

Google Analytics 4 Implementation – Web

About

This document describes the steps required to implement and configure a Google Analytics 4 property for a website only. App implementations are outside the scope of this document.

The configurations are not intended to be an exhaustive measurement plan implementation but more an illustration of the essential foundation for good data collection within GA4.

I have assumed familiarity with Universal Analytics and a moderate level of technical expertise including familiarity with Google products such as Google Tag Manager and tagging/tracking concepts.

The process described can be applied to most types of website including transactional ecommerce sites.

Do not expect to see detailed descriptions of the various “explore” custom reporting options, the intention here is to ensure that your base config is collecting data accurately to enable you to trust the data when diving into these features yourself.

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Dan Coleman
Coleman Marketing Limited
<https://www.linkedin.com/in/danielmcoleman/>

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Recommended “End Game”

In almost all instances at time of writing (March 2022) the best practice configuration for Google Analytics on web is

- Google Tag Manager (gtm) implemented with a complete Enhanced Ecommerce dataLayer (Universal Analytics) if required, and additional dataLayer for GA4 specific events
- Universal Analytics fully implemented with a complete Enhanced Ecommerce implementation if required via Google Tag Manager
- Google Analytics 4 (GA4) implemented in parallel via Google Tag Manager

The process described in this document will assume this is the desired implementation however it should be noted that in some instances it is preferable to implement tags directly on the webpage using the Global Site Tag (gtag). For detailed developer documentation on both gtag and gtm please see the Additional Resources section at the end of this document.

Other 3rd Party tag management solutions are outside the scope of this document.

Pre-Implementation Checks

Review Current Universal Analytics Implementation

Tagging Implementation

How are the current tags Universal Analytics tags implemented? There are 3 options:

Direct Implementation via analytics.js

This should have been migrated to gtag or gtm several years ago. Recommend updating to Google Tag Manager.

Direct Implementation via Global Site Tag

The majority of businesses who have left decisions over tagging to their web developers will have this implementation. It is possible to extend gtag to support GA4 however the additional effort required is typically greater than removing gtag and replacing with a gtm implementation.

Google Tag Manager will be a more versatile long term solution as it supports tags from non-Google properties. Additionally, server side gtm is increasingly likely to become an important part of measurement infrastructure in the future cookieless web so I recommend taking the opportunity to migrate.

Implementation via Google Tag Manager

This is the preferred solution in almost all cases

Review UA Enhanced Ecommerce Implementation (Ecommerce Sites Only)

Google Analytics 4 utilises a number of events similar to the Enhanced Ecommerce events in Universal Analytics. Check whether the following Enhanced Ecommerce events are being tracked:

- Product Impressions
- Product Clicks
- Product Detail Views
- Product Add To Cart
- Product Remove From Cart
- Checkout Steps
- Purchases

Audit Events

Document the custom events currently being collected in Universal Analytics and validate use cases with the client. Identify those which need to be migrated. The GA4 measurement philosophy is very different to UA and the more that can be done to reduce dependency on legacy custom events the easier clients find it to adapt to the new methodology.

Review UTM Taxonomy

GA4 does not currently offer the capability to modify the default channel groupings, with session/medium/campaign being the preferred mechanisms for grouping traffic. This means the UTM taxonomy is more important than ever, and it is essential that clients are using it consistently.

Common indicators that clients may need a refresher or support in refining their UTM taxonomy in the UA Acquisition reports are:

- Medium and Source being used interchangeably
- (not set) in Source, Medium, or Campaign fields
- Purpose of the fields being misunderstood e.g. Source should refer to the source platform or referrer (e.g. facebook), Medium should refer to the marketing medium (e.g. "banner")

In some cases, it may be necessary to modify the utm taxonomy to match default channel grouping expectations. A full list of [default channel grouping utm conditions can be found here](#)

Review Current GA4 Implementation

If the client has already implemented GA4 check that it is receiving required events. At this stage an initial scan of the following reports should indicate whether there are standard fields which are missing data:

- Reports > Engagement > Events report, the following automatically collected events should be in place as a minimum and the event counts should be comparable to the Page Views and Sessions in the Universal Analytics property for the same period.

Note it is unlikely that there will be an exact match, but a similar magnitude should give you confidence that the base tracking is in place

- page_view
- first_visit
- Engagement > Conversions report, if the website has an identifiable macro-conversion e.g. an ecommerce purchase or a registration this table should be populated
- Monetization > Ecommerce Purchases, if the website is an ecommerce website, then this table should be fully populated with data in each of the following columns:
 - Item Name
 - Item Views
 - Add-to-Basket
 - Basket-to-view rate
 - E-commerce purchases
 - Purchase-to-view rate
 - Item purchase quantity

There are a number of additional recommended events which may need to be mapped depending on the website, these are covered in the following section.

Event Mapping

Events were often used in Universal Analytics for custom measurement plans however they tended to be freeform in use.

In GA4 everything is an event, this means that to get the most out of the platform you need to ensure that your events follow Google's expected structure. There are several recommended events, and these should be mapped to web behaviours. Only when website functions have been mapped correctly to expected events should you consider defining custom events.

Use the Recommended Events Checklist below to complete the Event Mapping exercise for your web property

Recommended Events Mapping Example

An example of how to complete the Recommended Events Checklist

Event	Parameters	User Action (Trigger)	Parameter Source(s)
purchase	currency transaction_id value coupon shipping tax items	Purchase event is triggered on the order confirmation page	Existing enhanced ecommerce dataLayer. Items array to be a custom gtm variable refactored from ecommerce.purchase.products

Recommended Events Checklist

The following are the recommended events for most web properties. If the site does not offer specific functionality (e.g. ecommerce, registration, search) the events can be ignored, however it is essential that all appropriate events are mapped in the table below

For further detail on the expected parameter values please refer to [Google's documentation](#)

Automatically Collected Events

The following events are automatically collected and do not require a custom event mapping

- Click
- File Download
- Page View
- Scroll
- Video Plays
- On Site Search

Generic Events

Event	Parameters	User Action (Trigger)	Parameter Source(s)
login	method		
purchase	currency transaction_id value coupon shipping tax items		
search	search_term		
select_content <i>(note: Do not use for product selections from the plp on an ecommerce site. For this use select_item instead)</i>	content_type item_id		
share	method content_type item_id		
sign_up	method		
page_view <i>(automatically collected however additional configuration may be required if content groupings will be used)</i>	content_group		

For Ecommerce & Online Sales Websites

Event	Parameters	User Action (Trigger)	Parameter Source(s)
add_payment_info	currency value coupon payment_type items		
add_shipping_info	currency value coupon shipping_tier items		
add_to_cart	currency value items		
add_to_wishlist	currency value		

	items		
begin_checkout	currency value coupon items		
generate_lead	currency value		
purchase	currency transaction_id value coupon shipping tax items		
refund <i>(rarely used as in most instances these happen outside of the tagged website)</i>	currency transaction_id value coupon shipping tax items		
remove_from_cart	currency value items		
select_item	item_list_id item_list_name items		
select_promotion	creative_name creative_slot location_id promotion_id promotion_name items		
view_cart	currency value items		
view_item	currency value items		
view_item_list	item_list_id item_list_name items		
view_promotion	creative_name creative_slot location_id promotion_id promotion_name		

	items		
--	-------	--	--

Custom Event Mapping

Use the table below to define custom events not covered above

Event	Parameters	User Action (Trigger)	Parameter Source(s)

Technical Implementation

Using the data collected in the Event Mapping section it should now be possible to create technical briefs for the web development team to ensure that all required events are being sent to Google Analytics 4.

Google Tag Manager

GTM has 2 out of the box tag templates for GA4 and these should be used in all instances. The basic steps to implementation are:

1. Create your GA4 property in your Google Analytics account
2. Note the measurement id
3. In GTM create a GA4 Configuration Tag using this measurement id and an "All Pages" trigger
4. Optional: On ecommerce websites that already have a good Universal Analytics Enhanced Ecommerce implementation with a standard dataLayer I recommend importing the EEC dataLayer Builder for GA4 template by matteo-zambon-gtm from the gtm template gallery. Use this template to create 2 custom variables which can be used to configure triggers and event tags for GA4:
 - a. EEC -> GA4 Events
 - b. EEC -> GA4 Items
5. Using standard GA4 variables, triggers, and the Google Analytics: GA4 Event tag create the events you identified in the Event Mapping section. The majority of migrations can be completed in Google Tag Manager with little to no support from your web developers. If additional event or dataLayer pushes are required please see the developer links at the end of this document.
6. Publish the container and ensure that the Realtime report in GA4 is collecting data (this could take up to 30 minutes)



EEC dataLayer Builder for GA4
by [matteo-zambon-gtm](#)

ADDED



Global Site Tag

The Global Site Tag will require developer support to implement. The process is as follows:

1. Create your GA4 property in your Google Analytics account
2. Copy the Global Site Tag script and ask your web developers to add it to the <head> section of the website
3. Brief your web developer to create the events identified above by following the [Google Developer Documentation](#)
4. After deployment ensure that the Realtime report in GA4 is collecting data (this could take up to 30 minutes)

Tagging instructions
Use one of the following to start collecting data.

[Add new on-page tag](#) | [Use existing on-page tag](#)

Global site tag (gtag.js) Use this if you're using a website builder or CMS-hosted site. Add the Analytics tag to your website to begin seeing data in your property.

Copy the global site tag into the **<head>** section of your HTML. Or, if you use a website builder (such as GoDaddy, Shopify or others), tag your website using [these instructions](#).

```
<!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?id=G-9N5S3M2RV2"></script>
<script>
  window.dataLayer = window.dataLayer || [];
  function gtag(){dataLayer.push(arguments);}
  gtag('js', new Date());

  gtag('config', 'G-9N5S3M2RV2');
</script>
```

Once all events and technical implementation is complete and sending data to your GA4 property the next step is to configure the property itself.

GA4 Property Configuration

Having configured the technical implementation, the next step is to configure the Google Analytics property itself. In your Google Analytics 4 property select the gear option and check/apply the following configurations

Property Settings

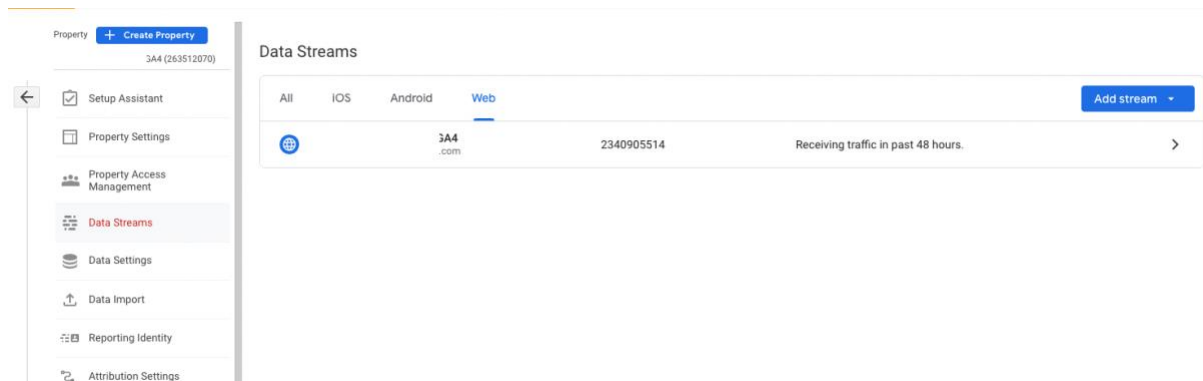
These should have been set up during property creation but ensure that the time zone and currency is correct

Property Access Management

Ensure that access to the property is limited to those who need it, there are no shared logins, and admin access is controlled

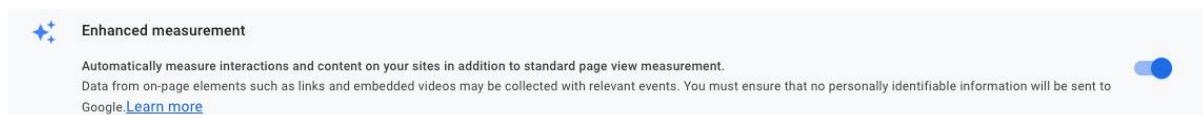
Data Streams

Ensure your web data stream is showing as “Receiving Traffic..”



Click the arrow/chevron icon on the right and configure the web stream as follows:


Toggle “Enhanced Measurement” to On



Select the Gear icon and enable any required enhanced measurement events


✕ Enhanced measurement

SAVE


- 

Page views


Capture a page view event each time a page loads or the website changes the browser history state. Optionally turn off browser history-based events under advanced settings.

[Show advanced settings](#)
- 

Scrolls


Capture scroll events each time that a visitor gets to the bottom of a page.
- 

Outbound clicks


Capture an outbound click event each time a visitor clicks a link that leads them away from your domain(s). By default, outbound click events will occur for all links leading away from the current domain. Links to domains configured for cross-domain measurement (in Tagging Settings) will not trigger outbound click events.
- 

Site search

Capture a view search results event each time a visitor performs a search on your site (based on a query parameter). By default, search results events will be fired any time a page loads with a common search query parameter in the URL. Adjust which parameters to look for under advanced settings.

[Show advanced settings](#)
- 


Video engagement

Capture video play, progress, and complete events as visitors view embedded videos on your site. By default, video events will be automatically fired for YouTube videos embedded on your site with [JS API support](#) enabled.
- 

File downloads

Capture a file download event each time a link is clicked with a common document, compressed file, application, video or audio extension.

Expand the Site Search advanced settings and add the search query parameter that your site uses

- 

Site search

Capture a view search results event each time a visitor performs a search on your site (based on a query parameter). By default, search results events will be fired any time a page loads with a common search query parameter in the URL. Adjust which parameters to look for under advanced settings.

[Hide advanced settings](#)

Search Term Query Parameter ?

Specify up to 10 parameters in order of precedence, separated by commas. Only the first matching parameter will be used.

q,s,search,query,keyword

Additional Query Parameters ?

Specify up to 10 parameters separated by commas. (Case insensitive)

Select “More Tagging Settings” from the bottom of the page and configure the following sections

Configure Your Domains

If you are using cross-domain tracking (i.e. the measurement id is deployed across multiple web properties with different subdomains or hostnames) add all domains that your tracking script is deployed on to this section

Define Internal Traffic

Use this section to exclude any internal, agency, or monitoring tool IP addresses. This is the equivalent of an Exclude IP filter in Universal Analytics

List Unwanted Referrals

Ensure any 3rd party payment processors or other 3 party domains that may interrupt a session are included in here.

For example, a customer comes to the site via an SEO click but makes a purchase using Paypal which redirects the customer temporarily to the paypal.com domain before redirecting them back to the order confirmation page. It is not desirable to record paypal.com as a referrer and therefore the PayPal domain should be added to this section.

Note: you should not include your own internal domains in this section

For more information on unwanted referrals review the [Google documentation](#)

Adjust Session Timeout

Check that the session timeout has not been adjusted from 0 hours, 30 minutes and that the timer for engaged sessions remains at 10 seconds.

Data Collection

Check that Google Signals has been enabled.

Expand the User Data Collection Acknowledgement section and confirm.

Data Retention

Change the Event Data Retention to 14 months

User and event data retention

You can change the retention period for data you send that is associated with cookies, user identifiers or advertising identifiers. These controls don't affect most standard reporting, which is based on aggregated data. Changes to these settings take effect after 24 hours. [Learn more](#)

Event data retention ⓘ 2 months ▾

Reset user data on new activity ⓘ

Data Filters

If you added an internal traffic rule to the internal traffic definitions under the web stream details you will need to set the Internal Traffic rule from Testing to Active

Reporting Identity

Set the Default Reporting Identity to “By User ID and Device”

Attribution Settings

The recommended attribution settings are as follows and should be left as-is in most cases, however it is worth highlighting that this means that potentially the attribution model will not be fully operational for 90 days.

revenue data. User and session data will be unaff

Reporting attribution model

Cross-channel data-driven model ▾

Lookback window

Conversions can happen days or weeks after a pe determines how far back in time a touchpoint is e lookback window will result in 30 January conver: 30 January.

Changing the lookback window will only apply goi within this Analytics property.

Acquisition conversion events
(i.e. first_open, first_visit)

- 7 days
 30 Days (recommended)

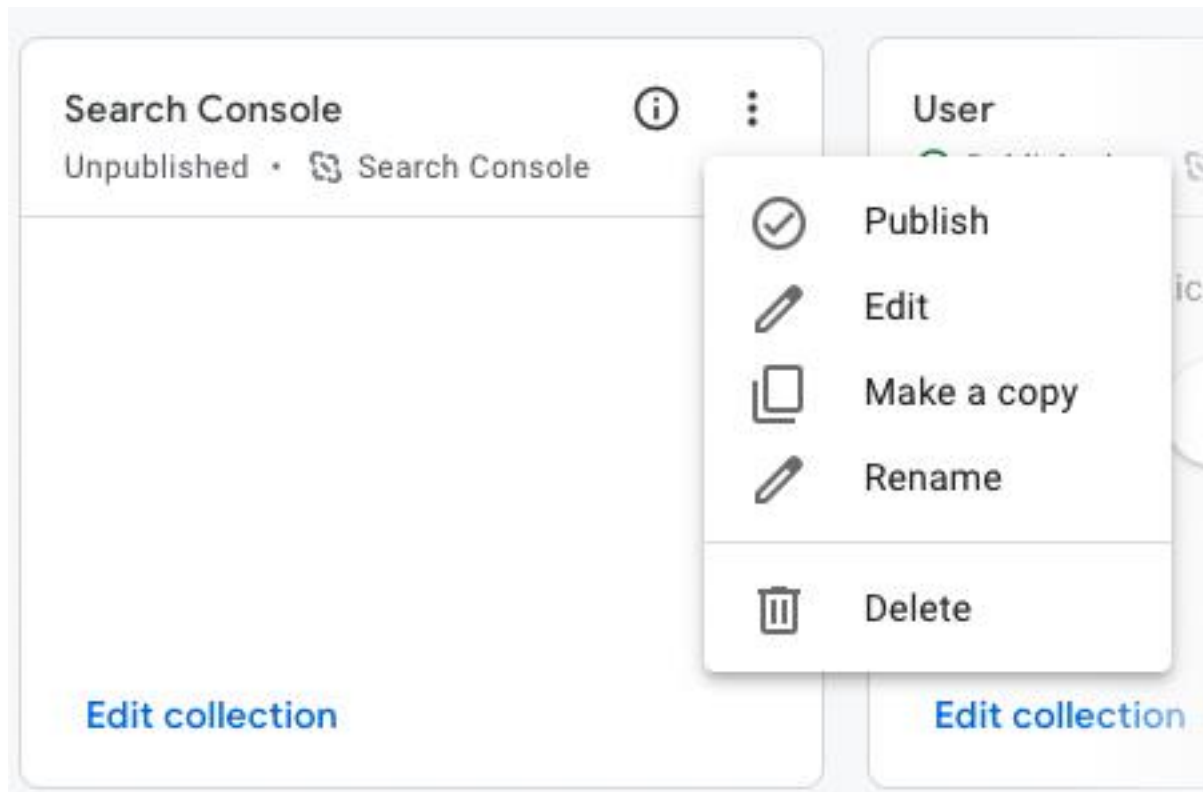
All other conversion events

- 30 days
 60 Days
 90 Days (recommended)

Product Links

Ensure that the appropriate links are created for Google Ads, Search Console, Merchant Center etc.

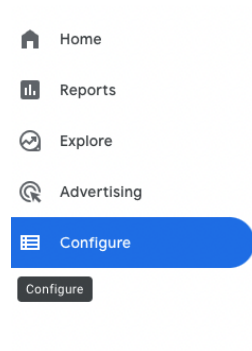
Note: The Search Console reports are not enabled in the property by default. Make sure you enable these from Reports > Library and then publish the Search Console collection



Reporting Interface Configuration

Conversions

Use the Configuration section to define any events that should be considered conversions.



Ecommerce purchase events will be automatically marked as conversions, but any event can be marked as a conversion depending on which on-site events are considered conversion within your business (for example an account sign-up)

Existing events						🔍	📄
Event name ↑	Count	% change	Users	% change	Mark as conversion (?)		
add_payment_info	3,754	↓ 66.9%	1,669	↓ 13.8%	<input type="checkbox"/>		
add_shipping_info	2,304	↓ 85.6%	1,346	↓ 0.3%	<input type="checkbox"/>		
add_to_cart	17,064	↓ 37.2%	5,819	↓ 12.5%	<input type="checkbox"/>		
begin_checkout	3,464	↓ 69.5%	1,762	↓ 10.7%	<input type="checkbox"/>		
click	867	↑ 48.5%	642	↑ 37.2%	<input type="checkbox"/>		
file_download	12	↑ 50.0%	7	↑ 75.0%	<input type="checkbox"/>		
first_visit	140,680	↑ 20.9%	139,643	↑ 21.1%	<input type="checkbox"/>		
page_view	765,652	↑ 23.6%	147,511	↑ 27.6%	<input type="checkbox"/>		
purchase	1,301	↓ 75.0%	1,181	↓ 6.0%	<input type="checkbox"/>		
remove_from_cart	5,329	↓ 60.0%	2,131	↓ 12.9%	<input type="checkbox"/>		
scroll	177,577	↑ 29.4%	67,889	↑ 38.5%	<input type="checkbox"/>		
select_item	136,570	↑ 8.7%	33,107	↑ 17.2%	<input type="checkbox"/>		
session_start	204,265	↑ 23.1%	147,534	↑ 27.7%	<input type="checkbox"/>		

Audience Creation

Audiences are best thought of as analogous to Segments in Universal Analytics, however due to the new multi-session measurement they can also take on many of the characteristics we traditionally associate with cohorts, for example

- All users who were first acquired by a specific campaign
- All users acquired by the Organic Search channel after a specific date

The audience requirements will vary from client to client however some common requirements include

- As we are no longer able to modify the default channel grouping it may be necessary to replicate previous UA channel grouping settings as audiences, for example paid social campaigns are often tagged in a way typically not recognised by Google Analytics and it is not always feasible to change the utm at source. It may therefore be desirable to create a “Paid Social” audience that includes all the source/medium conditions that you need to consider for Paid Social
- Creating audiences for your most important channels, even if they are just using the default channel grouping setting can be a time saver when selecting them from the Comparisons list as choosing a comparison by Audience Name is the first option, whereas you need to scroll to find the default channel grouping.
- Audiences should also be used to combine Channel+Geographical conditions, for example “Users Users From The UK Acquired by Organic Search”
- I also recommend creating a “High Value Customers” audience based on LTV > a value that is appropriate for your business

Note that when you first create an audience it can take 24-48 hours to fully populate.

Bonus: Landing Page Report

Although a detailed discussion of each report is out of scope for this document one of the most common complaints about GA4 is that the Behaviour > Landing Pages report has no direct equivalent and is one of the most used reports in Universal Analytics after the Acquisition > All Traffic > Channels report. It can however be replicated fairly closely as follows:

1. Click on Explore, and create a blank exploration
2. In the Variables column add the following Dimensions (click '+' and import)
 - a. Page Path + Screen Class
 - b. Event Name
3. In the Variables section add the following Metrics
 - a. Sessions
4. Drag the Page Path dimension to the Rows section
5. Drag the sessions metric to the Values section
6. Drag event name to the Filters section
 - a. Set the filter to "Exactly Matches" session_start
7. Set any other tab settings, e.g. number of rows
8. Add any other useful metrics e.g. Engagement Rate
9. If you want a landing page report for a specific channel
 - a. Import the Session Default Channel Grouping dimension
 - b. Add it to the filter, exact match "Organic Search" or "Paid Search" etc.
10. Complete the Exploration Name field (top left)

This will give you a basic landing page report. To access the report in future click the Explore tab and it will be listed as an option.

Additional Resources

The following further reading may be useful when implementing the recommendations in this guide

Technical Implementation Guide GTAG/GTM

https://developers.google.com/analytics/devguides/collection/ga4/ecommerce?client_type=gtag

Dimensions Reference

<https://support.google.com/analytics/answer/9143382#attribution&demographics&ecommerce&event&gaming&general&geography&link&other&page-screen&platform-device&publisher&time&traffic-source&user&user-lifetime&video&zipy=%2Cpage-screen>

Default Channel Grouping Rules

<https://support.google.com/analytics/answer/9756891>

Google's Migration Guide UA->GA4

https://support.google.com/analytics/answer/10607999?hl=en&ref_topic=10737980