Provision of this Specification does not guarantee connection to the BidSwitch Platform and/or to any Supply Side Partners and/or any Demand Side Partners that may be connected to the BidSwitch Platform from time to time.
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Introduction

BidSwitch is an innovative technology developed at IPONWEB to simplify integration of Demand Side Platforms (DSP) with Sell Side Platforms (SSP). The key idea behind the service is to enable fast and cheap SSP integration without many rounds of specification refinements and development between DSP and SSP. BidSwitch acts as an intermediate between DSP and SSP which adapts custom SSP protocols to OpenRTB 2.x standards. The present specification defines the protocol for interaction between DSP and BidSwitch.

Change history

<table>
<thead>
<tr>
<th>Version</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>v1.0 - 1.3</td>
<td>Initial version</td>
</tr>
<tr>
<td>v1.4</td>
<td>Added support of bcat, battr and badv fields, ext.openx section containing pub_blocked_content field.</td>
</tr>
<tr>
<td>v1.5</td>
<td>Updated wording of bid response bid.nurl field description. Added bid request ext.aol section containing denied_categories field.</td>
</tr>
<tr>
<td>v1.6</td>
<td>Updated wording of fields descriptions. Added bid response ext.agency_name and ext.advertiser_name fields.</td>
</tr>
<tr>
<td>v1.7</td>
<td>Added bid request imp.bidfloor field. Added support for HTTP 204 as a valid nobid response.</td>
</tr>
<tr>
<td>v 1.8</td>
<td>Added bid request site.cat field.</td>
</tr>
<tr>
<td>v 1.9</td>
<td>Added SSP click macro support. Added support for video traffic. Added bid request PMP section. Deprecated ssp-specific bid request fields: ext.deals, ext.rubicon, ext.aol, ext.openx.</td>
</tr>
<tr>
<td>v 1.10</td>
<td>Changed video.protocol type to array of integer, fixed video request example. Added bid request ext.is_secure field. Added bid response ext.language and ext.cat fields.</td>
</tr>
<tr>
<td>v 2.0</td>
<td>Added application traffic support. Bid request site object is optional now. Added ext.google.excluded_attribute and ext.google.allowed_vendor_type bid...</td>
</tr>
<tr>
<td>Version</td>
<td>Changes</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| v 2.1  | Added seatbid.bid.ext.js_url bid response field.  
Bid response seatbid.bid.nurl field is optional now.  
Added pmp.deals.wseat, imp.banner.expdir and “at” bid request fields. |
| v 2.2  | Added imp.video.protocols, imp.banner.api, site.publisher.name,  
app.publisher.name, app.name, video.companionad.id, device.os, device.osv,  
device.make and device.model bid request fields.  
Added imp.ext.google and ext.ghostery bid request objects.  
Deprecated imp.video.protocol, ext.google.excluded_attribute and  
ext.google.allowed_vendor_type bid request fields.  
Added extended sensitive categories, used in bcat field. |
| v 2.3  | Added site.ext.mobile_site and imp.banner.mimes bid request fields.  
Added imp.ext.yieldone, imp.pmp and ext.creative_params bid request objects.  
Added seatbid.bid.ext.duration, seatbid.bid.ext.img_url and seatbid.bid.ext.click_url  
bid response fields.  
Deprecated seatbid.bid.ext.liveintent and pmp objects.  
Updated btype field description. Important: usage of nurl, ext.js_url or  
ext.liveintent.img_url bid response fields depends on btype bid request field value.  
The field imp.video.linearity is now an optional field.  
Added video bid example.  
Updated User Matching section.  
Added Creative Approval section. |
| v 2.4  | Added tmax, app.paid, regs.coppa, device.dnt, device.ipv6, device.js,  
device.flashver, device.device_type, site.name, imp.ext.inventory_class,  
imp.displaymanagerapp, imp.displaymanagerver,  
imp.ext.yieldone.allowed_creative_types, imp.video.pos and imp.instl bid request fields.  
Added seatbid.bit.ext.yieldone.creative_type bid response field.  
Deprecated imp.ext.yieldone.inventory_class bid request field.  
The field device.ip is now optional for in-app traffic.  
Changed imp.pmp.deals.at values to comply with OpenRTB 2.2. |
| v 2.5  | Added imp.video.ext.player_type and imp.ext.yieldone.allowed_creative_category_id  
bid request fields.  
Added seatbid.bid.ext.yieldone.creative_category_id, ext.protocol, seatbid.bid.attr  
and seatbid.bid.dealid bid response fields.  
Deprecated seatbid.bid.ext.deal bid response field.  
Click tracking macro is now required in OpenX bids.  
The field imp.pmp.deal.at is now optional.  
Removed fields and objects deprecated in v 2.2. |
| v 2.6  | Added imp.secure, imp.banner.ext.extra_sizes and imp.ext.viewability bid request fields. |
User Matching

BidSwitch has an integrated user matching functionality to simplify user sync operations for DSP. User matching information is managed within BidSwitch database, so there is no need for DSP to implement user matching logic to store the mappings.

While making bid request to DSP, BidSwitch will send both DSP user ID and BidSwitch user ID in `buyeruid` and `id` fields of User Object respectively (see Bid Request). If DSP user ID is not available, only BidSwitch user ID will be sent. For these purposes BidSwitch needs to update User Object in bid request while proxying it from an exchange to the DSP.

User synchronization can be initiated either by DSP or by BidSwitch itself. For both
synchronization types BidSwitch supports secure and insecure communications with DSP using HTTP and HTTPS protocols.

**DSP Initiated User Matching**

To sync a particular user with BidSwitch, the DSP should initiate the user to call for 1x1.gif image by the following GET URL:

```
http://x.bidswitch.net/sync
```

providing the following HTTP request parameters:

<table>
<thead>
<tr>
<th>Param</th>
<th>Value Type</th>
<th>Default</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dsp_id</td>
<td>string</td>
<td>-</td>
<td>123</td>
<td>ID assigned to DSP by BidSwitch.</td>
</tr>
<tr>
<td>user_id</td>
<td>string</td>
<td>-</td>
<td>1234567890</td>
<td>User ID in DSP system. If the value is an empty string, the user will be considered not matched and no further sync requests would be send for this user for the “expires” period.</td>
</tr>
<tr>
<td>expires*</td>
<td>integer</td>
<td>90</td>
<td>30</td>
<td>Expiration time in days for user matching. Should be less or equal to 365.</td>
</tr>
</tbody>
</table>

* This field is optional.

BidSwitch matching URL also supports secure HTTPS connections.

There is an option to exclude a particular user from syncing for a certain time interval. To make it happen DSP can perform 302 redirect to the matching URL leaving user_id parameter blank.

**Example 1.** DSP initiated user matching:

```url
https://x.bidswitch.net/sync?dsp_id=123&user_id=1234567890&expires=30
```

**Example 2.** User opt out:

Redirecting a user to the following URL will not sync this specific user for the next 5 days and will consider bids from this user as user-unmatched for the given DSP:

```url
http://x.bidswitch.net/sync?dsp_id=123&user_id=&expires=5
```
BidSwitch Initiated User Matching

BidSwitch will also be able to initiate user synchronization. The partner will issue BidSwitch a matching URL that will redirect to the pixel URL described in DSP Initiated User Matching, with properly populated `dsp_id`, `user_id` and `expires` parameters. Note that this URL should be for a pixel that performs a 302 redirect, rather than for an iframe with a script, etc. within it. The only redirect from the DSP's matching URL should be to the BidSwitch pixel.

The matching redirect URL, issued by a DSP should contain `${SSP}` macro. This macro will be substituted with the SSP ID on BidSwitch side before sending a user to the partner. The value of the macro should be sent back to BidSwitch in the `ssp` parameter. The example of the matching URL, provided by partner is shown below:

```
http://www.dsp-example.com/bsw_sync?bidswitch_ssp_id=${SSP}
```

Here, `bidswitch_ssp_id` parameter name can be changed to any other name chosen by DSP. On receiving call to the URL above the partner should respond with 302 redirect to BidSwitch matching URL with valid `dsp_id`, `user_id` and `expires` parameters as described in DSP Initiated User Matching and providing one additional `ssp` parameter with the value of `${SSP}` macro. So given a call to the partner matching URL of the form

```
http://www.dsp-example.com/bsw_sync?bidswitch_ssp_id=rubicon
```

DSP server should respond with 302 redirect to BidSwitch matching URL with the following sample `dsp_id`, `user_id` and `expires` parameters:

```
http://x.bidswitch.net/sync?dsp_id=123&user_id=123&expires=5&ssp=rubicon
```

In addition to HTTP protocol the matching redirect URL, provided by the partner should also support secure HTTPS connections. If BidSwitch initiate a user call using HTTPS protocol the partner should redirect the user to BidSwitch matching URL using secure HTTPS connection.

After BidSwitch initiated user matching BidSwitch will associate the value of `user_id` parameter with the user’s browser and make it available in any later bid requests from this user’s browser. This will be sent in the `buyeruid` field of the JSON bid request. The `user_id` should not exceed 36 characters.

Opting out users

The DSP may differentiate between valuable and not valuable users. The latter are usually users that don’t have any retargeting or 3p data recorded for them. It is highly recommended that in case of a sync request for a not valuable user the DSP responds with a 302 redirect to BidSwitch sync url with an empty `user_id` param, e.g.:

```
http://x.bidswitch.net/sync?dsp_id=123&user_id=&expires=5&ssp=rubicon
```
## User Matching Recommendations

The user matching in BidSwitch environment is a complex process with the goal of syncing a DSP user with all connected supply partners. In order to improve the quality of user pool intersections it is recommended that the DSP regularly initiates user matching for a given user. The suggested re-sync period is once per 24 hours.

## Bid Request

### Bid Request Object

This is the top level object that is being sent to DSP. Each bid request sent from BidSwitch to DSP will contain the following fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>string</td>
<td>Unique ID of the bid request, provided by BidSwitch.</td>
<td>&quot;b5ba5ed2-547e-4e86-8a84-34a440dad6db&quot;</td>
</tr>
<tr>
<td>imp</td>
<td>array of object</td>
<td>Array of Impression Objects.</td>
<td></td>
</tr>
<tr>
<td>device</td>
<td>object</td>
<td>Device Object which describes the device the impression will be delivered to.</td>
<td></td>
</tr>
<tr>
<td>user</td>
<td>object</td>
<td>User Object which describes the user.</td>
<td></td>
</tr>
<tr>
<td>tmax</td>
<td>integer</td>
<td>Maximum amount of time in milliseconds to submit a bid (e.g., 120 means the bidder has 120ms to submit a bid before the auction is complete).</td>
<td>120</td>
</tr>
<tr>
<td>at*</td>
<td>integer</td>
<td>Auction type. If 1, then first price auction. If 2, then second price auction. Default value is 2.</td>
<td>2</td>
</tr>
<tr>
<td>site*</td>
<td>object</td>
<td>Site Object describing the site. Either site or app object should be present.</td>
<td></td>
</tr>
<tr>
<td>app*</td>
<td>object</td>
<td>App Object describing the mobile application. Either site or app object should be present.</td>
<td></td>
</tr>
<tr>
<td>bcat*</td>
<td>array of string</td>
<td>Blocked Advertiser Categories, using IAB taxonomy, extended by additional sensitive categories listed in BidSwitch Categories section. Creatives belonging to at least one of the listed categories are not permitted for bidding to the current bid request.</td>
<td>[&quot;IAB10-1&quot;, &quot;IAB25&quot;, &quot;BSW3&quot;]</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>badv*</td>
<td>array of string</td>
<td>Array of strings of blocked top-level domains of advertisers.</td>
<td>[&quot;mysite.com&quot;, &quot;mysite2.com&quot;]</td>
</tr>
<tr>
<td>wseat*</td>
<td>array of string</td>
<td>Array of buyer seats allowed to bid on this auction. If present, the allowed seat IDs may be supplied in BidSwitch or SSP taxonomy. BidSwitch taxonomy uses the DSP ID as the single seat ID value. The seat in SSP taxonomy may represent the whole DSP or some entity on the DSP side (e.g. agency); a bid request may contain multiple seat IDs in SSP taxonomy. The bid response should contain the appropriate seat value corresponding to one of values of the wseat field (see Seat Bid Object section).</td>
<td>[&quot;58&quot;]</td>
</tr>
<tr>
<td>cur</td>
<td>array of string</td>
<td>Array of allowed currencies for bids on this bid request using ISO-4217 alphabetic codes.</td>
<td>[&quot;USD&quot;, &quot;EUR&quot;]</td>
</tr>
<tr>
<td>regs*</td>
<td>object</td>
<td>Regulations object.</td>
<td></td>
</tr>
<tr>
<td>data*</td>
<td>array of object</td>
<td>Additional data. Each Data object represents a different data source.</td>
<td></td>
</tr>
<tr>
<td>ext</td>
<td>object</td>
<td>Ext Object used for SSP specific properties.</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

### Impression Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>string</td>
<td>ID of the impression being shown, unique within the bid request.</td>
<td>&quot;1&quot;</td>
</tr>
<tr>
<td>banner*</td>
<td>object</td>
<td>Banner Object describing the ad properties. Required for banner impressions.</td>
<td></td>
</tr>
<tr>
<td>video*</td>
<td>object</td>
<td>Video Object describing the ad properties. Required for video impressions.</td>
<td></td>
</tr>
<tr>
<td>native*</td>
<td>object</td>
<td>Native Object describing the ad properties. Required for native impressions.</td>
<td></td>
</tr>
<tr>
<td>bidfloor*</td>
<td>float</td>
<td>Bid floor in CPM as set by the SSP.</td>
<td>0.01080</td>
</tr>
<tr>
<td>bidfloorcur*</td>
<td>string</td>
<td>Bid floor currency specified using ISO-4217 alphabetic codes.</td>
<td>&quot;USD&quot;</td>
</tr>
<tr>
<td>instl*</td>
<td>integer</td>
<td>1 if the ad is interstitial or full screen; else 0 (i.e., no).</td>
<td>1</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>tagid*</td>
<td>string</td>
<td>Identifier for specific ad placement or ad tag that was used to initiate the auction. This value is prefixed with exchange name followed by underscore. E.g. if Rubicon SSP sends bid request for placement ID &quot;43256&quot;, the field becomes &quot;rubicon_43256&quot;.</td>
<td>&quot;rubicon_43256&quot;</td>
</tr>
<tr>
<td>secure*</td>
<td>integer</td>
<td>0 for non-secure pages (default); 1 for secure pages. Creatives for secure pages should be SSL-compliant.</td>
<td>1</td>
</tr>
<tr>
<td>iframebuster*</td>
<td>array of string</td>
<td>Array of names of supported iframe busters, see the “Supported Rich Media Frameworks” section below.</td>
<td>[&quot;dc&quot;, &quot;rb&quot;]</td>
</tr>
<tr>
<td>pmp*</td>
<td>object</td>
<td>Private Marketplace object.</td>
<td></td>
</tr>
<tr>
<td>displaymanager*</td>
<td>string</td>
<td>Name of ad mediation partner, SDK technology, or native player responsible for rendering ad (typically video or mobile).</td>
<td>&quot;SOMA&quot;</td>
</tr>
<tr>
<td>displaymanagerver*</td>
<td>string</td>
<td>Version of ad mediation partner, SDK technology, or native player responsible for rendering ad (typically video or mobile).</td>
<td>&quot;1.1&quot;</td>
</tr>
<tr>
<td>ext*</td>
<td>object</td>
<td>Impression Ext Object</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

**Impression Ext Object**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>rubicon*</td>
<td>object</td>
<td>Impression Ext Rubicon Object.</td>
<td></td>
</tr>
<tr>
<td>google*</td>
<td>object</td>
<td>Impression Ext Google Object.</td>
<td></td>
</tr>
<tr>
<td>yieldone*</td>
<td>object</td>
<td>Impression Ext YieldOne Object.</td>
<td></td>
</tr>
<tr>
<td>inventory_class*</td>
<td>integer</td>
<td>Inventory class according to SSP classification.</td>
<td>1</td>
</tr>
<tr>
<td>viewability*</td>
<td>integer</td>
<td>This is an estimate of the likelihood that this slot will be viewable by the end user, based on how often it has been viewable in the past. Expressed as a percentage in the range of [0, 100] and rounded down to the next multiple of 10. If the field is not present in the bid request then the historical viewability data is not available.</td>
<td>100</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.
Impression Ext Rubicon Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>site_size_session_count*</td>
<td>integer</td>
<td>User session counter for this site/size. A &quot;user session&quot; here is 24 hours.</td>
<td>3</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

Impression Ext Google Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>excluded_attribute*</td>
<td>array of integer</td>
<td>List of excluded creative attributes as defined by Google.</td>
<td>[70,28,30,32,22]</td>
</tr>
<tr>
<td>allowed_vendor_type*</td>
<td>array of integer</td>
<td>List of allowed vendor types as defined by Google. Note that if site.publisher.id or app.publisher.id field value equals to “google_1” then the vendors listed in <a href="https://storage.googleapis.com/adx-rtb-dictionaries/gdn-vendors.txt">https://storage.googleapis.com/adx-rtb-dictionaries/gdn-vendors.txt</a> are also allowed for bidding.</td>
<td>[42,43,51,60]</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

Impression Ext YieldOne Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>allowed_creative_types</td>
<td>array of string</td>
<td>List of allowed creative types as defined by YieldOne.</td>
<td>[&quot;HTML&quot;, &quot;FLASH&quot;]</td>
</tr>
<tr>
<td>allowed_creative_category_id*</td>
<td>array of integer</td>
<td>List of allowed creative categories as defined by YieldOne.</td>
<td>[70, 71, 72]</td>
</tr>
<tr>
<td>cat*</td>
<td>array of integer</td>
<td>List of site categories as defined by YieldOne.</td>
<td>[5, 16]</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.
## Banner Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id*</td>
<td>string</td>
<td>Unique identifier for this banner object. Used for tracking multiple banner objects (e.g., in companion banner array)</td>
<td>&quot;3&quot;</td>
</tr>
<tr>
<td>w</td>
<td>integer</td>
<td>Width of the impression in pixels.</td>
<td>300</td>
</tr>
<tr>
<td>h</td>
<td>integer</td>
<td>Height of the impression in pixels.</td>
<td>250</td>
</tr>
<tr>
<td>battr*</td>
<td>array of integer</td>
<td>Blocked creative attributes as defined in OpenRTB.</td>
<td>[1]</td>
</tr>
<tr>
<td>btype*</td>
<td>array of integer</td>
<td>Blocked banner ad types as defined in OpenRTB.</td>
<td>[1,4]</td>
</tr>
<tr>
<td>pos*</td>
<td>integer</td>
<td>Ad Position as defined in OpenRTB.</td>
<td>1</td>
</tr>
<tr>
<td>topframe*</td>
<td>integer</td>
<td>Indicates if the banner is in the top frame as opposed to an iframe, where 0 = no, 1 = yes.</td>
<td>1</td>
</tr>
<tr>
<td>mimes*</td>
<td>array of string</td>
<td>Whitelist of content MIME types supported. Possible values include &quot;text/html&quot; and &quot;application/x-shockwave-flash&quot;.</td>
<td>[&quot;text/html&quot;]</td>
</tr>
<tr>
<td>expdir*</td>
<td>array of integer</td>
<td>Possible expansion directions for an expandable ad: 1: Left 2: Right 3: Up 4: Down 5: Fullscreen If the field is not present expandable creatives are not allowed.</td>
<td>[1,2]</td>
</tr>
<tr>
<td>api*</td>
<td>array of integer</td>
<td>List of supported API frameworks for this impression as defined in OpenRTB.</td>
<td>[3,5]</td>
</tr>
<tr>
<td>ext*</td>
<td>object</td>
<td>Banner Ext Object.</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

## Banner Ext Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>extra_sizes*</td>
<td>array of objects</td>
<td>An array of size objects denoting the alternative sizes that may be used for bidding. If one of the alternative ad sizes is used in the bid response, seatbid.bid.h and seatbid.bid.w fields are required in the bid response.</td>
</tr>
</tbody>
</table>
### Size Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>integer</td>
<td>Width of the impression in pixels.</td>
<td>300</td>
</tr>
<tr>
<td>h</td>
<td>integer</td>
<td>Height of the impression in pixels.</td>
<td>250</td>
</tr>
</tbody>
</table>

### Video Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>mimes</td>
<td>array of string</td>
<td>Content MIME types supported. Note that for Google bids all the specified mime type media files are REQUIRED in the VAST response.</td>
<td>[&quot;video/mpeg&quot;, &quot;video/mp4&quot;]</td>
</tr>
<tr>
<td>pos*</td>
<td>integer</td>
<td>Ad Position as defined in OpenRTB.</td>
<td>1</td>
</tr>
<tr>
<td>linearity*</td>
<td>integer</td>
<td>Indicates if the impression must be linear, nonlinear, etc. If none specified, assume all are allowed. 1: Linear/In-stream 2: Non-Linear/Overlay</td>
<td>1</td>
</tr>
<tr>
<td>minduration</td>
<td>integer</td>
<td>Minimum video ad duration in seconds</td>
<td>2</td>
</tr>
<tr>
<td>maxduration</td>
<td>integer</td>
<td>Maximum video ad duration in seconds</td>
<td>15</td>
</tr>
<tr>
<td>protocols</td>
<td>array of integer</td>
<td>Accepted video bid response protocols as defined in OpenRTB.</td>
<td>[2, 5]</td>
</tr>
<tr>
<td>w*</td>
<td>integer</td>
<td>Width of the player in pixels.</td>
<td>600</td>
</tr>
<tr>
<td>h*</td>
<td>integer</td>
<td>Height of the player in pixels.</td>
<td>400</td>
</tr>
<tr>
<td>startdelay*</td>
<td>integer</td>
<td>Indicates the start delay in seconds or generic values below: 0: Pre-roll 1: Generic mid-roll 2: Generic post-roll</td>
<td>0</td>
</tr>
<tr>
<td>batt*</td>
<td>array of integer</td>
<td>Blocked creative attributes as defined in OpenRTB.</td>
<td>[6]</td>
</tr>
<tr>
<td>minbitrate*</td>
<td>integer</td>
<td>Minimum bit rate in Kbps.</td>
<td>680</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>maxbitrate*</td>
<td>integer</td>
<td>Maximum bit rate in Kbps.</td>
<td>990</td>
</tr>
<tr>
<td>api*</td>
<td>array of integer</td>
<td>List of supported API frameworks for this impression as defined in OpenRTB.</td>
<td>[1,2]</td>
</tr>
<tr>
<td>companionad*</td>
<td>array of object</td>
<td>Array of Banner objects if companion ads are available. See Banner Object section.</td>
<td></td>
</tr>
<tr>
<td>ext*</td>
<td>object</td>
<td>Video Ext Object</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

**Video Ext Object**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>skippable*</td>
<td>integer</td>
<td>Indicates whether the video ad may be skippable (i.e. contain a skip button). The values are: 0: allow skippable 1: require skippable 2: deny skippable</td>
<td>0</td>
</tr>
<tr>
<td>player_type*</td>
<td>integer</td>
<td>Video player type based on detected player size: 1: Small player (width less than 300px) 2: Medium player (width equal or more than 300px and less than 600px) 3: Large player (width equal or more than 600px)</td>
<td>2</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

**Native Object**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>request</td>
<td>object</td>
<td>Native Request object.</td>
<td></td>
</tr>
<tr>
<td>battr*</td>
<td>array of integer</td>
<td>Blocked creative attributes as defined in OpenRTB.</td>
<td>[1,3]</td>
</tr>
<tr>
<td>api*</td>
<td>array of integer</td>
<td>List of supported API frameworks for this impression as defined in OpenRTB.</td>
<td>[2,3,5]</td>
</tr>
</tbody>
</table>

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Native Request Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>ver*</td>
<td>integer</td>
<td>Version of the Native Markup in use.</td>
<td>1</td>
</tr>
<tr>
<td>layout*</td>
<td>integer</td>
<td>The Layout ID of the native ad unit as described in OpenRTB Native specification.</td>
<td>3</td>
</tr>
<tr>
<td>adunit*</td>
<td>integer</td>
<td>The Ad unit ID of the native ad unit as described in OpenRTB Native specification.</td>
<td>2</td>
</tr>
<tr>
<td>plcmtcnt*</td>
<td>integer</td>
<td>The number of identical placements in this Layout.</td>
<td>1</td>
</tr>
<tr>
<td>seq*</td>
<td>integer</td>
<td>0 for the first ad, 1 for the second ad, and so on. This is not the sequence number of the content in the stream.</td>
<td>0</td>
</tr>
<tr>
<td>assets</td>
<td>array of object</td>
<td>An array of Asset Objects. Any bid must comply with this array of elements.</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

Native Asset Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>integer</td>
<td>Unique asset id.</td>
<td>2</td>
</tr>
<tr>
<td>required*</td>
<td>integer</td>
<td>Set to 1 if asset is required (exchange will not accept a bid without it), default is 0.</td>
<td>1</td>
</tr>
<tr>
<td>title**</td>
<td>object</td>
<td>Title object for a title asset.</td>
<td></td>
</tr>
<tr>
<td>img**</td>
<td>object</td>
<td>Image object for an image asset.</td>
<td></td>
</tr>
<tr>
<td>video**</td>
<td>object</td>
<td>Video object for a video asset.</td>
<td></td>
</tr>
<tr>
<td>data**</td>
<td>object</td>
<td>Data object for a data asset.</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.
** There may be exactly one of the fields marked with double asterisk in one asset object.

Native Asset Title Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>len</td>
<td>integer</td>
<td>Maximum length of the text in the title element.</td>
<td>30</td>
</tr>
</tbody>
</table>
Native Asset Image Object

The image asset object may contain exact image size, minimal image size or both. If only exact image size is specified then the image in bid response should have the corresponding size. If minimal size is specified then the image asset in bid response should comply with the following restrictions:

- the size of the image should be equal or larger than the minimum;
- the aspect ratio of the image should be close to the one specified by the exact size (if available) or by the minimal size; allowed aspect ratio deviation is from 0.8 \( (w/h) \) to 1.25 \( (w/h) \);
- image asset in the bid response should contain w and h fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>type*</td>
<td>integer</td>
<td>Image asset type: 1: Icon, 2: Logo (Logo image for the brand/app), 3: Main (Large image preview for the ad)</td>
<td>3</td>
</tr>
<tr>
<td>w*</td>
<td>integer</td>
<td>Width of the image in pixels.</td>
<td>300</td>
</tr>
<tr>
<td>wmin*</td>
<td>integer</td>
<td>The minimum requested width of the image in pixels.</td>
<td>100</td>
</tr>
<tr>
<td>h*</td>
<td>integer</td>
<td>Height of the image in pixels.</td>
<td>250</td>
</tr>
<tr>
<td>hmin*</td>
<td>integer</td>
<td>The minimum requested height of the image in pixels.</td>
<td>100</td>
</tr>
<tr>
<td>mimes*</td>
<td>array of string</td>
<td>Whitelists of content MIME types supported. Popular MIME types include, but are not limited to &quot;image/jpg&quot; and &quot;image/gif&quot;. If blank, assume all types are allowed.</td>
<td>[&quot;image/gif&quot;]</td>
</tr>
</tbody>
</table>

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Native Asset Video Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>mimes</td>
<td>array of string</td>
<td>Content MIME types supported.</td>
<td>[&quot;video/mpeg&quot;, &quot;video/mp4&quot;]</td>
</tr>
<tr>
<td>minduration</td>
<td>integer</td>
<td>Minimum video ad duration in seconds</td>
<td>2</td>
</tr>
<tr>
<td>maxduration</td>
<td>integer</td>
<td>Maximum video ad duration in seconds</td>
<td>15</td>
</tr>
<tr>
<td>protocols</td>
<td>array of integer</td>
<td>Accepted video bid response protocols as defined in OpenRTB.</td>
<td>[2,5]</td>
</tr>
</tbody>
</table>
### Native Asset Data Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>integer</td>
<td>Data asset type as described in OpenRTB Native specification.</td>
<td>1</td>
</tr>
<tr>
<td>len*</td>
<td>integer</td>
<td>Maximum length of the text in the element’s response.</td>
<td>25</td>
</tr>
</tbody>
</table>

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### Device Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>ip*</td>
<td>string</td>
<td>IPv4 address closest to the device. Bids containing invalid IP addresses will be discarded. The field is optional for in-app traffic.</td>
<td>87.224.77.0</td>
</tr>
<tr>
<td>geo</td>
<td>object</td>
<td>Geo Object as derived from the device’s location services or supplied by the SSP if device IP is missing.</td>
<td></td>
</tr>
<tr>
<td>ua*</td>
<td>string</td>
<td>Browser or application user agent string.</td>
<td></td>
</tr>
<tr>
<td>language*</td>
<td>string</td>
<td>Alpha-2/ISO 639-1 code of browser language.</td>
<td>&quot;en&quot;</td>
</tr>
<tr>
<td>carrier*</td>
<td>string</td>
<td>Carrier or ISP derived from the IP address.</td>
<td>&quot;WIFI&quot;</td>
</tr>
<tr>
<td>connection type*</td>
<td>integer</td>
<td>Connection type as defined in OpenRTB.</td>
<td>2</td>
</tr>
<tr>
<td>didsha1*</td>
<td>string</td>
<td>SHA1 hashed device ID.</td>
<td></td>
</tr>
<tr>
<td>didmd5*</td>
<td>string</td>
<td>MD5 hashed device ID.</td>
<td></td>
</tr>
<tr>
<td>dpidsha1*</td>
<td>string</td>
<td>SHA1 hashed platform-specific ID.</td>
<td></td>
</tr>
<tr>
<td>dpidmd5*</td>
<td>string</td>
<td>MD5 hashed platform-specific ID.</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>ifa*</td>
<td>string</td>
<td>Native identifier for advertisers; an opaque ID assigned by the device or browser for use as an advertising identifier (e.g. Apple’s IFA, Android’s Advertising ID, etc.)</td>
<td>&quot;035911ea-467d-4056-903b-65cf44f5633b&quot;</td>
</tr>
<tr>
<td>make*</td>
<td>string</td>
<td>Device make.</td>
<td>&quot;Apple&quot;</td>
</tr>
<tr>
<td>model*</td>
<td>string</td>
<td>Device mode.</td>
<td>&quot;iPhone&quot;</td>
</tr>
<tr>
<td>os*</td>
<td>string</td>
<td>Device operating system.</td>
<td>&quot;iOS&quot;</td>
</tr>
<tr>
<td>osv*</td>
<td>string</td>
<td>Device operating system version.</td>
<td>&quot;3.1.2&quot;</td>
</tr>
<tr>
<td>dnt*</td>
<td>integer</td>
<td>If 0, then do not track is set to false, if 1, then do no track is set to true in browser.</td>
<td>0</td>
</tr>
<tr>
<td>devicetype*</td>
<td>integer</td>
<td>Device type as defined by OpenRTB.</td>
<td>4</td>
</tr>
<tr>
<td>ipv6*</td>
<td>string</td>
<td>IP address in IPv6.</td>
<td>&quot;fe80:0:0:0:200:f8ff:fe21:67cf&quot;</td>
</tr>
<tr>
<td>js*</td>
<td>integer</td>
<td>1 if the device supports JavaScript; else 0.</td>
<td>1</td>
</tr>
<tr>
<td>flashver*</td>
<td>string</td>
<td>Flash version detected.</td>
<td>&quot;10.1&quot;</td>
</tr>
</tbody>
</table>

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**Geo Object**

The information provided in Geo Object is based on MaxMind database, except lat and lon values.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>lat*</td>
<td>float</td>
<td>Latitude from -90 to 90. South is negative.</td>
<td>52.35</td>
</tr>
<tr>
<td>lon*</td>
<td>float</td>
<td>Longitude from -180 to 180. West is negative.</td>
<td>4.9167</td>
</tr>
<tr>
<td>type*</td>
<td>integer</td>
<td>Source of location data as defined by OpenRTB.</td>
<td>1</td>
</tr>
<tr>
<td>country*</td>
<td>string</td>
<td>Country using ISO-3166-1 Alpha-2.</td>
<td>&quot;NL&quot;</td>
</tr>
<tr>
<td>region*</td>
<td>string</td>
<td>Region using ISO-3166-2 or FIPS region codes.</td>
<td>&quot;07&quot;</td>
</tr>
<tr>
<td>city*</td>
<td>string</td>
<td>City name as provided by MaxMind.</td>
<td>&quot;Alkmaar&quot;</td>
</tr>
<tr>
<td>zip*</td>
<td>string</td>
<td>Zip/postal code.</td>
<td>&quot;1824&quot;</td>
</tr>
</tbody>
</table>

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## User Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id*</td>
<td>string</td>
<td>Unique customer ID of this user on the exchange. It may not be present if DSP opted for unknown users.</td>
<td>&quot;252eb154-b3e5-473f-bad8-9b6d7f8646e5&quot;</td>
</tr>
<tr>
<td>buyeruid*</td>
<td>string</td>
<td>DSP user ID for this user as mapped by BidSwitch for the DSP.</td>
<td>&quot;38f72eaf-5d6f-4143-824f-deaf753d7239&quot;</td>
</tr>
<tr>
<td>keywords*</td>
<td>string</td>
<td>Comma separated list of keywords, interests, or intent.</td>
<td>&quot;Cars, sports&quot;</td>
</tr>
</tbody>
</table>

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## Site Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id*</td>
<td>string</td>
<td>Site ID on the exchange prefixed with exchange name followed by underscore. E.g. if Rubicon SSP sends bid request for site ID &quot;123&quot;, the field becomes &quot;rubicon_123&quot;.</td>
<td>&quot;rubicon_123&quot;</td>
</tr>
<tr>
<td>name*</td>
<td>string</td>
<td>Site name (may be masked by publisher request).</td>
<td>&quot;Test Site&quot;</td>
</tr>
<tr>
<td>domain*</td>
<td>string</td>
<td>Domain of the site, used for advertiser side blocking.</td>
<td>&quot;testsite.com&quot;</td>
</tr>
<tr>
<td>cat*</td>
<td>array of strings</td>
<td>Array of IAB content categories for the publisher site.</td>
<td>['IAB1&quot;, &quot;IAB2-3&quot;]</td>
</tr>
<tr>
<td>page*</td>
<td>string</td>
<td>URL of the page where the impression will be shown.</td>
<td>&quot;<a href="http://testsite.com/main.asp">http://testsite.com/main.asp</a>&quot;</td>
</tr>
<tr>
<td>ref*</td>
<td>string</td>
<td>Referrer URL that caused navigation to the current page.</td>
<td>&quot;<a href="http://testsite.com/main.asp">http://testsite.com/main.asp</a>&quot;</td>
</tr>
<tr>
<td>publisher</td>
<td>object</td>
<td>Publisher Object.</td>
<td></td>
</tr>
<tr>
<td>mobile*</td>
<td>integer</td>
<td>Mobile-optimized signal, where 0 = no, 1 = yes.</td>
<td>1</td>
</tr>
<tr>
<td>ext*</td>
<td>object</td>
<td>Site Ext Object</td>
<td></td>
</tr>
</tbody>
</table>

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Site Ext Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>mobile_site*</td>
<td>integer</td>
<td>A value of 1 in this field indicates the user is accessing a mobile-optimized site. DEPRECATED: use site.mobile instead.</td>
<td>1</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

App Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id*</td>
<td>string</td>
<td>Application ID on the exchange prefixed with exchange name followed by underscore. E.g. if Rubicon SSP sends bid request for site ID &quot;123&quot;, the field becomes &quot;rubicon_123&quot;.</td>
<td>&quot;rubicon_123&quot;</td>
</tr>
<tr>
<td>name*</td>
<td>string</td>
<td>Application name.</td>
<td>&quot;Test App&quot;</td>
</tr>
<tr>
<td>domain*</td>
<td>string</td>
<td>Domain of the application.</td>
<td>&quot;mygame.foo.com&quot;</td>
</tr>
<tr>
<td>cat*</td>
<td>array of string</td>
<td>Array of IAB content categories for the application.</td>
<td>[&quot;IAB1&quot;, &quot;IAB2-3&quot;]</td>
</tr>
<tr>
<td>bundle*</td>
<td>string</td>
<td>Application bundle or package name.</td>
<td>&quot;com.foo.mygame&quot;</td>
</tr>
<tr>
<td>publisher</td>
<td>object</td>
<td>Publisher Object.</td>
<td></td>
</tr>
<tr>
<td>paid*</td>
<td>integer</td>
<td>0 = app is free, 1 = the app is a paid version.</td>
<td>1</td>
</tr>
<tr>
<td>storeurl*</td>
<td>string</td>
<td>App store’s URL for the mobile application.</td>
<td>&quot;<a href="http://media-apps.cc/android">http://media-apps.cc/android</a>&quot;</td>
</tr>
<tr>
<td>ver*</td>
<td>string</td>
<td>Application version.</td>
<td>&quot;1.1&quot;</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

Private Marketplace Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>private_auction</td>
<td>integer</td>
<td>A value of 1 indicates that only bids submitted inside pmp.deals will take part in the auction. A value of 0 indicates that bids without deal information may also be considered for serving.</td>
<td>1</td>
</tr>
</tbody>
</table>
## Deal Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>string</td>
<td>Deal id.</td>
<td>&quot;AA-1234&quot;</td>
</tr>
<tr>
<td>wseat*</td>
<td>array of string</td>
<td>Array of buyer seats allowed to bid on this Direct Deal. If present, the allowed seat IDs may be supplied in BidSwitch or SSP taxonomy. BidSwitch taxonomy uses the DSP ID as the single seat ID value. The seat in SSP taxonomy may represent the whole DSP or some entity on the DSP side (e.g. agency); a bid request may contain multiple seat IDs in SSP taxonomy. The bid response should contain the appropriate seat value corresponding to one of values of the wseat field (see Seat Bid Object section).</td>
<td>[&quot;58&quot;]</td>
</tr>
<tr>
<td>bidfloor*</td>
<td>float</td>
<td>Deal price in CPM. If deal.at = 3 then this is the exact price of the deal, otherwise this is the bid floor of the deal.</td>
<td>1.3</td>
</tr>
<tr>
<td>bidfloorcur*</td>
<td>string</td>
<td>Bid floor currency specified using ISO-4217 alpha codes.</td>
<td>&quot;USD&quot;</td>
</tr>
<tr>
<td>at*</td>
<td>integer</td>
<td>Auction type. 1 for first price auction, 2 for second price auction, 3 for fixed price deal.</td>
<td>2</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

## Publisher Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>string</td>
<td>Publisher ID prefixed with SSP name followed by underscore, e.g. if Rubicon passes publisher ID &quot;25&quot;, then the present field will be equal to &quot;rubicon_25&quot;. For Google AdX bid requests the Google seller network ID is used.</td>
<td>&quot;rubicon_25&quot;</td>
</tr>
<tr>
<td>name*</td>
<td>string</td>
<td>Publisher name.</td>
<td>&quot;AAP&quot;</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.
# Ext Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssp</td>
<td>string</td>
<td>SSP identification string.</td>
<td>&quot;rubicon&quot;</td>
</tr>
<tr>
<td>is_secure*</td>
<td>integer</td>
<td>0 for non-secure pages; 1 for secure pages. Creatives for secure pages should be SSL-compliant. DEPRECATED: use imp.secure instead.</td>
<td>1</td>
</tr>
<tr>
<td>google*</td>
<td>object</td>
<td>Google object. This field is optional and may be present only in Google AdX bid requests.</td>
<td></td>
</tr>
<tr>
<td>gumgum*</td>
<td>object</td>
<td>Gumgum object. This field is optional and may be present only in Gumgum bid requests.</td>
<td></td>
</tr>
<tr>
<td>adtruth*</td>
<td>object</td>
<td>Adtruth object. This field is optional and is present if the corresponding data is provided by the SSP.</td>
<td></td>
</tr>
<tr>
<td>ghostery*</td>
<td>object</td>
<td>Ghostery object. This field is optional and is present if the feature is enabled for the trading partner. DEPRECATED: use data object instead.</td>
<td></td>
</tr>
<tr>
<td>creative_params*</td>
<td>array of objects</td>
<td>SSP-specific parameters indicating which creatives are valid for bidding in correspondence with creative approval feedback data.</td>
<td></td>
</tr>
<tr>
<td>clktrkrq*</td>
<td>integer</td>
<td>1 for bid requests that require click tracking macro in the bid response, 0 otherwise.</td>
<td>1</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

## Google Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detected_vertical*</td>
<td>array of objects</td>
<td>List of detected vertical values as defined by Google.</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

### Detected_vertical Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>integer</td>
<td>The vertical id as defined by AdX docs.</td>
<td>1014</td>
</tr>
<tr>
<td>weight</td>
<td>float</td>
<td>Weight for this vertical, in the (0.0, 1.0] range. More relevant verticals have higher weights.</td>
<td>1.0</td>
</tr>
</tbody>
</table>
### Adtruth Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>tdl_millis*</td>
<td>int64</td>
<td>Time Difference Linking, which allows for differentiation between similarly configured devices that might share a DeviceInsight identifier.</td>
<td>19534993</td>
</tr>
<tr>
<td>RECIPE VERSION_x</td>
<td>string</td>
<td>The specific AdTruth device identification recipe version and the corresponding DeviceInsight identifier. There might be multiple AdTruth recipe versions.</td>
<td>&quot;WEB_APP_BRI DGE_4_0&quot;:&quot;4FD 87B97751E9C3 05FD5314A665 D2AF1C8FAA2D 3&quot;</td>
</tr>
</tbody>
</table>

### Gumgum Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat</td>
<td>array of string</td>
<td>Site or application category in Gumgum taxonomy.</td>
<td>[&quot;GGE23-1&quot;, &quot;GGE22&quot;]</td>
</tr>
</tbody>
</table>

### Ghostery Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>status</td>
<td>string</td>
<td>Indicates whether the bid request is associated with a single detected domain. Possible values are: &quot;verified&quot; : the publisher domain of the bid request is verified by Ghostery; &quot;unverified&quot; : there is more than one domain associated with the bid request; &quot;masked&quot; : the detected domains do not match those provided in the bid request; &quot;unknown&quot; : there is not enough data available for the current bid request.</td>
<td>&quot;verified&quot;</td>
</tr>
<tr>
<td>domain*</td>
<td>string</td>
<td>True publisher domain as detected by Ghostery.</td>
<td>&quot;bbc.com&quot;</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.
## Creative Parameters Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>string</td>
<td>Possible values:</td>
<td>&quot;blacklist&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- &quot;whitelist&quot;: only creatives with at least one of the listed parameter values are allowed;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- “blacklist”: creatives with at least one of the listed parameter values are not allowed</td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Parameter name as defined by the SSP</td>
<td>&quot;site&quot;</td>
</tr>
<tr>
<td>value</td>
<td>array of string</td>
<td>Parameter values eligible for bid current request.</td>
<td>[&quot;bbc.com&quot;]</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be sent in each request.

## Regulations Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>coppa</td>
<td>integer</td>
<td>Flag indicating whether or not this request falls under the COPPA regulations established by the USA FTC, where 0 = no, 1 = yes.</td>
<td>0</td>
</tr>
</tbody>
</table>

## Data Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>string</td>
<td>Exchange-specific name for the data provider.</td>
<td>&quot;domain-origin&quot;</td>
</tr>
<tr>
<td>segment</td>
<td>array of object</td>
<td>Array of Segment objects that contain the actual data values.</td>
<td></td>
</tr>
</tbody>
</table>

## Segment Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>string</td>
<td>Name of the data segment specific to the data provider.</td>
<td>&quot;status&quot;</td>
</tr>
<tr>
<td>value</td>
<td>string</td>
<td>String representation of the data segment value.</td>
<td>&quot;verified&quot;</td>
</tr>
</tbody>
</table>
Examples

Banner Ad Example 1

Following is a basic example of a bid request for a banner ad with click tracking macro required in the response.

{
    "id": "1234534625253",
    "imp": [
        {
            "id": "1",
            "tagid": "rubicon_4242424",
            "banner": {
                "w": 300,
                "h": 250,
                "pos": 1,
                "topframe": 0,
                "mimes": [
                    "text/html",
                    "application/x-shockwave-flash"
                ],
                "ext": {
                    "extra_sizes": [
                        {
                            "h": 50,
                            "w": 300
                        }
                    ],
                    "rubicon": {
                        "site_size_session_count": 5
                    },
                    "viewability": 40
                }
            }
        },
        {
            "ext": {
                "rubicon": {
                    "site_size_session_count": 5
                },
                "viewability": 40
            }
        }
    ],
    "site": {
        "id": "234563",
        "domain": "siteabcd.com",
        "page": "http://siteabcd.com/page.htm",
        "mobile": 1,
        "publisher": {
            "id": "rubicon_25"
        }
    },
    "device": {
        "ip": "64.124.253.1",
        "geo": {
            "lat": 33.94940185546875,
            "lon": -116.97750091552734,
            "type": 1,
            "country": "US",
            "region": "NY"
        }
    }
}
"city": "White Plains",
"zip": "10601"
"ua": "Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10.6; en-US; rv:1.9.2.16) Gecko/20110319 Firefox/3.6.16",
"language": "en"
"user": {
"id": "45asdf987656789adfad4678rew656789",
"buyeruid": "1234567890",
"keywords": "sports, entertainment"
"cur": ["USD"
"at": 2,
"ext": {
"ssp": "rubicon",
"clktrkrq": 1,
"adtruth": {
"tdl_millis": 19534993,
"WEB_APP_BRIDGE_3_2": "FD5314A665D2AF1C8FAA2D34FD87B97751E9C305",
"WEB_APP_BRIDGE_4_0": "4FD87B97751E9C305FD5314A665D2AF1C8FAA2D3"
"data": [
{ "name": "domain-origin",
"segment": [
{ "name": "status",
"value": "verified"
},
{ "name": "domain",
"value": "abcd.com"
}
]
}]

Banner Ad Example 2
{
"badv": [
"site1.com",
"site2.com"
],
"id": "a979a8ca-0781-4b89-b289-bb446d55ec21",
"user": {
"buyeruid": "928d0c74-4c97-4419-b7cb-de57761e173b",
"id": "1753a6be-025d-45e4-a548-4bffc47cab48"
},
"tmax": 100,
"cur": [
"JPY"
"wseat": ["46"],
"bcat": [
"BSW10",
"BSW2",
"IAB24",
"BSW1",
"BSW4",
"IAB26",
"IAB25",
"IAB25-3",
"IAB23"
],
"ext": {
ssp": "geniee",
"is_secure": 0
},
"site": {
"domain": "yukawanet.com",
"id": "geniee_2861",
"publisher": {
"name": "",
"id": "geniee_"
},
"ext": {},
"cat": [
"IAB1"
],
"page": "http://www.yukawanet.com/
},
"device": {
"ua": "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_10_4) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/44.0.2403.155 Safari/537.36",
"ip": "121.102.114.163",
"geo": {
"zip": "100-0001",
"country": "JP",
"region": "40",
"city": "Tokyo"
},
"os": "Mac",
"dnt": 0,
"language": "ja"
},
"imp": [
{
"bidfloor": 1.05,
"bidfloorcur": "JPY",
"instl": 0,
"secure": 0,
"banner": {
"pos": 2,
"w": 200,
"h": 200,
"btype": [
Video Ad Example 1

Following is a basic example of a bid request for a video ad served on a secure site.

```
{
  "id": "1234534625253",
  "wseat": ["58"],
  "imp": [
    {
      "id": "1",
      "secure": 1,
      "video": {
        "mimes": ["video/x-flv",
                   "video/mp4",
                   "application/x-shockwave-flash",
                   "application/javascript"],
        "linearity": 1,
        "minduration": 5,
        "maxduration": 30,
        "protocols": [2,
                      3,
                      5,
                      6],
        "w": 640,
        "h": 480,
        "startdelay": 0,
        "battr": [13,
                   14],
        "minbitrate": 300,
        "maxbitrate": 1500,
```
"api": [1],
"companionad": [
{
"w": 300,
"h": 250,
"id": "1"
}
],
"companionType": [1, 2, 3],
"ext": {
"skippable": 1
}
],
"site": {
"id": "234563",
"domain": "siteabcd.com",
"page": "https://siteabcd.com/page.htm",
"ref": "http://google.com/?q=siteabcd",
"publisher": {
"id": "google_25"
}
},
"device": {
"ip": "64.124.253.1",
"geo": {
"country": "US",
"region": "NY",
"city": "White Plains",
"zip": "10601"
},
"ua": "Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10.6; en-US; rv:1.9.2.16) Gecko/20110319 Firefox/3.6.16",
"language": "en"
},
"user": {
"id": "45asdf987656789adf4678rew656789",
"buyeruid": "1234567890"
},
"cur": ["USD"],
"ext": {
"ssp": "google"
}
Video Ad Example 2

{  
  "badv": [  
    "site1.com"  
  ],  
  "id": "6c6aece7-f2bc-45ee-a6c3-6af6d62cb523",  
  "user": {},  
  "tmax": 70,  
  "cur": [  
    "USD"  
  ],  
  "wseat": [  
    "4"  
  ],  
  "bcat": [  
    "BSW1",  
    "BSW4",  
    "BSW10",  
    "IAB25-3",  
    "BSW2",  
    "IAB26"  
  ],  
  "ext": {  
    "ssp": "stickyads",  
    "is_secure": 0  
  },  
  "site": {  
    "domain": "example.com",  
    "id": "stickyads_64557",  
    "publisher": {  
      "name": "",  
      "id": "stickyads_18021"  
    },  
    "ext": {},  
    "cat": [  
      "IAB1"  
    ],  
    "page": "http://example.com/"  
  },  
  "device": {  
    "ua": "Mozilla/5.0 (compatible; MSIE 9.0; Windows NT 6.0; Trident/5.0)\n",  
    "ip": "86.28.214.243",  
    "geo": {  
      "city": "Manchester",  
      "zip": "M23",  
      "region": "I2",  
      "country": "GB"  
    },  
    "devicetype": 2,  
    "ipv6": ":ffff:86.28.214.243",  
    "language": "en"  
  },  
  "imp": [  
    {  
      "bidfloor": 0.032445,
Native Ad

Following is an example of a bid request for a native ad, a content wall layout type with required title and main image and an optional icon image.

```json
{
  "id": "1234534625253",
  "imp": [
    {
      "id": "1",
      "bidfloor": 0.5,
      "bidfloorcur": "USD",
      "native": {
        "request": {
          "ver": 1,
          "layout": 1,
          "adunit": 4,
          "assets": [
            {
              "id": 1,
              "required": 1,
              "title": {}
            }
          ]
        }
      }
    }
  ]
}
```
"len": 25
},
{
"id": 2,
"required": 0,
"img": {
"type": 1,
"w": 15,
"h": 15
}
},
{
"id": 3,
"required": 1,
"img": {
"type": 2,
"wmin": 200,
"hmin": 200
}
}]
},
"site": {
"id": "234563",
"domain": "siteabcd.com",
"page": "http://siteabcd.com/page.htm",
"publisher": {
"id": "rubicon_25"
}
},
"device": {
"ip": "64.124.253.1",
"geo": {
"country": "US",
"region": "NY",
"city": "White Plains",
"zip": "10601"
},
"ua": "Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10.6; en-US; rv:1.9.2.16) Gecko/20110319 Firefox/3.6.16",
"language": "en"
},
"user": {
"id": "45asdf987656789adfad4678rew656789",
"buyeruid": "1234567890"
},
"cur": [
"USD"
],
"at": 2,
"ext": {
"ssp": "rubicon"}
In-App Ad Example 1

Following is an example of a bid request for a mobile application banner ad.

```json
{
  "app": {
    "bundle": "302324249",
    "cat": [
      "IAB14",
      "IAB24"
    ],
    "id": "mopub_af8f72a9eaae43d6b1330cada08f86f6",
    "publisher": {
      "id": "mopub_agltb3B1Y1pbnNyEAsSB0FjY291bnQY7cCnEgw"
    },
    "ver": "4.2"
  },
  "at": 2,
  "badv": ["badsite.com"],
  "bcat": [
    "IAB7-39",
    "IAB8-18",
    "IAB14-1",
    "IAB25",
    "IAB26",
    "BSW3"
  ],
  "cur": ["USD"
  ],
  "device": {
    "carrier": "234-30",
    "connectiontype": 3,
    "dpidmd5": "c43fba88be23abcc348227dd1d7c044a",
    "dpidsha1": "a17b943e3431e967230c1fc27cb3fa4029bcf4de",
    "geo": {
      "city": "",
      "country": "GB",
      "region": "",
      "zip": ""
    },
    "ifa": "3f6f224c-5f05-42b9-b0a3-8b63b86a2a",
    "ip": "31.121.161.211",
    "language": "en",
    "make": "samsung",
    "model": "GT-I9505",
    "os": "Android",
    "osv": "4.4.2",
    "ua": "Mozilla/5.0 (Linux; Android 4.4.2; GT-I9505 Build/KOT49H) AppleWebKit/537.36 (KHTML, like Gecko) Version/4.0 Chrome/30.0.0.0 Mobile Safari/537.36"
  }
}
```
In-App Ad Example 2

Following is an example of a bid request for a mobile application video ad.

```json
{
    "id": "4dad66c4-325e-49b0-a962-c15783681721",
    "user": {
        "id": "66c1f525-b658-4e7d-89d5-f9ab3520d8e6"
    },
    "tmax": 100,
    "cur": ["USD"],
    "wseat": ["68"],
    "bcat": [
        "BSW1",
        "BSW4",
        "BSW10",
        "IAB25-3",
        "BSW2",
        "IAB26"
    ]
}
```
{"imp": [
  {
    "bidfloor": 0.011341,
    "bidfloorcur": "USD",
    "instl": 0,
    "id": "1",
    "video": {
      "startdelay": 0,
      "protocols": [2, 5],
      "linearity": 1,
      "minduration": 5,
      "mimes": [
        "video/mp4"
      ],
      "maxduration": 30
    }
  }
],
"app": {
  "id": "adaptv_",
  "storeurl": "https://itunes.apple.com/us/app/words-with-
friends/id804379658?mt=8",
  "publisher": {
    "name": "",
    "id": "adaptv_"
  },
  "bundle": "com.newtoyinc.NewWordsWithFriendsFree",
  "name": "words with friends",
  "cat": ["IAB1"
  ]
},
"device": {
  "ua": "Mozilla/5.0 (iPhone; CPU iPhone OS 8.4 like Mac OS X)
AppleWebKit/600.1.4 (KHTML, like Gecko) Mobile/12H143",
  "ip": "68.100.68.222",
  "dpidmd5": "37dae841a91cc2e0dd8c8af21853f201",
  "geo": {
    "lat": 33.45,
    "lon": -112.07,
    "city": "Fairfax",
    "type": 1,
    "country": "US",
    "region": "VA",
    "zip": "22031"
  },
  "devicetype": 4,
  "ifa": "66c1f525-b658-4e7d-89d5-f9ab3520d8e6",
  "os": "iOS",
  "dpidsha1": "b308d48d23cd77809d3d3346cde78180ab880af8",
  "language": "en"
},
"ext": {
Request with wseat in SSP Taxonomy

Following is an example of bid request with multiple seat IDs sent in SSP taxonomy.

```json
{
    "id": "51f33f24-0ea6-4fb4-8f3c-94ff294f56e3",
    "user": {
    },
    "tmax": 90,
    "cur": [
        "EUR"
    ],
    "wseat": [
        "41002", "41004", "41007"
    ],
    "bcat": [
        "BSW1",
        "BSW4",
        "BSW10",
        "IAB25-3",
        "BSW2",
        "IAB26"
    ],
    "imp": [
        {
            "bidfloor": 0.0103,
            "bidfloorcur": "EUR",
            "instl": 0,
            "secure": 0,
            "banner": {
                "pos": 0,
                "w": 300,
                "h": 250,
                "btype": [1
            ]
        },
        "id": "1"
    ],
    "site": {
        "domain": "prosiebenmaxx.de",
        "id": "yieldlab_20395",
        "publisher": {
            "name": "",
            "id": "yieldlab_5710"
        },
        "ext": {},
        "cat": [
            "IAB14",
            "IAB9"
        ]
    }
}
```
Private Deal and Creative Parameters

Following is a basic example of bid request for a private auction also specifying creative parameters.

```json
{
  "id": "1234534625254",
  "wseat": [
    "58"
  ],
  "imp": [
    {
      "id": "1",
      "bidfloor": 0.426,
      "banner": {
        "w": 300,
        "h": 250,
        "pos": 1,
        "topframe": 0,
        "expdir": [1, 3]
      },
      "pmp": {
        "private_auction": 1,
        "deals": [
          {
            "id": "deal-1",
            "wseat": []
          }
        ]
      }
    }
  }
}
```
"58",
"bidfloor": 2.5,
"at": 1
},
{
"id": "deal-2",
"bidfloor": 2,
"at": 2
}
]
}
,"site": {
"id": "234563",
"domain": "siteabcd.com",
"page": "https://siteabcd.com/page.htm",
"publisher": {
"id": "rubicon_25"
}
},
"device": {
"ip": "64.124.253.1",
"geo": {
"country": "US",
"region": "NY",
"city": "White Plains",
"zip": "10601"
},
"ua": "Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10.6; en-US; rv:1.9.2.16) Gecko/20110319 Firefox/3.6.16",
"language": "en"
},
"user": {
"id": "45asdf987656789adfad4678rew656789"
},
"cur": ["USD"
],
"ext": {
"ssp": "rubicon",
"creative_params": [
{
"type": "blacklist",
"name": "ad_type",
"value": [
"14011",
"14006"
]
}
]
}
**Bid Response**

**Top Level Bid Response Object**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>string</td>
<td>ID of the bid request.</td>
<td>&quot;d7d1e107-fe7c-4a57-9592-d1d41fa702d9&quot;</td>
</tr>
<tr>
<td>seatbid</td>
<td>array of object</td>
<td>Array of Seat Bid objects. The length of the array can be either 1+ (for yes-bid) or 0 (for no-bid).</td>
<td></td>
</tr>
<tr>
<td>cur*</td>
<td>string</td>
<td>Bid currency using ISO-4217 alphabetic codes. If not provided USD is assumed.</td>
<td>&quot;USD&quot;</td>
</tr>
<tr>
<td>ext</td>
<td>object</td>
<td>Ext Object. This field may be omitted in nobid response.</td>
<td></td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be present in each response.

**Ext Object**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>protocol</td>
<td>string</td>
<td>The latest BidSwitch protocol version this bid response is compliant with.</td>
<td>&quot;4.1&quot;</td>
</tr>
</tbody>
</table>

**Seat Bid Object**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>bid</td>
<td>array of object</td>
<td>Array of Bid Objects. The maximum number of bid objects per single bid request ad slot is two.</td>
<td></td>
</tr>
<tr>
<td>seat</td>
<td>string</td>
<td>ID of the bidder seat on whose behalf this bid is made. The value should match one of the values supplied in wseat field in the bid request.</td>
<td>&quot;34&quot;</td>
</tr>
</tbody>
</table>

Formally there can be multiple bids within Seat Bid for two reasons. The first one is that there can be several slots in request. The second one is when there are more than one bid for a single slot. The BidSwitch allows no more than two bids for a single ad slot. Bids belonging to the same seat must be enlisted in the same seatbid.bid array, i.e. all seatbid.seat values must be unique per response.
## Bid Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>string</td>
<td>ID for the bid object chosen by the bidder for tracking and debugging purposes.</td>
<td>3</td>
</tr>
<tr>
<td>impid</td>
<td>string</td>
<td>ID of the impression object from bid request to which this bid applies.</td>
<td>“1”</td>
</tr>
<tr>
<td>price</td>
<td>float</td>
<td>Price as a float value, CPM. All prices assumed to be in USD, if cur parameter is omitted.</td>
<td>1.23</td>
</tr>
<tr>
<td>adm*</td>
<td>string</td>
<td>Creative markup for banner ads. Note that this field should NOT contain win price macro. The field is REQUIRED for banner ads and is ignored in case of video or native bid responses. Note that adm field is supported starting from protocol 4.0, so bid responses containing adm and NOT containing the ext.protocol value of 4.0+ would be deemed invalid.</td>
<td>&quot;&lt;a href=&quot;<a href="http://adserver.com/click?id=12345&amp;tracker=$%7BCLICK_URL:URLENCODE%7D%22%22%3E">http://adserver.com/click?id=12345&amp;tracker=${CLICK_URL:URLENCODE}&quot;&quot;&gt;</a>&lt;img src=&quot;http://image1.cdn.com/impid=102&quot;&gt;&lt;/a&gt;&quot;</td>
</tr>
<tr>
<td>nurl</td>
<td>string</td>
<td>Win notice URL. This field should NOT be used for submitting creative markup. The url should contain win price macro, see Macros section below. This URL will be mostly called from user’s browser and should thus be SSL-compliant for requests with imp.secure set to 1. SSPs for which this URL will be called by a server to server call: Mopub, TripleLift.</td>
<td>&quot;<a href="http://adserver.com/winnote?impid=102&amp;winprice=$%7BAUCTION_PRICE%7D">http://adserver.com/winnote?impid=102&amp;winprice=${AUCTION_PRICE}</a>&quot;</td>
</tr>
<tr>
<td>iurl*</td>
<td>string</td>
<td>Sample image URL (without cache busting) for content checking. REQUIRED for banner ads.</td>
<td>&quot;<a href="http://adserver.com/preview?impid=102">http://adserver.com/preview?impid=102</a>&quot;</td>
</tr>
<tr>
<td>adid</td>
<td>string</td>
<td>ID that references the ad to be served if the bid wins.</td>
<td>&quot;3021&quot;</td>
</tr>
<tr>
<td>adomain</td>
<td>array of string</td>
<td>Advertiser’s primary or top-level domain for advertiser checking. This can be a list of domains if there is a rotating creative. Note that some SSPs allow only one domain. To such SSPs we only send the first domain from the list.</td>
<td>[&quot;advertiser.com&quot;]</td>
</tr>
<tr>
<td>cid*</td>
<td>string</td>
<td>Campaign ID or similar that is used by the bidder to track and organize their campaigns. The field is REQUIRED for Nexage and MoPub.</td>
<td>&quot;102&quot;</td>
</tr>
<tr>
<td>attr*</td>
<td>array of integer</td>
<td>Creative attributes as defined in OpenRTB.</td>
<td>[1,3]</td>
</tr>
</tbody>
</table>
**dealid*** | string | Reference to the deal.id from the bid request if this bid pertains to a private marketplace direct deal. | “AA-1234”

| **h*** | integer | Height of the impression in case when alternative ad size is used. | 250

| **w*** | integer | Width of the impression in case when alternative ad size is used. | 300

| **cat*** | array of string** | IAB category of the creative. REQUIRED in bid responses to YAX (RMX) and YieldOne bids. If SSP accepts only one category in bid response the first array element will be used. | ["IAB1"]

| **ext*** | object | Ext Object. This field may be required under certain circumstances. See below. |

* Fields marked with asterisk are optional and may not be present in each response.

** This field is also allowed to be of string type for backward compatibility with protocol 4.0.

### Bid Ext Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| advertiser_name*** | string | The name of the advertiser serving the creative. REQUIRED in bids responses to AdScale, Centro, BRX, Improve Digital and YieldOne bids. | “Coca-Cola”

| agency_name*** | string | The name of the agency representing the advertiser. REQUIRED in bids responses to AdScale bids. | “CCA”

| lpdomain*** | array of string | The actual landing page domain of the creative if different from adomain value. Recommended for mobile application ads, e.g. “adomain”:[“angrybirds.com”] and “lpdomain”:[“play.google.com”,”itunes.apple.com”] | ["play.google.com”,”itunes.apple.com ”]

| language*** | string | Alpha-2/ISO 639-1 code of creative language. REQUIRED in bid responses to YAX (RMX) and OpenX Japan bids. | “jp”

| cat*** | string | IAB category of the creative. REQUIRED in bid responses to YAX (RMX) and YieldOne bids. DEPRECATED: use seatbid.bid.cat instead. | “IAB1”

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<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>google*</td>
<td>object</td>
<td>Contains additional information for Google bids. The field is recommended.</td>
</tr>
<tr>
<td>yieldone*</td>
<td>object</td>
<td>Contains additional information for YieldOne bids. The field is REQUIRED for YieldOne bids.</td>
</tr>
<tr>
<td>vast_url*</td>
<td>string</td>
<td>The url pointing to the location the VAST document for the bid response. REQUIRED for bid responses to video traffic. Note that the VAST document should NOT contain impression tracking urls with win price macros.</td>
</tr>
<tr>
<td>duration*</td>
<td>integer</td>
<td>Video ad duration in seconds. REQUIRED in bid responses to BRX.</td>
</tr>
<tr>
<td>native*</td>
<td>object</td>
<td>Contains the details of the native response.</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be present in each response.

**NB:** some of the fields are required by certain SSPs; responses to bid requests from these SSPs with these fields missing will be discarded.

<table>
<thead>
<tr>
<th>SSP</th>
<th>Required bid response fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdScale</td>
<td>ext.advertiser_name, ext.agency_name</td>
</tr>
<tr>
<td>BRX</td>
<td>ext.advertiser_name, ext.duration</td>
</tr>
<tr>
<td>Centro</td>
<td>ext.advertiser_name</td>
</tr>
<tr>
<td>Improve Digital</td>
<td>ext.advertiser_name</td>
</tr>
<tr>
<td>Mopub</td>
<td>cid</td>
</tr>
<tr>
<td>Nexage</td>
<td>cid</td>
</tr>
<tr>
<td>OpenX Japan</td>
<td>ext.language</td>
</tr>
<tr>
<td>YAX (RMX)</td>
<td>cat, ext.language</td>
</tr>
<tr>
<td>YieldOne</td>
<td>cat or ext.yieldone.creative_category_id, ext.advertiser_name, ext.yieldone.creative_type</td>
</tr>
</tbody>
</table>
### Native Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>ver*</td>
<td>integer</td>
<td>Version of the Native Markup version in use.</td>
<td>1</td>
</tr>
<tr>
<td>assets</td>
<td>array of object</td>
<td>List of native ad assets.</td>
<td></td>
</tr>
<tr>
<td>link</td>
<td>object</td>
<td>Destination Link. This is default link object for the ad. Individual assets can also have a link object which applies if the asset is activated (clicked). If the asset doesn’t have a link object, the parent link object applies.</td>
<td></td>
</tr>
<tr>
<td>imptrackers**</td>
<td>array of string</td>
<td>Array of impression tracking URLs, expected to return a 1x1 image or 204 response. This field should NOT contain win price macro.</td>
<td>[&quot;<a href="http://adserver.com/native?impid=102">http://adserver.com/native?impid=102</a>&quot;]</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be present in each response.
** imptrackers array should be used with following constraints:
  - For Rubicon, only one element is guaranteed to be triggered. Place trackers in the order of importance
  - Otherwise this array is optional and may not be present in each response

### Native Asset Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>integer</td>
<td>Unique asset ID, must match one of the asset IDs in request.</td>
<td>1</td>
</tr>
<tr>
<td>required*</td>
<td>integer</td>
<td>Set to 1 if asset is required (bidder requires it to be displayed), default is 0.</td>
<td>1</td>
</tr>
<tr>
<td>title*</td>
<td>object</td>
<td>Title object for a title asset.</td>
<td></td>
</tr>
<tr>
<td>img*</td>
<td>object</td>
<td>Image object for an image asset.</td>
<td></td>
</tr>
<tr>
<td>video*</td>
<td>object</td>
<td>Video object for a video asset.</td>
<td></td>
</tr>
<tr>
<td>data*</td>
<td>object</td>
<td>Data object for a data asset.</td>
<td></td>
</tr>
<tr>
<td>link**</td>
<td>object</td>
<td>Link object for call to actions. The link object applies if the asset item is activated (clicked). If there is no link object on the asset, the parent link object on the bid response applies.</td>
<td></td>
</tr>
</tbody>
</table>

* There may be exactly one of the fields marked with asterisk in one asset object.
** Link object is optional and may not be present in each response.
### Native Asset Title Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>string</td>
<td>The text associated with the title element.</td>
<td>&quot;Our product is the best!&quot;</td>
</tr>
</tbody>
</table>

### Native Asset Image Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>string</td>
<td>URL of the image asset.</td>
<td>&quot;<a href="http://adserver.com/image?impid=102">http://adserver.com/image?impid=102</a>&quot;</td>
</tr>
<tr>
<td>h*</td>
<td>integer</td>
<td>Height of the image in pixels.</td>
<td>250</td>
</tr>
<tr>
<td>w*</td>
<td>integer</td>
<td>Width of the image in pixels.</td>
<td>300</td>
</tr>
</tbody>
</table>

* There may be exactly one of the fields marked with asterisk in one asset object.

### Native Asset Video Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
</table>
| vasttag | string | VAST XML. | "<?xml version="1.0" encoding="UTF-8"?>
<VAST version="2.0">"Ad id="12345"">\n<InLine><AdSystem version="1.0">SpotXchange</AdSystem><AdTitle><![CDATA[Samp
le VAST]]></AdTitle><Impression>http://sampl
e.com</Impression><Des</Description>\n<CData</Value</Creative><Creatives><Creative sequence="1"><Linear><Duration>00:00:30</Duration><Tracki</Creative></Creatives></InLine></Ad></VAST>" |

### Native Asset Data Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>string</td>
<td>The formatted string of data to be displayed. Can contain a formatted value such as “5 stars” or “$10” or “3.4 stars out of 5”.</td>
<td>&quot;3.4 stars out of 5&quot;</td>
</tr>
</tbody>
</table>
Native Link Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>string</td>
<td>Landing URL of the clickable link.</td>
<td>&quot;<a href="http://advertiser.com/">http://advertiser.com/</a>&quot;</td>
</tr>
<tr>
<td>clicktrackers*</td>
<td>array of string</td>
<td>Click tracker URLs to be fired on click of the URL.</td>
<td>[&quot;<a href="http://adserver.com/click?impid=102">http://adserver.com/click?impid=102</a>&quot;]</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be present in each response.

SSP Specific Fields

Google Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>attribute*</td>
<td>array of integer</td>
<td>List of creative attributes as defined by Google.</td>
<td>[32,22]</td>
</tr>
<tr>
<td>vendor_type*</td>
<td>array of integer</td>
<td>List of creative vendor types as defined by Google.</td>
<td>[42,43]</td>
</tr>
</tbody>
</table>

* Fields marked with asterisk are optional and may not be present in each response.

Yieldone Object

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>creative_type</td>
<td>string</td>
<td>Creative type as defined by YieldOne.</td>
<td>&quot;HTML&quot;</td>
</tr>
<tr>
<td>creative_category_id*</td>
<td>integer</td>
<td>Creative category as defined by YieldOne. The field is recommended for YieldOne bids.</td>
<td>79</td>
</tr>
</tbody>
</table>

Nobid Response

If the DSP opts to pass on the bid request, it should respond with HTTP 204. The BidSwitch also accepts bid responses with an empty array of seatbid objects as valid nobid responses.

Examples

Banner Bid Response

Following is an example of a bid response with the ad served via adm field. The bid price for this impression is a $9.43 CPM.
Banner Secure Bid Response

Following is an example of a bid response with the ad served via adm field, suitable for serving in HTTPS environment. The bid price for this impression is a $9.43 CPM.

```json
{
  "id": "1234567890",
  "ext": {
    "protocol": "4.1"
  },
  "seatbid": [
    {
      "bid": [
        {
          "id": "1",
          "impid": "102",
          "price": 9.43,
          "adid": "314",
          "cid": "42",
          "cat": ["IAB12"],
          "nurl": "http://adserver.com/winnotice?impid=102&winprice=${AUCTION_PRICE}",
          "adomain": ["advertiserdomain.com"],
          "ext": {
            "advertiser_name": "Coca-Cola",
            "language": "en",
            "agency_name": "CC-advertising"
          }
        }
      ],
      "seat": "4.1002"
    }
  ]
}
```
"adid": "314",
"cid": "42",
"cat": ["IAB12"],
"adm": "<a href="http://adserver.com/click?adid=12345&tracker=${CLICK_URL:URLENCODE}\">
<img src="https://image1.cdn.com/impid=102\"/></a>",
"nurl": "https://adserver.com/winnote?impid=102&winprice=${AUCTION_PRICE}",
"adomain": [
   "advertiserdomain.com"
],
"ext": {
   "advertiser_name": "Coca-Cola",
   "language": "en",
   "agency_name": "CC-advertising"
}
"seat": "8"
]
}

Video Bid Response
{
   "cur": "USD",
   "ext": {
      "protocol": "4.1"
   },
   "id": "e9c3e120-ffcb-4300-9c98-64cb26f95df",
   "seatbid": [
      {
         "bid": [
            {
               "adid": "3",
               "nurl": "http://adserver.com/winnote?impid=102&winprice=${AUCTION_PRICE}",
               "adomain": ["nokia.com"],
               "cid": "11",
               "ext": {
                  "vast_url": "http://adserver.com/vast?impid=102",
                  "duration": 15,
                  "advertiser_name": "Nokia"
               },
               "id": "1c3ff810-3623-4b04-8396-9e7ca071cb72",
               "impid": "1",
               "price": 4.079077199308326
            }
         ],
         "seat": "1"
      }
   ]
}
Video Secure Bid Response

```json
{
  "cur": "USD",
  "ext": {
    "protocol": "4.1"
  },
  "id": "e9c3e120-ffcb-4300-9c98-644cb26f95df",
  "seatbid": [
    {
      "bid": [
        {
          "adid": "3",
          "nurl": "https://adserver.com/winnotice?impid=102&winprice=${AUCTION_PRICE}",
          "adomain": ["nokia.com"],
          "cid": "11",
          "ext": {
            "vast_url": "https://adserver.com/vast?impid=102",
            "duration": 15,
            "advertiser_name": "Nokia"
          },
          "id": "1c3ff810-3623-4b04-8396-9e7ca071cb72",
          "impid": "1",
          "price": 4.079077199308326
        }
      ],
      "seat": "1"
    }
  }
}
```

Native Bid Response

Following is an example of a native bid response. The bid contains a title and an image assets.

```json
{
  "id": "1234567890",
  "ext": {
    "protocol": "4.1"
  },
  "seatbid": [
    {
      "bid": [
        {
          "id": "1",
          "impid": "102",
          "price": 9.43,
          "adid": "314",
          "cid": "42",
          "cat": ["IAB12"],
          "nurl": "http://adserver.com/winnotice?impid=102&winprice=${AUCTION_PRICE}"}
```
"adomain": [  "advertiserdomain.com"
],
"ext": {
  "advertiser_name": "Coca-Cola",
  "language": "en",
  "agency_name": "CC-advertising",
  "native": {
    "ver": 1,
    "link": {
      "url": "http://adserver.com/click?impid=102"
    },
    "imptrackers": [ "http://adserver.com/native?impid=102"
    ],
    "assets": [
      {
        "id": 1,
        "required": 1,
        "title": {
          "text": "A test Native Ad"
        }
      },
      {
        "id": 3,
        "required": 1,
        "img": {
          "url": "http://adserver.com/image?crid=314"
        }
      }
    ]
  }
},
"seat": "58"
}

Native Secure Bid Response

Following is an example of a native bid response suitable for serving in HTTPS environment. The bid contains a title and an image assets.

{
  "id": "1234567890",
  "ext": {
    "protocol": "4.1"
  },
  "seatbid": [
    {
      "bid": [
        {
          "id": "1",
          "impid": "102",
          "url": "http://adserver.com/click?impid=102"
        }
      ]
    }
  ]
}
Multi-bid Response

The following bid response example contains two bids, for $9.43 CPM and for $5.50 CPM. Both bids target the same ad slot, both would take part in the auction and if the first one is discarded due to publisher-side blocklist then the second one would be able to win the auction.

```json
{
  "id": "1234567890",
  "ext": {
    "advertiserName": "Coca-Cola",
    "language": "en",
    "agency_name": "CC-advertising",
    "native": {
      "ver": 1,
      "link": {
        "url": "http://adserver.com/click?impid=102"
      },
      "imptrackers": ["https://adserver.com/native?impid=102"
      ],
      "assets": [
        {
          "id": 1,
          "required": 1,
          "title": {
            "text": "A test Native Ad"
          }
        },
        {
          "id": 3,
          "required": 1,
          "img": {
            "url": "https://adserver.com/image?crid=314"
          }
        }
      ]
    }
  },
  "seat": "1"
}
```
"protocol": "4.1",
"seatbid": [
  
  "bid": [
    
    "id": "1",
    "impid": "102",
    "price": 9.43,
    "adid": "314",
    "cid": "42",
    "cat": ["IAB12"]
  
  
  "adm": "<a href="http://adserver.com/click?adid=12345&tracker=${CLICK_URL:URLENCODE}"
  
  "nurl": "http://adserver.com/winnote?impid=102&winprice=${AUCTION_PRICE}",
  
  
  "adomain": ["advertiserdomain.com"
  
  "ext": {
  
  "advertiser_name": "Coca-Cola",
  
  "language": "en",
  
  "agency_name": "CC-advertising"
  
  
  },
  
  "id": "2",
  
  "impid": "102",
  
  "price": 5.5,
  
  "adid": "413",
  
  "cid": "43",
  
  "cat": ["IAB12"]
  
  "adm": "<a href="http://adserver.com/click?adid=12345&tracker=${CLICK_URL:URLENCODE}"
  
  "nurl": "http://adserver.com/winnote?impid=413&winprice=${AUCTION_PRICE}",
  
  "iurl": "http://adserver.com/preview?crid=413",
  
  "adomain": ["advertiserdomain.com"
  
  "ext": {
  
  "advertiser_name": "Coca-Cola",
  
  "language": "en",
  
  "agency_name": "CC-advertising"
  
  
  },
  
  "seat": "1"
  ]
  ]
]
Response to a Bid Request with a Private Deal

```
{
    "id": "1234567892",
    "ext": {
        "protocol": "4.1"
    },
    "currency": "USD",
    "seatbid": [
        {
            "id": "1114125-afaff2f-af2251",
            "impid": "1",
            "price": 9.43,
            "adid": "314",
            "dealid": "deal-1",
            "ad": "<a href="http://adserver.com/click?adid=12345&tracker=${CLICK_URL:URLENCODE}\">
                  <img src="http://image1.cdn.com/impid=102"/></a>
                "nurl": "http://adserver.com/winnote?impid=102&winprice=${AUCTION_PRICE}",
                "adomain": [
                    "advertiserdomain.com"
                ],
            "seat": "58"
        }
    ]
}
```

No Bid Response

Following is an example of sending no-bid response to the bid. Note that the preferred nobid response format is an empty HTTP 204 response.

```
{
    "id": "1234567891",
    "ext": {
        "protocol": "4.1"
    },
    "seatbid": []
}
```

Macros

Win price macro should be used in nurl field. Click tracking macro may be used adm field.
Win price macro

In order for the exchange to convey certain information to the winning bidder (e.g., the settlement price), some substitution macros can be inserted into the win notice URL definition. Prior to calling a win notice URL, the exchange will search the specified URL for any of the defined macros and replace them with the appropriate data. Note that the substitution is simple in the sense that wherever a legal macro is found, it will be replaced without regard for syntax correctness.

<table>
<thead>
<tr>
<th>Macros</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>${AUCTION_PRICE}</td>
<td>Settlement price for the auction. The substituted value will be defined as CPM.</td>
</tr>
</tbody>
</table>

SSP click tracking url macro

Some SSPs require the DSP to add an SSP click url macro in all creatives for click reporting. **This is a strict requirement if the bid request contains ext.clktrkrq field** and is strongly recommended in other cases. DSPs wishing to trade with such SSPs should add the click tracking macro to the creative markup in adm field. The SSP will replace the macro with the SSP click tracking url. If the SSP doesn’t support click tracking macros then the tracking macro will be replaced by an empty string.

<table>
<thead>
<tr>
<th>Macros</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>${CLICK_URL:URLENCODE}</td>
<td>A placeholder for the SSP click tracking url in urlencoded form. Required for bids to SSPs that support click tracking.</td>
</tr>
</tbody>
</table>

The SSP click url (if present) should be inserted before the landing page in the creative. The landing page url should be single-escaped.

Click tracker at Google AdX

An URL-encoded click tracker at Google AdX has escaped query string and not-escaped path, i.e.:

```
http://googleads.g.doubleclick.net/pagead/ac1k%3Fsao%3Dai%3DBsD-iGqbnSU3JjgqjQTg0M6eDOc8E4m5vD7CsCNTw9qThABGAEg9084AFCa-x-
HEBgdJhugvYQOQQYgBAaAzbvzyC_wXzNy2F9wYXJ0eS5odGiSUAIYqAMB9QMAAAe9QMEAAAA
%26num%3D1%26client%3Dca-mongoogle%26adurl%3D
```

URLs escaped like this can safely be used as query string parameters (inside the ?param1=...&param2=... part), but using them inside URL paths (i.e. inside the http://example.com/.../... part before the question mark) will most probably lead to misinterpretation of URLs.
BidSwitch Categories

For the better coverage of sensitive categories BidSwitch extends the standard IAB list with additional categories. These categories may be used in bcat, site.cat, app.cat fields in bid requests and seatbid.bid.cat field in bid response.

<table>
<thead>
<tr>
<th>ID</th>
<th>Creative Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSW1</td>
<td>Alcohol</td>
</tr>
<tr>
<td>BSW2</td>
<td>Gambling</td>
</tr>
<tr>
<td>BSW3</td>
<td>Tobacco and smoking</td>
</tr>
<tr>
<td>BSW4</td>
<td>Firearms and weapons</td>
</tr>
<tr>
<td>BSW5</td>
<td>Sexual &amp; Reproductive Health</td>
</tr>
<tr>
<td>BSW6</td>
<td>Ringtones &amp; Downloadable</td>
</tr>
<tr>
<td>BSW7</td>
<td>Drugs &amp; Supplements</td>
</tr>
<tr>
<td>BSW8</td>
<td>Get Rich Quick</td>
</tr>
<tr>
<td>BSW9</td>
<td>Free Gifts, Quizzes, &amp; Surveys</td>
</tr>
<tr>
<td>BSW10</td>
<td>Nudity</td>
</tr>
<tr>
<td>BSW11</td>
<td>Cosmetic Procedures &amp; Body Modification</td>
</tr>
</tbody>
</table>

Supported Rich Media Frameworks

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any framework is accepted</td>
<td>ALL</td>
</tr>
<tr>
<td>Adcentric</td>
<td>ac</td>
</tr>
<tr>
<td>Adinterax</td>
<td>ad</td>
</tr>
<tr>
<td>Adform</td>
<td>af</td>
</tr>
<tr>
<td>Atlas</td>
<td>at</td>
</tr>
<tr>
<td>Apivid</td>
<td>av</td>
</tr>
<tr>
<td>DoubleClick</td>
<td>dc</td>
</tr>
<tr>
<td>Eyeblaster</td>
<td>eb</td>
</tr>
<tr>
<td>EyeReturn</td>
<td>er</td>
</tr>
<tr>
<td>EyeWonder</td>
<td>ew</td>
</tr>
<tr>
<td>Flashtalking</td>
<td>ft</td>
</tr>
<tr>
<td>Klipmart</td>
<td>km</td>
</tr>
<tr>
<td>Kpsule</td>
<td>ks</td>
</tr>
<tr>
<td>MediaMind</td>
<td>mm</td>
</tr>
<tr>
<td>Mediaplex</td>
<td>mp</td>
</tr>
<tr>
<td>Piximedia</td>
<td>pm</td>
</tr>
<tr>
<td>PointRoll</td>
<td>pr</td>
</tr>
<tr>
<td>Pictela</td>
<td>pt</td>
</tr>
<tr>
<td>Rockabox</td>
<td>rb</td>
</tr>
<tr>
<td>Company</td>
<td>Code</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
</tr>
<tr>
<td>Smart Adserver</td>
<td>sa</td>
</tr>
<tr>
<td>Silence Media</td>
<td>sm</td>
</tr>
<tr>
<td>Unicast</td>
<td>ui</td>
</tr>
<tr>
<td>Undertone</td>
<td>ut</td>
</tr>
<tr>
<td>Viewpoint</td>
<td>vp</td>
</tr>
<tr>
<td>Weborama</td>
<td>wo</td>
</tr>
</tbody>
</table>