is built with Xcode 7 and the user closes the native video playback component and taps on the *<Home* button after completing video playback in full screen.
4. [TAGQA-1042] Prevent applications from crashing when the implementation uses the vCE component and tries to use `updateMetaString`.
5. [TAGQA-1043] Ensure the vCE component sends visibility information and updates dictionary values on the same thread to prevent data corruption.
6. [TAGQA-1044] Ensure the vCE component detects web views which it internally creates to prevent those web views from being included in visibility tracking.
7. [TAGQA-1054] Ensure the vCE component calculates correct viewability metrics when the native view loses or gains focus.
8. [TAGQA-1055] Prevent the vCE component from detecting false positives when native views are removed from the view hierarchy.

9. [TAGQA-1065] Prevent applications from crashing when the implementation uses the vCE component and the application is cold started on a network connection with low bandwidth or no connectivity.

Known issues and limitations:

▪ There were no known issues for this release.

Library Version 5.1.4.160907

Release Date: September 16, 2016

Data Collection Model Version: 2.11

Supported iOS Versions: 6.x, 7.x, 8.x, 9.x, 10.x

Supported watchOS Versions: 1.x, 2.x, 3.x

Supported tvOS Versions: 9.x, 10.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*, *audio-unit*

Feature changes:

1. First public release of comScore library version 5.x.
2. [TAG-2020, TAG-2238, TAG-2243, TAG-2293, TAG-2506, TAG-2569] Refactor and re-implement the public API and underlying internal logic. This includes changes like:
   ▪ Rename most public API methods to introduce a new naming scheme as well as adherence to platform-specific naming conventions.
   ▪ Implement improvements for performance and stability as well as for futureproofing the public API for implemenations for combinations of different comScore products.
   ▪ Implement a new approach to configuring the library, including support for multiple partner and/or client configurations while collecting data only once.
3. [TAG-2169, TAG-2216, TAG-2491, TAG-2527, TAG-2596] Implement streaming analytics v5 API and data collection model features. This includes a completely new API for streaming analytics implemetantions.
4. [TAG-2193] Deliver the library as three separate frameworks: one for iOS applications and extensions, one for tvOS applications and one for watchOS applications.
5. [TAG-2201] Include instrumentation for mobile in-application ad viewability for campaigns tagged with a comScore vCE tag by introducing a vCE component.
   This feature requires iOS 7 or higher to function properly. If the application is running on devices with iOS 6 or lower then this feature will not be enabled/available.
6. [TAG-2227] Introduce support for tvOS.
7. [TAG-2251] Include data collection model version label `ns_ap_smv` in the collected data.
8. [TAG-2292] Enable *Usage Properties Auto Update* by default.
9. [TAG-2577] Make a warning appear on the device console for debug builds of the hosting application when the *AdSupport* framework is not linked into the hosting application.
10. [TAG-2740] Include label `ns_st_li=1` for live media types when using the streaming tag wrapper class for reduced requirements implementations.

Bug fixes:

1. [TAG-2029] Ensure all characters which require URL encoding are properly encoded.
2. [TAG-2244] Ensure the public pod does not generating compile time errors when added as a transitive dependency from Cocoapods.
3. [TAG-2254] Modify the streaming tag wrapper class used for Reduced Requirements implementation to prevent incorrect hardcoded content type values from being reported.

Known issues and limitations:

1. [TAG-2770] There is an undocumented unnecessary value in the enum used to indicate *ContentType* when using the streaming tag wrapper class for reduced requirements implementations.
2. [TAGQA-1041] Certain applications that offer video playback using the native video playback component can crash on iOS 10 when the application is built with Xcode 7 and the following scenario occurs: after completing video playback in full screen, the user closes the native video playback component and navigates to a different application screen.
3. [TAGQA-1042] An application can crash when it uses the vCE component and the implementation tries to use `updateMetaString`.
4. [TAGQA-1043] The vCE component does not send visibility information on main thread while the dictionary values are updated on main thread. This causes data corruption.
5. [TAGQA-1044] The vCE component does not detect web views which it internally creates. This causes those web views to be included in visibility tracking which is undesirable.

Library Version 3.1607.27

Release Date: July 28, 2016
Supported iOS Versions: 6.x, 7.x, 8.x, 9.x
Supported watchOS Versions: 1.x
Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*

Feature changes:

▪ No feature requests were included in this release.

Bug fixes:

1. [TAG-2559] Improved the changes implemented for version 3.1607.26.

Known issues and limitations:

▪ There were no known issues for this release.

Library Version 3.1607.26

Release Date: July 26, 2016
Supported iOS Versions: 6.x, 7.x, 8.x, 9.x
Supported watchOS Versions: 1.x
Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*

Feature changes:

▪ No feature requests were included in this release.

Bug fixes:

1. [TAG-2020] Modified the code responsible for dispatching measurements to prevent the occurrence of a race condition which could lead to sporadic crashes.
2. [TAG-2559] Fixed an issue which could cause exception messages related to overreleasing objects which are already being deallocated.

Known issues and limitations:

▪ There were no known issues for this release.

Library Version 3.1605.03

Release Date: May 6, 2016

Supported OS Versions: 6.x, 7.x, 8.x, 9.x

Supported watchOS Versions: 1.x

Supported iOS Extensions: *today-extension*, *share*, *action*, *photo-editing*, *document-provider*, *custom-keyboard*, *watchapp*

Feature changes:

▪ No feature requests were included in this release.

Bug fixes:

1. [TAG-2020] Fixed an issue related to the use of worker threads which could lead to a memory leak.

Known issues and limitations:

▪ There were no known issues for this release.

Releases from 2015 and earlier have been removed from the release notes.