

Getting Started with HAR Matrix RETS

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Section 1) Communication with HAR Staff about RETS

All emails in regards to HAR RETS should be addressed to idx@HAR.com which are forwarded to the entire HAR RETS team:

Nathan Goble, MLS Project Manager;

Magen Skains, MLS Support Specialist;

This ensures there is always someone to respond to your questions. Sending the email to an individual at HAR or any other email address may delay our response to your question.

- **Emails to HAR should always include your RETS login.**
 - HAR Staff often has to look up a user's data package or login. With the large number of users accessing HAR RETS, including your RETS Login will expedite your request. In addition,
- HAR asks that you keep your contact information current. If HAR needs to contact you or your firm, there will be two attempts made by email and two attempts made by phone. If HAR does not receive a response in a reasonable time, your access to RETS will be turned off until you contact HAR.

Section 2) Access to HAR RETS

All access to RETS requires a RETS login and password issued by HAR. HAR requires that the ip address of the server that will connect be registered. Each account is allowed to have up to two authorized ip addresses. To receive your RETS credentials, contact idx@har.com requesting the required forms and documents.

- The RETSID (RETS Login) and password are both case sensitive.
- Do not share your RETS Credentials with anyone.

Section 3) System Performance

The HAR MLS/RETS Systems are resources shared by real estate professionals and RETS users. The primary function of the HAR MLS System is to provide current information to real estate professionals in a timely manner and the function of RETS is to provide MLS data to MLS users and third parties.

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HAR is very concerned about RETS downloads creating a system performance slow down not only for RETS, but possibly MLS resulting in a poor experience for both real estate agents and RETS users.

HAR would prefer not to impose limits on RETS users, either on the amount of data or when data can be accessed. If it is determined that a RETS user is consistently running either large downloads or has improper/inefficient RETS queries, HAR reserves the right to impose limits either on when the queries are allowed to run, or how much data can be downloaded within a certain time.

To ensure the experience is optimal for all users, HAR requests all RETS users refrain from running large downloads between 8 am and 8 pm CST on Monday through Friday. During these hours, please run incremental searches. Large or full downloads can be run after 8 pm and before 8 am.

If your RETS queries return a large amount of data, HAR requests that you run incremental searches at least 15 minutes apart.

If you have any questions, please contact idx@HAR.com.

Section 4) Resources for RETS

- Your main resource for information about RETS is <http://www.reso.org>.
- The RETS 1.8 Specification can be found at:

<http://www.reso.org/specifications>

Section 5) HAR RETS Servers

- HAR is running RETS 1.8 Production on multiple load-balanced servers. The URL for the RETS Servers is:

<http://retsiqmatrix.harmls.com/contact/rets/login>

This server points directly to the MLS Production Database and our CDN for Images. The MLS Database is approximately 60 GB in size. New listings or changes to existing listings will be available to RETS within 15 minutes of the data being added or modified to MLS.

- You can login to RETS useful information with these URL's:

<http://retsiqmatrix.harmls.com/contact/rets/login>

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This URL will take you to the metadata

<http://retsigmatrix.harmls.com/contact/rets/GetMetaData?type=metadata-table&Format=COMPACT-DECODED&ID=0>

- If your RETS Client or script requires a port, the correct port is 80. The CoreLogic Client, RETS Connector 1.2, is programmed to use port 80. Be sure your firewall allows Port 80.
- The RETS Server uses GMT. The data is in Central Time. All times referenced in the HAR documentation are in Central Time.
- The MLS SQL Server and RETS servers reboot between 2 and 3 am. If you are downloading data during this window, be sure your client/script has the ability to automatically re-try in case the server is not available due to the server's rebooting.

Section 6) RETS Clients

A RETS Client or script is required to access data from the RETS Server. Two popular clients that are available without charge are:

- ezRETS from the Center for Realtor Technology at the National Association of REALTORS® and
- RETS Connector 1.2 from CoreLogic

6.a) ezRETS

The ezRETS ODBC driver, from the Center for Realtor Technology (CRT) at the National Association of REALTORS®, was designed to allow ODBC-aware applications to easily query data from any Multiple Listing Service that supports the RETS standard. Many of the programs in Microsoft Office can utilize ezRETS to integrate real estate listing data directly into your own custom documents. See this link for more information on ezRETS:

<http://crt.blogs.realtor.org/?s=ezrets>

6.b) CoreLogic RETS Connector

The CoreLogic RETS Client, RETS Connector 1.2, is available for free at www.retsconnector.com. RETS Connector 1.2 only works in Windows operating systems. It does not work in Linux or Macintosh operating systems. Previous versions of RETS Connector are not compatible with the current HAR MLS System.

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Please read all documentation associated with RETS Connector 1.2. The help file is available on www.retsconnector.com.

HAR does not provide training on using the CoreLogic RETS Client, RETS Connector1.2. It does come with an excellent Help Manual that will answer your questions. If you suspect RETS Connector1.2 is not functioning correctly, contact idx@HAR.com. HAR Staff will investigate the functionality and, if necessary, report the problem to CoreLogic.

Section 7) Viewing the HAR RETS Metadata

There are several ways to view the RETS Metadata. One method is by using your RETS Login and Password and pasting these links into your browser:

<http://retsiqmatrix.harmls.com/contact/rets/login>

This URL will take you to the metadata

<http://retsiqmatrix.harmls.com/contact/rets/GetMetaData?type=metadata-table&Format=COMPACT-Decoded&ID=0>

In RETS Connector 1.2, click on 'View' and 'Metadata Browser' to view the metadata. You can also go to www.retsmd.com to view the metadata by entering your credentials.

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Section 8) Classes in RETS

The RETS Metadata is based on these Resources and Classes:

Resource	Class	Approximate Number of Records (Total/Active)
Agent	Agent	77055/33607
Office	Office	13040/6481
Media	Media	22,508,387
Property	Listing	2,851,641
Property Sub Table: Units	Units	20,943
Property Sub Table: Rooms	Rooms	341,596
OpenHouse	Open House	121,397

All data exported from RETS must be from one of these classes.

HAR Matrix RETS has one class, Property, which contains seven property types:

- Single-Family
- Townhouse/Condo
- Lots
- Multi-Family
- Country Homes and Acreage)
- Mid/Hi-Rise Condo
- Residential Lease

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Section 9) Linking Classes

The MATRIX_UNIQUE_ID in the Listing Class links to the Listing_MUI in the Rooms and Units Classes.

The MATRIX_UNIQUE_ID in the Listing Class links to the TABLE_MUI in the Media Class.

Section 10) Media and RETS

RETS accesses the CDN media server separate from the HAR MLS System. Media added to the MLS system is available within 15 minutes to RETS users.

10.a) Working with MEDIA

Every listing has a MLS Number and MATRIX_UNIQUE_ID in the Listing Class. The MATRIX_UNIQUE_ID in each Property Class links to the TABLE_MUI in the Media class.

- The MATRIX_UNIQUE_ID in the Listing Class does not link to the MATRIX_UNIQUE_ID in the Rooms, Units, Media, or Open House Classes.
- The MATRIX_UNIQUE_ID in the Listing Class links to the TABLE_MUI in the Media Class.

You can download media from the media servers using "GETOBJECT". We do not allow image objects to be obtained directly. We only allow images URLs from our CDN to be obtained.

10.b) Downloading Photos

Downloading photos in RETS is done through the GETOBJECT request. Here is an example of the GETOBJECT request to get an image for a property. It is the code to retrieve an actual photo for MLS Number 41891616 (MATRIX_UNIQUE_ID = 36163298) in the HAR MLS database:

<http://retsigmatrix.harmls.com/contact/rets/GetObject?Type=LargePhoto&Resource=Property&ID=36163298:0&Location=1>

The ID portion of the parameters has two parts. ID=36163298:0

1. 36163298 is the MATRIX_UNIQUE_ID of the listing, our primary key, as noted in the METADATA-RESOURCE. It is not the MLS number.

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2. The “:0” of the ID means to get the primary picture. A “:1” will get you the first picture, which is the primary picture, so in effect :0 and :1 are equivalent. “:2” will give you the second picture. If you use a “:*” you will receive a multipart response which contains all of the images for that property.

There is no request in RETS to simply ask for ALL of the images.

There is a field called PHOTOCOUNT in the listing table that indicates the number of photos for that particular listing.

The field PHOTOMODIFICATIONTIMESTAMP contains a modification timestamp for the photos for a listing. If any new pictures are added, removed or replaced the listing’s PHOTOMODIFICATIONTIMESTAMP would be changed as well as the MATRIXMODIFIEDDT.

You can pull photo updates for listings using a similar method for pulling listing updates, but instead of using MATRIXMODIFIEDDT you can use PHOTOMODIFICATIONTIMESTAMP. When listings have a newer PHOTOMODIFICATIONTIMESTAMP, you need to download the photos for those listings. Alternatively, you could use a different method whereby when you download updates for a listing, you can compare the old PHOTOMODIFICATIONTIMESTAMP with the new one. If they differ, re-download the photos for that listing. This method works because the MATRIXMODIFIEDDT is updated at the same time as the PHOTOMODIFICATIONTIMESTAMP.

10.c) Notes on Virtual Tours

Virtual Tour links are stored in these fields in the Listing Class:

1. URLVT1
2. URLVT2

In the Listing Class, there is a PHOTOMODIFICATIONTIMESTAMP and PHOTOCOUNT field. If any photo is modified, these values are updated. It is meant as an indicator to RETS user that they should re-download the photos for this listing. While not the MOST efficient method possible, it is way better then downloading the photos every time the listings modification timestamp changes.

Explanation of the fields in the Matrix Media Class:

MODIFIEDDATE – Is the modification timestamp for this row. If anything changes, then this gets touched. If the order changes, if the description changes, or if the actual photo changes.

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UPLOADDATE – This will be touched with the actual Image or BLOB(Binary Large Object) changes. Slightly different than the Modified date. If this value is updated it means you should download the image or blob, if it is the same as before , but the modified has changed it means only something in the row has changed, perhaps description.

TYPE – has the single option of Image

DESCRIPTION – This is the photo description. Usually this is placed just below the photo. Contains values like “This is the Kitchen Sink”, “Great View from the bedroom window”

ORDER – This is the order in which photos should be displayed. Photos are numbered 0,1,2,3,4,5....

TABLE MUI – This is the MATRIX_UNIQUE_ID of the related item. This table can contain more than just listing photos. It can contain agent photos and/or office logos. This is the field that will relate to the item.

10.d) High Resolution Images

- a) HAR Matrix RETS supports two image sizes. The image size in pixels is shown below:

Name	width	height
Photo	256	195
LargePhoto	1024	768

- b) Images larger than 1024x768 will be resized to 1024x768. Photos with greater dimensions can will fail to upload.
- c) Your GETOBJECT can be modified to include “Photo” along with “LargePhoto”.
- d) You do not have to download “LargePhoto” images. Or you can only download “LargePhoto” for specific listings to meet your needs.

10.e) Hot Link to images

- a) All RETS users may only obtain images by download a URL that links back to the HAR CDN Server by using the “Location=1” parameter in their RETS query. We do not allow images to be obtained directly from the Matrix Media Server.

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Section 11) RETS Names

The Matrix RETS Metadata is based on the SQL Tables that underlie the Matrix MLS Database and the names used in RETS can be tied back to the fields in the Tempo SQL Tables.

A field in RETS has 5 different names:

LongName	This is the most user friendly name.
ShortName	Same as the LongName.
StandardName	Many fields lack a standard name.
SystemName	These names are the schema name on the MLS SQL Tables.
DBName	This is very cryptic and useful only to the Matrix DBA Team.

It is your choice as to the name you work with in RETS, but you will find the SystemName in most cases is the easiest to work with.

Many critical fields do not have a Standard Name. HAR recommends you do not use the Standard name unless you are downloading a very small set of fields. Check the metadata to ensure the fields you are interested in do have a Standard Name.

Section 12) Look Ups

Many fields in HAR MLS are driven by look-up/list boxes. "CountyOrParish" is one example. Others include STATUS, GeoMarketArea, etc.

For Yes/No fields, Matrix represents "Yes" as a "1" and "No" as a "0".

12.a) Compact and Compact De-coded

RETS allows you to download the data as either Compact or Compact De-Coded. The first option downloads the codes used for the data, i.e. 'BELLA', and the second option would be in user-friendly terms, i.e. 'Bellaire Area'.

Downloading in the Compact form allows for smaller and faster downloads. Then you have to de-code the data yourself.

Downloading in Compact De-Coded requires downloading more data. The size of the file is larger and takes more time to download, but you do not have to use the Lookups to change the data into user-friendly names.

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Section 13) RETS Download Limits and Recommendations

A maximum limit of 5,000 has been set for RETS downloads. There are currently more than 60,000 records in the IDX data feed which includes listings from the active-pending statuses. The actual numbers fluctuate depending on the real estate market.

13.a) Initial Download

If you are downloading data in support of a website, your initial download should be for

- Status includes 'A', 'OP', 'PSHO', and 'PEND',

Subsequent downloads would be for all statuses changing the MATRIXMODIFIEDDT as appropriate.

If you are downloading data in support of a back office product, you would be downloading all statuses. **HAR strongly recommends using MATRIXMODIFIEDDT to divide the initial download into multiple passes.** Failure to download the full database in increments may cause a degradation in system performance. You may also find you cannot download the full database with a single download.

13.b) Recommendation for downloading large amounts of data

The following is an efficient and effective method to download large amounts of data

1. Take note of the time that you started this process - it will be used later.
2. Use a query of (MATRIX_UNIQUE_ID= 0+)&Limit=5000
3. Retrieve all those listings
4. Find the highest MATRIX_UNIQUE_ID from those listings
5. Create a new query with (MATRIX_UNIQUE_ID =<HighestID from step 4>+)&Limit=5000
6. Repeat from step 3 until you receive all listings.

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7. Start the general download of listings using the MATRIXMODIFIEDDT equal to the date you got in step 1. This makes sure to get any changes you may have missed while getting the entire set of listings.

This process works because all of our output is ordered by the primary key, the MATRIX_UNIQUE_ID field.

13.c) Keeping IDX Data Feeds up to date with listings.

To keep your databases in synch with the HAR MLS Database refresh the listings on a regular interval. An additional Class is exposed, OffMkt_Alert, in the Property Resource. This class allows you to identify listings that have gone off market. You can do an incremental query with the field MatrixModifiedDT to identify off-market listings that need to be removed. As per MLS Rules, IDX websites must be updated at least once every 12 hours.

Section 14) Important Date Fields

- The Listing, Rooms, Units, Agents, Office and OpenHouse classes contain the MATRIXMODIFIEDDT field which is a date and time the record was last changed. In the Media Class, the MODIFIED performs the same function. For new listings, this date and time is when the listing was added to MLS. It changes when media is added, edited, or modified. When the data in the Rooms and Units classes changes, it also changes the MATRIXMODIFIEDDT in the Listing Class.
- The MODIFIEDDATE field on the MEDIA class is updated when the media is added or modified (it is not updated when any media is deleted). When media is added, edited, or modified, it changes the MATRIXMODIFIEDDT field on the property classes.
- The PHOTOMODIFICATIONTIMESTAMP field in the property classes is updated whenever media is added or modified.
- The UPLOADDATE field on the MEDIA class is populated a media record is created.
- Some RETS data feeds may include DAYSONMARKETDISP (DOM). When this field is updated, the MATRIXMODIFIEDDT field is not updated. DOM is not available in most RETS downloads.

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Section 15) Miscellaneous Information

- Every night at midnight, an automated process changes the status of listings according to their expiration date. If you are accessing the data around this time, you may wish to wait until 20 or 30 minutes after midnight to access the data.
- Between 2 am and 4 am, the RETS servers undergo a reboot. If your client allows for it, please set it to re-try.
- HAR recommends using the SELECT parameter in RETS, it allows you to select specific fields you may wish to download. See the RETS 1.8 Specification for information on this parameter. If you use a SELECT statement in your query, the addition of a new field into MLS and RETS will not break your processes. If you do not use the SELECT parameter, RETS will return all fields, but a change to MLS and RETS could cause your processes to fail.
- Every listing has a MLS Number and MATRIX_UNIQUE_ID in the Listing Class. The MATRIX_UNIQUE_ID in each Property Class links to the Listing_MUI in the other classes.
- Listings in the AREA=82 are outside the United States.

Section 16) Basic Troubleshooting

16.a) Viewing the fields you can download

To view the fields you can download via RETS and information about these fields, paste this URL into IE:

<http://retsiqmatrix.harmls.com/contact/rets/login>

and press Enter. Enter your RETS credentials and click on "OK".

Then, paste this URL into Internet Explorer:

<http://retsiqmatrix.harmls.com/contact/rets/GetMetaData?type=metadata-table&Format=COMPACT-DECODED&ID=0>

and press Enter.

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16.b) Verify your credentials and connection

To verify you can connect to the RETS Server and download data, paste this URL into IE:

<http://retsiqmatrix.harmls.com/contact/rets/login>

and press Enter. Enter your RETS credentials. HAR RETS credentials are case-sensitive.

Paste this URL into IE

[http://retsiqmatrix.harmls.com/contact/rets/search?CLASS=Listing&searchtype=Property&querytype=DMQL2&Query=\(MATRIX_UNIQUE_ID=0%2B\)&StandardNames=0&Format=COMPACT-DECODED&Limit=10&select=MATRIX_UNIQUE_ID,MATRIXMODIFIEDDT](http://retsiqmatrix.harmls.com/contact/rets/search?CLASS=Listing&searchtype=Property&querytype=DMQL2&Query=(MATRIX_UNIQUE_ID=0%2B)&StandardNames=0&Format=COMPACT-DECODED&Limit=10&select=MATRIX_UNIQUE_ID,MATRIXMODIFIEDDT)

and press Enter.

If the screen returns something like this:

```
<RETS ReplyCode="0" ReplyText="Operation Success.">
<DELIMITER value="09"/>
<COLUMNS>Matrix_Unique_ID MatrixModifiedDT</COLUMNS>
<DATA>1014177 2016-03-08T14:09:48.403</DATA>
<DATA>1014179 2016-03-23T10:25:19.647</DATA>
<DATA>1014180 2016-03-23T10:27:25.537</DATA>
<DATA>1014182 2015-09-10T13:40:27.067</DATA>
<DATA>1014187 2016-05-27T22:12:54.120</DATA>
<DATA>1014189 2015-09-08T09:31:44.100</DATA>
<DATA>1014197 2016-05-23T16:20:51.617</DATA>
<DATA>1014199 2016-03-12T13:12:13.253</DATA>
<DATA>1014200 2016-04-07T12:23:45.137</DATA>
<DATA>1014203 2016-04-18T12:51:33.340</DATA>
<MAXROWS/>
</RETS>
```

Then your credentials are working and you can connect to HAR RETS and download data. If you are having a problem downloading RETS data through your client, then the problem is probably with your RETS Client. You will have to contact the Technical support for your particular client for assistance.

After viewing this page, please logout of RETS by pasting this into IE

<http://HARrets.mls.HAR.net/rets/logout>

and press Enter.