Tag

LEARNING TAG MANAGEMENT

BEGINNERS GUIDE TO GOOGLE TAG MANAGER

BY HIMANSHU SHARMA
Beginners Guide to Google Tag Manager

Written by Himanshu Sharma, Founder of Optimize Smart

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About the author

Himanshu Sharma is the founder of Optimize Smart, a UK based digital marketing consultancy which specializes in analytics consultation and conversion optimization.

Himanshu has more than ten years’ experience in SEO, PPC and web analytics. He holds a bachelors’ degree in Internet Science and is a certified web analyst. He is both Google Analytics and Google AdWords certified. He was nominated for a Digital Analytics Association award for excellence. The Digital Analytics Association is a world renowned not-for-profit association which helps organizations overcome the challenges of data acquisition and application.

Himanshu runs a popular blog on OptimizeSmart.com which gets more than a quarter of a million visits a month from over one hundred countries. He is the author of three bestselling books on conversion optimization, attribution modelling and email analytics:

He run a popular course on ‘Web Analytics’ on optimizesmart.com. Through this comprehensive course you will learn and master all of the elements that go into extracting insight from data and optimising the online performance of your business for sales and conversions. More than 500 students are currently enrolled in this course.
Introduction to Google Tag Manager

Google Tag Manager (also known as GTM) is a free tag management solution provided by Google. Through this 'online tool', you can deploy and manage various marketing and analytics tags on a website or mobile app.

Introduction to Tags

A tag is a bunch of JavaScript code which is used to collect measurement and marketing data from your website/mobile app and then send that data to 3rd party services.

The third party service could be: Google Analytics, Google Adwords, Twitter, Facebook, Comscore etc.

Following is an example of Google Analytics Tag (also known as Google Analytics Tracking code):

```html
<!-- Google Analytics -->
<script>
(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function()
{
(i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
```
Following is an example of Google Adwords Conversion Tracking Tag (also known as Google Adwords Conversion Tracking code):

<!-- Google Code for Test Conversion Page -->
<script type="text/javascript">
/* <![CDATA[ */
var google_conversion_id = 928804124;
var google_conversion_language = "en";
var google_conversion_format = "3";
var google_conversion_color = "ffffff";
var google_conversion_label = "wceHCILzjGQQ7drxugM";
var google_conversion_value = 100.00;
var google_conversion_currency = "GBP";
var google_remarketing_only = false;
/* ]]> */
</script>
<script type="text/javascript" src="/www.googleadservices.com/pagead/conversion.js"></script>
<noscript>
<div style="display:inline;">
<img height="1" width="1" style="border-style:none;" alt="" src="/www.googleadservices.com/pagead/conversion/928804124/?value=100.00&amp;currency_code=GBP&amp;label=wceHCILzjGQQ7drxugM&amp;guid=ON&amp;script=0"/>
</div>
</noscript>
Following is an example of Facebook Tag (also known as Facebook Pixel Code):

```html
<!-- Facebook Pixel Code -->
<script>
!function(f,b,e,v,n,t,s){if(f.fbq)return;n=f.fbq=function(){n.callMethod?
  n.callMethod.apply(n,arguments):n.queue.push(arguments)};if(!f._fbq)f._fbq=
  n;
  n.push=n;n.loaded=!0;n.version='2.0';n.queue=[];t=b.createElement(e);t.async=
  !0;
  t.src=v;s=b.getElementsByTagName(e)[0];s.parentNode.insertBefore(t,s)(window,
  document,'script','//connect.facebook.net/en_US/fbevents.js');

  fbq('init', '879030082151151');
  fbq('track', "PageView");</script>
<noscript><img height="1" width="1" style="display:none"
  src="https://www.facebook.com/tr?id=879030082151151&ev=PageView&noscript=1"
/></noscript>
<!-- End Facebook Pixel Code -->

Other examples of tags are:

- Kissmetrics tracking code
- Phone call tracking code etc.

So you see, that tag is just a snippet of code. You can add this snippet of code (or tag) directly to your website, by copying-pasting it, in your website template files (like header.php) or you can add the tag indirectly on your website, via Google Tag Manager (GTM).

**Advantage of adding the tags via Google Tag Manager**
What is the advantage of adding the tags to your website via GTM, when you can simply, directly place them on the website? The advantage is, when you use GTM to add tags on a website, you get more control over:

1. When the tag should fire.
2. When the tag should not fire.
3. Where the tag should fire.
4. Where the tag should not fire and
5. What the tag should do, when it get fired (executed)

In addition to this, via GTM, you can very easily: add, remove, enable or disable any tag on your website. You can very easily change the functionality of almost any tag. If you are not using Google Tag Manager, then you need to, manually add or remove the tags from one or many website template files, and you won’t be able to enable or disable these tags. To disable a tag, you have to remove it from the template files. To enable the tag, you have to add the tag back in your template files. This is a lot of work (code changes) esp. if your website is big and use several tags.

Similarly, if you want to change the functionality of a tag, you have to first manually find the template file(s) where the tag is installed and then edit the tag code. If you are using same tag in several different template files, you may miss to update the tag in some of the template files which can result in data discrepancies. So when you do not use Google Tag Manager to deploy and manage tags, then your web developer/ IT has to work extra hard to maintain various tags on your website.

This increases your website maintenance cost. So by not using Google Tag Manager, you end up spending more time and money on tag deployment and management. That is why you should use Google Tag Manager. And above all,
**GTM is free to use.** There is no monthly or yearly fees. So there is really, no excuse, for not using GTM.

**Key Benefits of using Google Tag Manager**

Following are the key benefits of using Google Tag Manager:

#1 **GTM removes the need for editing the website code over and over again just for adding, removing or editing tags.**

Instead, one code is placed on every page on the website, which is the **GTM container code.** This container code literally acts as a container, as it can store and deploy several marketing and analytics tags.

Through GTM user interface, you can: add, edit, enable, disable or remove any tag, with just few button clicks. No need to hard code the website over and over again just for deploying and maintaining various tags.

#2 **Through GTM you can test and deploy tags very fast** without hardcoding the tags each and every time on your website.

If you want to adapt rapidly and cost efficiently in response to changes in marketing conditions, search engine and social media landscape and competitive landscape then you need to move fast.

You can’t afford to spend weeks or even months, just to add bunch of tags on your website, because your IT team is too busy updating the product catalogues.

A common problem for most online businesses owners/marketers is, over dependence on web developers for any task related to website code which
makes them very slow, when it comes to adopting anything agile or lean (agile analytics, agile marketing, lean startup etc).

With GTM installed on the website, tags can be: added, edited, tested or removed in a matter of minutes. That means you can move quickly.

For example, if you want to add survey on your website, say for just one day, just add and publish the survey tag to the website via GTM. Once the day is over, disable the tag. That's it. No heavy coding, no booking the time with IT, no direct changes to the website code.

**#3 GTM makes advanced tracking possible** – The biggest advantage of using GTM is that, it makes advanced analytics tracking possible for your website.

GTM provides many in-built tags and variables through which you can implement advanced tracking in short amount of time. The same task may take several days or weeks without GTM.

For example, say you want to track clicks on all external links on your website, so that you can determine how much traffic the website is sending out to other websites (advertisers, affiliates etc).

If you are using Google Tag manager, you can complete this task in a matter of minutes. Without using GTM, you will have to add, event tracking code, to each and every external link, which is very time consuming and prone to errors.

Similarly, if you are using Google Tag manager, you can track clicks on ‘submit’ buttons embedded on pages across your website in a matter of minutes. Without using GTM, you will have to manually add, event tracking code, to each and every submit button on the website, which is very time consuming and prone to errors.
#4 **GTM makes tag management very efficient** - When you use GTM, you can add, edit, enable, disable and remove all website tags from one central location. This ability of the GTM, makes tag management extremely efficient esp. when you have got dozens of marketing and analytics tags on your website.

#5 **By using GTM, you can improve website speed** - when you deploy tags via GTM, they are deployed asynchronously, meaning a slow loading tag won't block other tags from being fired (executed).

**Anatomy of Google Tag Manager Tool**

If you treat Google Tag Manager Tool as a car, then its engine is the container tag and its skin (look and feel) and controls are the user interface.

The container tag provides all the functionality needed for GTM tool, to run and deploy tags on your website. The user interface makes it easy for you, as an end user, to control the container tag.

Just like, when you drive a car, the car steering, makes it easy for you to control the car engine, make it, turn the car left or right. When coders refer to GTM, they usually refer to the container tag.

When non-coders refer to GTM, they usually refer to the user interface. Thus depending upon the context, GTM can either mean the 'container tag' or the 'user interface'.

**Google Tag Manager Container Tag**

Google Tag Manager container tag is a two part tag. What that means, it is made up of two parts. The following first part of the GTM container tag is
placed in the head section (<head>.....</head>) of all of the web pages on your website:

<!-- Google Tag Manager -->
<script>(function(w,d,s,l,i){w[l]=w[l]||[];w[l].push({'gtm.start':
new Date().getTime(),event:'gtm.js'});var f=d.getElementsByTagName(s)[0],
j=d.createElement(s),dl=l!='dataLayer'?'&l='+l:'';j.async=true;j.src=
'https://www.googletagmanager.com/gtm.js?id='+i+dl;f.parentNode.insertBefore(j,f);
})(window,document,'script','dataLayer','GTM-TXAAA');</script>
<!-- End Google Tag Manager -->

The second part of the GTM container tag is placed immediately after the opening <body> tag of all of the web pages on your website:

<!-- Google Tag Manager (noscript) -->
<noscript><iframe src="https://www.googletagmanager.com/ns.html?id=GTM-TXAAA"
height="0" width="0"
style="display:none;visibility:hidden"></iframe></noscript>
<!-- End Google Tag Manager (noscript) -->

If you already have a GTM account then you can see the GTM container code by following the steps below:

**Step-1:** Login to your GTM account: [https://tagmanager.google.com/](https://tagmanager.google.com/)

**Step-2:** Click on the 'Admin' tab:
Step-3: Click on the 'Install Google Tag Manager' link:

You will now see your GTM container tag code:

The GTM Container ID

The part of the GTM container tag code which reads 'GTM-TXAAA', it is called the container ID. This ID is used to uniquely identify each GTM container tag.
The other part of the code which reads 'gtm.js' is the JavaScript library used by the container tag

Once the container tag code is added to your website, the Google Tag Manager is considered to be installed on your website.

Whenever we refer to GTM in the context of coding, like if someone says “GTM pulls the data from data layer”, we are actually referring to the container tag.

In short, **Google Tag Manager is a container tag.**

**Introduction to Data Layers in Google Tag Manager**

In the context of GTM, a data layer is a JavaScript array which is used to collect and store data from a website and then send that data to the GTM container tag.

Google recommends to use data layers, for retrieving run time information.

Your web developer can set up data layer for you. This data layer contains all the information you want to send to the container tag.

Example of an empty data layer:

```html
<script>
  dataLayer = [];
</script>
```

Example of a data layer which contain variables:
In order to get the most out of GTM, you need to understand and use data layers.

**Google Tag Manager Account Structure**

You need a Google account to create a GTM account. You can create multiple GTM accounts from a single Google Account. The rule of thumb is to create one GTM account per company/organization.

If you are a business, then most likely, you need only one GTM account. If you are a business conglomerate, you may have several companies or units. In that case, you would need multiple GTM accounts.

Multiple GTM accounts are often used by marketing agencies because they manage the GTM of several different companies. You can either create a new GTM account from scratch or you can add an existing GTM account. Marketing agencies generally ask their clients to add them, to their existing GTM accounts.

Following is a visual representation of the GTM account structure:
You can create/add multiple GTM accounts from a single Google account. So you don't need to create, several Google accounts for managing multiple GTM accounts. Each GTM account can have one or more container tags.

The rule of thumb is to create one container tag for each website. So if you have got 3 different websites, then you would create 3 different container tags, one for each website.

But you would create these 3 container tags from a single GTM account and from a single Google account. If you treat your sub-domain as an entirely different website, then you should create a separate container tag for your sub-domain. Otherwise use the same container tag for both primary domain and sub-domain.

Each container tag has got one or more tags, triggers and variables. The tags, triggers and variables are collectively called **GTM configurations**. You can't share GTM configurations across containers. So unless your sub-domain is
completely unrelated from your primary domain, you should not use a different container tag for your sub-domain.

The GTM account structure can now, also be illustrated like the one below:

Since majority of businesses out there have got only one company and one website, their GTM account structure will look like the one below:
Naming Conventions for GTM accounts and containers

The best practice is to name the GTM account after your company name and your container after the domain name.

For example,

If your company name is 'XYZ Ltd' and your website name 'www.howcool.com' then you should name your GTM account 'XYZ Ltd' and your container 'www.howcool.com':

Google Tag Manager Setup Process

Google Tag Manager set up includes following thirteen steps:

1. Determine tracking requirements
2. Do Tag Audit of your live website
3. Create functional and technical designs of your tags
4. Do tag Deployment Planning
5. Do the Risk Assessment
6. Create Project Scope document
7. Get buy-in from IT
8. Setup Google Tag Manager Account
9. Install GTM container tag on the staging website
10. Create, test and publish tags on your staging website
11. Install GTM container tag on the live website
12. Create, publish and test tags on the live website
13. Do tag audit of your live website.

**Step #1: Determine your tracking requirements**

Think of all of the information you want to collect. Think of all of the additional tags you may need, to achieve your tracking objectives.

Your tracking requirements will also depend upon your current migration status like:

1. Migrating from a non-google product like 'Omniture' to Universal Analytics (UA).
2. Migrating from [classic Google Analytics to Universal Analytics](#).
3. Migrating from hardcoded Google Analytics tags to the tags deployed via GTM.
4. Fresh installation of Google Analytics and all other tags via GTM.
5. Migrating hundreds of different configuration settings along with Classic GA to Universal Analytics via GTM.
If you are migrating from non-google platform and/or migrating along with hundred different configuration settings then your migration is going to be difficult and time consuming and you would need to do lot more planning to minimise risk like **data loss**.

**Step #2: Do Tag Audit of your live website**

In tag audit we identify all the tags currently being hard-coded on our website. We also document following information about each deployed tag:

1. What is the purpose of this tag? What data it is collecting?
2. Where the tag is sending the data?
3. Does the tag still serve our purpose or is it obsolete?
4. How the tag is collecting the data?
5. When the tag collects the data?
6. Where (on which page(s)) the tag collects the data.

You need to document all such information about each deployed tag preferably in an excel document. Marketing and measurements tags are generally deployed in the global header and footer and/or order confirmation page(s).

So that is the first place to look for the tags. Some tags are deployed in the body section of the HTML document or tied to a HTML element(s) via event handler.

Manually identifying tags can be quite difficult esp. if the website is big.

That is why you should use crawlers like [screaming frog SEO spider](https://www.screamingfrog.co.uk) or the tools which are specially designed for Tag auditing like: [Tag Inspector](https://www.tag-inspector.com), [web analytics solution profiler](https://www.analytics-profiler.com) or [Google Tag Assistant](https://tagassistant.google.com).

Following is the tag audit report from the 'Tag Inspector' tool:
This report provides following information:

1. List of all the tags found on a website along with the number of pages on which each tag was found as you can see from the screenshot above.

2. Details of how each tag was loaded. If a tag is loaded from page source or from GTM. For example from *optimizesmart.com* => *Google Tag*
Manager (gtm.js) => Google Universal Analytics (analytics.js), we can conclude that Google Analytics is loaded from GTM.

3. Provides a list of all the web pages containing a particular tag.

4. Provides a list of all the web pages on which the tag is missing.

5. Provides a list of all the cookies set by the tag.

Step #3: Create functional and technical designs of your tags

Functional design is what your tags are supposed to do and technical design is how the intended functionality is to be implemented in code and produce results.

For example you may want to create a tag which tracks publication date of each article. So tracking publication dates will be the functional design of your tag.

The code/process/configuration/data layers that you will use to actually implement this functionality will be the technical design of your tag. The format in which your tag should produce the output is also the technical design of your tag.

Once you have created functional and technical design of your tags, you can then test the tags on your development website and make sure that it works the way it should before you deploy the tag on the client’s staging website.
On a development website you can run wild with your code and ideas without worrying about messing up the staging website.

Sometimes it is not possible to replicate the functionality of a hard coded tag without working on the staging website. In that case you have no choice but to create and debug tags on the staging website.

But you should always aim to do as much legwork as possible in the development environment, so that you can minimise re-work later in the staging environment when not only you but many more people are responsible for tag deployment and testing.

It is always a good practice to plan your data layers in advance i.e. what data layer variables you will use on each page (esp. product pages and order confirmation page) and how they will be set up. This is because if data layers need to be hard coded on page(s) then IT need to know about that in advance.

**Step #4: Do tag deployment planning**

This type of planning includes determining the whole sequence in which you will import tags one by one to GTM without breaking the existing tracking or creating technical issues. You need to decide in advance whether you will go for complete tag deployment or partial tag deployment.

Complete tag deployment means migrating all of your hard coded tags to GTM. Partial tag deployment means migrating only a subset of hard coded tags to GTM.

But the whole point of using GTM is to remove the need for editing the website code over and over again, just for adding, removing or editing tags. This
objective cannot be accomplished, if you keep tags (other than the container tag) hard coded on your website.

So in order to get the full benefit of GTM, you should aim to remove all hard coded tags (other than the container tag) from your website and deploy them via the container tag.

**Note:** Google recommends complete tag deployment.

Sometimes migration of certain tags to GTM is not technically possible as GTM doesn’t support it.

For example GTM doesn’t support ‘two part tags’. These are the tags which need to be deployed in two different parts of an HTML document, generally one part goes in the header and the second part goes in the footer.

If you have got ‘two part tags’ then you need to identify them and hard code them.

There are certain tags (like Facebook JavaScript SDK) which cannot be deployed via GTM. So you may also have to keep such tags, hard coded on your website. Sometimes complete migration of all of your hard coded tags is not possible because of the website size and complexity of the tracking.

Determine all those tags which are dependent on each other, as the output from one tag may act as an input for other tag. Such tags need to be deployed simultaneously.

For example if you are manipulating the ecommerce data via a GTM tag then you first need ecommerce tracking set up. So if you deploy a tag which manipulates the ecommerce data in some way without first deploying the transaction tag, your tracking will break.
You know it by now that GTM works even if you migrate only a subset of tags. But you need to make sure that you don’t do **double tagging** during tag deployment.

Double tagging occurs when you leave the tags deployed via GTM, hard coded on your website or when you deploy the same tags through other Tag management solutions. Double tagging is a bad practice because it can inflate your data or make the data collection inconsistent.

So you need to make sure that double tagging doesn't occur during tag deployment. Remove the hard coded tag as soon you deploy it via GTM.

**Step #5: Do the risk assessment**

You need to understand that migrating tags to GTM is not as easy as Google claims, in its blog posts, documentations and videos. I get lot of cases where marketers get lost during tag deployment via GTM.

Vendors sell Tag Management Solutions (TMS) to marketers with the promise that it will give them independence from the IT department and they can easily use TMS to track almost anything without hard coding tags on the website again. But this is simply misleading and not true.

Tag Management Solution like GTM won’t help you much beyond executing some very basic tasks (like installing Google Analytics tracking code, some very basic event tracking etc on your website) if you know little to nothing about [DOM and JavaScript](https://developer.mozilla.org/en-US/docs/Web/API/Document_object_model).
The real power of GTM lies in the usage of its variables. Many times predefined variables won’t do the trick and you need to create custom JavaScript variables, custom HTML tags or use DOM element etc. All of this require a good knowledge of DOM tree and JavaScript code.

- Can you drill down to a particular DOM element?
- Do you understand how debug console works?
- Do you understand what variable is and how functions and data layer work?
- Can you confidently debug your GTM installation and/or revert back to the previous working version if something goes wrong with the implementation?

You would need to do such type of risk assessment before you decide to migrate tags on your own or outsource tag deployment to a third party.

In addition to technical expertise, you need to consider following factors too before you start the migration process:

1. Website size and complexity.
2. Complexity of the tracking.

**Step #6: Create Project Scope document**

A project scope document outlines all of the project deliverables and identify the constraints, assumptions, resources, cost and milestones. As the name suggest it clearly defines the scope of the project.

Migrating tags to GTM is a project, both for you and for the IT. You should create a project scope document to get a buy-in from client/boss and esp. from
IT department as they often need to know in advance about your requirements before starting the migration process.

This document is basically a corporate way of saying:

“Hey I am working under the assumption that all of my queries will be resolved in a timely manner and that I will get required access, documents, permissions or any support for my work without prolonged delays and if I don’t then there is no guarantee of project timeline or added expenses”

I use this document a lot. It is a great way to manage clients’ expectations and to avoid any confusion, disagreement or conflict.

I have explained in great detail about creating a ‘project scope document’ in this article: Universal Analytics Upgrade Guide. So check it out.

**Step-7: Get buy-in from IT**

“Hang on a second, isn’t the whole purpose of using GTM is to get independence from IT?”

Actually this is not the real purpose. The main purpose of using GTM is to speed up and streamline the whole tagging process. There are lot of blogs out there who can tell you how to use GTM to fix a particular tracking issue and in many cases if you follow the instructions, you can fix your issues.

But every time you follow someone’s instructions or use someone’s code without a thorough understanding of your development environment, you bring certain amount of risk with your code/actions.
This risks increases exponentially when you work on a big website which has got dozens of different configuration settings and/or which rely on several third party solutions.

Just because your GTM debugger tells you that you can fire a tag, does not automatically mean that your tag will not create any website issues. Always remember that.

When you choose to bypass IT department by deploying code via GTM, you also take the full responsibility for your code and actions. If anything goes wrong with your code, IT can/will put all the blame on you.

A typical commercial website is updated all the time and if you are not involving IT in your code deployment, they can accidentally break/misplace your container tag or break your data layer. They may change the element ID you are using in one of your tag rules or just remove the whole element.

Your custom HTML tag can easily break your website functionality and the worst part is neither you nor IT would have any clue what went wrong. Now imagine you are deploying tags on an airline website. One of your custom HTML tag suddenly broke the shopping cart.

You have no idea that shopping cart is not working anymore because your GTM debugger didn't tell you that. While you are happy that your tag is firing, the airline company lost millions of dollars in sales within few minutes. Now who will get the blame? You or the IT department.

I don’t need to explain how much devastating a professional negligence claim brought to you by an airline company can be, for your career and your life. No matter how good you are in coding, no matter how many years of experience you have got in using GTM, there is always a possibility that you could make a
mistake, the mistake which might cost you your job or in worst case, send you to prison.

Not involving IT in your Tag deployment is one of the biggest mistake one can make in his/her career esp. when working for enterprise level clients. Is that little bit of independence from IT, really worth chasing? No. Not in real life. The sensible way of using GTM or any TMS is to involve IT.

Let them know what you are doing via GTM. Keep them in loop. If you are going to deploy a custom HTML tag, then get it tested by your IT first before you deploy it. Your testing can never be as exhaustive as the one done by an IT professional because they understand their development environment the best.

The IT should always be aware of the code being deployed via GTM. In this way when they make certain changes on the website, they make sure that it doesn’t break your tracking.

Similarly, when you deploy certain code on the website via GTM, the IT can make sure that it doesn't alter/break existing website functionality.

You should also consider restricting tag deployment if more than one person use GTM. You can blacklist certain tags (esp. custom HTML Tags) and variables through `gtm.blacklist` if you know that they are known to create website issues once deployed.

Use the project scope document to get a buy-in from the IT department. Make sure they allocate sufficient time for tag deployment work.

**Step #8: Setup Google Tag Manager Account**

Follow the steps below to create Google Tag Manager (GTM) account:
Step-1: Sign in to GTM: https://tagmanager.google.com/ using your Google username and password.

Step-2: Click on the ‘create account’ link on the home page. Generally only one GTM account is needed per company:

![Google Tag Manager](image)

**Note:** You can create/add multiple GTM accounts from a single Google account.

Step-3: Name your new GTM account after your company name, select the checkbox ‘Share data anonymously with Google and others’ (to enable benchmarking) and then click on the ‘continue’ button:

![Add a New Account](image)
**Step-4:** Enter the name of your container after your staging website name, select 'Web' (if you want to use GTM container on a website) and then click on the ‘create’ button:

![Add a New Account](image)

**Step-5:** Accept Google Tag Manager Terms of service by clicking on the ‘Yes’ button:

![Google Tag Manager Terms of Service Agreement](image)

You have now created new GTM account and container.
Step-6: You will now be shown the code for installing Google Tag Manager. Just click on the 'ok' button for now. Once you clicked on the 'ok' button, you will see the GTM interface.

Step #9: Install GTM container tag on the staging website

Navigate to the 'Admin' section of your GTM account and then click on the 'Install Google Tag Manager' link as shown below:

Copy-paste the GTM code (aka container tag) on every page of your staging website by following the instructions given by GTM:
Make sure that your container tag is on every web page, does not break the functionality of staging website or create tracking issues on the staging website. Google recommends creating one container tag for each web property.

So if you have got multiple sub-domains or top level domains, you may need to create multiple container tags, one container tag for each web property.

If you have also got a mobile app, then you also need to create a separate mobile app container tag.

Note: Create a test view in a test GA property (if you already don’t have one) to test various GTM tag implementations on the staging website. In this way you avoid corrupting your existing tracking data for the live website.

**Step #10: Create, test and publish tags on your staging website**
Create and test tags **one by one** on the staging website according to your tag deployment plan. It is important that you create and test one tag at a time. In this way you are more likely to spot an issue if something goes wrong.

Tags which are dependent on each other should be deployed simultaneously. Deploy tags in such an order that it does not break the existing tracking or create technical issues/errors on the staging website.

Create and hard code data layers on the staging website, if your tracking set up required it. Add your data layer just above the container snippet and initialize it for each web page esp. product pages and order confirmation page(s).

Test your tag in 'preview and debug' mode. Through this mode you can determine which tags are firing and which are not.

You can see how your staging website looks with updated container draft in your browser and determine (to some extent) whether the tag is working or breaking the website functionality.

Test your tags on different web browsers and devices.

Make sure that the tag is firing from the GTM container and not from the source code of a page. Make sure that the tag is not firing twice and is firing on all of the targeted web pages.

Once you have done your testing, send the preview link of your updated container draft to IT for further testing esp. if you are working on a custom HTML tag or custom JavaScript macro.

Remember GTM debugger does not provide full proof testing. You can’t just blindly rely on this testing tool alone. Once you have done your testing, publish tags one by one on the staging website and simultaneously remove the
corresponding hard coded tag from the website. If you published all the tags at once and something goes wrong, you will have a hard time diagnosing the issue.

**Step-11: Install a new GTM container tag on the live website**

Create and install a new GTM container tag on the live website. Make sure that this container tag does not break the website functionality.

Test your container tag in different web browsers and devices. It is important that you keep two different version of your container tag.

Use one container tag for the staging website (called it 'staging container') and use a different container tag for the live website (called it 'live container').

Maintaining two different versions of the container tag can be challenging but this is required to avoid mishaps on the live website esp. if large volume of transactions are being carried out on the live website.

**Step-12: Create, publish and test tags on the live website**

*Never auto import GTM configurations (Tags, Variables, Triggers) from the staging container to the live container.*

This is because over time, you cannot be sure that the staging container is the exact copy of the live container and you don't want to accidentally overwrite the last known good configuration settings of the live container.
Instead of importing the GTM configurations from the staging container, manually create, publish and test each tag one by one on the live website according to your deployment plan. Test your tags in different devices and browsers.

**Step-13: Do Tag Audit of your live website**

Now is the time to do another tag audit on the live website. The purpose of this tag audit is to make sure:

1. No page is missing the container tag.
2. Marketing and measurement tags are on all targeted pages.
3. Each tag is firing and is being fired from the container and not from the source code of a page.
4. No tag is firing twice
5. Data layers are all intact
6. Each tag is working the way it should.
7. No tag is breaking the existing website tracking and/or functionality.

**Setting up Google Analytics via Google Tag Manager**

The purpose of this exercise is to make you familiar with the GTM interface and help you, in moving around, with ease. You will learn to create a new tag, debug it and then publish it on a website.

Follow the steps below to set up Google Analytics via GTM:
**Step-1:** [Create new Google Analytics Property](#) (if you don't have one). If you already have GA property then login into GA via your Google login and password.

**Step-2:** Navigate to the 'Admin' section of your 'All Website Data' view:

![Click here](#)

**Step-3:** Click on 'Tracking Code' link (under Property > Tracking Info):

![Tracking Code](#)

**Step-4:** Make a note of the tracking ID. You would need this ID later, when you set up Google Analytics via GTM:

![Tracking ID](#)
Step-5: Login to your GTM account and then click on the link ‘Add a new tag’:

Step-6: Name your tag 'Google Analytics Tracking - All Pages':

Note: You can name your tag whatever you like.

Step-7: Click on 'Choose a tag type to begin setup...' button:
Step-8: Select 'Universal Analytics' from the list of featured tags:

Step-9: Enter the tracking ID of your Google Analytics property in the 'Tracking ID' text box:

Step-10: Click on 'Choose a trigger to make this tag fire...'
**Step-11**: Click on 'All Pages' trigger as we want the Google Analytics tracking to fire on all the web pages of our website:

Your entire tag configuration will look like the one below:
Step-12: Click on the 'Save' button to complete the process of creating a new tag. You will now see your new tag listed under the 'Tags' section:

![Image of Google Analytics Tracking - All Pages]

Step-13: Click on the ‘preview’ button to test the tag on your website:
Once you have clicked on the ‘preview’ button, you will see a message box like the one below:

![Message box image]

**Step-14:** Now visit your website, scroll down to the bottom of the window and look for a debugging window, like the one below:

![Debugging window image]

This debugging window is telling you, that if you publish your Google Analytics tag on the live website, it should fire/execute.

**Note:** Make sure that, not only the tag is firing but it is also not breaking the website design and/or functionality in any way.

**Step-15:** Once you have tested your new tag, head back to GTM and click on the ‘Leave Preview Mode’ link:
Step-16: Click on the ‘Submit’ button in the top navigation:

Step-17: Enter your version name and version description (like the one below) and then click on the 'Publish' button:

This action will install Google analytics on your website via GTM.
**Step-18:** Now remove the Google Analytics tracking code from all of the web pages on your website. If the Google analytics tracking code is not hard coded on your website then you can skip this step.

That’s how you create, debug and publish new tags in Google Tag Manager.

Since now you know, how to create and publish a tag via GTM, now is the time to migrate all of the tags hardcoded on your website to GTM. By migrating I mean, deploying the tags via GTM.

**Introduction to GTM Tag Templates**

A tag template makes it easy to deploy a tag (esp. third party non-google tags) on your website. GTM provides dozens of tag templates.

To see the list of all available tag templates, click on the 'Add a new tag' link on the container 'overview' page:
Now click on 'Tag Configuration':

You can now see the list of all available GTM tag templates:

**Note:** If you want to create and use your own tag, you can do that via *Custom HTML Tag* or *Custom Image Tag*: 
Introduction to Triggers in Google Tag Manager

A trigger is a condition that must evaluate to either true or false at run time. In GTM, triggers are an integral part of a tag creation process. So you cannot create a tag without first creating the corresponding trigger.

There are two methods for creating a trigger in GTM:

One is while you are creating a new tag and one is through the triggers menu:
There are two categories of triggers in GTM:

1. Firing triggers (commonly known as triggers)
2. Blocking triggers

**Firing triggers**
A firing trigger (or firing rule) is a condition which must be met (must evaluate to true) at run time, for a tag to fire/execute. A firing trigger tells GTM when the tag should fire.

Following is an example of a firing trigger:

```
{{url}} matches http://www.abc.com/cart/thankyou.html
```

This trigger fires the tag, when the URL of the currently loaded page matches http://www.abc.com/cart/thankyou.html

There are two categories of firing triggers:

1. Built-in firing triggers
2. User-defined firing triggers (also known as custom triggers)

**Built-in and User defined firing Triggers**

Built-in triggers are predefined firing triggers. These are ready to use triggers. User defined triggers are the one defined by people like me and you.

There are two methods to see the list of built-in and user-defined triggers. One is while you are creating/editing a tag and one is through the triggers menu.

**Method-1: While creating/editing a tag**

In order to see the list of built-in and user-defined triggers, follow the steps below:

**Step-1:** Create or edit a new tag.

**Step-2:** Click on the 'Choose a trigger to make this tag fire...' button:
Step-3: Click on the '+' button on the top right hand side:

Step-4: Click on 'Choose a trigger type to begin setup':

You will now see the list of available built-in triggers:
For each built-in trigger there is a corresponding user defined trigger available. In other words, GTM let you customise built-in triggers.

For example, in order to customize a built-in trigger say 'DOM Ready' just click on it and then select 'Some DOM Ready Events':
Following is a complete list of built-in triggers along with their corresponding user defined trigger:

<table>
<thead>
<tr>
<th>Built-in Trigger</th>
<th>Corresponding user defined trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 All DOM Ready Events</td>
<td>Some DOM Ready Events</td>
</tr>
<tr>
<td>2 All Page Views</td>
<td>Some Page Views</td>
</tr>
<tr>
<td>3 All Window Loaded Events</td>
<td>Some Window Loaded Events</td>
</tr>
<tr>
<td>4 All Clicks</td>
<td>Some Clicks</td>
</tr>
<tr>
<td>5 All Link Clicks</td>
<td>Some Link Clicks</td>
</tr>
<tr>
<td>6 All Custom Events</td>
<td>Some Custom Events</td>
</tr>
<tr>
<td>7 All forms</td>
<td>Some forms</td>
</tr>
<tr>
<td>8 All History Changes</td>
<td>Some history Changes</td>
</tr>
<tr>
<td>9 All JavaScript Errors</td>
<td>Some JavaScript Errors</td>
</tr>
<tr>
<td>10 All Timers</td>
<td>Some Timers</td>
</tr>
</tbody>
</table>

**Method-2: Using the 'Triggers' menu**

In order to see the list of built-in and user-defined triggers using the 'Triggers' menu, follow the steps below:

**Step-1:** Click on the 'Triggers' menu:
Step-2: Click on the 'New' button:

Step-3: Click on 'Choose a trigger type to begin setup':

You will now see the list of available built-in triggers:

Blocking triggers
A blocking trigger is a condition which must be met (must evaluate to true) for a tag to not fire/execute. A blocking trigger tells GTM when the tag should not fire.

You can create a blocking trigger (or blocking rule) by clicking on the 'Add Exception' link while creating/editing your tag.

Follow the steps below:

**Step-1:** Create/edit a tag

**Step-2:** Scroll down to the 'Triggering' section and hover your mouse over this section. You should now see a 'Pencil' button. Click on it:

![Click here](image)

**Step-3:** Once you clicked on the 'Pencil' button you will see an 'Ad Exception' link. Click on it:
The rest of the process of creating a blocking trigger is similar to the process of creating a firing trigger.

**Note:** Whenever your firing trigger contradicts with your blocking trigger then the blocking trigger takes precedence.

For example,

If you set a trigger to fire tag on all pages of your website and then you set a blocking trigger which prevents the same tag from firing on the ‘order confirmation’ page then your tag will not fire on the ‘order confirmation’ page even when the tag is supposed to fire on all pages of your website according to the firing trigger.
Introduction to Variables in Google Tag Manager

A variable is a storage location in the computer memory. It has got 'name' and 'value'.

A variable is referenced by its name. Value is that expression that cannot be solved any further.

For example the expression '2+3' is not a value because it can be solved further into 5. However the expression '5' cannot be solved further, so it can be used as value.

In the context of GTM, a variable is a function which can be called from within a tag, trigger or another variable. A variable tells GTM where to fire a tag.

For example,

{{url}} matches RegEx .* // fire the tag on any page that is downloaded by a user.

Here {{url}} is a built-in variable (predefined variable) which refers to the URL of currently loaded page.
Following is the syntax for calling/referencing a variable in GTM:

`{{Variable Name}}`

You can reference/call a variable in any text field in GTM wherever you can see the ‘variable’ button:

![Variable button in GTM](image)

**Note:** The value of GTM variable is populated during run time.

A variable is used to store data that is used in defining a trigger and/or to pass information (like product price, google analytics account id etc) to tag(s) at runtime from:

- Data layers
- JavaScript Variables
- First Party Cookies
- HTML DOM

In GTM there are two categories of variables:

1. Built-in variables (or predefined variables)
2. User defined variables

**Built-in Variables in Google Tag Manager**
Built-in variables are predefined variables. These variables cannot be customised.

In order to see the list of built-in variables available to you, click on the 'Variables' menu:

![Variables menu]

Configuring a built-in variable means activating or deactivating the variable from within the GTM interface.

Only a particular set of built-in variables are activated by default:
Once a built-in variable is activated it can be used just like any user defined variable. Activate all of the built-in variables so that they are available to be used anytime.

In GTM the number and type of built-variables that are available depend upon the type of GTM container being used.

Following are the different types of GTM containers:

1. Web container
2. AMP container
3. Android container
4. IOS container

**User defined Variables in Google Tag Manager**

User defined variables are the variables defined by people like me and you.
If you have created user defined variables then you can see them by clicking on the 'Variables' menu:

The real power of Google Tag Manager lies in the usage of variables.

**Introduction to Folders in Google Tag Manager**

Through folders you can organize tags, triggers and variables by project name, team name etc.
For example, you can group all of the tags, triggers and variables related to 'video tracking' by creating a folder called 'video tracking' and then adding all of the related tags, triggers and variables to it:
Note: You can rename or delete a folder and/or add/remove items from the folder at any time.

**Frequently asked questions about Google Tag Manager**

**Q. Is Google Tag Manager easy to use for a non-coder?**

Yes but only to a very limited extent. If you want to considerably modify the way, a tag is fired or should behave, or if you want to implement advanced tracking like: [scroll tracking](#), [ecommerce tracking](#) or [enhanced ecommerce tracking](#) then you need to have adequate knowledge of: [HTML](#), [DOM](#) and [JavaScript](#).

If you cannot [traverse a DOM](#), you won't be able to get the best out of GTM.

Many non-coders start using GTM on Google's recommendation but then they quickly get lost during the tags' setup and configuration.

Once they can't figure out, what is going wrong, they have no choice but to delegate the set up to a third party GTM expert/agency.
Q. Is Google Tag Manager easy to use for a coder?

Yes but only to an extent.

Though coders/developers have adequate knowledge of: HTML, DOM and JavaScript, they are still not familiar with the Google Analytics Developers environment. This makes it difficult for them to capture GA data with or without GTM.

Q How do I become a GTM expert?

In order to become a GTM expert, you would need to develop very good knowledge of:

1. HTML, DOM and JavaScript
2. Google Analytics Developers environment.
3. DOM Scraping
4. At least working knowledge of regular expressions
5. Working knowledge of a server side language (like PHP) is a bonus.

Q Will Google Tag Manager make me independent from the IT/Web developer?

Yes but only to an extent.

Even when you have got adequate knowledge of HTML, DOM and JavaScript, you would still need the help of client's web developers/IT.
This is because, if you are not familiar with the server side language used by your client and/or the client's development environment or database, then you will need the help of client's IT/web developer, to add server side code to your data layers or to query their database for you.

Without adding sever side code to GTM data layers, you can't implement many of the sophisticated trackings like 'enhanced ecommerce tracking' in GA.

The best practice is, to always involve your web developer / IT (no matter how confident you feel about your tags setup) during tag planning and deployment, as they understand their development environment better than you.

**Q Can the use of Google Tag Manager create serious tracking/technical issues on my website?**

Yes.

If you are deploying all of the marketing and analytics tags via the container tag and the container breaks during a website/code update, then all of your website tracking, can stop working immediately.

If you deploy a tag which conflicts with the website code, it can very easily break/modify certain website functionality.

Similarly, if you leave the tags deployed by GTM, hard coded on your website or you deploy the same tags through other tag management solutions, then this can inflate your analytics data.
So you need to be very confident, what you are doing with GTM. In the wrong hands, GTM can be a dangerous tool.

**Q Can I use same container tag on multiple websites?**

Yes. However the best practice is, not to do that, as it can create tracking issues.

**Q Can I deploy GTM container tag code through another TMS (Tag Management Solution)?**

Yes. But it can prevent GTM from working correctly. The rule of thumb is, not to use multiple TMS.

**Q Are there any tags which can't be deployed via GTM?**

Yes.

GTM can't be used to deploy: synchronous tags, two part tags, tags that are associated with in-page structure or tags which are not compatible with GTM:

- **Synchronous tags** - these tags block rendering of other web page elements when they are executed.
- **Tags associated with in-page structure** - like social sharing widgets

- **Two parts tags** - Tags with part of the snippet in the header and the other part in footer.

- **Tags not compatible with GTM** - For example 'Facebook JavaScript SDK' tag cannot be deployed via GTM.

**Q** Do I have to migrate all of my tags to Google Tag Manager?

No.

However Google recommends to migrate all the tags which are supported by GTM.

**Q.** Does GTM work, even if you migrate only a subset of tags to Google Tag Manager?

Yes.

**Q** Does GTM collect any data?

No.

GTM itself does not collect any data. However the tags it fires, may collect data.
Q What is the difference between Google Tag Manager and Google Analytics?

GTM is a tag management tool which is used to deploy and manage tags. Whereas Google Analytics (GA) is a website/mobile app tracking tool which is used to collect, process and report on website usage data.

Q Can I use Google Tag Manager even when I don't use Google Analytics?

Yes.

GTM is a tag management solution and can be used to deploy non-google tags.

Q How I can deploy non-google tags via GTM?

Through custom HTML tags or 3rd party tag templates.

Q Does GTM work on mobile websites and mobile apps?

Yes.
Q Will the use of GTM, slow down my website?

No.

Since GTM fire tags asynchronously, it can actually improve the website speed.

However there is one caveat here. If your container tag is very large (contains lot of tags, triggers and variables) then it can negatively affect the website speed.

So if you are not using a particular tag, trigger or variable and you have no plan to use it in the future then remove it from the container.

Q Can I use Google tag manager in parallel with hard coded tags?

Yes.

If complete migration of all of your tags in not possible. However, you need to make sure that you don’t do double tagging i.e. deploy same tag twice, once via GTM and once without GTM.

Q Will GTM work, if I deploy it, on only a part of my website?

Yes.
But then it will work, only on those web pages which contain the container tag.

**Q Which type of tags are most likely to break my website functionality?**

Custom HTML tags.

Be very careful with them. Use tag templates wherever possible esp. if you are brand new to GTM.

**Q GTM is protocol relative. What does that mean?**

It means it will work on both secure (https) and nonsecure (http) web pages alike.

**Q What is Google Tag Manager V2 (or GTM V2)?**

It is the second and better version of Google Tag Manager.

To access GTM V2, navigate to: [https://tagmanager.google.com/](https://tagmanager.google.com/)

**Q What is a rule in GTM?**

GTM trigger was formerly known as rule.
Q What is a macro in GTM?

GTM variable was formerly known as macro.

Q What is the use of GTM API?

Through GTM API you can programmatically manage: accounts, containers, permissions, variables, tags and triggers.

Advanced Google Tag Manager Resources

#1 Implementing E-Commerce Tracking via Google Tag Manager

Learn to Implement E-Commerce Tracking through Google Tag Manager via this easy to understand step by step guide.

#2 Google Tag Manager Workspaces

Learn all about Google Tag Manager Workspaces through this easy to understand guide.

#3 Tracking Virtual Pageviews in Google Tag Manager – Complete Guide

Learn to track virtual pageviews in Google Tag Manager, through this easy to understand, step by step guide.
#4 Cross device tracking with User ID in Google Tag Manager

Learn to implement cross device tracking with User ID in Google Tag Manager through this easy step by step guide.

#5 Setting up Dynamic Remarketing via Google Tag Manager

Learn to set up dynamic remarketing in Google Analytics and Google Adwords via Google Tag Manager.

#6 Event Tracking in Google Tag Manager V2 – Complete Guide

Learn to track Form Submissions, Form Fields, clicks on external links, File downloads and clicks on other buttons via Google Tag Manager.

#7 Cross domain tracking in Google Tag Manager

Learn to implement Cross domain tracking in Google Tag Manager between two or more primary domains and its sub domains.

#8 Implementing Scroll Tracking via Google Tag Manager

Learn to Implement Scroll Tracking through Google Tag Manager via easy to understand step by step guide.

#9 Adjusting Bounce Rate via Google Tag Manager
Learn to adjust bounce rate in Google and Universal Analytics via Google Tag Manager.

#10 Why you may no longer need Google Tag Manager

Understand the limitations of Google Tag Manager through this article.

#11 How to install and use Google Tag Manager in Segment.com

Learn to install and use Google Tag Manager in Segment.com

#12 Google Tag Manager Content Grouping Setup Guide

Through this article you will learn to set up content grouping in Google Analytics via Google Tag Manager.

#13 Google Tag Manager WordPress Installation Guide

Learn to correctly install Google Tag Manager on your WordPress Website through this easy to understand step by step guide.

#14 Google Analytics Settings Variable in Google Tag Manager Explained

Through this article you will learn to create and use the new 'Google Analytics Settings' variable in Google Tag Manager.
#15 Learn to install Google Tag Manager on your Shopify Store

Learn to install GTM on your shopify store through this easy to understand step by step guide.

#16 Learn to correctly setup Google Analytics for Shopify Store while using Google Tag Manager

The new Web Analytics Training Course

I have launched a new course on 'Web Analytics'. Through this comprehensive course you will learn and master all of the elements that go into extracting insight from data and optimising the online performance of your business for sales and conversions.

- Learn to do a very focused and meaningful analysis from the very start
- Learn to quickly deliver recommendations and rapidly deploy solutions which solve your customers problem either wholly or in parts.
- Learn to adapt rapidly and cost efficiently in response to changes in the marketing environment by using Agile Analytics methodologies.
- Learn to achieve your business objectives within the area of your responsibility and expertise, and that too in the most efficient manner.
- Learn to create strategies, translate business objectives into measurable goals and improve business bottomline.
Take the Web Analytics Training Course