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AppNexus Open AdStream Mobile SDK Integration Guide and API Reference for iOS
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Getting Started

AppNexus Open AdStream Mobile SDK allows app developers to incorporate ads into their native iOS applications.
AppNexus Open AdStream Mobile SDK supports the following ad formats:

- Simple banner ads
- HTML/JavaScript based rich media banner ads
- MRAID 1.0 and 2.0 rich media banner ads
- Simple interstitial ads
- HTML/JavaScript based rich media interstitial ads
- MRAID 1.0 and 2.0 rich media interstitial ads
- VAST 2.0 and 3.0 video interstitial ads
- VAST 2.0 and 3.0 in-stream pre-roll video ads

System Requirements

The following are the basic requirements to build and run the demo application:

- iOS version 5.1 or later
- Xcode 4.6 or later

Intended Audience

This document is for iOS native application developers who want to incorporate ads into their applications.

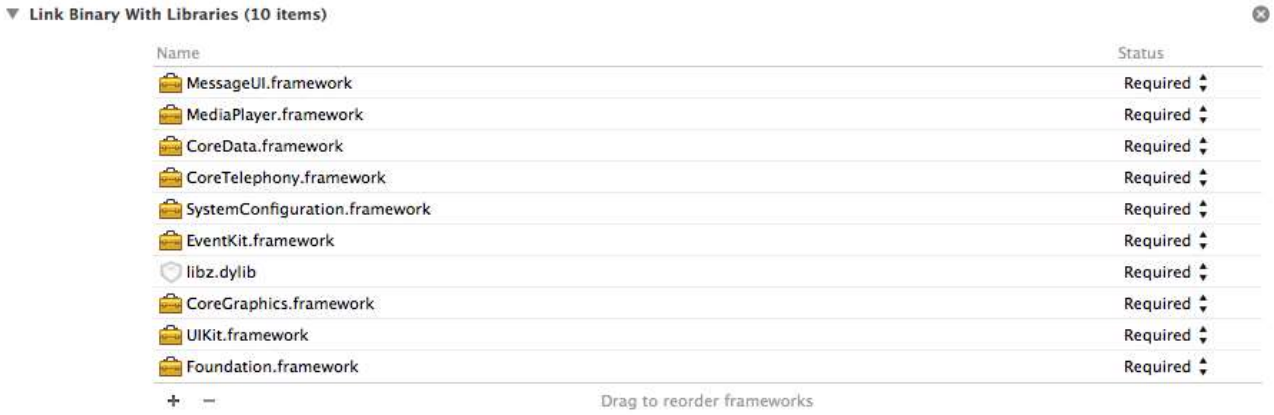
Integrating AppNexus Open AdStream Mobile SDK

To demonstrate the integration of the AppNexus Open AdStream Mobile SDK we will assume that the target iOS application into which AppNexus Open AdStream Mobile SDK needs to be integrated is named AppNexusOASMobileSDKSampleApp.

The decompressed SDK consists of Objective-C headers, a runtime library, and release notes.

The following are the steps needed to integrate AppNexus Open AdStream Mobile SDK into AppNexusOASMobileSDKSampleApp application:

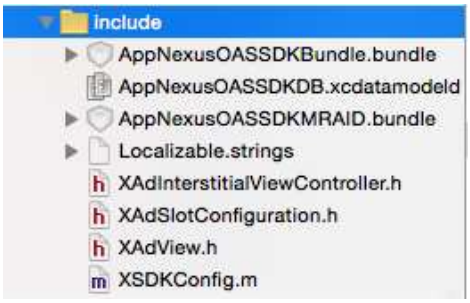
1. Right-click on your project in Xcode, choose **Add Files** to " AppNexusOASMobileSDKSampleApp"



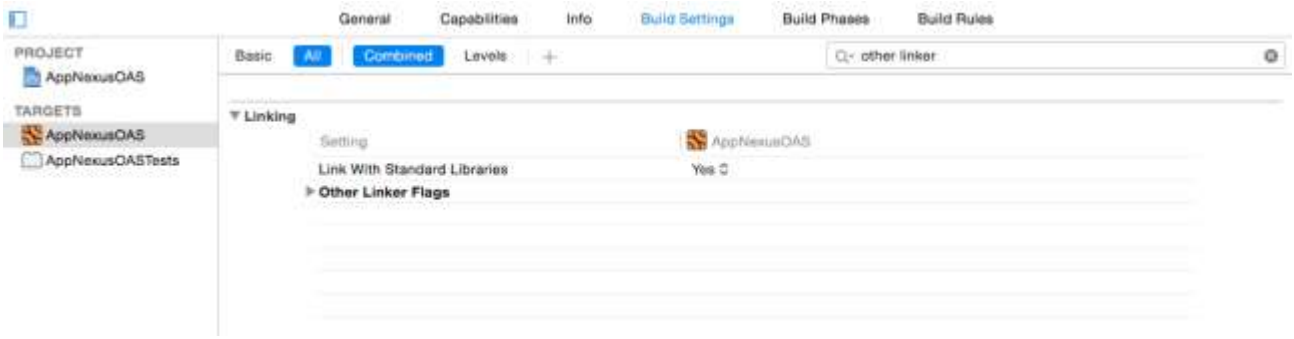
2. Make sure the following frameworks and library files are added:

- MediaPlayer.framework
- libAppNexusOASSDK.a (Provided as part of this SDK package)
- AVFoundation.framework
- EventKit.framework
- CoreTelephony.framework
- CoreData.framework
- SystemConfiguration.framework
- libz.dylib
- CoreGraphics.framework
- UIKit.framework
- Foundation.framework
- MessageUI. framework

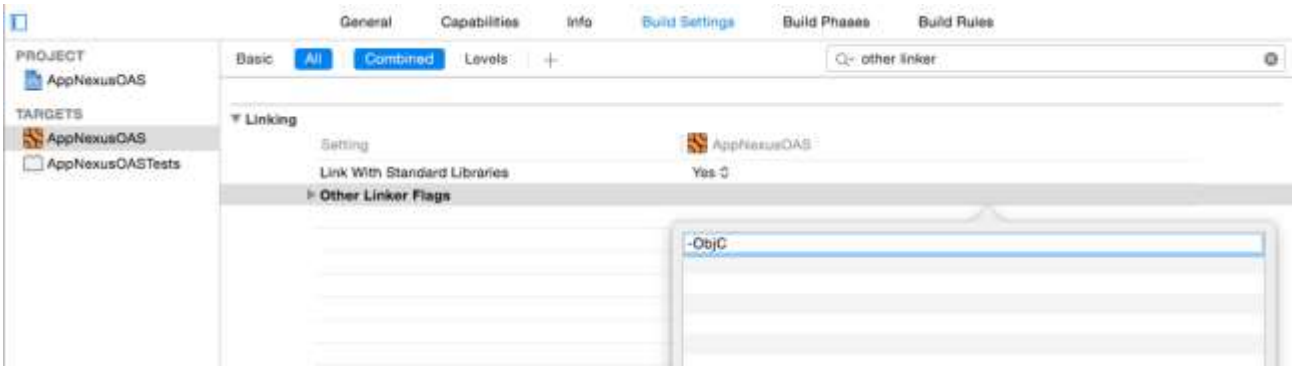
3. Add "include folder" which comes in the package.



4. Go to Build settings and search for other linker flags.



5. Set other linker flags to "-ObjC" (without double quotes)



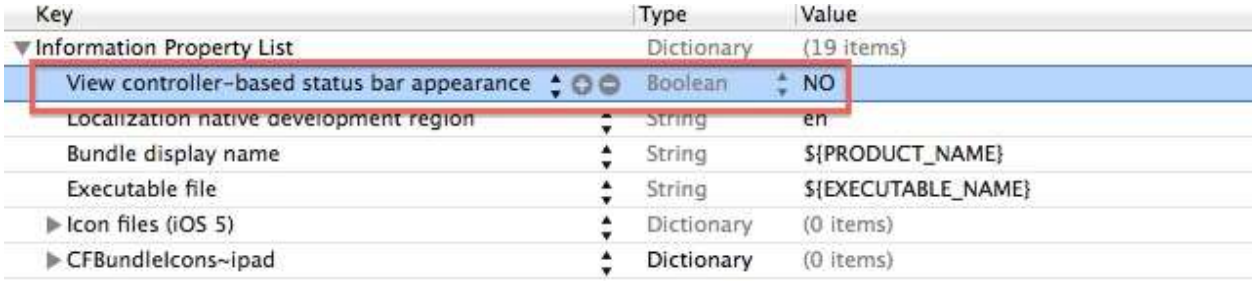
Clean and build the project

Optional Settings:

Problem Case:
While displaying any ads modally, SDK programmatically hides the status bar. If the status bar comes up due to any application request or due to any phone calls or notifications, the modally displayed ad shifts little down, however the close button on the ad is partially hidden.

Solution:
To handle this problem case, the publisher has to set a flag in the application plist file. The flag is called "**View controller-based status bar appearance**". This flag takes **Boolean** values. For an effective use of this flag, the publisher must set it to "NO" for the OS to respond to the **setStatusBarHidden** method of **UIApplication** for iOS 7 and above. This flag can be set as detailed below -

1) Go to application plist file
2) Add "View controller-based status bar appearance" item in the plist
3) Set the value to "NO"



Building the Demo App

To build the demo app, you need to delete the references to the 'include' folder and the libAppNexusOASSDK.a, and replace them by following steps 1 and 2 above. This ensures that the paths to these library files are set correctly. Please ensure that the library path is specified correctly in the "Library Search Paths" section of "Build Settings".

Integration Overview

Showing Banner Ads

Initialize XAdView with your project bannerAdView
Refer to the following code for more details.

```
@property(nonatomic,strong)XAdView *bannerAdView;
```

1) In viewWillAppear initialize banner view with your frame
2) Add your bannerView as SubView
3) The following steps are optional:
    a. Assign the XAdView delegate
    b. Initialize slot configuration
    c. Set bannerRefreshInterval to the desired value
    d. Set scallingAllowedProperty to the desired mode

4) For fetching and displaying ads from server, call loadWithDomainName. Set the DomainName, PageName attribute and adPosition attributes, keywords:attribute(s), queryString:attribute(s).

Example:

```
-(void)viewWillAppear:(BOOL)animated
{

[super viewWillAppear:animated];

/* Initialising the XAdView and fetching the ad */
self.bannerAdView = [[XAdView alloc]initWithFrame:CGRectMake(x_position,
y_position,
xadView_width,
xadView_height)];
self.bannerAdView.delegate = self;
XAdSlotConfiguration *configuration = [[XAdSlotConfiguration alloc] init];
configuration.bannerRefreshInterval = 120.0f;
configuration.scalingAllowed = NO;
configuration.openClickThroughURLInDeviceBrowser = NO;
configuration.RTBRequired = NO;
configuration.COPPAPermissions =YES;
self.bannerAdView.slotConfiguration = configuration;
[self.view addSubview:self.bannerAdView];

[self.bannerAdView loadWithDomainName:@"delivery.uat.247realmedia.com"
pageName:@"www.mobilesdkdemo.com/page_320x50" adPosition:@"@x23" keywords:nil
queryString:nil];}
```

Note	Keywords and queryString can be passed as NIL or actual value

Showing Interstitial Ads

Initialize XAdInterstitialViewController in your project.
Refer to the following code for more details:

```
@property (nonatomic, strong) XAdInterstitialViewController *interstitial;
```

1) Initialize Interstitial
2) Present Interstitial view
3) The following steps are optional:
    a. Set the XAdInterstitialViewController delegate
    b. Initialize slot configuration
4) For fetching and displaying ads from server, call:

```
loadWithDomainName:domainName:pageName:adPosition:keyword:queryString.
```

5) Set the PageName, adPosition, keyword, QueryString and DomainName attributes.

Example:

```
interstitial = [[XAdInterstitialViewController alloc] init];
interstitial.delegate = self;
[self presentViewController:interstitial animated:YES completion:nil];
[interestitial loadWithDomainName:@"delivery.uat.247realmedia.com"
pageName:@"MSDK-Joule-banner-TF1_Eurosport_iPad_RM_ban-249063"
adPosition:@"Left" keywords:nil queryString:nil];
```

Notes: It is important not to call presentViewController from within the calling view controller's viewWillAppear. When the interstitial dismisses, viewWillAppear to be called again, leading to a situation where iOS throws an exception when trying to present a controller while dismissing it at the same time.

Additionally, if presenting the interstitial on viewDidLoad, keep in mind that viewDidLoad will be called again when the interstitial is dismissed for any reason. It is good practice to maintain a flag that indicates whether the interstitial was displayed to avoid an infinite loop.

You may choose to present the interstitial view controller on the success callback xAdInterstitialDidLoad. This is especially useful to prevent the interstitial from displaying at all when the server does not return an ad.

Showing Pre-roll Video Ads

1) Initialize MPMoviePlayerController instance
2) Set the frame of the movie player
3) Add the view of the movie player instance as subview
4) Initialize XAdView object
5) Assign movie player to the moviePlayerInstance property of the XAdView object
6) For fetching and displaying ads from server, call loadWithDomainName. Set the pageName, adPosition, dataFormat, queryString and DomainName attribute values.

Example:

```
NSURL *url = [NSURL fileURLWithPath:@"http://yourserver.com/moviename.mp4"];
moviePlayerControllerInstance = [[MPMoviePlayerController alloc]
initWithContentURL:url];
CGFloat height = [UIScreen mainScreen].bounds.size.height;
[moviePlayerControllerInstance.view setFrame:CGRectMake(x_position, y_position,
view_width, view_height)];
[self.view addSubview:moviePlayerControllerInstance.view];
adview = [[XAdView alloc] init];
adview.moviePlayerInstance = moviePlayerControllerInstance;
adview.delegate = self;
[adview loadWithDomainName:@"network.realmedia.com" pageName:@"BZ71581"
adPosition:@"@Frame2" keywords:nil queryString:nil];
```

Implementing XAdViewDelegate for Pre-roll Video Ads

The application will need to know when the pre-roll play out has finished. When this delegate method is called, the application resumes responsibility for the player. The movie player controller must not be playing or configured to autoplay when this method is called. Alternatively, the movie player controller can be used just to display an ad, and the delegate can dismiss the controller's view to again show the app's main content to the user.

```
-(void)xadView:(XAdView *)xadView
prerollDidFinishWithPlayer:(MPMoviePlayerController*)player
{

//Hook up notifications now that the preroll has finished.

//Play the main video
}
-(void)xAdView:(XAdView *)xAdView didFailWithError:(NSError *)error
{

}
```

Handling Callbacks with Delegates

The application may choose to handle callbacks from the Mobile SDK. These callbacks are implemented with Objective-C delegates, and allow the application to respond to particular events that occur during the lifecycle of an ad request and display. Although all of the delegate methods are optional, an application will typically want to handle at least a few of the more common delegate methods.

There are two delegates available, one for XAdView, and another for XAdInterstitialViewController. They are called *XAdViewDelegate* and *XAdInterstitialViewDelegate*, respectively. The complete list of callbacks is described in the SDK documentation.

There are several very common instances where these delegates are useful. These use-cases are described below.

Pre-roll Completion

In a video pre-roll scenario, it is important to know when the pre-roll has completed. When the pre-roll has finished, the SDK gives up control of the video area back to the application. Often the application will want to start playing the video right away. Do this with the **xAdView:prerollDidFinishWithPlayer:** message. Keep in mind that an ad request may fail. In this case, you will also want to start video playback when the ad fails. Do this with the **xAdView:didFailWithError:** message.

Sample code:

```
-(void)xAdView:(XAdView *)xAdView prerollDidFinishWithPlayer:(MPMoviePlayerController*)
                                  moviePlayerController
{
    NSLog(@"Preroll finished, let's continue playing our video");
    [self.videoPlayer play];
}

-(void)xAdView:(XAdView *)xAdView didFailWithError:(NSError *)error
{
    if (xAdView == self.preroll)
    {
        NSLog(@"Ad failed to load, start our video");
        [self.videoPlayer play];
    }
}
```

Ad View Control

Consider the case where you want to display an ad in a banner, and you only want to add the ad view into the layout when the ad was successfully loaded. Or alternatively, you want to remove the ad banner area from the layout if the ad failed rather than display the default background. In these cases you should handle the **xAdViewDidLoad:** and **xAdView:didFailWithError:** messages.

Sample code:

```
-(void)xAdViewDidLoad:(XAdView *)adView
{
      //Ad was successfully loaded. Add it to the layout.
     [self.view addSubView:adView];
}

-(void)xAdView:(XAdView *)xAdView didFailWithError:(NSError *)error
{
    //Ad server did not return a valid ad. There is nothing to show.
    [xAdView setHidden:YES];
}
```

Interstitial Presentation

There are two general ways to present an interstitial. One is to call presentViewController:animated:completion immediately after the call to loadWithDomainName:page:position. The other is to defer the call to presentViewController:animated:completion until the interstitial was successfully loaded. While the former is simpler code, if the ad load fails, the user will see a blank interstitial for a short time. This is because the view controller will be displayed immediately, and then dismissed automatically after the SDK determines that a failure occurred. The latter creates a bit of a better user experience if the ad fails. In this case, the application will show the interstitial view controller only when it knows the ad load was successful. To do this, handle the **xAdInterstitialDidLoad:** and **xAdInterstitial:didFailWithError** messages.

```
-(void)xAdInterstitialDidLoad:(XAdInterstitialViewController*)
                                interstitialAdViewController
{
    NSLog(@"Interstitial successfully loaded"];
    [self presentViewController:interstitial animated:YES completion:nil];
}

-(void)xAdInterstitial:(XAdInterstitialViewController*) interstitialAdViewController
                                didFailWithError:(NSError *)error
{
    NSLog(@”Interstitial failed. Continue with what we were doing.”);
    [self showPostInterstitial];
}
```

Interstitial Completion

Often an interstitial is used between two application states, such as between game levels, or when navigating to a new section in the application. In these cases, it is important to know when the interstitial has completed so that additional setup work and/or navigation can continue. You will need to handle the **xAdInterstitialDismissed:** message.

Sample code:

```
-(void)xAdInterstitialDismissed:(XAdInterstitialViewController*)
interstitialAdViewController
{
    NSLog(@"Interstitial finished.");
    [self performSegueWithIdentifier:@"NextLevelSegue" sender:self];
}
```

Third Party "No Ad" responses

While the SDK is capable of detecting 'no-ad' responses from Open AdStream, it is often trickier to detect the case where a no-ad response was served by a third party ad-server as a result of a redirect (both explicit and implicit). This is exacerbated by the fact that different publishers use different third party ad servers, and the no-ad responses are very ad server specific.

To aid in this case, the SDK provides a callback to the application so that the developer can inspect the contents of the webview and determine based on its own rules whether or not the response was a valid ad. To use this feature, handle the **xAdView:shouldDisplayAdOnWebViewFinishRender:** message (or the interstitial equivalent **xAdInterstitialViewController:shouldDisplayAdOnWebViewFinishRender:)**.

If this delegate returns YES, then SDK handling continues normally. That is, the application will receive the ad loaded callback, and the ad will display as usual.

However, if the delegate returns NO, the SDK will treat this as an error condition, and the standard error handling logic will be executed as follows:

- In the case of a banner, the xAdView:didFailWithError: callback will be called, and the SDK will show the default image if one is provided by the application. If the app developer chooses the hide the ad area, they can do so in response to xAdView:didFailWithError: as shown in the "Ad View Control" section above.

- In the case of an interstitial, the interstitial view will not be displayed, and the xAdInterstitial:didFailWithError: callback will be called. Typically, this is where the developer will handle the case of a failed ad for an interstitial as shown in the "Interstitial Presentation" section above.

- This delegate method is never called for the case of a pre-roll. A pre-roll is always VAST, which is a standard, and has a specific no-ad response format which doesn't vary between

ad servers. Any ad that is not VAST which is served for a pre-roll is considered an error by the SDK, so there is no need for this callback.

Sample code:

```
-(BOOL)xAdView:(XAdView *)xAdView shouldDisplayAdOnWebViewFinishRender:(UIWebView*)
                                                                        webView
{
    NSString* html = [webView stringByEvaluatingJavaScriptFromString:
        @"document.body.innerHTML"];

    //This calls your app-supplied method to check if the response is valid, or contains
    //an indication from the third party server that no ad was served.
    BOOL isValid = [self checkIsValidAdForHTML:html];
    return isValid;
}

-(void)xAdView:(XAdView *)xAdView didFailWithError:(NSError *)error
{
    //Ad server did not return a valid ad. There is nothing to show.
    //This is also called if xAdView:shouldDisplayAdOnWebViewFinishRender: returns NO
    [xAdView setHidden:YES];
}
```

Please Note:

Using third party script redirects containing javascript's window.location cannot be easily detected and SDK would render the content as it is. This is because there can be numerous conditional ways window.location can be programmed, therefore it becomes very difficult to detect.

Recommended approach to support such kind of redirects is to use <meta http-equiv="refresh"> tag. SDK detects meta tag using regex and therefore it is necessary that creative code uses correct syntax of <meta> tag. In case of complex ad scripts, if SDK fails to detect **<meta http-equiv="refresh"** using regex**,** then SDK would pass on available ad response in xAdShouldDisplay callback.

It is recommended to use a simple and correct syntax to initialize meta-refresh tag. Following is an e.g.

<meta http-equiv="refresh" content="0;http://www.exampleurl.com">

Low Memory Warning

When the SDK detects an OS-sent low memory warning, it will tear down any current ads in an attempt to let the application reclaim as much memory as possible. Although the application will get its own such notification from the operating system, the SDK also lets the application know when this happens, using the **xAdViewDidDismissOnMemoryWarning:** message (and the interstitial equivalent **xAdInterstitialDidDismissOnMemoryWarning:**).

Sample code:

```
-(void)xAdViewDidDismissOnMemoryWarning:(XAdView *)adView
{
```

```
    //Ad view was cleared because of low memory conditions.
    [adView removeFromSuperview];
}
```

Click to Actions

In order to provide flexibility to application developers to display alerts as per the context or theme of application, a delegate method is necessary. Also, this delegate helps supporting stricter policies on alerts in certain countries. For example, in France, it is mandatory to display a user confirmation pop-up for click to call action.

To achieve this, SDK provides an optional delegate method, which can be implemented by application developer. If display of custom pop-up is required, this delegate should return NO. It means that the MSDK stops the flow executing Click to Action. And application developer needs to add an AlertView into this delegate in order to show a custom pop-up. This is required because of the asynchronous nature of the AlertView. As a result this delegate is needed to stop the flow of the SDK to wait for user's reaction.

Exemption: There is an exemption to this implementation for click to store picture action. According to the IAB standards, click to store picture already requires showing a confirmation dialog box before accessing the phone gallery. As a result this delegate will not be fired for the click to store picture use case. Instead it is handled by the SDK. To make it multi-language complaint, we have entered the following keys:

- Message text
- "Yes" button
- "No" button

into the resource files, presently for France, English-US and English-UK. These language files are exposed to the client in the include folder. If there is a need to extend the multi- language support for another language, then app developer will have to simply add the new language file to the include folder with the pre-defined keys and their values in the native language. This way the implementation is flexible for any language supported by the iOS devices.

Sample code:

```
- (BOOL)xAdInterstitialViewController:(XAdInterstitialViewController
*)xAdInterstitialViewController shouldHandleClickToAction:(XClickToAction)actionType
parameters:(NSDictionary *) parameters{

    switch (actionType) {
        case XClickToActionOpenBrowser:
        case XClickToActionCall:
        case XClickToActionSMS:
        case XClickToActionAppstoreItunes:
        case XClickToActionCalendar:
        case XClickToActionEmail:
        {
            myActionType = actionType;
            myParameters = parameters;
             UIAlertView *alertView = [[UIAlertView alloc] initWithTitle:@"Alert"
             message:@"<Alert message goes here?>" delegate:self cancelButtonTitle:@"No"
             otherButtonTitles:@"Yes", nil];
            [alertView show];
```

```
            return NO;
        }

        default:
            break;
    }
    return YES;

}
```

Above sample code is required for Interstitial Banner. If you want to use the same approach on the GeneralBanner, you need to use xAdView:shouldHandleClickToAction:parameters.
App Developer also needs to implement the delegate for UIAlertView. App developer has to make an explicit call to an SDK method performClickToAction:parameters which is required by the SDK to execute with showing the dialogs for the specific actions as per the SDK requirements. Once this delegate is implemented, failing to call SDK method performClickToAction will terminate the flow.

Sample code:

```
- (void)alertView:(UIAlertView *)alertView clickedButtonAtIndex:(NSInteger)buttonIndex
{
    if (buttonIndex == alertView.cancelButtonIndex)
    {
        //Do nothing
    }
    else if (buttonIndex == alertView.firstOtherButtonIndex)
    {
        [self.interestitial performClickToAction:myActionType parameters:myParameters];
    }
}
```

Click to Actions: Handling SMS body and recipients

Currently only iOS 8 supports pre-populating SMS body from URL in the SMS app. To handle this on all versions of iOS, current version of SDK parses the SMS url, extracts the body tag and recipients, and opens the in-app SMS composer with pre-populated body and recipients. SDK supports many different types of SMS URL formats. Following are the examples:

1. sms://987654321,123123323,488888555&body=hello
2. sms:123123121&body=hello
3. sms://1233423423&body=hello
4. sms:12312312123?body=hello
5. sms://12312312123?body=hello
6. sms:123324232;body=hello
7. sms://123324232;body=hello
8. sms:123123123,345345345,983459834
9. sms://123123123,345345345,983459834

However, to support this feature with some other formats of URLs, SDK provides the SMS URL to publisher via parameters dictionary object available in the shouldHandleClickToAction delegate method.

Publishers can perform following steps to open the pre-populated SMS composer using that URL.

1. Create and initialize an object of NSMutableDictionary.

```
myParameters = [[NSMutableDictionary alloc] init];
```

2. Copy the parameters dictionary into this new object using following code:

```
[myParameters setValuesForKeysWithDictionary:parameters];
```

3. Extract the URL from dictionary in the clickToAction callback.
   It can be extracted using following code:

```
NSURL *url = [parameters objectForKey:XParameterCommandURL];
```

4. Parse it and extract body and recipients.
5. Form the new URL in one of the formats that SDK supports.
6. Set it back again in the dictionary object.

```
[myParameters setValue:[NSURL URLWithString:newUrl forKey:XParameterCommandURL];
```

7. Call the existing SDK method - performClickToAction with the updated dictionary object.

```
[self.bannerAdView performClickToAction:myActionType parameters:myParameters];
```

Other Callbacks

The SDK attempts to be as flexible as necessary to make fully robust applications using advertising possible. Although the most common use-cases were described, there are many other delegate methods available. It may be informative to glance at the XAdViewDelegate and XAdInterstitialViewDelegate API sections to familiarize yourself with what additional information it provides. Because they are all optional, feel free to use them or ignore them as needed.

OAS Mobile SDK API Reference

SDK Classes and Methods

XAdView

XVideoQuartile

This is an enum used for tracking video quartiles.

XClickToAction

This is an enum used for handling popups for click to actions. The add developer will be able to differentiate the calls with the help of these enum items.

init

This is the constructor used to initialize the class which is the entry point to the SDK.
Returns: (id) this method returns the instantiated XAdView object

loadWithDomainName:pageName:adPosition:keywords:

This method is used to request an ad from the server based on the ad server domain, page name, container position, and keywords.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed
keywords	NSString	Comma separated values to filter the ads based on the keywords

Returns: void

loadWithDomainName:pageName:adPosition:keywords:queryString:

This method is used to request an ad from the server based on the ad server domain, page name, container position, keywords, and additional query string values.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed
keywords	NSString	Comma separated values to filter the ads based on the keywords
queryString	NSString	Key value pairs in the query string format for additional filtering of ads in the query string format

Returns: void

loadWithDomainName:pageName:adPosition:queryString:

This method is used to request ad from the server based on the ad server domain name, page name, container position, and query sting values.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed
queryString	NSString	Key value pairs in the query string format for additional filtering of ads in the query string format

Returns: void

loadWithDomainName:pageName:adPosition:

This method is used to request ad from the server based on the ad server domain, page name, and the container position.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed

Returns: void

performClickToAction:parameters

This method is used get the control back from the app developer into the SDK after displaying the conformation dialog box to the user and accepting YES/NO from the user, after which the SDK will take control of opening the respective click to action controllers.

Parameter	Type	Description
actionType	XClickToAction	Enum for different Click to Action Events
Parameters	NSDictionary	Key/Value Pair of values required to perform the click to action event

Returns: void

appNexusOASSDKVersion

This is a static method that is used to get current SDK version

Returns: NSString

setMoviePlayerInstance

This method sets the movie player instance. This is used to provide a player to the SDK to allow a pre-roll video ad to be played in the same player as the main content video.

Parameter	Type	Description
moviePlayerInstance	MPMovieplayerController	Initializes the instance of the video player

Returns: void

Note: The moviePlayerInstance must not be playing or configured to shouldAutoplay when the instance is passed to SDK. If the moviePlayerInstance is already playing a playback, then SDK will not stop it to play the pre-roll ad. If the moviePlayerInstance controller starts regular playback while a pre-roll ad is playing, the ad stops playing immediately and the main content of the movie player controller is played.

moviePlayerInstance

This method returns an instance of MPMovieplayerController if it was set by the call to setMoviePlayerInstance earlier.

Returns: MPMovieplayerController

setDelegate

This method sets the XAdViewDelegate for the given ad.

Parameter	Type	Description
delegate	XAdViewDelegate	Delegate

Returns: void

delegate

This method returns the XAdViewDelegate for this ad.
Returns: XAdViewDelegate

setSlotConfiguration

This method sets the ad slot configuration.

Parameter	Type	Description
slotConfiguration	XAdSlotConfiguratioin	Slot configuration required at ad slot level

Returns: void

slotConfiguration

This method returns the slot configuration related to this ad.
Returns: XAdSlotConfiguration

XAdSlotConfiguration

setBannerRefreshInterval

This method sets the banner refresh interval for the ads displayed.

Parameter	Type	Description
bannerRefreshInterval	float	Refresh Interval for ad in seconds.

Returns: void

Default value if not specified: 120 seconds

bannerRefreshInterval

This method returns the value of the refresh interval for the slot in seconds.
Returns: float

setCanShowCompanionAd

This method is used to indicate if this banner ad slot can also be used for video companion ad.

Parameter	Type	Description
canShowCompanionAd	BOOL	A flag indicating if this banner ad slot can also be used for video companion ads

Returns: void
Default value if not specified: NO

Note	Current version of the Mobile SDK doesn't yet support video companions – this feature will be added in the next version.

canShowCompanionAd

This method returns the flag indicating if this banner slot can be used for video companion ads.
Returns: BOOL

Note	Current version of the Mobile SDK doesn't yet support video companions – this feature will be added in the next version.

setMaintainAspectRatio

This method is used to set the flag indicating if the aspect ratio of an ad needs to be maintained when needs to be resized.

Parameter	Type	Description
maintainAspectRatio	BOOL	Maintain aspect ratio of the ad on resize

Returns: void
Default value if not specified: NO

maintainAspectRatio

This method returns the value of the maintain aspect ratio on resize flag. If the value is true it suggests that the aspect ratio for the ad is to be maintained in case the ad being resized. If the value is false, then it suggests that the aspect ratio will not be considered while expanding the ad and the ad will be expanded.

Returns: BOOL

setBackGroundImage:UIImage

This method sets the place holder background image for the ad slot container. This image will be displayed if the ad server fails to deliver an ad.

Parameter	Type	Description
backgroundImage	UIImage	Background image for the ad slot container

Returns: void
Default value if not specified: nil

backGroundImage

This method returns the placeholder background image for the ad slot container.
Returns: UIImage

setScalingAllowed

This method will set the scaling permission for an ad slot. If the value of this flag is true then the ad is scaled; otherwise it will not be scaled.

Parameter	Type	Description
scalingAllowed	BOOL	Scaling permission for this ad slot

Returns: void
Default value if not specified: NO

scalingAllowed

This method retrieves the scaling permission flag for this ad slot.
Returns: BOOL

setAccessToGeoLocation

This method will allow the app developer to give the SDK permission for accessing geo based location service to extend the ad server capabilities. If the value is true then SDK will access the geo location to get the lat/lon and send the same to the ad server. However, this further requires permission from the device end user to access user's current location.

Parameter	Type	Description
accessToGeoLocation	BOOL	Permission for accessing geo based location.

Returns: voide
Default value if not specified: NO

Note	Current version of the Mobile SDK doesn't yet support Ad GeoTargeting – this feature will be added in the future versions.

accessToGeoLocation

This method retrieves the permission flag for geo-location service.
Returns: BOOL

Note	Current version of the Mobile SDK doesn't yet support Ad GeoTargeting – this feature will be added in the future version.

setCOPPAPermissions

This method sets the COPPA compliance flag. If set to true, then COPPA compliance mode is activated in which case only frequency capping and DAPROPS cookies are sent to the ad server.

Parameter	Type	Description
COPPAPermission	BOOL	COPPA compliance mode flag

Returns: void
Default value if not specified: NO

COPPAPermissions

This will retrieve the COPPA compliance flag as true or false.
Returns: BOOL

setRTBRequired

This method turns the Real Time Bidding (RTB) mode on/off. If RTB mode is on, then the SDKL version of the DX tag is used, otherwise SDK version is used. Also, if RTB mode is on, then SDKL version of DX structure is returned; otherwise it's JSON version of the DX structure.

Parameter	Type	Description
rtbRequired	BOOL	RTB mode

Returns: void
Default value if not specified: NO

RTBRequired

This method returns the value for RTB mode flag.
Returns: BOOL

setShouldOpenClickThroughURLInAppBrowser

This method sets the click-through mode of this ad view. If YES, the click-through opens in the SDK's inline app browser. If NO, the click-through is displayed in the device's native browser.

Parameter	Type	Description
openInBrowser	BOOL	NO to open in native browser. YES to show click-through inline.

Returns: void
Default value if not specified: NO (open in device browser)

shouldOpenClickThroughURLInAppBrowser

This method returns the value of the click-through mode.
Returns: BOOL

XAdViewDelegate

xAdViewDidLoad:

This call back is called when an ad is successfully loaded.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView that was successfully loaded

Returns: void

xAdView: didFailWithError

This call back is called when SDK encounters an error while retrieving an ad. This method is also called when the ad server successfully returns, but with no ad available.

Parameter	Type	Description
error	NSError	NSError that will contain the error description.
xAdView	XAdView	Instance of XAdView class

Returns: void

xAdViewDidClickOnAd:

This call back is called when the user clicks on the ad.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdDidExpand:

This call back is called when the ad is expanded.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdDidCollapse:

This call back is called when the ad is collapsed.

Parameter	Type	Description
xAdView	XAdView	instance of XAdView.

Returns: void

xadView:prerollDidFinishWithPlayer:

This call back is called after XAdView finishes playing or fails to play an in-stream pre-roll ad.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView
moviePlayerController	MPMoviePlayerController	MPMoviePlayerController which has finished playing the pre-roll

Returns: void

xAdViewWllLeaveApplication

This call back is called when a click-through event causes SDK to open the click-through URL in external browser.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdViewWillOpenInInAppBrowser:

This call back is called when the in-app browser is launched in response to a user click-through event.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdViewWillCloseInAppBrowser:

This call back is called when the in-app browser is closed.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdViewDidDismissOnMemoryWarning:

This call back is called when XAdView is dismissed because of an OS memory warning. Note that in the case of a preroll, the xadView:prerollDidFinishWithPlayer: is also called.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdView:didPauseVideo:

This call back is called when a video within an ad has paused.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView
currentTime	NSTimeInterval	Time at which video was paused

Returns: void

xAdView:didResume:

This call back is called when a video within an ad has resumed.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView
currentTime	NSTimeInterval	Time at which video was resumed

Returns: void

xAdView:didSkipVideo:

This call back is called when a video within an ad was skipped.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView
currentTime	NSTimeInterval	Time at which video was skipped

Returns: void

xAdView:didFinishQuartile:

This call back is called when a video within an ad has hit a quartile point.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView
Quartile	XVideoQuartile	The quartile that was hit

Returns: void

xAdViewDidEnterFullScreen:

This call back is called when a video within an ad went into fullscreen mode.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdViewDidExitFullScreen:

This call back is called when a video within an ad exited fullscreen mode.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdViewDidRewind:

This call back is called when a video within an ad is rewound.

Parameter	Type	Description
xAdView	XAdView	Instance of XAdView

Returns: void

xAdView:shouldDisplayAdOnWebViewFinishRender:

Asks the delegate if webview should display ad after webview finish rendering. If the application implements this, it should inspect the contents of the webView to interpret the contents of the HTML to detect if it is a 3rd party no-ad response. If that is the case, is should return NO. Otherwise, it should return YES. If the application doesn't implement this, the default ad processing continues normally as if a YES were returned by this method.

Parameter	Type	Description
xAdView	XAdView	The instance of XAdView
webView	UIWebView	The instance of UIWebView

Returns: BOOL

xAdView:shouldHandleClickToAction:parameters

This delegate is used to handle the popups for click to action events. App developer will use this delegate to show customized popup message with changeable title, message, and button texts on the popup. This delegate will ask if the popup is handled or not handled by the app developer. If display of custom pop-up is required, this delegate should return NO. It means that the SDK stops the flow executing Click to Action. Moreover In order to show a popup, app developer needs to add AlertView into this delegate.

Parameter	Type	Description
xAdView	XAdView	The instance of XAdView
actionType	XClickToAction	Enum for click to action events
Parameters	NSDictionary	Key/value pairs with values required for handling the actions

Returns: BOOL

interstitialAdDismissed:xadView

This delegate notifies that the interstitial ad is dismissed and app developer can take any action on the controller.

Parameter	Type	Description
xAdView	XAdView	The instance of XAdView

Returns: void

interstitialAdDismissedOnMemoryWarning:xadView

This delegate notifies that the interstitial ad is dismissed due to memory warning and app developer can take any action on the controller.

Parameter	Type	Description
xAdView	XAdView	The instance of XAdView

Returns: void

XAdInterstitialViewControllerDelegate

xAdInterstitialDidLoad:

This call back is called when an interstitial view controller successfully loads an ad.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitial:didFailWithError:

This call back is called when an ad view fails to load an ad. This method is also called when the ad server returns successfully, but with no ad available.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message
error	NSError	An NSError object describing the error that occurred

Returns: void

xAdInterstitialDidClick:

This call back is called when an interstitial ad is clicked.

Parameter	Type	Description
interstitial	interstitialAdViewController	The ad view controller sending the message

Returns: void

xAdInterstitialDidDismissOnMemoryWarning:

This call back is called when XAdInterstitialViewController is dismissed due to an OS memory warning. Note that the xAdInterstitialDismissed callback is also called.

Parameter	Type	Description
interstitial	interstitialAdViewController	The ad view controller sending the message

Returns: void

xAdInterstitialDismissed:

This call back is called when the interstitial is dismissed.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitialWllLeaveApplication

This call back is called when a click-through event causes SDK to open the click-through URL in external browser.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitialWillOpenInInAppBrowser:

This call back is called when the in-app browser is launched in response to a user click-through event.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitialWillCloseInAppBrowser:

This call back is called when the in-app browser is closed.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitial:didPauseVideo:

This call back is called when a video within an ad has paused.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message
currentTime	NSTimeInterval	Time at which video was paused

Returns: void

xAdInterstitial:didResume:

This call back is called when a video within an ad has resumed.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message
currentTime	NSTimeInterval	Time at which video was resumed

Returns: void

xAdInterstitial:didSkipVideo:

This call back is called when a video within an ad was skipped.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message
currentTime	NSTimeInterval	Time at which video was skipped

Returns: void

xAdInterstitial:didFinishQuartile:

This call back is called when a video within an ad has hit a quartile point.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message
Quartile	XVideoQuartile	The quartile that was hit

Returns: void

xAdInterstitialDidEnterFullScreen:

This call back is called when a video within an ad went into fullscreen mode.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitialDidExitFullScreen:

This call back is called when a video within an ad exited fullscreen mode.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitialDidRewind:

This call back is called when a video within an ad is rewound.

Parameter	Type	Description
interstitial	XAdInterstitialViewController	The ad view controller sending the message

Returns: void

xAdInterstitialViewController:shouldDisplayAdOnWebViewFinishRender:

Asks the delegate if webview should display ad after webview finish rendering. If the application implements this, it should inspect the contents of the webView to interpret the contents of the HTML to detect if it is a 3rd party no-ad response. If that is the case, is should return NO. Otherwise, it should return YES. If the application doesn't implement this, the default ad processing continues normally as if a YES were returned by this method.

Parameter	Type	Description
interstitial	XAdInterstitialViewcontroller	The instance of XAdView
webView	UIWebView	The instance of UIWebView

Returns: BOOL

xAdInterstitialViewController:shouldHandleClickToAction:parameters

This delegate is used to handle the popups for click to action events. App developer will use this delegate to show customized pop-up message with changeable title, message, and button texts on the popup. This delegate will ask if the popup is handled or not handled by the app developer. If display of custom pop-up is required, this delegate should return NO. It means that the SDK stops the flow of Click to Action execution. Moreover, in order to show a pop-up app developer needs to add AlertView into this delegate.

Parameter	Type	Description
xAdInterstitialViewController	XAdInterstitialViewController	Instance of XAdInterstitialviewController
actionType	XClickToAction	Enum for click to action events
Parameters	NSDictionary	Key/value pairs with values required for handling the actions

Returns: BOOL

XAdInterstitialViewController

loadWithDomainName:pageName:adPosition:keywords:

This method is used to request an ad from the server based on the ad server domain, page name, container position, and keywords.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed
keywords	NSString	Comma separated values to filter the ads based on the keywords

Returns: void

loadWithDomainName:pageName:adPosition:keywords:queryString:

This method is used to request an ad from the server based on the ad server domain, page name, container position, keywords, and additional query string values.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed
keywords	NSString	Comma separated values to filter the ads based on the keywords
queryString	NSString	Key value pairs in the query string format for additional filtering of ads in the query string format

Returns: void

loadWithDomainName:pageName:adPosition:queryString:

This method is used to request ad from the server based on the ad server domain name, page name, container position, and query sting values.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed
queryString	NSString	Key value pairs in the query string format for additional filtering of ads in the query string format

Returns: void

loadWithDomainName:pageName:adPosition:

This method is used to request ad from the server based on the ad server domain, page name, and the container position.

Parameter	Type	Description
domainName	NSString	Domain name of the server to request the ad
pageName	NSString	Name of the page
adPosition	NSString	Position of the ad where it needs to be displayed

Returns: void

setDelegate

This method sets the XAdInterstitialViewControllerDelegate for the given ad.

Parameter	Type	Description
delegate	XAdInterstitialViewControllerDelegate	Delegate

Returns: void

delegate

This method returns the XAdInterstitialViewControllerDelegate for this ad.
Returns: XAdInterstitialViewControllerDelegate

setSlotConfiguration

This method sets the ad slot configuration.

Parameter	Type	Description
slotConfiguration	XAdSlotConfiguratioin	Slot configuration required at ad slot level

Returns: void

slotConfiguration

This method returns the slot configuration related to this ad.
Returns: XAdSlotConfiguration

setIsVastInterstitial

This method sets the flag for vast interstitial ads

Parameter	Type	Description
isVastInterstitial	BOOL	Bool Value for vast interstitial

Returns: void

isVastInterstitial

This method returns the vast interstitial flag
Returns: BOOL

Appendix 1: Mobile Ad Trafficking

a) In OAS, setting up house ad campaign and creative is recommended for utilizing ad slot space when no paid campaign is available.

b) When 3rd party ad campaigns are involved, setting up house ad campaign and creative is recommended for utilizing ad slot space when no paid campaigns are available.

c) Such house ad campaign and creative need to be set up in a way that prevents OAS from returning an empty ad response in the case of a passback.

Appendix 2: 3rd Party Redirect and Passback Use Cases

The following defines the use cases and expected behavior:

1. OAS returns the "no ad" DX response

   This is a common OAS use case.

	Banner	**Interstitial (both video and non-video)**	**In-stream Video**
Behavior	SDK displays the default image provided by app developer	Interstitial ad window is not displayed	No ad is played and control of the video player is returned back to the app

2. 3rd party ads trafficked in OAS as script blocks

   This is a common 3rd party ad use case.

	Banner	**Interstitial (non-video)**	**Video (both interstitial and in-stream)**
Behavior	SDK displays 3rd party ads	SDK displays 3rd party ads	n/a – this should be handled via VAST Wrappers

3. 3rd party ads trafficked in OAS as redirect (HTTP 302) creative

   This is a less common use case.

	Banner	**Interstitial (non-video)**	**Video (both interstitial and in-stream)**
Behavior in non-RTB Mode	SDK displays 3rd party ads	SDK displays 3rd party ads	n/a – this should be handled via VAST Wrappers
Behavior in RTB Mode	SDK displays the default image provided by app developer. A callback is issued that allows the app to hide the banner ad area.	Interstitial ad window is not displayed	n/a – this should be handled via VAST Wrappers

4. 3rd party ad server redirect (HTTP 302) to another 3rd party ad server

   This is a less common use case.

	Banner	**Interstitial (non-video)**	**Video (both interstitial and in-stream)**
Behavior	SDK displays 3rd party ads	SDK displays 3rd party ads	n/a – this should be handled via VAST Wrappers

5. 3rd party ad server passback to OAS

   This is a common passback use case.

	Banner	**Interstitial (non-video)**	**Video (both interstitial and in-stream)**
Behavior	SDK displays the passback targeted ad from OAS	SDK displays the passback targeted ad from OAS	n/a – this should be handled via VAST Wrappers

6. 3rd party ad server passback to OAS resulting in an empty OAS ad response

   This is a possible passback use case.

	Banner	**Interstitial (non-video)**	**Video (both interstitial and in-stream)**
Behavior	SDK displays the default image provided by app developer. A callback is issued that allows the app to hide the banner ad area.	Interstitial ad window is not displayed.	n/a – this should be handled via VAST Wrappers

7. 3rd party ad server returns empty response (equivalent to empty.gif in OAS)

   This is not a common use case.

	Banner	**Interstitial (non-video)**	**Video (both interstitial and in-stream)**
Behavior	A callback is issued that allows the app which detect a no-ad use case and returns "No", in which case SDK displays the default image provided by app developer. The app can hide the banner ad area.	A callback is issued that allows the app which detect a no-ad use case and returns "No", in which case the interstitial is not displayed.	n/a – this should be handled via VAST Wrappers