HubSpot Development Options - Case study

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com

Cognitive Convergence is Subject Matter Expert in Office 365, Dynamics 365, SharePoint, Project Server, Power Platform: Power Apps-Power BI-Power Automate-Power Virtual Agents.

We offer HubSpot Services Work one-on-one with an expert who takes the time to understand your company's goals—across Marketing, Sales, and Service—and designs a custom plan to help you achieve them.

Contents

Objective ... 4

Hubspot – A complete CRM Solution for Marketing, Sales, and Customer Service ... 4

development on the HubSpot CMS ... 5

Fast, Secure, Reliable ... 5

Powerful for developers, flexible for content creators ... 5

efficient development workflow ... 5

Building with portability in mind ... 6

CMS Theme Boilerplate ... 6

HubSpot defined Objects ... 7

Products ... 7

Line items ... 7

Feedback submissions ... 7

Marketing events ... 7

Custom Objects ... 7

Properties ... 8

Default properties ... 8

Custom properties ... 8

Property groups ... 8

Clearing properties ... 8

Record owners ... 9

Object and record associations ... 9

Record engagements and attachments ... 9

Data syncing ... 10

Batch actions ... 10

Unique identifiers and record IDs ... 11

HubSpot's default unique identifiers ... 11

Creating own unique identifiers ... 11

Object relationships ... 12

HUBSPOT APIs ... 12

analytics API ... 13

GET ... 13

POST ... 13

PUT ... 13

DELETE ... 13

Access to analytics data ... 14

Custom Behavioral Events ... 14

Automation API ... 15

Using the Workflows API ... 15

GET ... 15

POST ... 15

PUT ... 15

DELETE ... 15

Custom Workflow Actions ... 16

CRM API ... 17

Understanding the CRM 17
Objects 17
Contacts 17
Companies 17
Deals 17
Tickets 17
Custom Objects 18
What is Association? 18
CRM Associations API 19
Events API 19
Web Analytics 19
Event types 20
Tracking code API 21
Tracking custom behavioral events (Marketing Hub Enterprise only) 21
Email Events API 22
GET 22
POST 22
PUT 22
DELETE 22
Marketing API 23
Marketing Events 23
Marketing Email 23
GET 23
POST 23
PUT 23
DELETE 23
Files API 24
Testing hubspot live 25
Editor 26
Module Preview 26
Debugging 26
Sandboxes 26
Deploying 26
Integrations 28
BI & Analytics 28
Power Automate 29
Workflow and Automation 30
Data Virtualization 31
Zapier 31
Conclusion 32

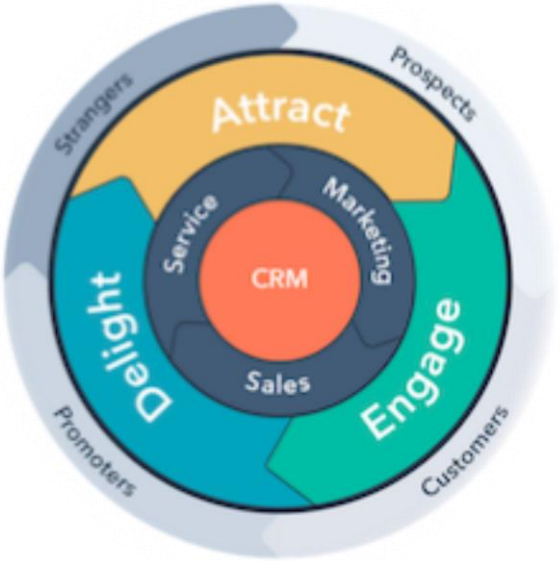
OBJECTIVE

The purpose of this case study is to have an overview of HubSpot from developer perspective which facilitates its customer to have a better experience of Sales and Marketing. Having a single source of truth, intuitive UX, and a unified codebase, HubSpot equips companies to better manage marketing, sales, service, and operations efforts.

HUBSPOT – A COMPLETE CRM SOLUTION FOR MARKETING, SALES, AND CUSTOMER SERVICE

HubSpot is an inbound marketing and sales platform that helps companies to attract visitors, convert leads, and close customers.

- Bringing together a variety of functionalities and allowing marketing and sales departments to manage all their activities in one place.
- Includes content creation, social media sharing, workflow automation, lead capture, customer relationship management, sales pipeline mapping, and performance tracking.
- Companies are better equipped to manage sales and marketing activities efficiently, and leads can be nurtured through the buyer's journey effortlessly.
- No more siloed information, no more misaligned departments. Everything happens in one place.



With HubSpot, Developers can:

1. Boost website traffic
2. Capture leads
3. Automate lead nurturing (i.e., build the relationship)
4. Convert the customer by making a sale

DEVELOPMENT ON THE HUBSPOT CMS

Fast, Secure, Reliable

HubSpot handles security, reliability, maintenance, and more so team can focus on writing code and creating delightful user experiences. The HubSpot CMS' globally distributed Content Delivery Network (CDN) ensures lightning-fast page load times no matter where visitors are.

Powerful for developers, flexible for content creators

Developers can build websites using their preferred tools, technologies, and workflows. Content creators can then create pages and publish content using simple drag-and-drop experience. Using templates and modules as building blocks, developers can create flexible design systems for content creators to use.

EFFICIENT DEVELOPMENT WORKFLOW

Setting up an efficient developer workflow will help with working process more effectively when building websites on the HubSpot CMS. Depending on the nature of web development team, or the nature of a specific project, workflow may differ.

For example, a single developer building out a new site in a new HubSpot CMS account needs to worry less about testing and collaboration. On the other hand, a team of developers working on a larger website will need a clearer dev and staging process, a deployment workflow, and code living in source control in order to work efficiently.

BUILDING WITH PORTABILITY IN MIND

Before developer workflow starts, it is important to recognize portability as a key concept in having an efficient developer workflow. The portability of the project ensures it is easy to move between environments with little friction and explanation, making it easy to test and stage changes before taking them live.

CMS Theme Boilerplate

The CMS Theme Boilerplate is a project that is portable, utilizing features like relative file paths, and true file format for all assets in the project using the **CMS CLI**, which allows it to live in source control and work in any HubSpot account. The HubSpot CMS Boilerplate serves as a starting point for helping developers get a website up and running quickly on the HubSpot CMS while illustrating best practices developers can use when building on the HubSpot CMS Platform.

HubSpot/**cms-theme-boilerplate**

A straight-forward starting point for building a great website on the HubSpot CMS

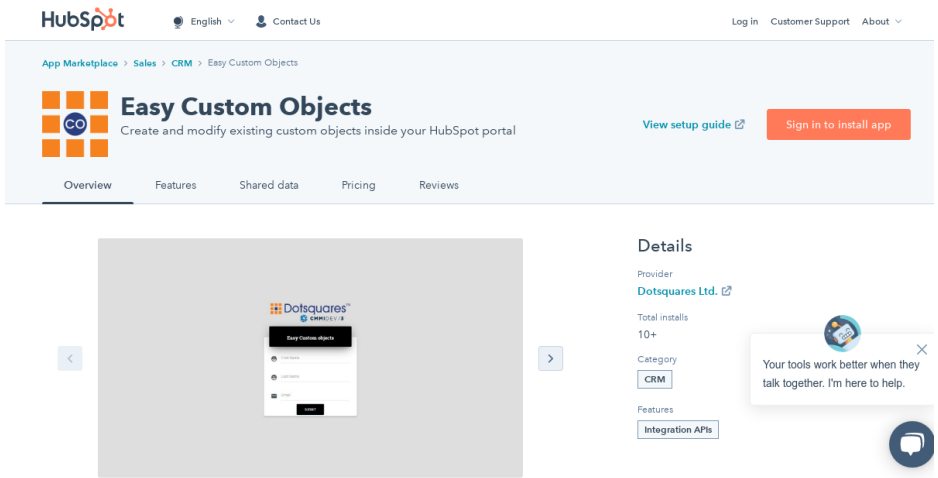
21 Contributors · 19 Issues · 230 Stars · 200 Forks

We listen to your needs and work to develop the best HubSpot integration strategy possible based on that information.

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com

HUBSPOT DEFINED OBJECTS

HubSpot-defined objects use the same object framework as the standard CRM objects, , which enables to segment or report on them. The following are HubSpot-defined objects:



Products

Represent goods or services for saleProducts to deals, generate quotes, and report on product performance can be added.

Line items

Represent a subset of products sold in a deal. When a product is attached to a deal, it becomes a line item. Line items that are unique to an individual quote library can be created, but they will not be added to the product.

Feedback submissions

Stores information submitted to a feedback survey.

Marketing events

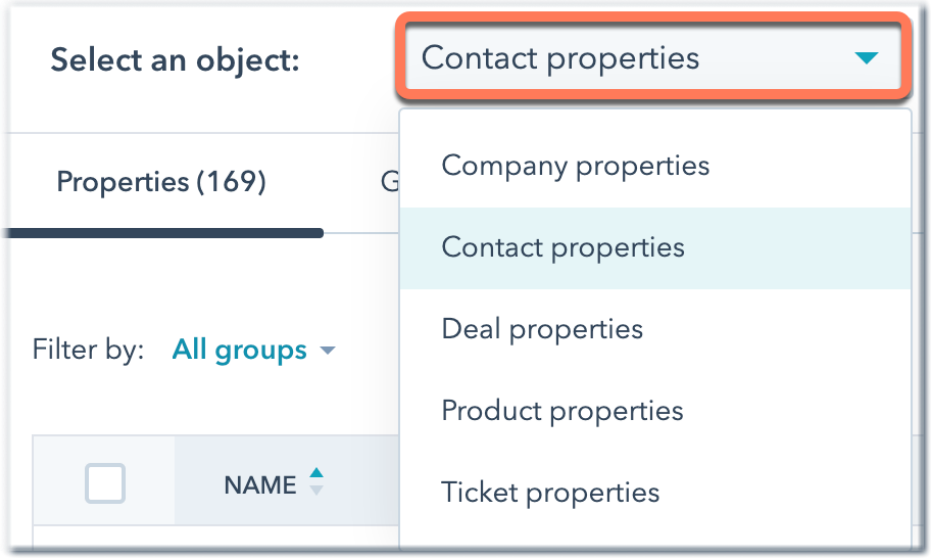
Represent events related to marketing efforts, specifically including events from connected integrations.

Custom Objects

Create a custom object to store any type of data in HubSpot—particularly data that doesn't fit the standard objects listed above. Custom objects are created via the custom object endpoints and can be associated with standard objects.

PROPERTIES

Detailed information (metadata) for HubSpot's CRM objects is stored in properties, which are then organized into groups. In addition to each object's default properties, custom data can be stored by creating custom properties.



Default properties

CRM objects are defined by a primary *type* and a set of *properties*. Each type has a unique set of standard properties, represented by a map of name-value pairs.

Custom properties

Create custom properties to store specialized information for an object. Custom properties can be managed through the CRM object properties endpoints.

Property groups

Property groups are used to group related properties. When viewing records in HubSpot, any grouped properties will appear next to each other. If integration creates any custom object properties, organizing them in a custom property group will make it easy to identify that data.

Clearing properties

Object property can be cleared value via the API by setting the property value to an empty string.

Example: To clear the firstname from a contact object, send a PATCH request to https://api.hubapi.com/crm/v3/objects/contacts/{contactId} with the body { "properties": { "firstname": ""} }.

Record owners

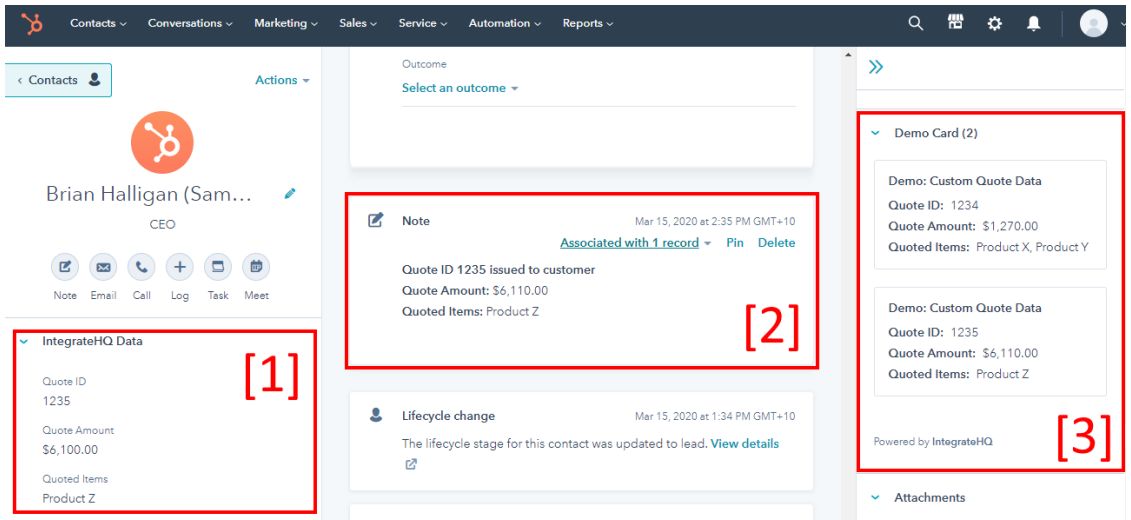
Owners can be assigned to contacts, companies, deals, or ticket records. Any HubSpot user with access to contacts can be assigned as an owner, and multiple owners can be assigned to an object by creating a custom property for this purpose. Owners can only be created in HubSpot, but owners endpoint can be used to get their identifying details, including IDs and email addresses. This data can then be assigned to CRM records in HubSpot or via property change API calls.

OBJECT AND RECORD ASSOCIATIONS

Associations represent the relationships between objects. Aassociations can be managed using the associations endpoints.

Record engagements and attachments

Engagements store data from interactions between records and the business, including notes, tasks, meetings, emails, and calls. Attachments are files stored on records in CRM, often related to engagements. To associate an attachment to a record via API, hs_attachment_ids can be used properly to attach a file to a note, call, email, or meeting.



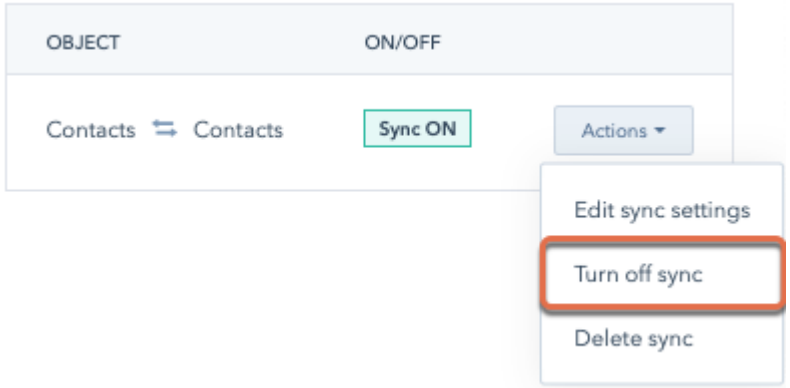
Leverage your HubSpot Integration CRM API, using our services, to keep bidirectional conversations going.

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com

DATA SYNCING

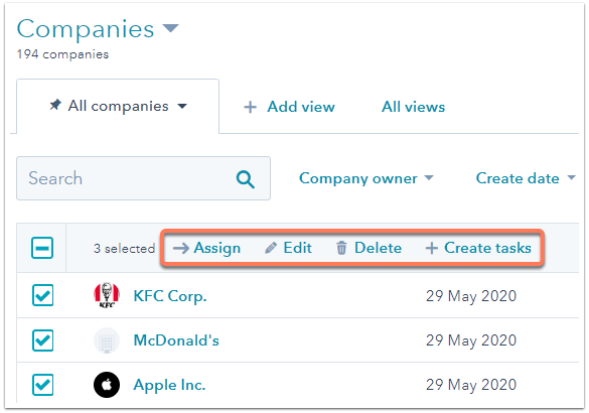
Syncing engagement data is not required to sync object data. Because an object can be associated with numerous engagements, it's also important to keep API limits in mind before syncing.

However, Developers want to sync engagements rather than properties when an integration is a precursor to a full migration. In this case, syncing engagements across both systems will ensure all users have the data they need during the transition. For example, when a business development team working in HubSpot is handing deals to an inside sales rep working in another CRM, engagements should be synced so both teams have the context they need to close a sale.



BATCH ACTIONS

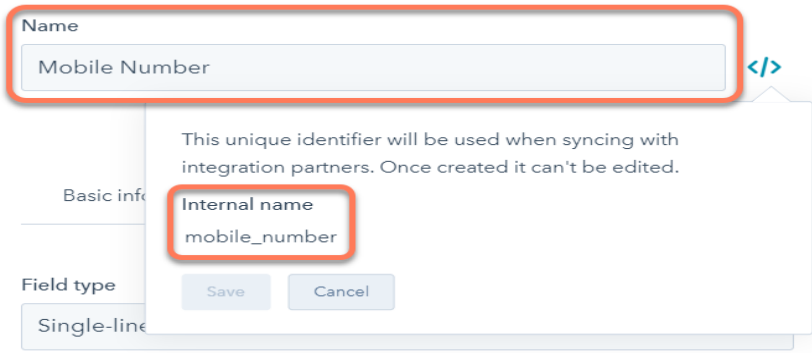
Each object provides batch endpoints that let developers create, read, update, and archive multiple object records in a single request. Batch endpoints have a limit of 100 records per call except for creating and updating contacts, which are limited to 10 records per call.



UNIQUE IDENTIFIERS AND RECORD IDS

A unique identifier is a value that differentiates one record in a database from another, even if they have otherwise identical information. For example, a database for a bank might have records for two people named John Smith. To avoid accidentally sending money to the wrong John Smith, each record is given a number as their unique ID.

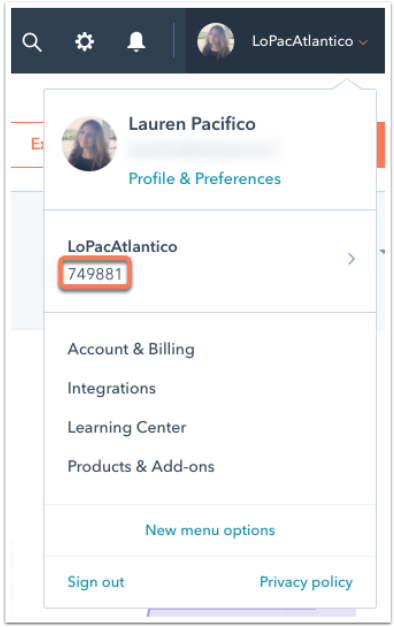
These unique identifiers will be used to send the data to the correct records and manage deduplication.



HUBSPOT'S DEFAULT UNIQUE IDENTIFIERS

When a record is created in HubSpot, a unique ID is automatically generated and should be treated as a string. These IDs are unique only within the object type, so there can be both a contact and company with the same ID.

For contacts and companies, there are additional unique identifiers, including a contact's email address and a company's domain name.



Creating own unique identifiers

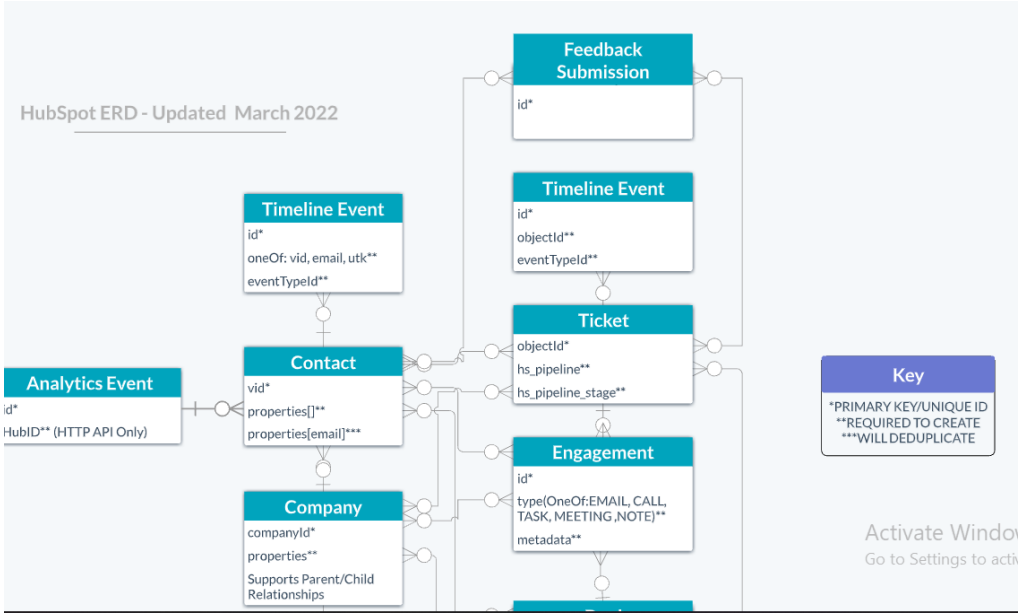
In many cases, the record ID can be used by HubSpot to drive the logic of integration. However, there are times when that isn't possible, or it complicates the integration logic of the app. For example:

- A legacy CRM can't store HubSpot's object ID with the associated record, making it impossible to match corresponding records in the two systems.

- An integration is syncing updates from another app to HubSpot, but not from HubSpot to the other app. Instead of mapping IDs from both systems, the integration simply uses the external app's IDs when creating or updating records.

OBJECT RELATIONSHIPS

This entity relationship diagram (ERD) illustrates the organization of and relationships between CRM objects.



HUBSPOT APIS

Hubspot Developer platform empowers organizations to grow better through the API support. The APIs are designed to enable teams of any shape or size to build robust integrations that help them customize and get the most value out of HubSpot. All

HubSpot APIs are built using REST conventions and designed to have a predictable URL structure. They use many standard HTTP features, including methods (POST, GET, PUT, DELETE) and error response codes. All HubSpot API calls are made under **https://api.hubapi.com** and all responses return standard JSON.

Client Libraries

Client libraries are designed to interact with the HubSpot APIs with less friction. They are written in several different languages and help bridge the gap between your application and HubSpot's APIs.

1. Node.js
2. PHP
3. Ruby
4. Python

HubSpot provides the following APIs for different purposes.

ANALYTICS API

The Analytics API allows to export analytics and reporting data from HubSpot. It's primarily used to connect metrics tracked in HubSpot to those stored in other business intelligence tools. The analytics API includes the following:

GET	POST	PUT	DELETE
Get analytics data breakdowns	-	-	-

Get analytics data for specific objects	-	-	-
Get analytics data for HubSpot hosted content	-	-	-
Check for the existence of analytics data for an object type	-	-	-
Get Events	-	-	-
Get a Group of Events by ID	-	-	-
Get all analytics views	-	-	-

Access to analytics data

Access to data from the Analytics API will depend on the connected HubSpot account's permissions. For example, to pull analytics data for landing pages, the account would need access to create landing pages. To get analytics data broken down by category, the account would need access to the data in the sources report.

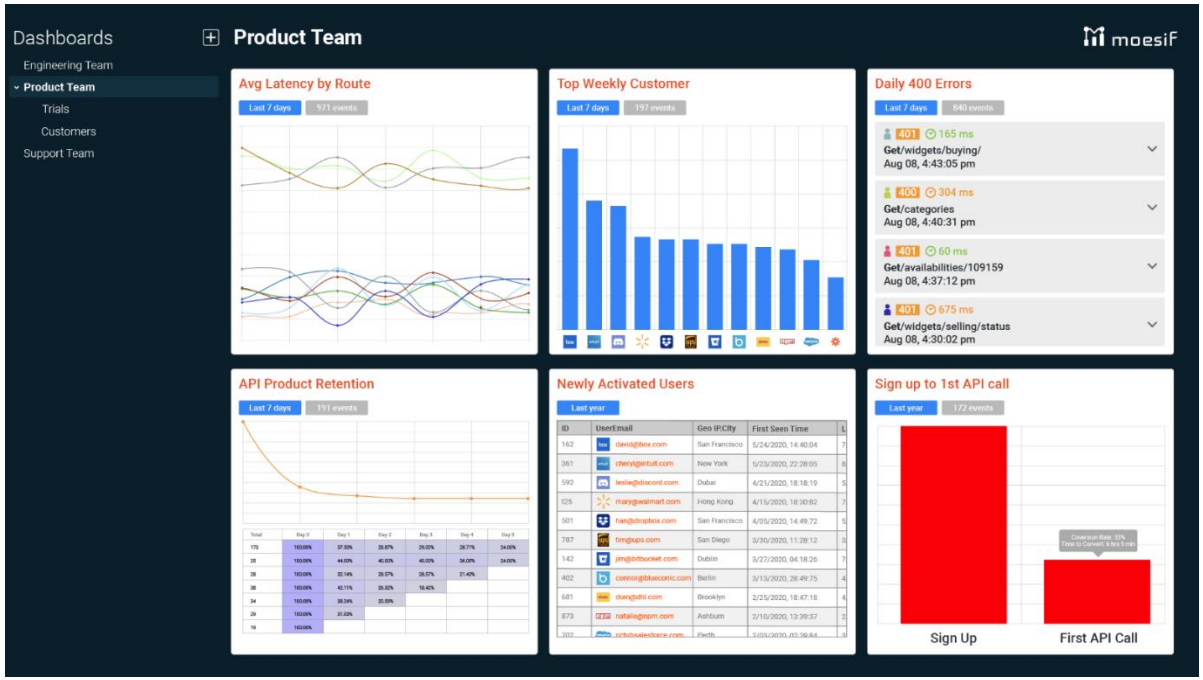
Custom Behavioral Events

Custom behavioral events are account-defined events that store event details in event properties. There are three types of custom behavioral events that you can create in HubSpot:

- ✓ **Clicked element** and **visited URL** events are custom events that the tracking code automatically populates with data. These events can be further customized by updating tracking code with the trackCustomBehavioralEvent function.
- ✓ **Manually tracked behavioral events** are custom events that are unique to your business that are not captured automatically by HubSpot or by an integration. You can manually send data to these events through this API.

AUTOMATION API

Workflows are used to automate marketing, sales, and service processes. Setting enrolment criteria to enroll specific records or manually enroll contact, Add actions for contacts, companies, deals, quotes, and tickets. It also provides the functionality to act on associated records. For example, updating an enrolled contact's associated company.



Using the Workflows API

The Workflows API allows for full CRUD access to any workflow in each portal. The most common use case for the API is to create a workflow for marketing automation.

Then, enrol contacts in the workflow based on triggers in the external application.

Webhooks can be used in workflows to trigger notifications to external applications. If polling the API becomes too much of a hassle while developing an integration with HubSpot, this is a great alternative.

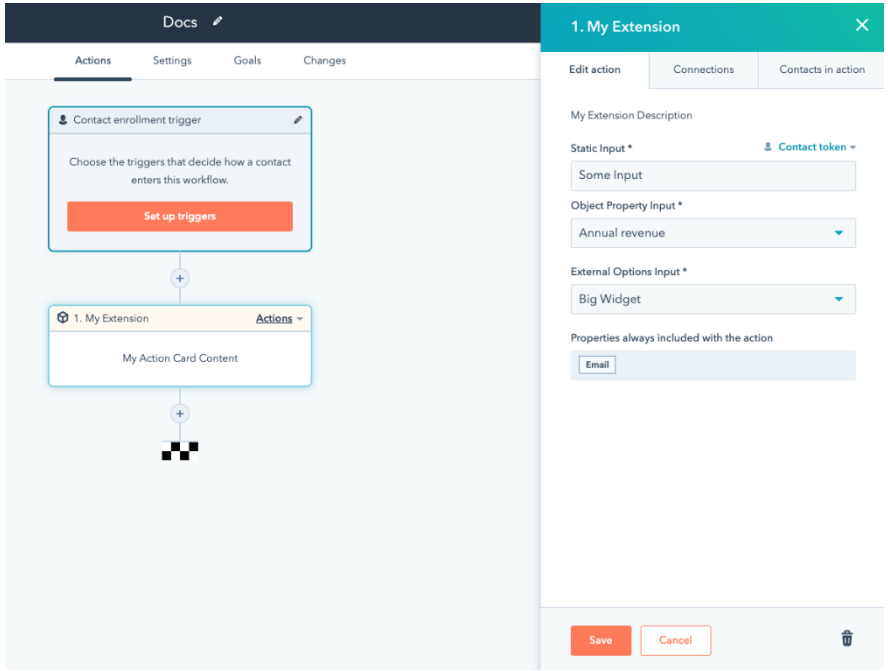
Automation API provides the following functionalities with workflows.

GET	POST	PUT	DELETE
Get all workflows	Enroll a contact into a workflow	Log events	Delete a workflow

Get a specific workflow	Create a workflow	-	Unenroll (remove) a contact from a workflow
Current enrollments	Using webhooks in workflows	-	-
Get performance stats for a workflow	-	-	-

Custom Workflow Actions

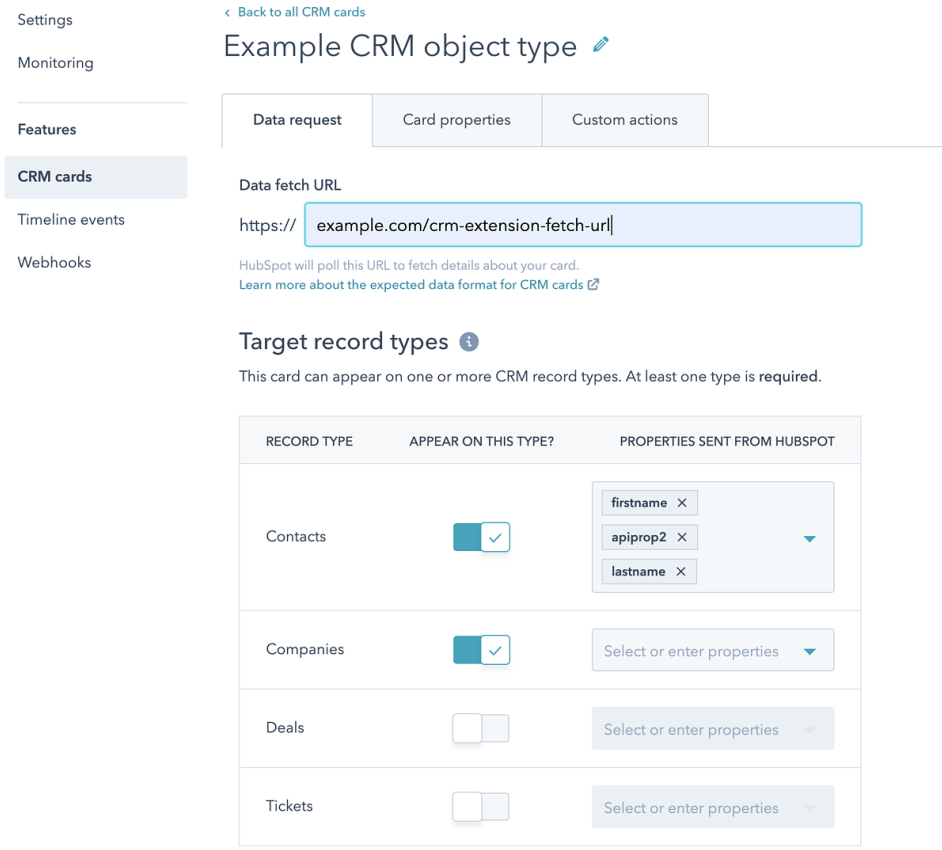
Use HubSpot's workflows to automate business processes and allow your team to be more efficient. You can create custom workflow actions to integrate your service with HubSpot's workflows.



CRM API

Understanding the CRM

The foundation of HubSpot account is a database of user business relationships and processes, called the CRM (Customer Relationship Management). To manage this data, HubSpot provides a set of standard CRM objects, as well as additional HubSpot-defined objects. Each object represents a different type of relationship or process. For each object, users can create individual records where they can store information in properties and track interactions. Associations can also be made between records to understand the relationships between them.



Objects

The CRM API provides access to CRM objects and records. The following are the standard CRM objects available in HubSpot:

Contacts

Store information about an individual person.

Companies

Store information about an individual business or organization.

Deals

Represent revenue opportunities with a contact or company. They're tracked through pipeline stages, resulting in the deal being won or lost.

Tickets

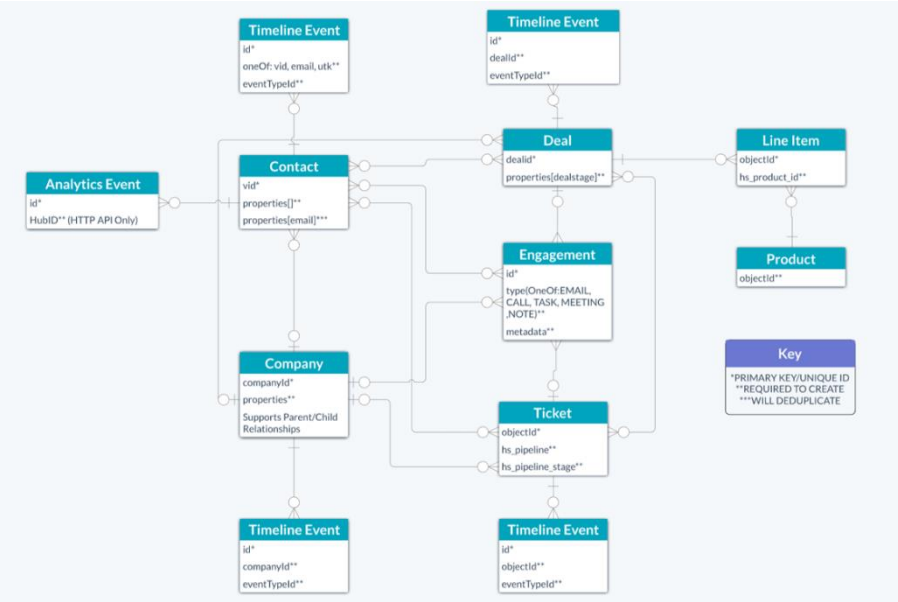
Represent customer requests for help or support. They're tracked through pipeline statuses, resulting in the ticket being closed.

Custom Objects

Create a custom object to store any type of data in HubSpot—particularly data that doesn't fit the standard objects listed above. Custom objects are created via the custom object endpoints and can be associated with standard objects.

What is Association?

Associations are defined based on the type of objects being associated, and the **direction** of that association. Association definitions are **unidirectional**, so a different definition ID can be used depending on which object type are getting started. For example, if users have a contact (identified by its vid) and they want the associated tickets, they would use definition ID 15. If a ticket is available (identified by its objectId) and the associated contacts are required definition ID 16 will be used.



CRM Associations API

The CRM Associations API helps manage and define relationships between objects in the HubSpot CRM (contacts, companies, deals, quotes, line items, and tickets), allowing developers to create a more holistic picture of the customer interactions and improving the ability to market, sell, and serve. While a full list of supported associations can be found below, common examples include: contact to company, company to parent or child company, deal to company or contact, and ticket to contact or company. Associations can also be created between engagements and other objects.

Use case for this API: Anorganization has several deals open with a company. The sales team can use the CRM Associations API to associate these deals with a contact who has decision-making power. Associations also make it easier to analyze data and trends, like which job titles are most often connected with buying decisions.

We develop a sense of testing for HubSpot according to your requirements and provide a bug free system to you.

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com

Bulk Import CRM Data

Using the imports API to import CRM records into your HubSpot account, such as contacts or companies. Once imported, you can access and update records through the various CRM API endpoints, including the contacts API and associations API. You can also import records using the guided import tool in HubSpot

EVENTS API

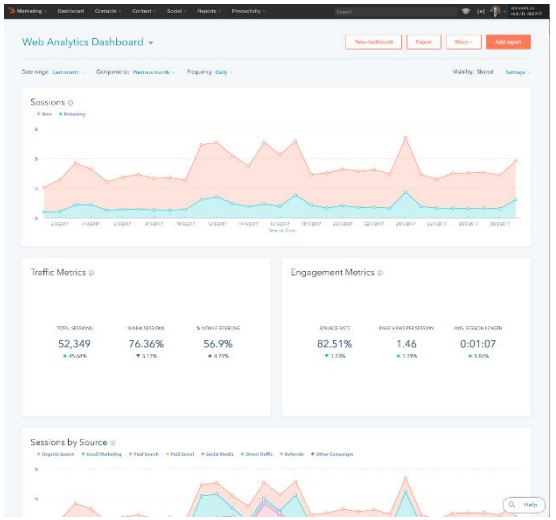
Web Analytics

Use the web analytics API to fetch events associated with CRM records of any type. This includes standard events, such as website page views and email opens, as well as custom behavioural events.

Through our HubSpot developing and consulting services, you will be able to save significant costs, minimize the need of manual data entry, and make wiser business choices.

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com

For example, use this API to view a timeline of the interactions that a contact has had with the content. This timeline can be used to build a dataset for custom analytics or present a contact timeline in an external application.

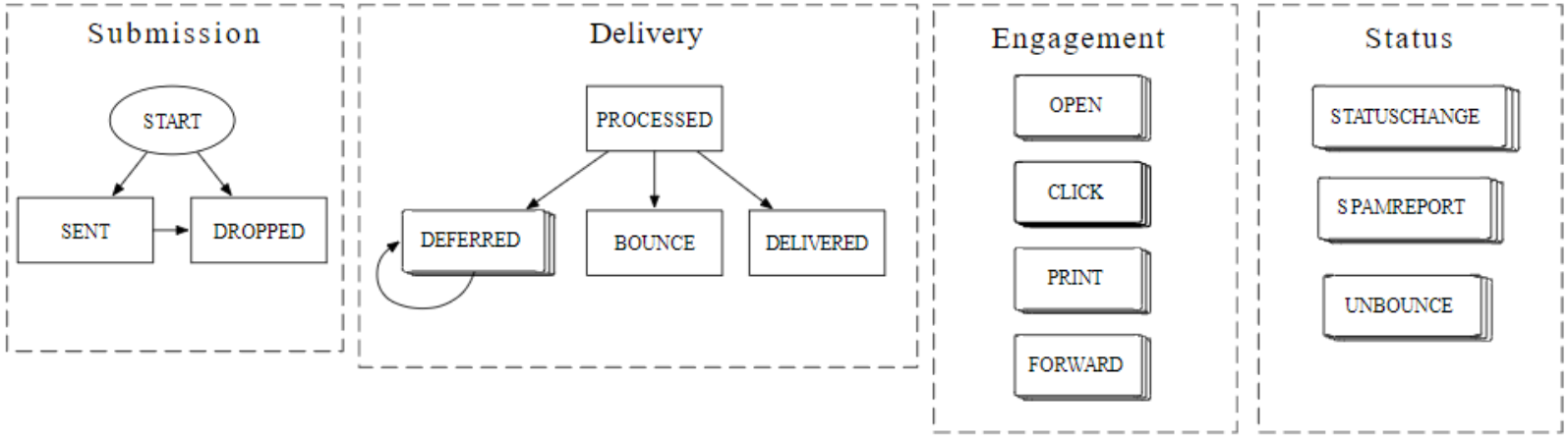


Event types

When querying for the events associated with a given CRM object, the response will include all event types, including custom behavioral events. During the beta, some standard event types are subject to change.

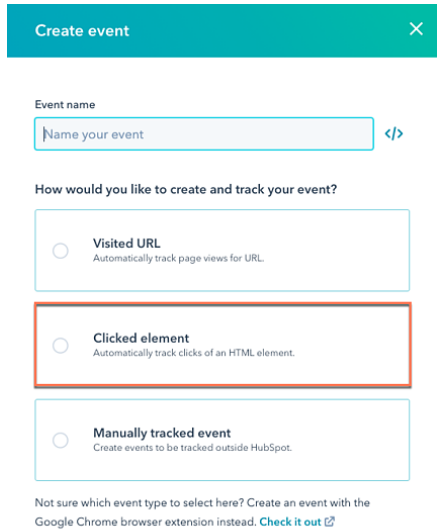
To only return custom behavioral event completions, an event Type parameter can be included, followed by the custom behavioral event name.

The 12 event types can be classified as: Submission, Delivery, User Engagement, and User Status. Event types, event categories, and their relationships are diagrammed below.



Tracking code API

In addition to tracking page views, the HubSpot tracking code allows to identify visitors, track events, and manually track page views without reloading the page. The tracking code API allows to dynamically create events and track event data in HubSpot.



If site uses the privacy consent banner, learn how to manage the cookies that are added to a visitor's browser with the cookie banner API.

Tracking custom behavioral events (Marketing Hub Enterprise only)

Using custom behavioral events, event completions can be tied to contacts records and populate event properties with metadata about the event. To retrieve custom behavioral events, use the web analytics API.

Through the API, events can be triggered using the event's internal name, which is assigned automatically when the even can be created. An event's internal name either can be found in HubSpot or by using the events API. Learn how to find the internal name for an event.

EVENT	INTERNAL NAME	COMPLETIONS	UNIQUE VISITORS
Mobile app login	pe22714_mobile_app_login	–	–

There are three types of events that can create in HubSpot:

- **Clicked element events**: Events tied to clickable elements on a website page. Will automatically populate a set of default HubSpot event properties through the tracking code. These events can be customized further with the trackCustomBehavioralEvent function.

- **Visited URL events**: Events tied to page loads at specified URLs. Will automatically populate a set of default HubSpot event properties through the tracking code. These events can be further customized with the trackCustomBehavioralEvent function.
- **Manually tracked behavioural events**: Custom events that are unique to business, as well as events that may not be automatically captured by HubSpot or by an integration. Manually send data to HubSpot events through the HTTP API.

For each event type, HubSpot includes a set of standard properties that can capture certain metadata at the time of completion, including UTM parameters or device and operating system metadata.

Since this function works alongside HubSpot's analytics tracking, any events triggered through the JavaScript API will automatically be associated with the visitor's *hubspotutk* cookie, so the event would automatically be tied to the contact associated with that user token.

Email Events API

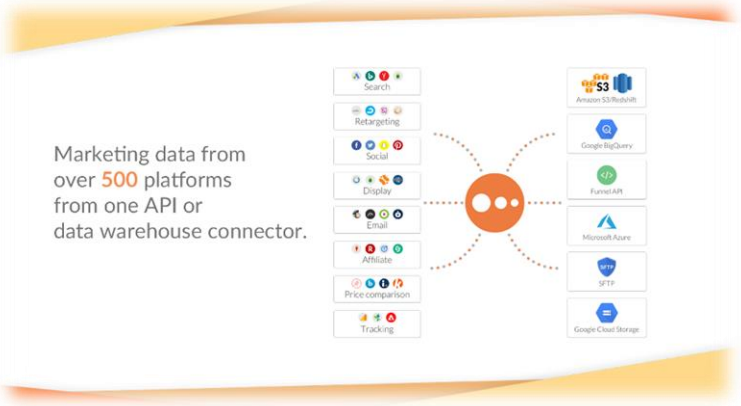
The Email Events API is used to get information about events generated by marketing emails or email campaigns sent through a HubSpot account. Every email sent via HubSpot generates a number of events detailing its lifecycle and how the recipient interacts with its content.

GET	POST	PUT	DELETE
Get all campaign IDs for a portal	-	-	-
Get campaign IDs with recent activity for a portal	-	-	-
Get campaign data for a particular Campaign	-	-	-
Get event data for a campaign or recipient	-	-	-
Get event data for a specific event	-	-	-

MARKETING API

Marketing Events

For integration to connect to a HubSpot user's account, an app definition on HubSpot for it must be created. Here, details are entered such as the logo and text to be shown to the HubSpot user when integration attempts to make an initial connection to their account, and it also defines what permissions (scopes) integration needs in the user's HubSpot account.



Marketing Email

This API can be used to programmatically create marketing emails, get details about marketing emails, and update marketing emails. Additionally, this API features two endpoints that return email send related statistics. These statistics are identical to what you can access in app under the details section of a particular email and will be returned under the stats object. It provides the possibility of following REST calls:

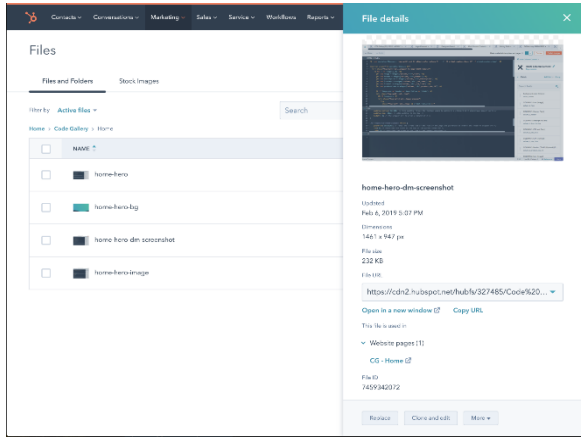
GET	POST	PUT	DELETE
Get all marketing emails	Create a marketing email	Update a marketing email	Delete a marketing email
Get a marketing email	Clone a marketing email	Restore a deleted marketing email	-
Get campaign data for a particular Campaign	-	-	-
Get event data for a campaign or recipient	-	-	-
Get event data for a specific event	-	-	-

Get revisions of a marketing email	-	-	-
Determine the buffer of a marketing email	-	-	-
Get the statistics for a marketing email	-	-	-
Get all marketing email statistics	-	-	-

FILES API

Use HubSpot's files tool to manage and store files in HubSpot. Files hosted in HubSpot can be uploaded and used in both HubSpot and external content. They can also be attached to records using the engagements API.

If company is building their website using HubSpot CMS, the files API can be used to upload and store assets in HubSpot, then serve it through the HubSpot CMS.



CONVERSATIONS INBOX AND MESSAGES API (BETA)

The conversations APIs enable you to manage and interact with the conversation's inbox, channels, and messages. For example, you can use these APIs to:

- ✓ Search conversations inboxes, channels, threads, and messages.
- ✓ Update thread statuses.
- ✓ Delete and restore threads.
- ✓ Send messages via existing conversations channels.

- ✓ Send an internal comment to an agent.
- ✓ Retrieve conversation data to create advanced reports and analytics in external tools.

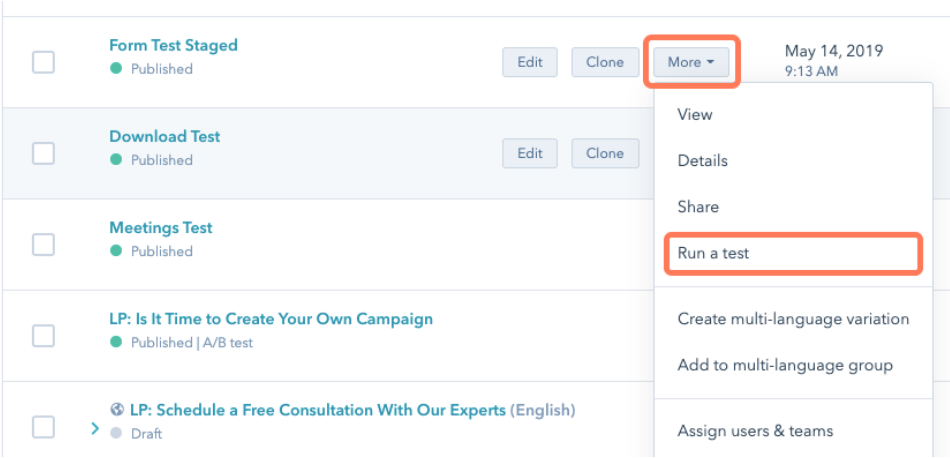
Other conversation APIs

Other conversation APIs provided by HubSpot include

- ✓ Chat Widgets SDK
- ✓ Visitor identification API
- ✓ Working with chatbots

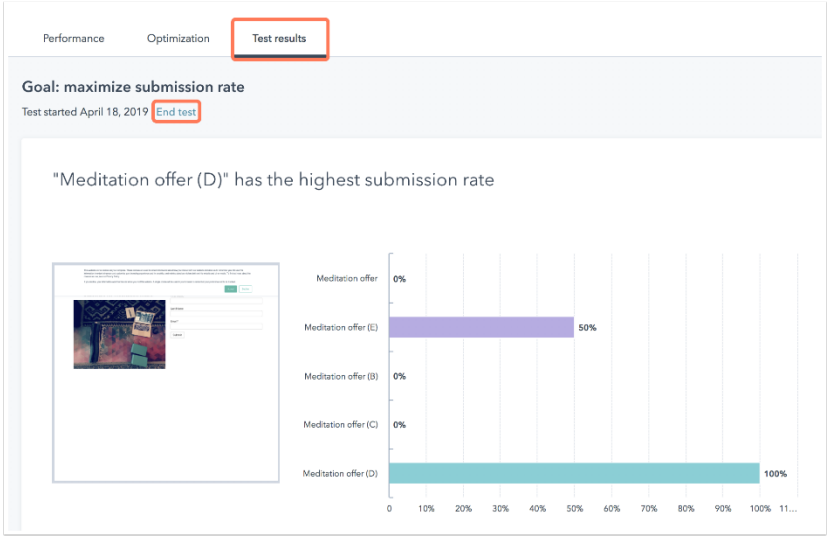
TESTING HUBSPOT LIVE

When working in the development environment, hubspot provides a set of safe commands to automatically upload changes when files are saved in the text editor to rapidly develop. “Live preview with display options” tool for a template is used, providing the functionality of automatically showing the rendered output of the template preview, as the changings are saved.



Editor

Another critical piece of the development phase is testing the changes in the content creation tools. If modules are getting built, or templates designed to be manipulated in the content editor, pages are created in the development environment to ensure the content editing experience is as intended it to be. It allows to drag modules around into odd configurations and enter dummy content to make sure marketers can not “break” the modules when building pages. Using the content editors will help illustrate what guardrails want to build into the templates and modules. Currently, it is not possible to move content, such as pages or blog posts, between HubSpot accounts.



Module Preview

Hubspot provides the functionality to preview the module through a “Preview” button to show how the module and its fields will behave in the content editors. This allows users to test the fields, groups, and repeaters in the module with dummy content in a safe environment.

Debugging

Knowing how to debug and troubleshoot issues with the website is critical in the ongoing health and success of website.

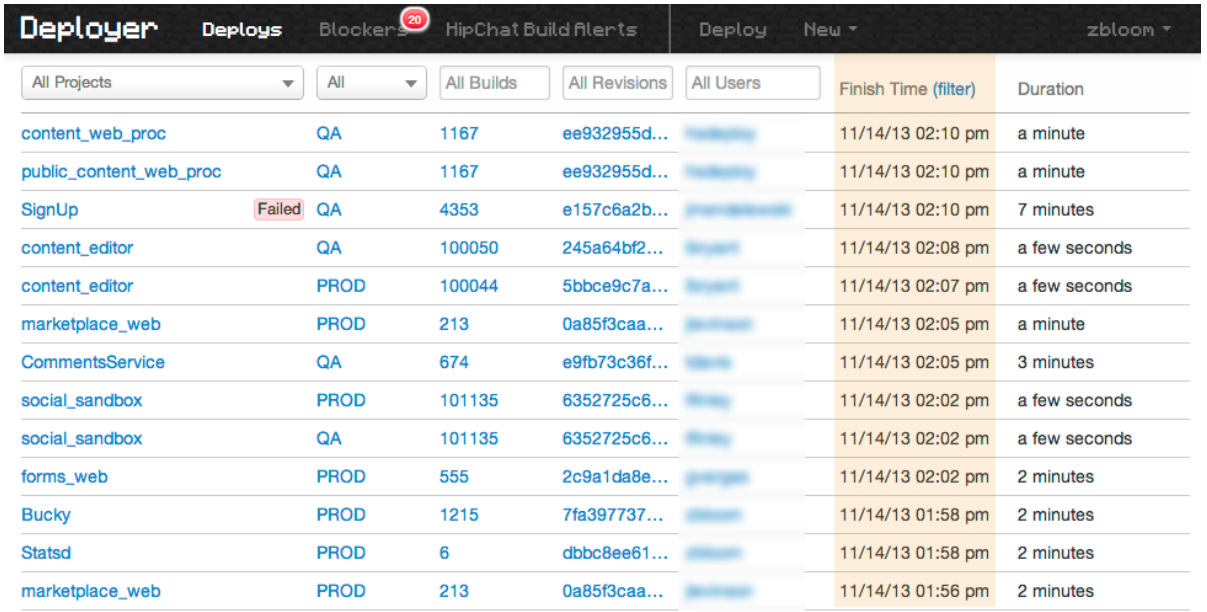
Sandboxes

There is a possibility in HubSpot to create free CMS Developer Sandbox accounts to use for testing and as a safe development environment.

DEPLOYING

Once the users have tested the changes and are ready to take them live, it is time to deploy the changes to production portal. Based on local configuration,It is required to run the CMS CLI command with the --portal argument to interact with production

account. When uploading files to the production account, it is important to diagnose any errors, and make sure to briefly browse the live website avoiding any unintended consequences of the deploy.



INTEGRATIONS

Integrations connect your software to third-party applications so they can share information with each other. They share data from one system to the next which provides you with more features and options while using your software. HubSpot's integrations can be done on following platforms:

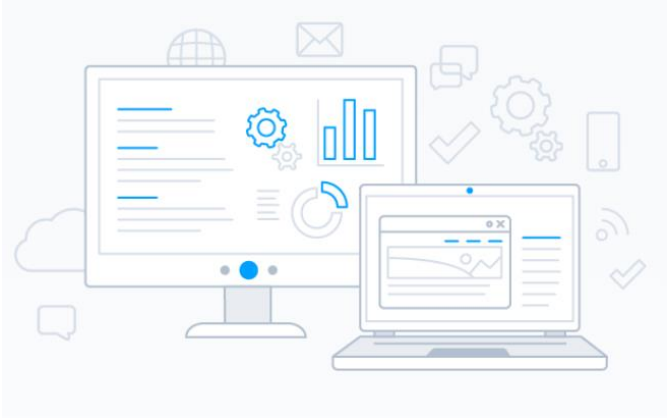
- Power Automate
- BI & Analytics
- Zapier
- Workflow Automation
- Data Virtualizations

BI & Analytics

Our drivers offer the fastest and easiest way with BI, analytics, reporting and data visualization technologies. They provide unmatched query to HubSpot data and metadata, and seamlessly integrate with your favorite analytics tools.

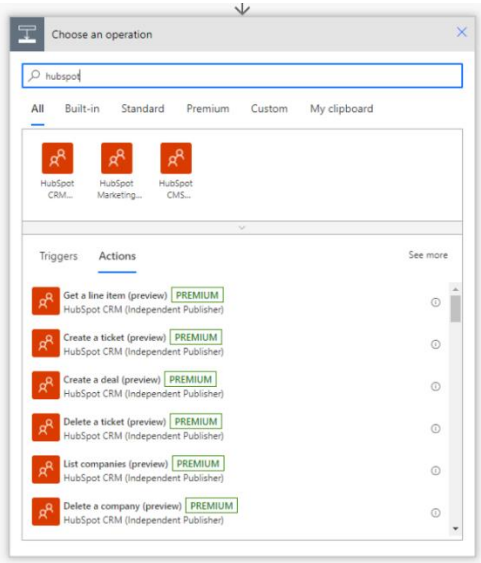
We offer more scalable and faster deployments in HubSpot Applications, through API integrations of HubSpot

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com



Power Automate

Power Automate (Microsoft Flow) is an online service that automates events (known as workflows) across the most common apps and services. When paired with CData Connect Server, you get instant, cloud-to-cloud access to HubSpot data for visualizations, dashboards, and more. This article shows how to connect to Connect Server from Power Automate and integrate live HubSpot data into your workflows and tasks.



We provide integrations of HubSpot with third-party tools and consulting services related to them to broad your marketing and sales strategies.

Cognitive Convergence
http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com

Workflow and Automation

Connect to HubSpot from popular data migration, ESB, iPaaS, and BPM tools.

The drivers and adapters provide straightforward access to HubSpot data from popular applications like BizTalk, MuleSoft, SQL SSIS, Microsoft Flow, Power Apps, Talend, and many more.

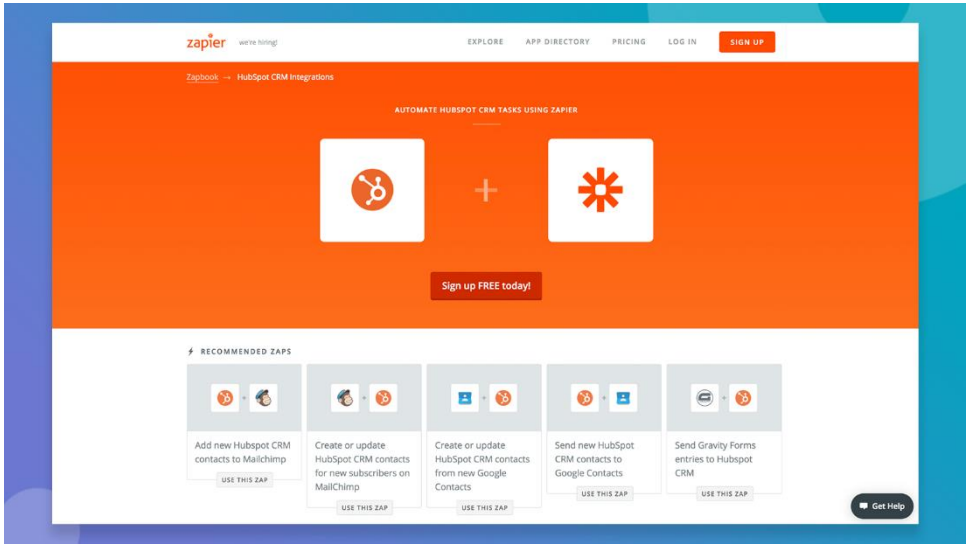
Data Virtualization

The drivers provide a virtual database abstraction on top of HubSpot data and support popular data virtualization features like query federation through advanced capabilities for query delegation / predicate pushdown.

Zapier

Easy automation for busy people. Zapier moves info between HubSpot and apps automatically, so most important work can be focused. Link apps with a few clicks, so data can be shared-- no code required, and time-saving workflows called Zaps are set up in minutes.

By setting up automated workflows with Zapier, manual effort can be cut out and tedious copy-pasting and apply that time to customers and for more important work.



CONCLUSION

In this document, the development perspective of HubSpot has been discussed that how developers can make apps and Customizations to make more sales and lined Marketing. It will be done through a single source of truth, intuitive UX, and a unified codebase. HubSpot equips companies to better manage marketing, sales, service, and operations efforts.

Contact Us

Cognitive Convergence

http://www.cognitiveconvergence.com
+1 4242530744
shahzad@cognitiveconvergence.com