

Retsly Technical Documentation - Beta

Version History

First draft: Oct. 14, 2014 – Karen Rempel created draft

Second draft: Oct. 16, 2014 – Incorporated review comments from Kyle, Joshua, Colin, Kevin

Contents

About the Retsly platform	3
Who uses Retsly?	3
Creating connections and adding value in the real estate market	3
Simplifying the data request process.....	3
Normalizing data format to facilitate growth	4
Getting access to Retsly	4
Why apply?	4
To apply.....	4
Next steps	4
Steps for developing and launching your Retsly application	4
Registering your Retsly application.....	5
Why register?	5
To register	5
Receiving, reviewing and requesting data approvals	7
Applying for additional data approvals.....	7
To apply.....	7
Editing application details and uploading screen shots.....	7
To edit application details.....	7
Deleting applications	7
To delete an application	7
Viewing application details and authentication information	8
To view application details.....	8
Developing your application	8
JavaScript SDK	8
HTTP API.....	8
Using TEST data sets	9
Using the API Explorer	9

Requesting access to data.....	9
Guidelines for types of applications	9
Information required to make a decision	9
Communication between data vendors and requestors	10
Approvals	10
Denials.....	10
Ongoing compliance reviews	10
Components of the Retsly platform.....	10
RESTful design	10
What is a RESTful API?	10
Sample queries.....	11
Open Authentication.....	12
Client ID and client secret	12
Server tokens and browser tokens	12
User tokens, user scopes and application tokens.....	12
How the pieces fit together: Overview of the OAuth flow	13
Analytics.....	14
Examples of use cases for data analytics	16
Viewing data analytics for your application.....	16
Using TEST data.....	16
To view data analytics for an individual application.....	16
Viewing aggregate data	16
To view aggregate data analytics for multiple applications	16
Leads	17
The Lead data set	17
Examples of use cases for leads.....	17
Support for working with Retsly	17
Contributing to the Retsly platform.....	17
Open source components.....	17
Submitting your components	18
RESO.....	18

About the Retsly platform

The Retsly platform is middleware for the real estate industry. Our platform allows software developers to create web-based and mobile applications. Retsly connects technology providers to real estate listing data directly from Multiple Listing Services.

Our name, Retsly, is derived from the acronym Real Estate Transaction Standard (RETS). The [Real Estate Transaction Standard](#) is a common language spoken by systems that handle real estate information, such as MLSs. A common language enables computers and mobile devices to receive information from many different real estate systems or MLSs without special programming to understand the information from each.

We have created a data normalization framework for MLS data that allows applications to extract information in a format that is unified across Real Estate Boards. Retsly uses an ecosystem of transparency and stringent authentication standards, so data providers can see how their data is being used and feel comfortable with the innovators using it.

Who uses Retsly?

We made Retsly to facilitate the flow of data for players in the real estate industry, whether you are an MLS, a brokerage, a software developer, or an agent.

- **MLSs** are multiple listing services that manage the approval flow and compliance aspects of data usage. MLSs set the rules about how data can be used and displayed.
- **Brokerages** are real estate companies that build applications for their staff (agents) to use.
- **Software developers** are individuals or companies that build software applications for brokerages and agents.
- **Agents** are individuals who are licensed to assist their clients to buy and sell real estate. Applications can empower agents to serve their clients more effectively by providing useful, timely information to help their clients make smart decisions.

Creating connections and adding value in the real estate market

We've partnered with MLSs to help developers access real estate listing data in a more seamless way. Our belief is that software developers are innovators who want to create great applications that will meet the needs of agents and brokerages and help them improve the way they do business. The more business, the more listings, and everyone benefits. A bottleneck in this goal can be the access to and transfer of data between MLSs and applications. So we set out to help make it easier for MLSs and developers to work together by delivering the data from multiple sources in a normalized way and simplifying the data request process.

Simplifying the data request process

Developers can request access to MLS data from multiple MLSs in moments, using one online collection of information about their application. Previously, developers would need to apply to each MLS individually, meeting different application criteria for each one, and preparing separate packages for each application.

Normalizing data format to facilitate growth

Retsly enables developers to scale their data structure by simply requesting access to new MLS data. For example, a developer might want to start by developing an application for a local market, and then scale to serve other markets. With Retsly, developers can scale up with little or no increased overhead. Before Retsly, the application developer would have to develop separate software to communicate with each MLS database (because they use different data types and structures and are not standardized). With Retsly, we provide an API so developers don't need to write additional code to expand into a new market. This leaves developers more time for improving their products to provide even better applications to brokerages and agents.

Getting access to Retsly

Retsly is in closed Beta. We are working with select partners to develop processes and integration between the different types of Retsly users, data, and websites. We are accepting applications for participation in Beta testing. You can also apply to receive email updates about Retsly.

Why apply?

- **To get in the queue for Beta testing** If you want to use the Retsly platform, applying is the first step. We will send you updates about Retsly platform development and notify you when you can start using Retsly.
- **To get on our mailing list** If you are simply interested in receiving information about Retsly, apply now to receive email updates about Retsly platform development.

To apply

1. Click [Request Beta Access](#).

2. Fill in your name and email address.

You will see a notice and receive an email requesting that you confirm subscription to the Retsly Beta mailing list.

3. Click the link in the email to confirm your subscription.

You will receive a second email confirming that you have successfully subscribed to the mailing list.

Next steps

- When we are ready to support another beta testing partner, we will notify you and provide a login ID and password.

You can unsubscribe from the mailing list at any time by clicking the Unsubscribe link in any email from us.

Steps for developing and launching your Retsly application

When you receive Beta access to Retsly, you are invited to begin developing your application with the Retsly platform. Developing and launching your Retsly application involves these steps:

1. Register your application.

2. Develop and test your application.
3. Request data access for your application from the available MLS partners.
4. Deploy and run your application with live users and data.

This web page gives you information about the steps in the process, with links to additional information.

Registering your Retsly application

When you have received a login ID and password, the next step is to register your application with us.

Registering involves giving us details about your website and what your application does. You can provide a link to a video, presentation, or info page, as well as images from your site.

Why register?

Registering your application is the first step in developing your application on the Retsly platform. Registration has many benefits:

- You can apply for access to data from the data vendors of your choice.
- You can begin using Retsly to track data analytics, both during application development (using test data) and after your application is deployed.
- You can integrate user [authentication](#) on multiple platforms using OAuth.
- Registration helps MLSs, brokerages, and agents learn about your application and understand the service you are providing.

To register

1. On the Retsly website, on the menu in the upper right, click Login.
2. Enter your login ID (email address) and password, and then click Login.

Tip: The login process uses [OAuth](#), just as your website will. You must grant the Retsly website access to your application data. Click Allow.

3. Click Applications in the left menu.
4. Click the My Applications tab, and then click Create New Application.
5. Fill in the required fields with this information:

Field	What to enter	Examples & notes
Name	Name of your application	Listings A Go-Go
Homepage URL	Homepage of the website where you will host the app	http://listingsagg.com - This is the domain name where the tool or application you are building resides and is used
Detail URL	Link to a video, presentation, or info	https://www.youtube.com/watch?v=g9XXPRBR_bY

	page about your application	
Short Description	Brief description of what your app does, up to 120 characters	Everything you need to help your clients research, buy and sell homes from your mobile device
Full Description	Complete description of what your app does	Use our app to track your clients' searches for listings. Create an advanced search including price or the number of bedrooms or washrooms, to find listings tailored to your clients' preferences. View detailed property descriptions and photos, instantly calculate mortgage costs and land transfer fees and much more. You can save a list of likely properties and email them to your client, email listing agents to arrange viewings or contact them directly through the Listings A Go-Go app. Search homes for sale, pre-market properties and recently sold homes.
Support URL	Homepage or support page of your website	http://listingsagg.com
Support email	Support email address	support@listingsagg.com
Icon+	Upload an image from your machine to use as the icon for your application	- Supported formats: JPG and PNG - Icon will be resized to 196x196, 382x382, and 684x684 pixels. We suggest you upload the largest size for best results.
Screenshots+	Upload one or more screenshot images of your application from your machine	- Supported formats: JPG and PNG - Screen shots will be resized to 100x100, 400x400, and 800x800 pixels. We suggest you upload the largest size for best results.
Domain	Homepage of your website	http://listingsagg.com
Redirect URL	Web page for the OAuth callback	http://listingsagg.com/homepage/ - Has to match the URL provided in the OAuth flow when you request the grant code

Fields with + are optional

6. In the Data vendors section, click the Apply button beside provider names to select the data vendors you would like your application to access.

Important We recommend you read [The approval process for data access](#) before applying for access to data.

You automatically receive access to the TEST data, which you will use initially to develop and test your application.

7. Click Create Application.

A message at the top of the screen indicates that your application has been created. Your application is displayed.

Receiving, reviewing and requesting data approvals

Retsly will automatically send you an email notification when a data vendor grants you access to their data.

You can also view the Data Approvals section of your application's overview page on Retsly to see the status of your data requests.

Applying for additional data approvals

Once your application is ready to deploy, and as you expand into new markets, you might wish to apply for access to additional data providers. Retsly allows you to scale to accommodate growth by adding data providers with a click or a tap. Before you request access to data, review [The approval process for data access](#).

To apply

1. Login and click Applications in the left menu.

If you have more than one application, click the name of the application to work with.

2. Click Edit Application.
3. Click the Data Providers tab.
4. Click the Apply button beside provider names to select the data vendors you would like your application to access.
5. Click Update.

Editing application details and uploading screen shots

You can edit any of the details you supplied during the registration process. For example, you might not have final (or any) screen shots when you registered your application, so you can upload them later after you have developed your application.

To edit application details

1. Login and click Applications in the left menu.

If you have more than one application, click the name of the application to work with.

2. Click Edit Application.
3. Make your changes in the four tabs.
4. Click Update.

Deleting applications

To delete an application

1. Login and click Applications in the left menu.

If you have more than one application, click the name of the application to work with.

2. Click Edit Application.
3. Click Delete.

Viewing application details and authentication information

You can view the details you entered, as well as this important authentication information for your application:

- Client ID
- Client Secret
- Server Token
- Browser Token

These will be used when setting up your API integration.

To view application details

1. Login and click Applications in the left menu.

If you have more than one application, click the name of the application to work with.

2. Click Edit Application.

Authentication information is displayed below your application's name.

3. To view the token information, click Show Server Token and Show Browser Token.

Developing your application

You can build realtime mobile and web apps in minutes using client-side code and our powerful API.

There are two ways your application can interact with our API. You can use our [JavaScript SDK](#) or our [HTTP API](#), or elements of both programming tools. More languages are coming soon, including iOS. This section provides a brief introduction to our tools, including our TEST data sets and API Explorer. Also see [Components of the Retsly platform](#).

JavaScript SDK

The Retsly JavaScript SDK is a toolkit that allows you to build robust realtime applications without the need for a database. On top of this SDK is a [component system](#) that allows for developers to create reusable plug and play components.

HTTP API

Retsly allows you to choose between two different APIs: the Retsly API and the RESO API. Both APIs are designed using modern REST principles. The Retsly API also powers our JavaScript SDK, so we ensure that your data flow is as compliant as possible from one medium to another.

Using TEST data sets

Use the TEST data sets to develop your application and demonstrate what it can do. This information will be useful when you are applying for access to real data providers. See [Analytics](#) for information about seeing how the TEST data works with your application.

We have created the TEST data sets from a random assortment of flower shops in San Francisco. This sample data has no correlation to real MLS data. The machine-generated TEST data represents data sets and functionality that exists in real data, to allow you to develop a proof of concept that shows how your application will integrate with real data providers.

Retsly takes data integrity, privacy and security very seriously and respects the rights of MLSs, brokerages and agents.

Using the API Explorer

The [API Explorer](#) tool shows the operations you can perform on Retsly and RESO API data elements, and provides model schemas and parameters.

You can use the API Explorer tool to intuitively develop and test your application code. The API Explorer is a graphical tool that allows you to examine API requests and responses. A server token is required to create a successful API request.

Requesting access to data

[Registering your application](#) with us is the first step in preparing your application for approval. The second step is developing and testing your application. When you have finished developing your application with the Retsly API, you are ready to [request data access](#).

Data vendors such as MLSs own their data. For data vendors to grant access to application developers, you must provide sufficient information for vendors to trust that you will safeguard their data and use it for a purpose that will be of benefit to the vendor and their stakeholders. When a data vendor grants approval, they are essentially granting a license for the developer to use their data. This section provides additional information about the approval process.

Guidelines for types of applications

The Retsly platform is intended for agent-facing and [IDX](#) applications. Retsly supports developers that create applications for [MLSs, brokers, and agents](#). If you can provide a beneficial service to these user groups in the real estate industry, your application is a candidate for data approval.

Information required to make a decision

Data vendors need adequate information about your application in order to decide whether or not to approve your request. Before requesting data access, ensure that your application details on the Retsly website are as complete as possible:

- Ensure that your Details URL and Full Description provide enough information that the vendor can understand the service you are offering, the data you want to use, and how you will use the data to provide the service.

- Provide screen shots to illustrate how your application works. A picture is worth a thousand words. Screen shots demonstrate the professionalism and authenticity of your application. They also demonstrate how your application provides the service you say it does.

Communication between data vendors and requestors

Retsly provides a conduit for application developers to receive data approvals. Retsly forwards data approval requests to the data vendors, and hosts an easy-to-use bulletin board that allows data vendors and requestors to communicate with each other.

Approvals

If your request for access is approved, you will receive an email notification. Your existing token will then be approved for access to the vendor's data set.

Denials

If your request for access is denied, you will receive an email notification with a link to the bulletin board. The data vendor will provide feedback using a comment thread in the bulletin board. After you have implemented the feedback, you can use the bulletin board to communicate with the vendor. You can demonstrate that you have implemented the feedback, justify decisions not to implement it, and generally resolve any concerns that the data vendor has.

Ongoing compliance reviews

Retsly supports full transparency for data usage. MLSs, brokerages, and agents can use the Retsly system to review application data usage and ensure that their data is being used for the intended purpose for which access was granted. MLSs can submit inquiries for consideration about any issues they see where data is not being used in a compliant manner.

The Retsly compliance team will work with all parties to resolve issues. We will work with the compliance teams at all MLSs that use our platform, providing an interface with their departments and developers to ensure ongoing compliance within the Retsly partner network.

Components of the Retsly platform

This section introduces you to some of the technical elements and practical applications of the Retsly platform. Click the links to read more about REST and OAuth.

RESTful design

REST is the underlying architectural principle of the web. It stands for REpresentational State Transfer. You can easily integrate your application with our [RESTful](#) API, built on standards that are proven and widely adopted across the internet, including by mainstream web service providers such as Yahoo, Google and Facebook.

What is a RESTful API?

An API that adheres to the principles of REST does not require the client to know anything about the structure of the API. Rather, the server needs to provide whatever information the client needs to interact with the service.

REST defines a set of architectural principles by which you can design web services that focus on a system's resources, including how resource states are addressed and transferred over HTTP. This allows

your service to be used by a wide range of clients written in different languages. Our RESTful HTTP-based API adheres to these [REST architectural design principles](#):

- Identifies resources (data) using persistent, directory-structure like [URIs](#), such as `http://yoursite.com/resources/`
- Uses an [Internet media type](#) for the data (we use [JSON](#) but it can be any other valid Internet media type)
- Works with data using standard [HTTP methods](#) (for example, GET, PUT, POST, or DELETE) – see the [API Explorer](#)
- Is stateless, using hypertext links to reference state and related resources

If you're looking for more information about RESTful web services, the [O'Reilly RESTful Web Services book](#) is excellent. Or check out the [Java tutorial](#).

Sample queries

You can use any Retsly URL as a REST endpoint by appending `.json` to the end of the URL, and sending standard HTTPS requests. HTTPS is required; Retsly only responds to encrypted traffic so that your data remains safe.

PUT and GET lead information

The basic write operation through the Retsly API is `PUT`. To write data to a reference with a `PUT` request (to modify an existing record), you can do the following:

```
PUT '{ "favorite_client_name": { "email": "client@email.com",  
  "contact_time": "After 7 PM" } }'  
https://rets.io/api/v1/lead/{leadID}.json
```

A successful request will be indicated by a `200 OK` HTTP status code, and the response will contain the data you wrote to Retsly:

```
1. {  
2.   "favorite_client_name": {  
3.     "email": "client@email.com",  
4.     "contact_time": "After 7 PM"  
5.   }  
6. }
```

You can issue an HTTP `GET` request to the same endpoint to read the data you saved:

```
https://rets.io/api/v1/lead/{leadID}.json
```

Sample API requests to the Retsly API

List all the agents associated with a vendor:

```
https://rets.io/api/v1/agent/{{VENDOR}}.json?access\_token={{TOKEN}}
```

List the first 10 listings with a vendor:

https://dev.rets.io/api/v1/listing/{{VENDOR}}.json?limit=10&access_token={{TOKEN}}

Sample API request to the RESO API

List the first 10 property listings with a vendor:

[https://rets.io/api/v1/{{VENDOR}}/RESO/oData/Property?access_token={{TOKEN}}&\\$top=10](https://rets.io/api/v1/{{VENDOR}}/RESO/oData/Property?access_token={{TOKEN}}&$top=10)

Open Authentication

Most applications need to know the identity of a user. Knowing a user's identity allows an app to provide a customized experience and grants the app permission to access the user's data. The process of proving a user's identity is called *authentication*.

Open authentication is used by all major internet services, such as Google and Facebook. It allows an application to authenticate a user and grants limited permissions. The permission is stateless, which means the website doesn't have to have a cookie. Instead, the token is the representation of the user. For example, if you build an application for an agent, the application would want to know who the agent is and have access to their listings. The user token would tell the application who the user is and allow the application to view the MLS listings and the brokerage office they are involved with.

You must authenticate to use the Retsly API with your applications. This requires the use of an access token. We use OAuth 2.0 open authentication to generate access tokens and authenticate to the service on a users' behalf. [OAuth](#) is a protocol to provide client applications access to server (Retsly) resources on behalf of a resource owner.

Client ID and client secret

When you register an application, we assign a **client ID** and **client secret**. ***Never share your client secret.*** The client ID and client secret are [displayed in your application details](#). They are required for creating authorization tokens.

Server tokens and browser tokens

Retsly also provides an easy way to create a server token and browser token. You can create your own tokens for development use, or if you only need a small number of authorizations. [Click the buttons in the application details area](#) to generate server and browser tokens.

- Browser tokens are short-lived and expire in 3 hours.
- Server tokens are longer lived and more secure. They expire in 60 days.

Browser tokens must originate from the application domain (website). The redirect URL you specified when you [registered the application](#) with Retsly is used for the callback with the grant code (to send authorization back to your application)—see step 6 in the [diagram](#).

User tokens, user scopes and application tokens

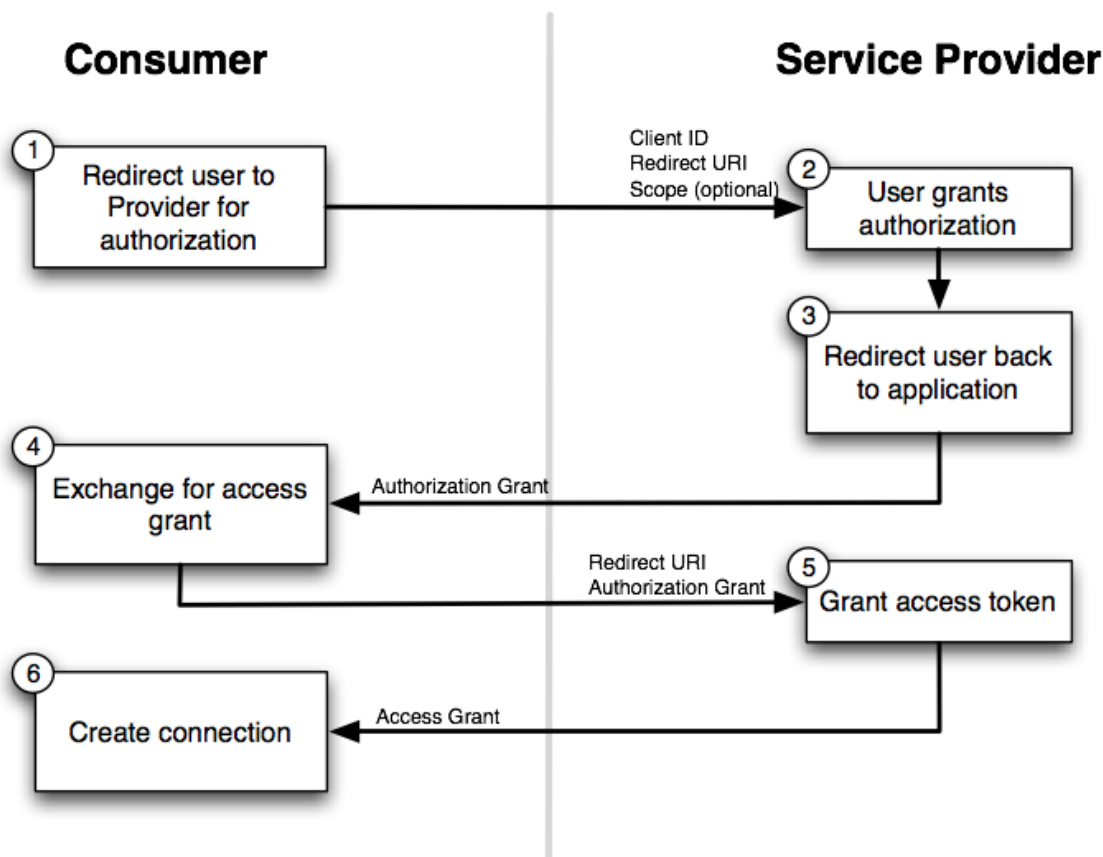
Each user has a set of permissions, called scopes. User tokens indicate who the user is and identify the range of permissions or scopes the user has granted to the application.

The user ID scope is required. Other user scopes are optional. For example, an optional user scope is permission to allow the application to submit or read data such as leads stored in Retsly, and distribute the information to the user's applications.

Generally you will [create authorization tokens](#) for applications and users so that users can authenticate to your application. Application tokens have fewer privileges than user tokens. The link takes you to detailed code syntax and examples for setting up authorization for applications and users.

How the pieces fit together: Overview of the OAuth flow

Here's a basic overview of the OAuth flow. The diagram illustrates the process for server tokens. For browser tokens, step 4 is omitted.



[Link for Kevin: http://www.springframework.net/social/refdoc/images/oauth2_flow.png]

Diagram notes:

- The Service Provider is Retsly, and the Consumer is your application.
- In step 2 of the diagram, the user grants permission for Retsly to release information to the application.
- For short-lived browser tokens, step 4 of the diagram is omitted. Client applications are not required to exchange a grant code for an authorization token.
- The final arrow labeled Access Grant is the actual OAuth server token.

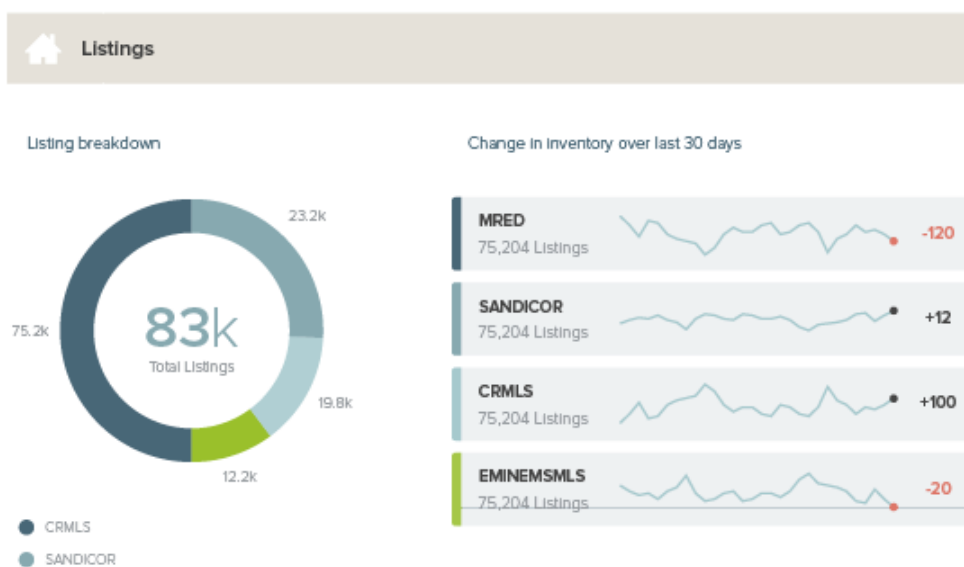
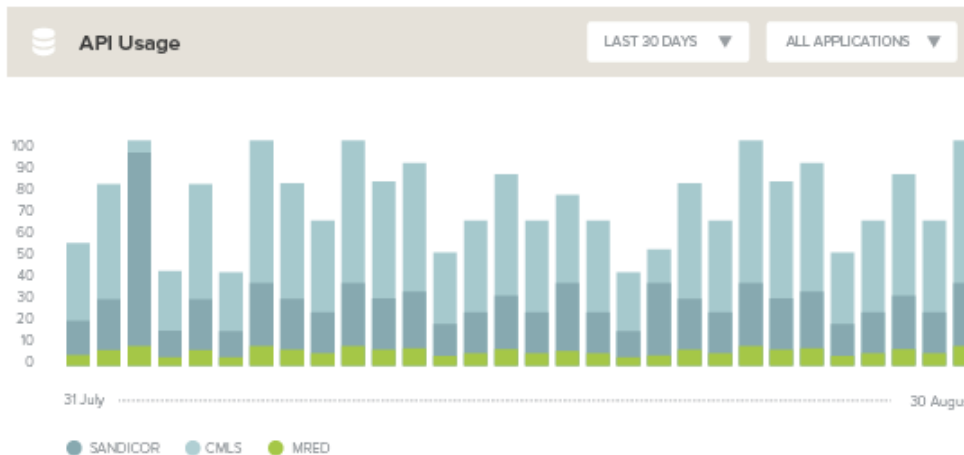
Visit the [OAuth 2.0 site](#) for detailed information about OAuth 2.0, including specifications and server and client libraries.

Analytics

One of the strengths of the Retsly platform is our analytics. You can [view aggregate data](#) from your top 10 applications, as well as [data analytics for individual applications](#).

Analytic information is available for each active data provider. You can view the data in these graphic formats:

- Line
- Donut
- Pie
- Bar
- Area



Sample graphical analytics

Any time an application makes a request to the Retsly API through an application token or a user token, Retsly tracks the requested data and stores the information. You can display this information graphically, as shown above, or design your application to create metrics of the numerical data.

Examples of use cases for data analytics

- **MLSs** can oversee compliance by viewing how applications use the Retsly API.
- **MLSs** can track how people search for data in the MLS and gain a competitive advantage through making data more accessible.
- **Developers** can create new types of applications for **agents** based on their leads' search activity. For example, based on the types of search traffic, such as types of homes, regions the user is looking in, average price, or square footage, the developer can deliver customized information about a lead's preferences to an agent.
- **Brokerages** can use search data to compare demand with supply, to assist in long-range planning such as office space and number of agents on staff.

Viewing data analytics for your application

During application development, you can view the data analytics for your application using the sample TEST data we have provided. Once you have received approval for your application to access and interact with data providers, and your application begins to receive traffic from users, you can view data analytics for live data.

Using TEST data

Prior to receiving data approvals from data providers, you can use the TEST data sets to test your application's data flow, and view analytics of the test results.

Analytic data is displayed for each MLS that your application is currently approved for, including the TEST data if applicable.

To view data analytics for an individual application

1. Login and click Applications in the left menu.
2. Click the name of the application to work with.

Analytic information is displayed in the Traffic by Data Provider section.

3. Click the buttons at the lower right to display the types of graphical representations you want to view.

Viewing aggregate data

You can view aggregate data analytics for up to 10 applications. If you have more than 10 applications, the top 10 are included in the aggregate. Applications are sorted by the volume of traffic generated to the API to determine the top 10.

To view aggregate data analytics for multiple applications

1. Login and click Analytics in the left menu.
2. Select from the drop-down menus to modify the displayed time periods and application data.

Leads

Leads are one of the possible data elements that you can use the Retsly platform to track. Retsly provides a database that developers and agents can use to store information about leads, including their search history, and share the information across multiple apps.

Important Agents need to grant permission using [OAuth authentication](#) before an application can use the data for a lead.

The Lead data set

The Lead data set includes the lead ID, agent ID, name, phone number, email address, contact time (best time of day to contact the lead), and array of listings.

The API Explorer tool shows the operations you can perform on the lead data set, as well as the model schema and parameters. You can also use the API Explorer tool to test your application code for tracking leads.

Examples of use cases for leads

- **Developers** can create new types of applications for **agents** based on their leads' search activity. For example, based on the types of search traffic, such as types of homes, regions the user is looking in, average price, or square footage, the developer can deliver customized information about a lead's preferences to an agent.
- **Agents** and **brokerages** can port their lead information, such as names, phone numbers, and email addresses, across multiple applications.
- **Developers** can use the Retsly platform to build applications that integrate lead information with relevant data from existing popular real estate apps such as [Zillow](#) and [Sitegeist](#).

Support for working with Retsly

If you need help using Retsly, you can chat with us on our [support chat](#), email support@rets.ly, or hit us up on Twitter [@retsly](#).

We also provide developer support, tools, and information at these sites:

- [Zendesk forum](#)
- [GitHub open source components](#)
- [BuiltWith Retsly.com technology profile](#)

Contributing to the Retsly platform

Open source components

At Retsly we believe in the principle of openness—including sharing resources and information—upon which the Internet was founded. Retsly uses open source components. We work with stakeholders to understand processes that enable a community of developers to rally behind the real estate industry resulting in reusable and open software toolkits that will quicken the pace of innovation within the industry.

These software toolkits are freely available to any developer to use or modify however you see fit as long as you contribute mutually beneficial innovations back to the community.

Submitting your components

We hope you will use our platform and contribute your innovations to the community at large.

We publish shareable components that developers have created with Retsly on [GitHub](#).

To submit a component for testing and evaluation, you can drop a link or a line in our [support chat](#), or email support@rets.ly.

RESO

RETS is the Real Estate Transaction Standard. The Real Estate Standards Organization ([RESO](#)) is an environment for the development and implementation of data standards and processes that facilitate innovation, ensure portability, eliminate redundancies and obtain maximum efficiencies for all parties participating in the real estate transaction.

We are members of the RESO community, and use the [RETS language](#) for our platform.