Property Data API Technical Specifications

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Revision Log

Date	Change Description
01/24/2022	Created initial draft for PDA cloud version
03/07/2022	Updated API Documentation section
02/22/2023	Updated Property Data API System Flow (Figure 2), API Documentations, Apigee & API Call, and Headers Added new messages under section Property Data Messages
05/10/2023	Clarified message applicability by program
08/15/2023	Updated message text to align with changes in the API
10/30/2023	Updated API Documentation section to include Uniform Property Dataset (UPD) information Updated Apigee & API Call and Headers section to align with API changes for UPD Updated Message table to align with API changes for UPD

	Created a new section for Implementation Instructions for Key Fields
04/01/2024	Updated API Documentation to account for four versions
	Updated Apigee & API Call to account for four versions
	Updated Property Data Messages Table to align with API Changes for UPD

Introduction

This document describes the vendor integration process to access the Property Data API Service. It includes information about:

- How to obtain credentials to access Developer Portal.
- How to create an App and retrieve API Key, Client ID, and Client Secret in Developer Portal.
- The authentication process through Fannie Mae ESSO.
- How to submit data and images to the Property Data API Service through Apigee endpoints.
- How to check the status of the submission process.
- Error messages that may be encountered when interacting with the API.
- Scheduled maintenance windows during which the API may not be available.

Property Data API System Flow

Figure 1 gives an overview of the process. It represents a high-level view of the interaction between the different systems, from the initial Property Data Collection offer through resubmitting the loan application to DU and getting potential messages.
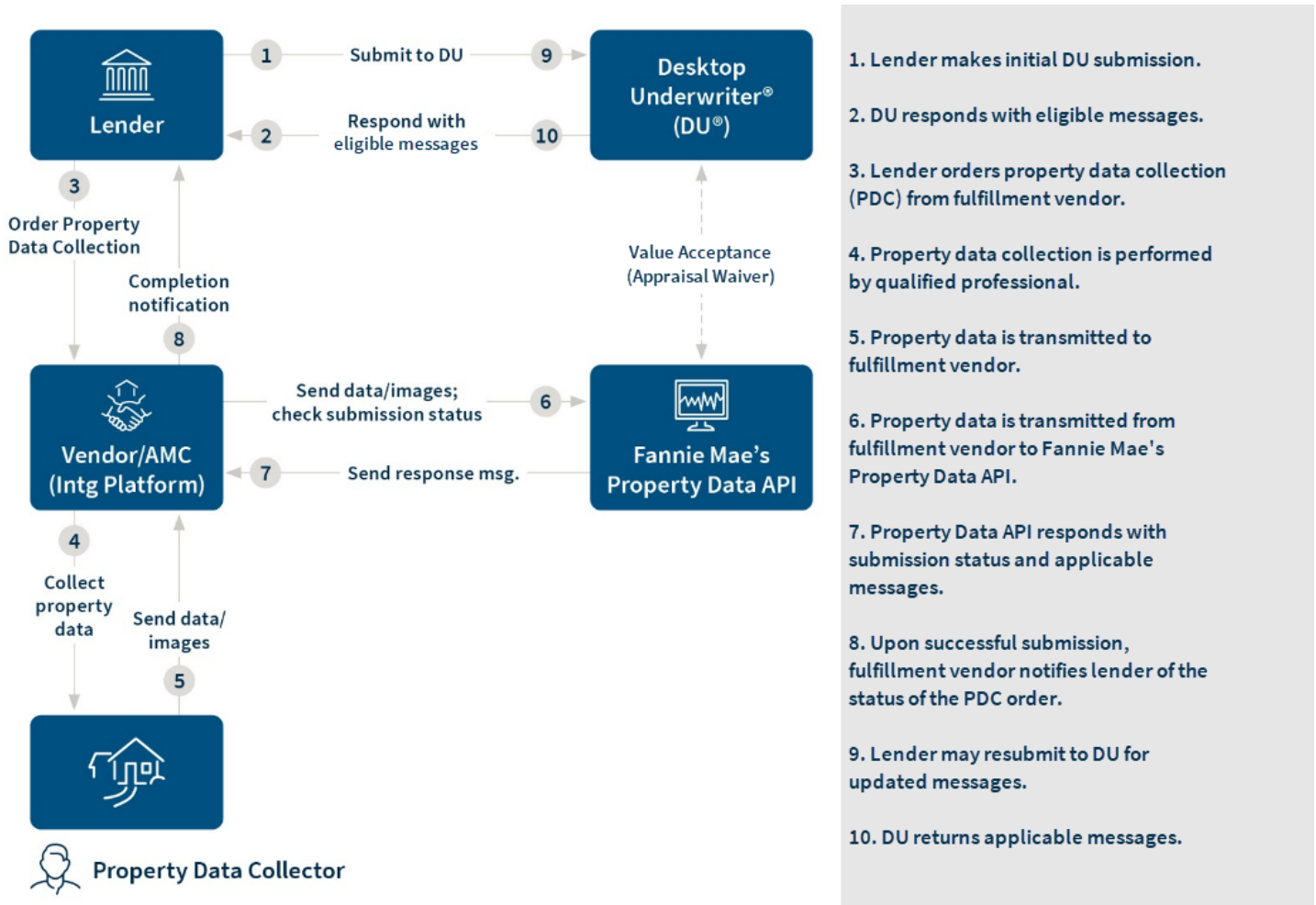

Figure 1: Process Flow

Figure 2 provides details on some of the steps in Figure 1 (those that focus on how to submit data and images to the API service).
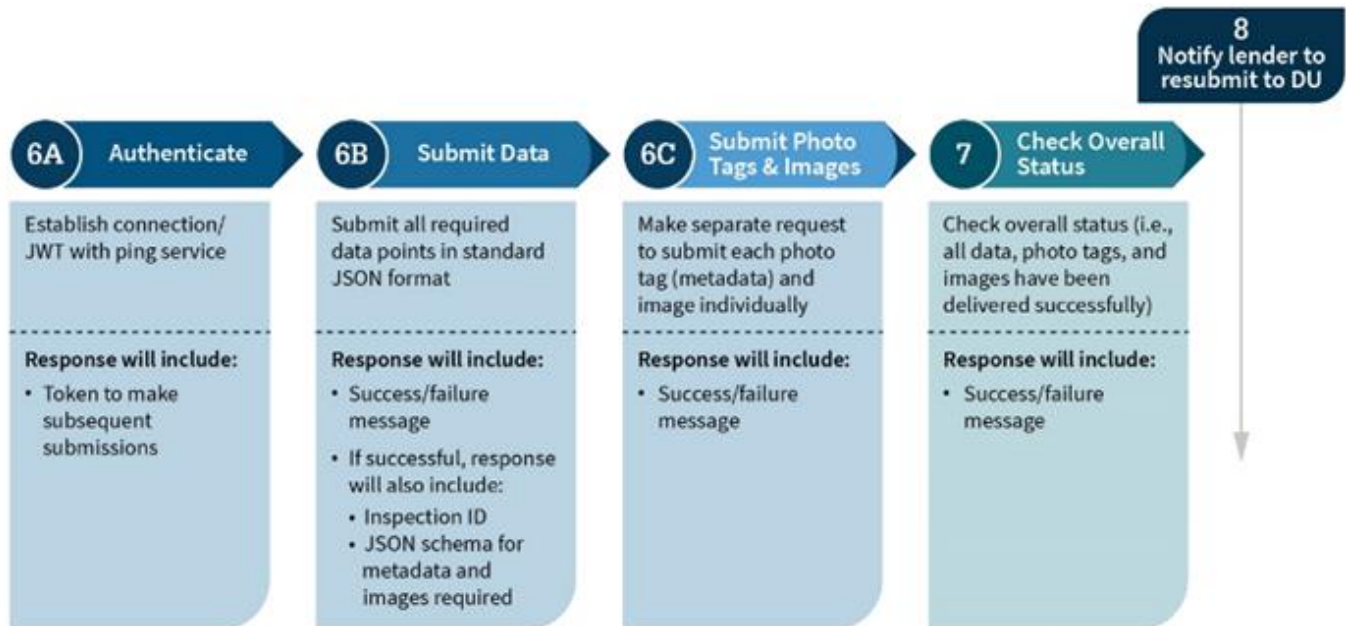

Figure 2: Process Flow Details

In Step 6C, there could be a need to submit multiple photos for a single object.

- For each object in the array of required images for which multiple photos have been taken, copy the object for as many images as are available.
- For each copy of the object, add the required information for description, photoTags, geoPosition, timestamp, and photoNotAvailable.
- Upload the metadata to the Property Data API, differentiating between the various images of the same object (e.g., use description to indicate that two SKETCH images were done from two different angles).
- If that upload is successful, a JSON with an upload link for each image will be returned.

The process is repeated for every image type/data point.

If there are multiple images of the same type for the same data point (for example, multiple SKETCH images), the object for that image type/data point will need to be cloned. Metadata will need to be uploaded for each image. For each uploaded metadata, a JSON with an upload link for each image will be returned (See Appendix B).

Photo Requirements

Uploaded photos must meet the following requirements:

- All photos must be original. No modifications are permitted.
- Images must be at least 1 MB and less than 4 MB in size.
- Photos must be sent in a common image format (JPG, PNG).
- Photos must be of at least 1 MP resolution.
- Photos must be adequately bright and clear enough so that the condition of the items within the photos can be discerned. An informational message will be issued for photos that are identified as either dark or blurry. See Appendix C for examples.

Vendor Integration Process

The first step toward integrating to the Property Data API service is to set up credentials to access Fannie Mae Developer Portal. Vendors will need a non-system ID to log into Fannie Mae Developer Portal and a system ID which can generate API Keys.
To start the vendor integration process and set up credentials, please contact Fannie Mae API Integration Partners at
DAD-A2D_Integration@fanniemae.com.

Once your user account is setup successfully, with your credentials you can generate API keys in your authorized Developer Portal environments below.
Integration: **https://developer-clve.fanniemae.com/**
Production: **https://developer.fanniemae.com/**

For more details on how to access Developer Portal and create an App, please follow the instructions provided in the vendor integration training guide available at link below.
https://acpt-singlefamily.fanniemae.com/test-property-data-api-appraisal-value-verify-page

The Property Data API service also provides read-only access to vendor submitted data. Any user with appropriate access can retrieve property data and images by making a direct call to the API. Please contact Fannie Mae API Integration Partners at
DAD-A2D_Integration@fanniemae.com to set up your read-only access to Property Data API services.

API Authentication

Property Data API service calls are authenticated using Fannie Mae SSO service. Credentials generated in the Developer Portal should be used to generate the access token and refresh token that will authenticate the Property Data API service call.

The following table summarizes the use and lifetime of each credential.

Credentials	How it is created	Created	Purpose	Scope	Lifetime	Use	How it is Refreshed
System ID	Technology Manager	One Time	Authenticates creation of Client ID & Access Token	All APIs	Forever	Forever	n/a
Client ID & Secret	Developer Portal screen	One Time	Required to create Access Token	API Product Selected in the UI	Forever	Forever	n/a
API Key	Developer Portal screen	One Time	Authorizes an API call	API Product Selected in the UI	Forever	Forever	n/a
Access Token	Access Token API Call		Authenticates an API call	API Product Selected in the UI	5 Mins	Until expiration	Refresh Token API Call
Refresh Token	Access Token API Call		API refresh call header	n/a	2 hours	Until expiration	Create Token API call

In cURL do not put the app ID/password in the URL query parameter (e.g., https://fmsso-api.fanniemae.com/as/token.oauth2?grant_type=password&username=<AppID>&password=<AppIDPassword>. Instead, the app ID/password should be in the request body. This is mandatory for applications that have received the Resource Owner Password Credentials (ROPC) grant. It is a secure practice that complies with Fannie Mae information security standards.

Use the cURL example below.

```
curl -i -X POST \
'https://fmsso-api.fanniemae.com/as/token.oauth2' \
-H "Content-Type:application/x-www-form-urlencoded; charset=UTF-8" \
-H "client_id:<client id>" \
-H "Authorization:Basic <client Id>:<client Secret>" \
  --data "grant_type=password" \
  --data "username=xxxxxxxx" \
  --data-urlencode "password=xxxxxxxx" \
```
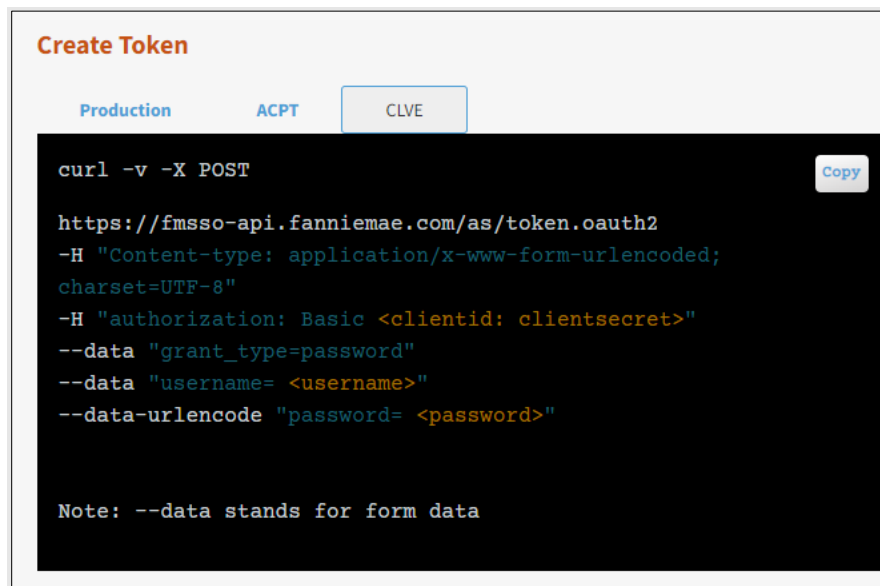

If an API call needs to be made beyond the five-minute timeframe, then a request for a new access token must be made.

It is recommended to use a refresh token to get a new token. The refresh token is issued along with the access token on the initial token endpoint request.

Refresh Tokens

Refresh tokens are used to refresh an access token.
The refresh token will be valid for 2 hours and can be used to retrieve a new access token without authenticating the system credentials again. To refresh an access token, follow steps below.

- Provide the refresh Token obtained from Create Tokens.
- In response, the Fannie Mae authorization server issues an access token. Use the access token in the next API call.

The following command can be used for the refresh token:

```
curl -X POST \ https://fmsso-api.fanniemae.com/as/token.oauth2 \
-H 'Client_Id: <client id>' \
-H 'Content-Type: application/x-www-form-urlencoded' \
-H 'Postman-Token: <access_token>' \
-H 'cache-control: no-cache' \
-d 'grant_type=refresh_token&refresh_token=<refresh_token>'
```

API Documentation

Additional documentation of the Property Data API is available in Fannie Mae's Uniform Property Dataset (UPD) page. Within the UPD page, users can view API version(s), API specification (yaml), endpoint details, data models, and contact information. The API specification can also be downloaded. Currently four versions, (UPD 1.0 Single Family, UPD 1.0 Condo, UPD 1.1 Single Family, and UPD 1.1 Condo) of the Property Data API are available through the UPD page.

Apigee & API Call

To connect to Property Data API services, use API Key and access token. API Key is obtained from Developer Portal and access token can be obtained from Create Tokens. All API calls connect to Property Data API service Apigee endpoint to submit and/or retrieve data. Base Apigee endpoints are below.

Integration: **https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api**
Production: **https://api.fanniemae.com/singlefamily/originating/properties/property-data/api**

A complete list of Fannie Mae ESSO & Apigee endpoints is below.

	CLVE – Integration (for testing purposes only)		
#	URL	Method	Description
1	https://fmsso-api.fanniemae.com/as/token.oauth2?	POST	Endpoint to get authorization/token. **Note:** If an API call needs to be made beyond the five-minute timeframe limit, then another token endpoint call to get a new token is required. When the refresh token is used to get a new token, reauthentication is not required. The refresh token is issued along with the access token on the initial token endpoint request.
2	https://fmsso-api.fanniemae.com/as/token.oauth2?grant_type=refresh_token&refresh_token=<<refresh token>>	POST	Endpoint to get refresh token
3	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/health	GET	Apigee Endpoint to check Property Data API service status
4	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/property	POST	Endpoint to post all property data **Note:** Because four versions are served on a single URL, a version number must be included in the media type. For **UPD Condo 1.1**, use application/pda.upd.co.1.1+json For **UPD SF 1.1**, use application/pda.upd.sf.1.1+json For **UPD Condo 1.0**, use application/pda.upd.co.1+json For **UPD SF 1.0**, use application/pda.upd.sf.1+json
5	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}?zip={zip}	GET	Endpoints to retrieve existing property data set. **Note:** To retrieve property data the Inspection ID and Zip Code is required.

6	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}/imagemeta	POST	Endpoint to post all photo metadata7
7	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}/imagemetalist	GET	Endpoint to retrieve list of metadata
8	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/property/imagemeta/{imageId}	PUT	Endpoint to replace existing metadata. Metadata cannot be replaced once a submission is complete.
9	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/image/{imageId}	POST	Endpoint to post images (See Photo Requirements for details.)
10	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/image/{imageId}	PUT	Endpoint to upload & replace images **Note:** Images cannot be replaced once a submission is complete.
11	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/image/{imageId}	GET	Endpoint to retrieve image
12	https://api-clve.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}/status	GET	Endpoint to check overall status of submission

PROD – Production (for production use only)			
#	URL	Method	Description
1	https://fmsso-api.fanniemae.com/as/token.oauth2?	POST	Endpoint to get authorization/token. **Note:** If an API call needs to be made beyond the five-minute timeframe limit, then another token endpoint call to get a new token is required. When the refresh token is used to get a new token, reauthentication is not required. The refresh token is issued along with the access token on the initial token endpoint request.

2	https://fmsso-api.fanniemae.com/as/token.oauth2?grant_type=refresh_token&refresh_token=<<refresh token>>	POST	Endpoint to get refresh token
3	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/health	GET	Apigee Endpoint to check Property Data API service status
4	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/property	POST	Endpoint to post all property data **Note:** Because four versions are served on a single URL, a version number must be included in the media type. For **UPD Condo 1.1**, use application/pda.upd.co.1.1+json For **UPD SF 1.1**, use application/pda.upd.sf.1.1+json For **UPD Condo 1.0**, use application/pda.upd.co.1+json For **UPD SF 1.0**, use application/pda.upd.sf.1+json
5	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}?zip={zip}	GET	Endpoint to retrieve existing property data set. **Note:** To retrieve property data the Inspection ID and Zip Code is required.
6	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}/imagemeta	POST	Endpoint to post all photo metadata
7	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}/imagemetalist	GET	Endpoint to retrieve list of metadata
8	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/property/imagemeta/{imageId}	PUT	Endpoint to replace existing metadata. Metadata cannot be replaced once a submission is complete.
9	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/image/{imageId}	POST	Endpoint to post images (See Photo Requirements for details.)

10	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/image/{imageId}	PUT	Endpoint to upload & replace images **Note:** Images cannot be replaced once a submission is complete.
11	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/image/{imageId}	GET	Endpoint to retrieve image
12	https://api.fanniemae.com/singlefamily/originating/properties/property-data/api/property/{propertyDataId}/status	GET	Endpoint to check overall status of submission

Headers

Set up headers in your API request depending upon API version and what data you are submitting.

Property data

> *Authorization*: Bearer *<Access Token>*
> *Content-Type*: application/pda.upd.co.1.1+json, or
> *Content-Type*: application/pda.upd.sf.1.1+json, or
> *Content-Type*: application/pda.upd.co.1+json, or
> *Content-Type*: application/pda.upd.sf.1+json, or
> *x-fnma-access-token*: *<Access Token>*
> *x-fnma-channel*: *api*
> *x-fnma-api-type*: *private*
> *x-fnma-api-key*: *<API KEY>*
>
> *Note: Please use appropriate Content-Type for different versions of API for your post to property*

Image metadata

> *Authorization*: Bearer *<Access Token>*
> *Content-Type*: application/json
> *x-fnma-access-token*: *<Access Token>*
> *x-fnma-channel*: *api*
> *x-fnma-api-type*: *private*
> *x-fnma-api-key*: *<API KEY>*

Image Upload

> *Authorization: Bearer <Access Token>*
> *Content-Type*: multipart/form-data
> *x-fnma-access-token*: *<Access Token>*
> *x-fnma-channel*: *api*
> *x-fnma-api-type*: *private*
> *x-fnma-api-key*: *<API KEY>*

API Call

Production   ACPT   CLVE

```
curl -v -X GET

https://api-
clve.fanniemae.com/singlefamily/underwriting/messages/19911
68755?lastname=Loanseeker
-H "Content-Type:application/json"
-H "Accept:application/json"
-H "x-fnma-channel:api"
-H "x-fnma-access-token:<Access Token>"
-H "x-fnma-api-key:<API Key>"
```

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Technical Error Messages

Message ID	Description	Other Specifications
504	The request could not be satisfied	CloudFront attempted to establish a connection with the origin, but either the attempt failed, or the origin close the connection. We can't connect to the server for this app or website at this time. There might be too much traffic or a configuration error. Try again later or contact the app or website owner.
503	The Property Data Service is currently unavailable. Please retry later.	Retry wait time: 2000 milliseconds
500	The Property Data Service is currently unavailable. Please contact the Property Data API Technical Support team.	Contact our support mailbox: propertydataapi_support@fanniemae.com
410	Not available anymore	This message will be issued when the request targets a resource that no longer exists (e.g., if version number is not specified in the media type when property data is posted).
404	Information not found	
403	Access Denied	Apigee issues 403 Forbidden when there is invalid authentication.
400	Bad request. Please correct and resubmit.	This message will be issued when the data provided is incomplete or is not in the specified format (e.g., a bad JSON file is provided).

Property Data Messages

Message ID	Description	Active for value acceptance + property data	Active for pilot	Property Type

FNM 3	Property Data ID: [Property Data ID]. Successful submission. Based on the property data submitted and the last DU submission, no appraisal is required for this case.	x	x	SF
FNM 5	Property Data ID: [Property Data ID] Successful submission. Based on the property data submitted and the last DU submission, a 1004 Hybrid is required for this case.		x	SF
FNM 98	Due to technical issues, we were unable to determine the valuation solution. Please check submission status later or contact our support mailbox: propertydataapi_support@fanniemae.com	x	x	All
FNM 99	Unable to perform further analysis. Please work with your lender partner to determine if one or more of the following needs to be resolved: DU casefile id, property address, or loan eligibility parameters.	x	x	All
FNM 50	Blurry photo, please train accordingly. No further action required for this issue.	x	x	All
FNM 51	Dark photo, please train accordingly. No further action required for this issue.	x	x	All
FNM 101	An adverse site condition was noted.	x	x	SF
FNM 103	A garage deficiency has been noted.	x	x	SF
FNM 104	The construction status for the subject property is not complete.	x	x	SF
FNM 105	The data provided indicates either there are no dwelling units, or more than two dwelling units.	x	x	SF
FNM 106	The property data collection appears to be more than 365 days old.	x	x	SF
FNM 107	No Electrical Service was noted.	x	x	SF
FNM 108	An exterior deficiency was noted.	x	x	SF
FNM 110	The GLA is outside the expected range.	x	x	SF
FNM 111	Some required photos are missing	x	x	SF
FNM 112	No heat source was noted.	x	x	SF
FNM 113	An interior deficiency was noted.	x	x	SF
FNM 116	A mechanical deficiency was noted.	x	x	SF
FNM 117	A non-residential use was noted.	x	x	SF
FNM 118	The electrical service noted is not public.	x	x	SF
FNM 126	The data collector noted the subject road has not been maintained.	x	x	SF
FNM 127	The sewer service for the subject property may impact the eligibility for delivery to Fannie Mae.	x	x	SF
FNM 128	The water service for the subject property may impact the eligibility for delivery to Fannie Mae.	x	x	SF
FNM 129	The data provided indicates that the subject property does not have year-round access.	x	x	SF
FNM 131	The location noted has a material impact on the risk analysis.	x	x	SF
FNM 132	The view noted has material impact on the risk analysis.	x	x	SF
FNM 301	An adverse site condition was noted.	x	x	Condo
FNM 303	A car storage deficiency has been noted.	x	x	Condo

FNM 304	The construction status for the subject property is not complete.	x	x	Condo
FNM 305	The data provided indicates either there are no dwelling units, or more than two dwelling units.	x	x	Condo
FNM 306	The property data collection appears to be more than 365 days old.	x	x	Condo
FNM 307	No electrical service was noted.	x	x	Condo
FNM 308	An exterior deficiency was noted.	x	x	Condo
FNM 310	The GLA is outside the expected range.	x	x	Condo
FNM 311	Some required photos are missing.	x	x	Condo
FNM 312	No heat source was noted.	x	x	Condo
FNM 313	An interior deficiency was noted.	x	x	Condo
FNM 316	A mechanical deficiency was noted.	x	x	Condo
FNM 318	The electrical service noted is not public.	x	x	Condo
FNM 319	The location noted has a material impact on the risk analysis.	x	x	Condo
FNM 320	The view noted has material impact on the risk analysis.	x	x	Condo
FNM 326	The data collector noted the subject road has not been maintained.	x	x	Condo
FNM 327	The sewer service for the subject property may impact the eligibility for delivery to Fannie Mae.	x	x	Condo
FNM 328	The water service for the subject property may impact the eligibility for delivery to Fannie Mae.	x	x	Condo
FNM 329	The data provided indicates that the subject property does not have year round access.	x	x	Condo

Implementation Instructions for Key Fields

When structureType = detachedGarage the unit array will need to be invoked in order to populate the garage specific fields. The unit array has several required fields including roomType. In the initial version of the UPD there is no enumeration for "Garage" as a room type; it is recommended that the users select "other" for the roomType field and enter "Garage" in the otherRoomDescription field.

Maintenance Window

The Property Data API is subject to a maintenance window on the first and third Sunday of each month.

On those dates, the API could be unavailable between 12 a.m. ET and 4 a.m. ET.

During outage periods, the API does not process or queue any submissions. All submissions to the API should be deferred until the service is available.

Property Data API Support

For any technical API related issues please contact our support mailbox, propertydataapi_support@fanniemae.com.
For questions related to registering an account, API access, or training materials, please contact Fannie Mae API Integration Partners at DAD-A2D_Integration@fanniemae.com. For urgent matters, please call the Help Desk at 1-800-@FANNIE (1-800-232-6643).

Appendix A: Sample JSON Image Data

Notes:

- All time stamps are Unix time stamps in seconds. Visit https://www.unixtimestamp.com/ to convert a time to Unix format.
- The JSON parent path for each image type can vary by property data collection. When posting metadata for an image, the information is copied from the property data collection.

```
{
                "inspectionId": "75C1FBA572DB2390E053C16DCF0AF86C",
                "photoType": "ROOM",
                "description": "ROOM",
                "photoTags": null,
                "geoPosition": {
                        "latitude": 0.0,
                        "longitude": 0.0
                },
                "timestamp": 1536698607,
                "photoNotAvailable": false,
                "alwaysRequired": false,
                "parentObjectJsonPath": "property.structures[0].units[0].levels[0].rooms[0]"
        }


{
                "inspectionId": "75C1FBA572DB2390E053C16DCF0AF86C",
                "photoType": "ROOM",
                "description": "ROOM",
                "photoTags": null,
                "geoPosition": {
                        "latitude": 0.0,
                        "longitude": 0.0
                },
                "timestamp": 1536698607,
                "photoNotAvailable": false,
                "alwaysRequired": true,
                "parentObjectJsonPath": "property.structures[0].units[0].levels[0].rooms[1]"
        }
```

Appendix B: Sample JSON with Image Upload Link

```
1   {
2       "photoId": "a4e7955c-d095-5c1c-9a22-a45545196ad5",
3       "imageMeta": {
4           "inspectionId": "f0844d13-9379-5fe0-bdb6-07056641d4a8",
5           "photoType": "STREET_LEFT",
6           "description": "STREET_LEFT",
7           "photoTags": null,
8           "geoPosition": {
9               "latitude": 0.0,
10              "longitude": 0.0
11          },
12          "timestamp": 1556026675,
13          "photoNotAvailable": false,
14          "alwaysRequired": true,
15          "parentObjectJsonPath": "property"
16      },
17      "uploadUrl": "image/a4e7955c-d095-5c1c-9a22-a45545196ad5"
18  }
```

Appendix C: Blurry and Dark Photo Examples

The following are examples of photos with an unacceptable level of blurring. An informational message will be returned upon the submission of any photo that is flagged as too blurry.

The following are examples of photos with an unacceptable level of darkness. An informational message will be returned upon the submission of any photo that is flagged as too dark.