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Introduction to the Migration Guide for Data Packs

Beginning July 31, 2023, SAS will no longer support or provide updates to the following data packs:

- US Address Verification (USPS)
- North America Postal Level Geocode (includes PhonePlus)
- Canada Address Verification (Canada Post SERP (Software Evaluation and Recognition System) version 2, release 2 (V2R2))
- US Street Level Geocode (except for Loqate geocode data)

Users who want to perform US/Canada address verification and geocode jobs, must migrate to the Loqate data packs listed below, prior to July 31, 2023.

- **Loqate US Data**
- **Loqate Data** (includes Canada)

After July 31, 2023, the SAS Data Management Studio jobs that rely on the discontinued data packs fail, and you will receive license errors. The nodes that are affected by these changes include the following:

Data Job Nodes

- Address Update Lookup
- Address Verification (US/Canada)
- US City/State/ZIP Lookup
- US City/State/ZIP Validation
- Geocoding
- Street-level Geocoding
- Canadian Postal Lookup
- Distributed Address Verification
- Distributed Geocoding

Process Job Nodes

- Address Update Audit Report
- Address Update Monthly Reports
- Address Update Process Summary Report

The *SAS Data Management Studio and Server 2.9: Migration Guide for Data Packs* provides information about how to migrate your US and Canada Address Verification jobs, along with Geocoding jobs to use the **Loqate** node.

Before You Begin

The *SAS Data Management Studio and Server 2.9: Migration Guide for Data Packs* shows users how to complete the following tasks:

- Update system files to use the **Loqate** node for United States and Canada address verification and geocoding.
- Update existing data jobs to use the **Loqate** node instead of the **Address Verification (US/Canada)** node.

NOTE: Migration to Loqate for US/Canada address verification and geocoding is supported for SAS Data Management Studio and SAS Data Management Server 2.7 and later. If you have an earlier version of the software, contact your SAS account manager for a supported version of SAS Data Management Studio and SAS Data Management Server.

Preparing Your System

Obtain a License

Contact your SAS account manager to obtain new license files that include the required Loqate US/Canada data pack products.

Required Patches

Next, you must apply patches to SAS Data Management Studio and SAS Data Management Server to enable the Loqate data for US and Canada.

Access the SAS Note at <http://support.sas.com/kb/69827> to access the hot fix for this step.

Download Reference Data – United States

Before you begin, you must log in to the SAS Support website to download the Loqate US enrichment data.

NOTE: American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the US Virgin Islands are included in the Loqate US Data Pack.

Please follow these steps:

1. Navigate to the SAS Downloads site: <https://support.sas.com/downloads/browse.htm?fil=3&cat=16>.
2. Click **Loqate US Data**.

[All Downloads](#)

Downloads

DataFlux Data Updates

Version / Release

A - Z

Release Date

- Any SAS Release
 - [Canada Address Verification \(Canada Post SERP Current Version 2 Release 2, V2R2\)](#)
 - [Loqate Data](#)
 - [Loqate US Data](#)
 - [North America Postal Level Geocode \(includes PhonePlus\)](#)
 - [US Address Verification \(USPS\)](#)
 - [US Street Level Geocode](#)

3. Download both the **Loqate US Data** and the **Loqate US Data Setup** files for your operating system.
4. Once the files are downloaded, run the **Loqate US Data Setup** file (`-xc.exe` or `-xc.tar.gz`). Setup creates a subdirectory for the data files just like a normal reference file installation (for example, `C:\Program Files\SAS\VerifyData\data\XXXX\world`).
5. Unzip the **Loqate US Data** file (`-usx.zip` or `-usx.tar.gz`) into the directory that was created as part of the **Loqate US Data Setup** file setup.

Download Reference Data - Canada

Before you begin, you must log in to the SAS Support website to download the Loqate Canada enrichment data. Please follow these steps:

1. Navigate to the SAS Downloads site: <https://support.sas.com/downloads/browse.htm?fil=3&cat=16>.
2. Click **Loqate Data**.
3. Download the **Loqate Canada Data** files for your operating system.

[All Downloads](#)

Downloads

Loqate Data

Loqate Datapacks for World Regions

Important Notes:

- Update March 30, 2023 - A new package was added for Canada. The Brazil package was split into two packages, Brazil - Part 1 and Brazil - Part 2.
- Update January 25, 2023 - The following countries were moved from the South Western Europe package into a new package that was added: ES, GI, and PT.

Loqate Data					
Platform	Description	Request Download	Size	Release Date	ReadME
Microsoft® Windows®	Africa	dfdpworld__2303__vdata-af.exe	634MB	2023-03	
Microsoft® Windows®	Brazil - Part 1	dfdpworld__2303__vdata-br.exe	694MB	2023-03	
Microsoft® Windows®	Brazil - Part 2	dfdpworld__2303__vdata-brg.exe	1.4GB	2023-03	
Microsoft® Windows®	Canada	dfdpworld__2303__vdata-cc.exe	1.3GB	2023-03	
Microsoft® Windows®	Central America	dfdpworld__2303__vdata-ca.exe	990MB	2023-03	

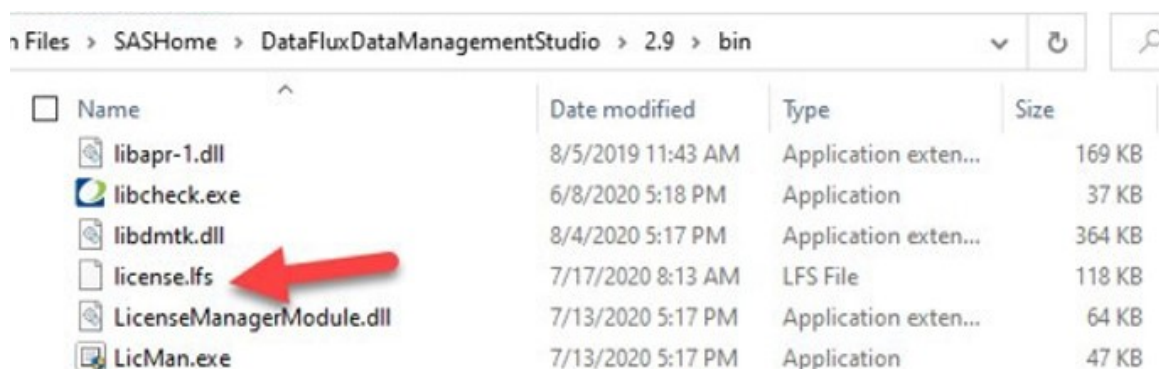
4. Once the file is downloaded, run the **Loqate Canada Data** file (`-cc.exe` or `-cc.tar.gz`). Setup creates a subdirectory for the data files (for example, `C:\Program Files\SAS\VerifyData\data\XXXX\world`).

Copy Loqate License Key into the Data Folder

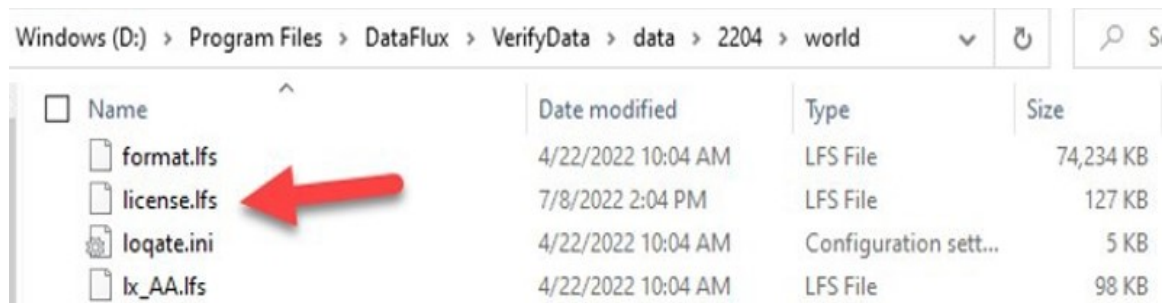
Once the Loqate reference data is downloaded and installed, copy a `license.lfs` file from the `SASDataManagementStudio/version/bin` folder to the **Loqate** data folder.

Note: If you are using SAS Data Management Studio version 2.7 or if you do not get output after running the job, your `license.lfs` is expired. Contact SAS Technical Support for an updated `license.lfs` file.

1. Navigate to the `bin` folder in your Data Management Studio directory. For example: `C:\Program Files\SASHome\SASDataManagementStudio\2.9\bin`.
2. Copy the `license.lfs` file.



3. Paste the `license.lfs` file into the Loqate data folder.



4. Navigate to the `app.cfg` file. For example, `C:\Program Files\SASHome\SASDataManagementStudio\2.9\folder\app.cfg`.
5. Edit the `app.cfg` file to include the `VERLQT/LOQATE_DATA_PATH` entry. For example, the Windows path to the Loqate data, `VERLQT/LOQATE_DATA_PATH=H=C:\Program Files\SAS\VerifyData\data\XXXX\world`.

Job Modifications

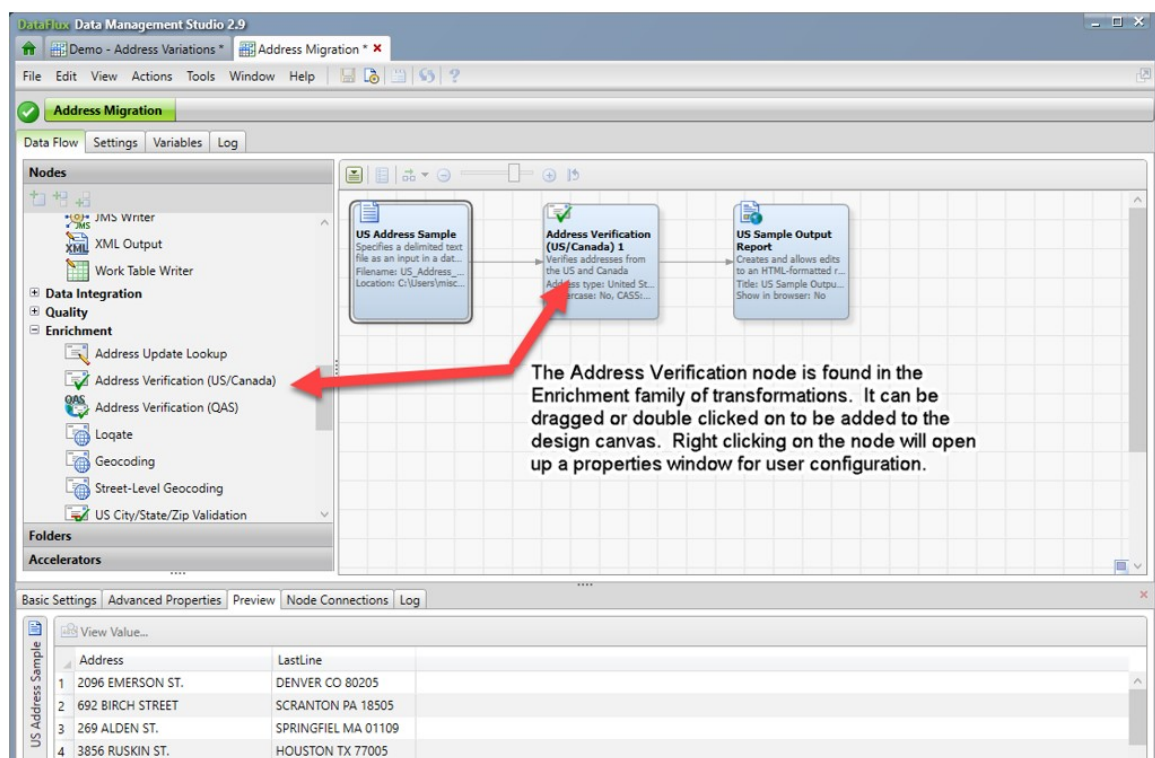
United States

This section covers changes that are required for the United States data for address verification. Follow the steps below to modify your SAS Data Management Studio job to use a **Loqate** node instead of the **Address Verification (US/Canada)** node.

NOTE: Refer to the section, [Introduction to the Migration Guide for Data Packs](#) for information about migrating your SAS Data Management Studio **Address Verification (US/Canada)** jobs to **Loqate**.

SAS Job Using the Address Verification (US/Canada) Node

1. In this screenshot, there is a text input file on the left side of the data flow and an HTML output on the right. The **Address Verification (US/Canada)** node, in the center of the flow, is set up to process US addresses.

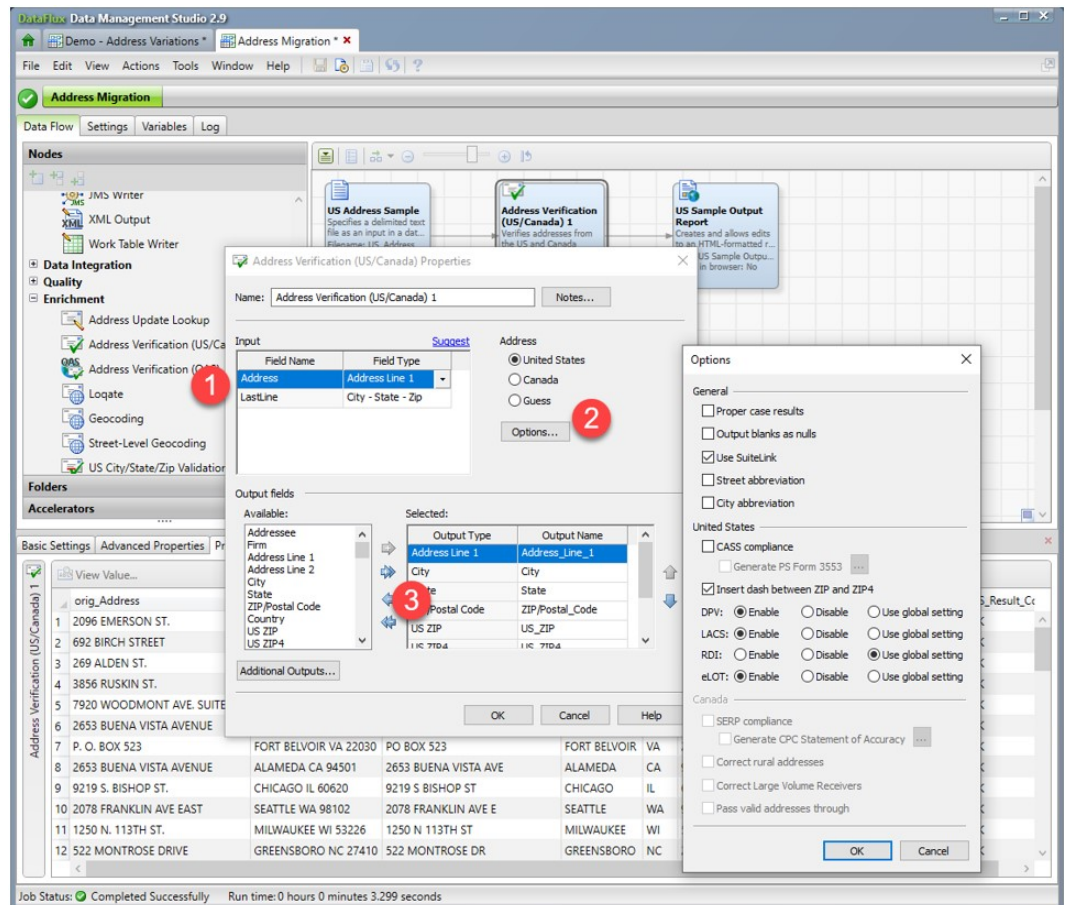


2. In the following screenshot, you can review the properties of the **Address Verification (US/Canada)** node for the United States. In this example, there are three parts:

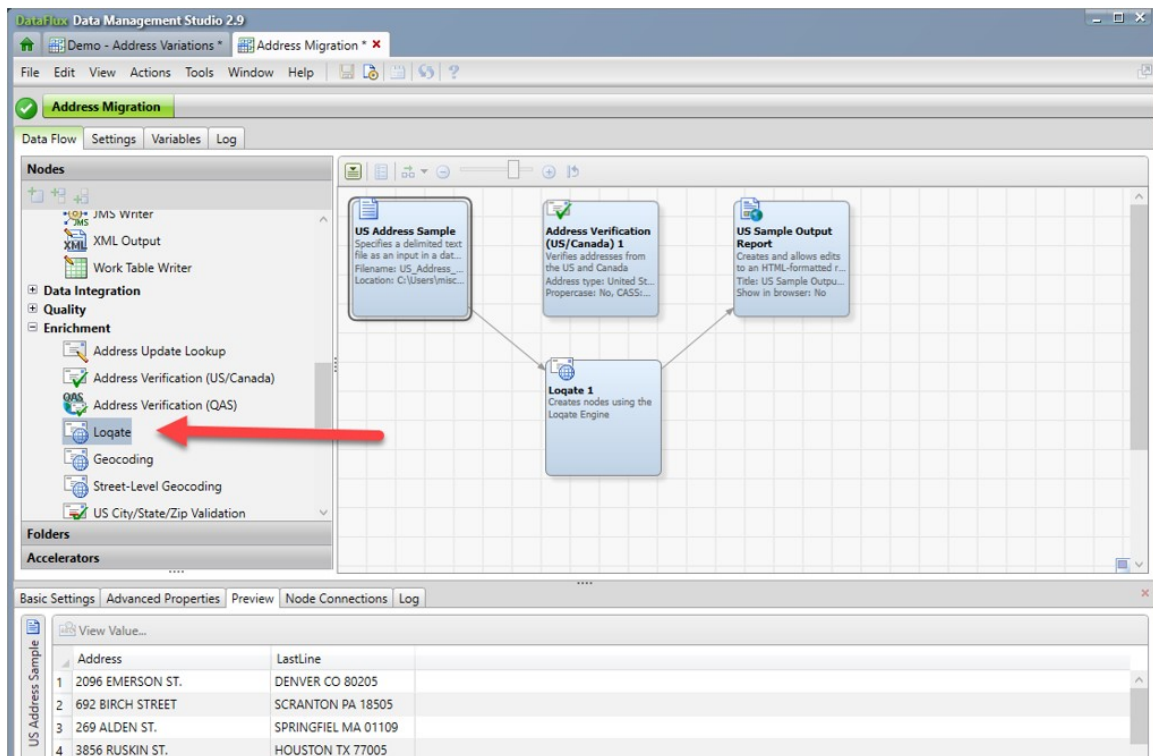
- Part 1 - These are the **Input** fields for the node. Please remember that you need at a minimum an address line and either a city and state or a

ZIP code for the node to be able to verify an address.

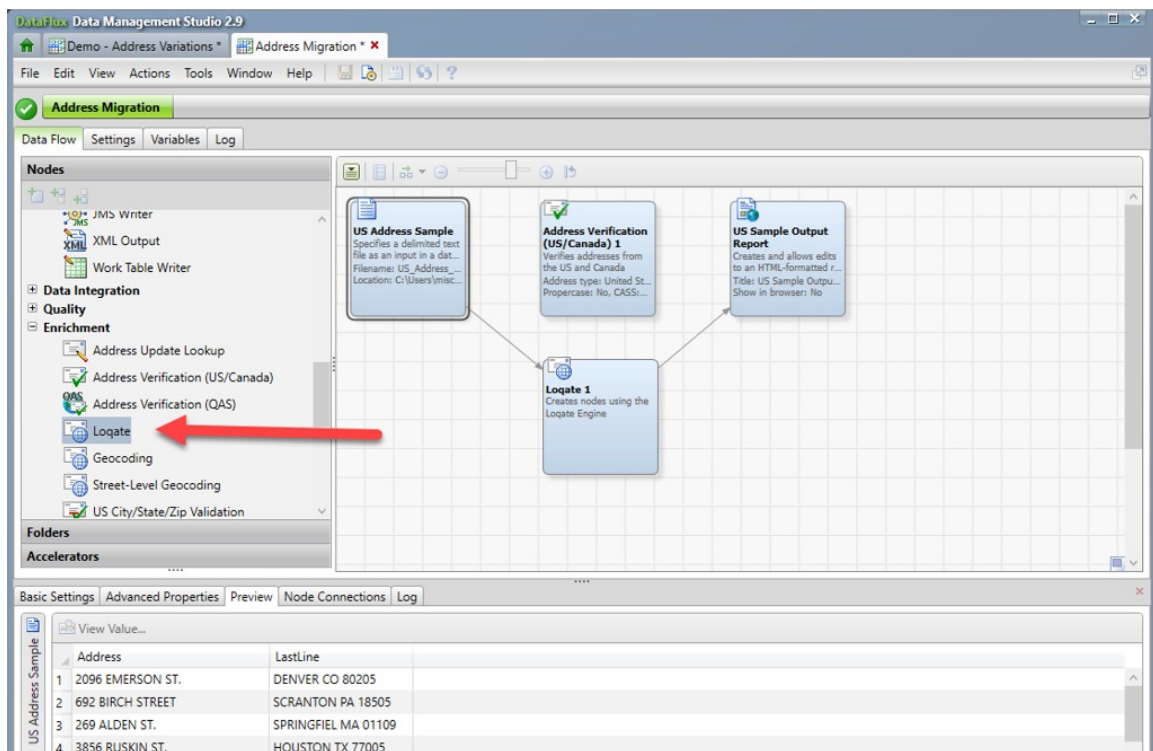
- Part 2 - In the **Options** window, you can tell the node which parts and pieces of the reference data to use when verifying US addresses. It is recommended to use DPV, LACS, and eLOT. Please note that these options are different in the **Loqate Address Verification** node.
- Part 3 - Determine which output fields are needed and select those for output in the node.



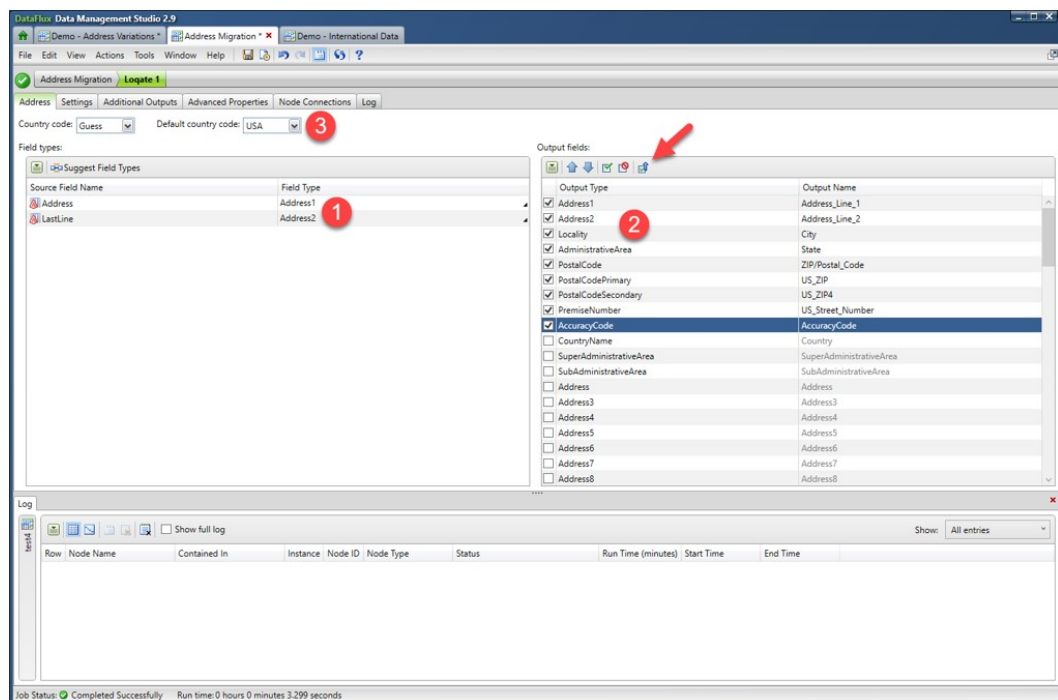
3. Next, a **Loqate** node is added to the design canvas and the source and targets are connected to the **Loqate** node.



4. Once you have configured the **Loqate** node, you can delete the **Address Verification (US/Canada)** node.
5. The **Loqate** node is now added, and the source and targets are connected to the **Loqate** node.




6. Here is the **Properties** for the **Address** tab within the **Loqate** node.



- Part 1 - These are the **Input** fields for the node. Remember that you need, at a minimum, an address line and either a city and state or a ZIP code for the node to be able to verify an address.
- Part 2 - Determine which output fields are needed and select those for output. See the Field Mappings document for a detailed explanation of the different field output tokens, as the names are different within the Loqate node.

NOTE: To rename the **Output Names**, double-click the **Output Name** field and select **Rename**.

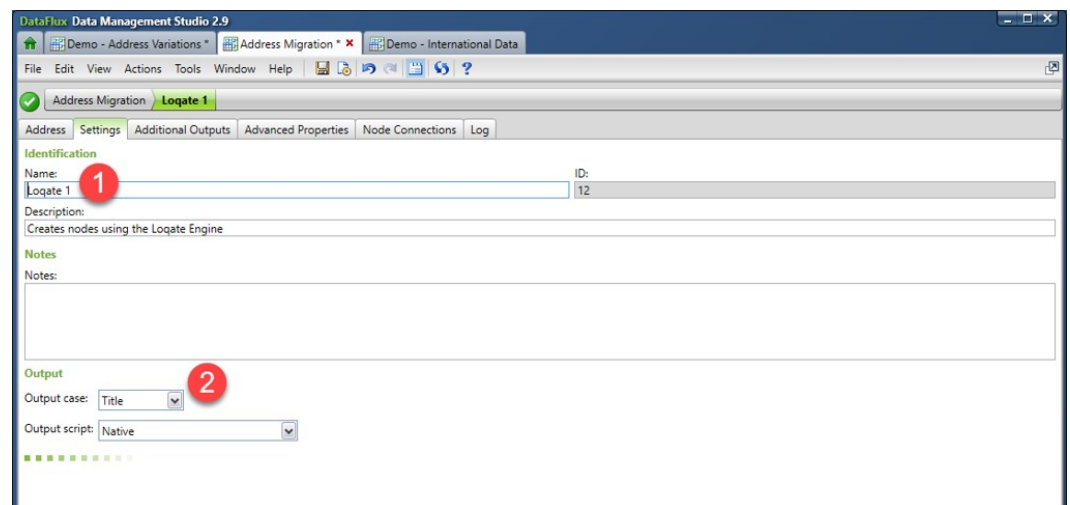
- Part 3 - Select **USA** as the default country code.

Note: In the **Output** field ribbon , click the **Moved Checked to Top** icon to move all the selected output fields to the top of the list.

Configuring the Settings Tab within the Loqate Node

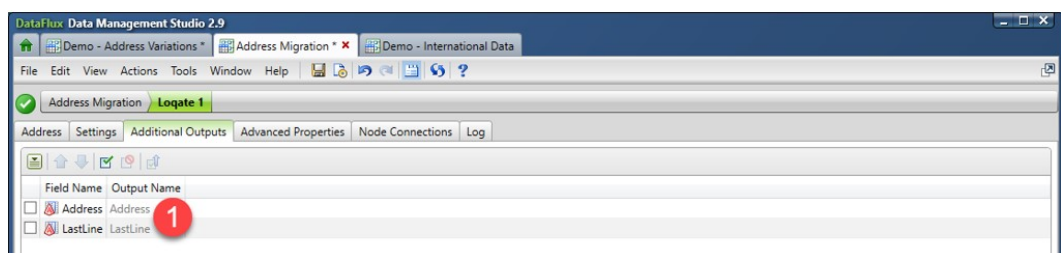
1. In the next screenshot, the **Properties** for the **Settings** tab, within the Loqate node, you see the following information:

- Part 1 - You can rename the node in the name field in case you are performing branching within a job and have multiple Loqate nodes.
- Part 2 - Determine the output casing for the Loqate node. The options include the following:
 - Upper (SAN FRANCISCO)
 - Title (San Francisco)
 - Lower (san francisco)



2. In the next screenshot, the **Properties** for the **Additional Outputs** tab is shown.

- Part 1 - Select which input fields get passed along to the output file. Note that by default no input fields are passed along, they will need to be selected by the user and after selection they can be renamed.



Previewing Address Verification (US/Canada) Output

The following screenshot displays the preview of the configured **Address Verification (US/Canada)** node. This shows the original data and the validated address data. You can tell that this is validated and enriched data because the output now has a ZIP+4 field, as well as a parsed last line field. Please note the **Numeric Result Code** field, which shows you the level of verification achieved.

The screenshot shows the DataFusion Data Management Studio 2.9 interface. The main workspace displays a workflow with four nodes: 'US Address Sample', 'Address Verification (US/Canada) 1', 'US Sample Output Report', and 'Loqate 1'. The 'Address Verification (US/Canada) 1' node is highlighted with a blue border. Below the workspace, the 'Basic Settings' tab is active, showing a 'View Value...' button. A red arrow points to this button. Below the button is a table of address data.

	orig_LastLine	Address_Line_1	City	State	ZIP/Postal_Code	US_ZIP	US_ZIP4	US_Street_Number	US_Numeric_Result_Code
1	2096 EMERSON ST.	DENVER CO 80205	2096 N EMERSON ST	DENVER	CO	80205-5212	80205 5212	2096	0
2	692 BIRCH STREET	SCRANTON PA 18505	692 BIRCH ST	SCRANTON	PA	18505-4255	18505 4255	692	0
3	269 ALDEN ST.	SPRINGFIELD MA 01109	269 ALDEN ST	SPRINGFIELD	MA	01109-3707	01109 3707	269	0
4	3856 RUSKIN ST.	HOUSTON TX 77005	3856 RUSKIN ST	HOUSTON	TX	77005-4331	77005 4331	3856	0
5	7920 WOODMONT AVE. SUITE 200	BETHESDA MD 20814	7920 WOODMONT AVE SUITE 200	BETHESDA	MD	20814-3099	20814 3099	7920	0
6	2653 BUENA VISTA AVENUE	ALAMEDA CA 94501	2653 BUENA VISTA AVE	ALAMEDA	CA	94501-1549	94501 1549	2653	0
7	P. O. BOX 523	FORT BELVOIR VA 22030	PO BOX 523	FORT BELVOIR	VA	22060-0523	22060 0523	523	0

Job Status: Completed Successfully Run time: 0 hours 0 minutes 3.299 seconds

Previewing Loqate Output

Next, see the preview for the **Address Verification (US/Canada)** node. This shows the original data and the validated address data. You can tell this is validated and enriched data because the output now has a ZIP+4 field, as well as a parsed last line field. Please note the **AccuracyCode** field, which shows you the level of verification achieved.

NOTE: By renaming columns, you can replicate all the output fields that were generated in the **Address Verification (US/Canada)** node preview. An **Expression** node can be added that converts the **Loqate Accuracy Code** over to a **US_Result_Code** field, if needed.

The screenshot displays the SAS Data Management Studio 2.9 interface. The main window shows a data flow diagram with four nodes: 'US Address Sample', 'Address Verification (US/Canada) 1', 'US Sample Output Report', and 'Logate 1'. The 'Logate 1' node is highlighted with a red arrow. The 'Nodes' pane on the left lists various address-related nodes. The 'Basic Settings' pane at the bottom shows the 'Logate 1' node's configuration, including a table of address data.

orig_Address	orig_LastLine	Address_Line_1	City	State	ZIP/Postal_Code	US_ZIP	US_ZIP4	US_Street_Number	AccuracyCode
1 2096 EMERSON ST.	DENVER CO 80205	2096 N Emerson St	Denver	CO	80205-5212	80205	5212	2096	V42-I44-P7-098
2 692 BIRCH STREET	SCRANTON PA 18505	692 Birch St	Scranton	PA	18505-4255	18505	4255	692	V44-I44-P7-100
3 269 ALDEN ST.	SPRINGFIELD MA 01109	269 Alden St	Springfield	MA	01109-3707	01109	3707	269	V44-I44-P7-098
4 3856 RUSKIN ST.	HOUSTON TX 77005	3856 Ruskin St	Houston	TX	77005-4331	77005	4331	3856	V44-I44-P7-100
5 7920 WOODMONT AVE. SUITE 200	BETHESDA MD 20814	7920 Woodmont Ave Ste 200	Bethesda	MD	20814-3099	20814	3099	7920	V44-I55-P7-100
6 2653 BUENA VISTA AVENUE	ALAMEDA CA 94501	2653 Buena Vista Ave	Alameda	CA	94501-1549	94501	1549	2653	V44-I44-P7-100
7 P. O. BOX 523	FORT BELVOIR VA 22030	PO Box 523	Fort Belvoir	VA	22060-0523	22060	0523		V55-I55-P5-095

Canada

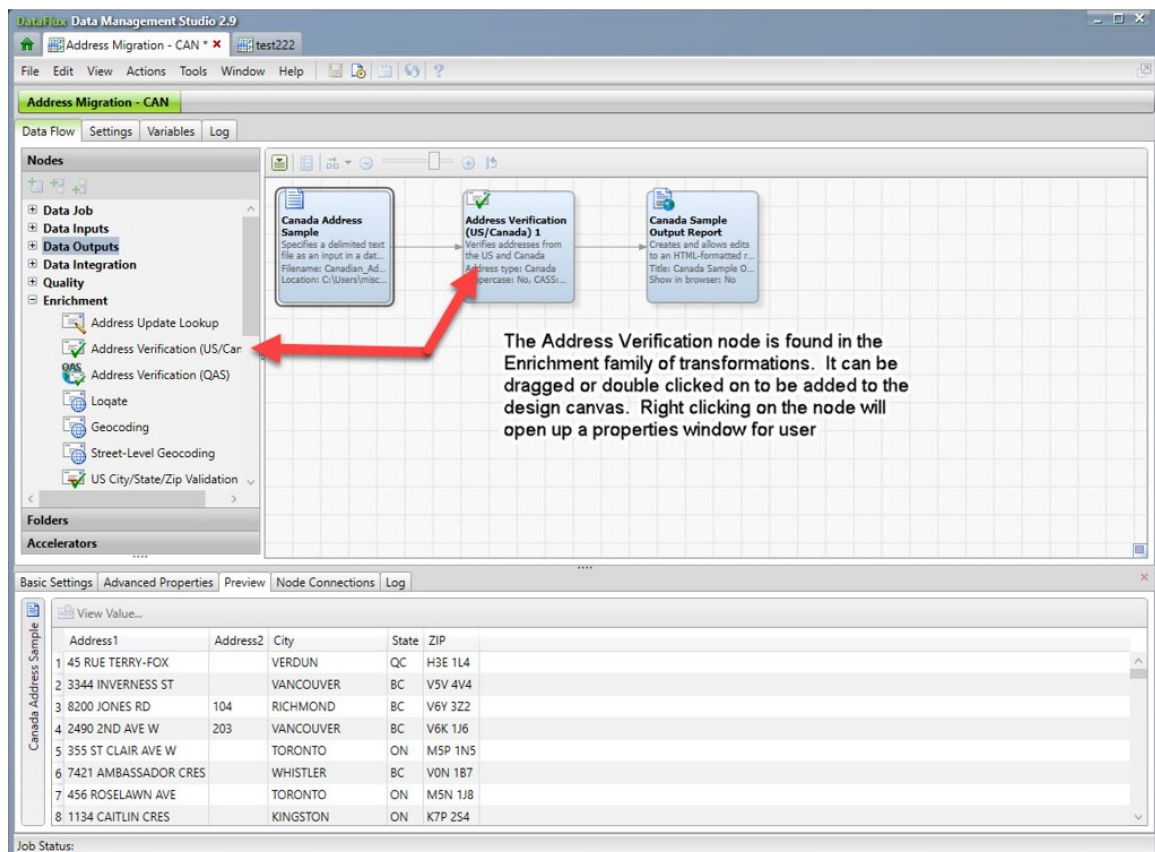
Background

This section covers changes that are required for the Canada data for address verification. Follow the steps below to modify your SAS Data Management Studio job to use a **Logate** node instead of the **Address Verification (US/Canada)** node.

NOTE: Refer to the section, [Introduction to the Migration Guide for Data Packs](#) for information about migrating your SAS Data Management Studio **Address Verification (US/Canada)** jobs to **Logate**.

Step 1 - SAS Job Using the Address Verification (US/Canada) Node

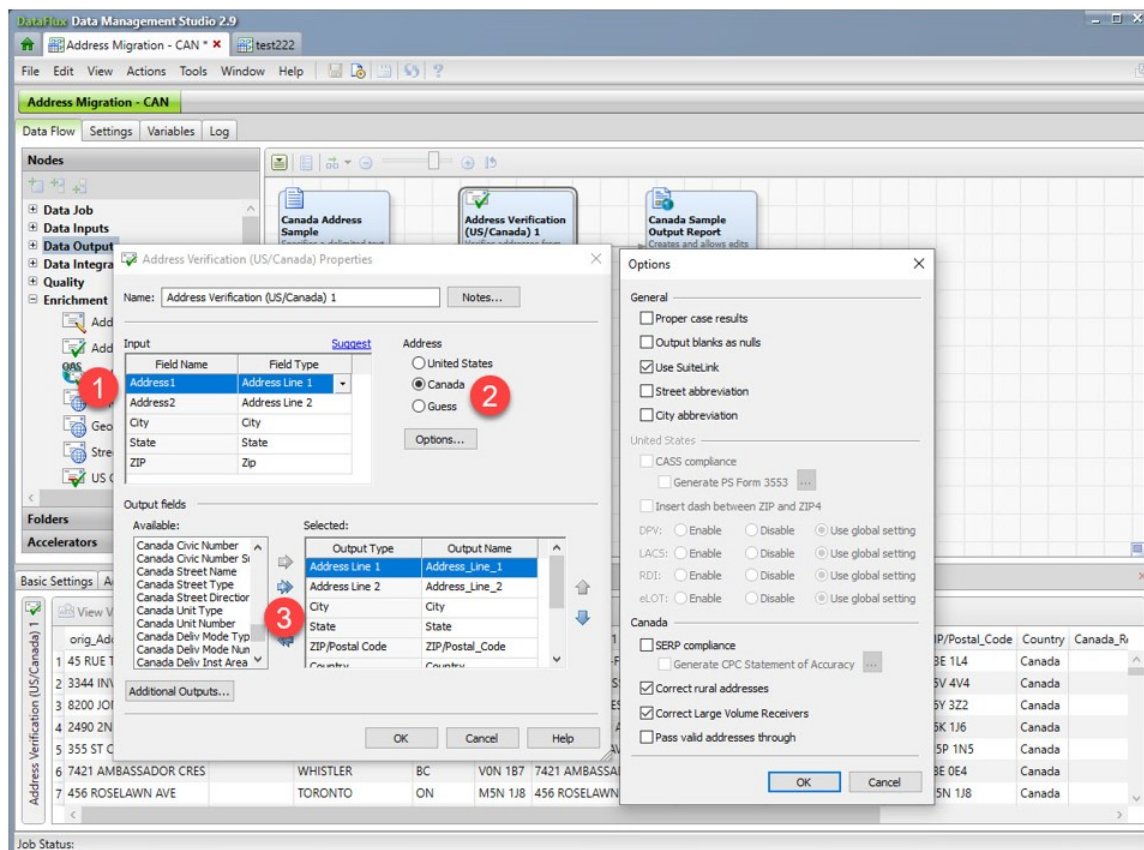
In this initial screenshot, there is a text input file on the left side of the data flow and an HTML output on the right. The **Address Verification** node in the center of the flow is set up to process Canadian addresses.



Step 2 – Reviewing the Properties of the Address Verification (US/Canada) Node

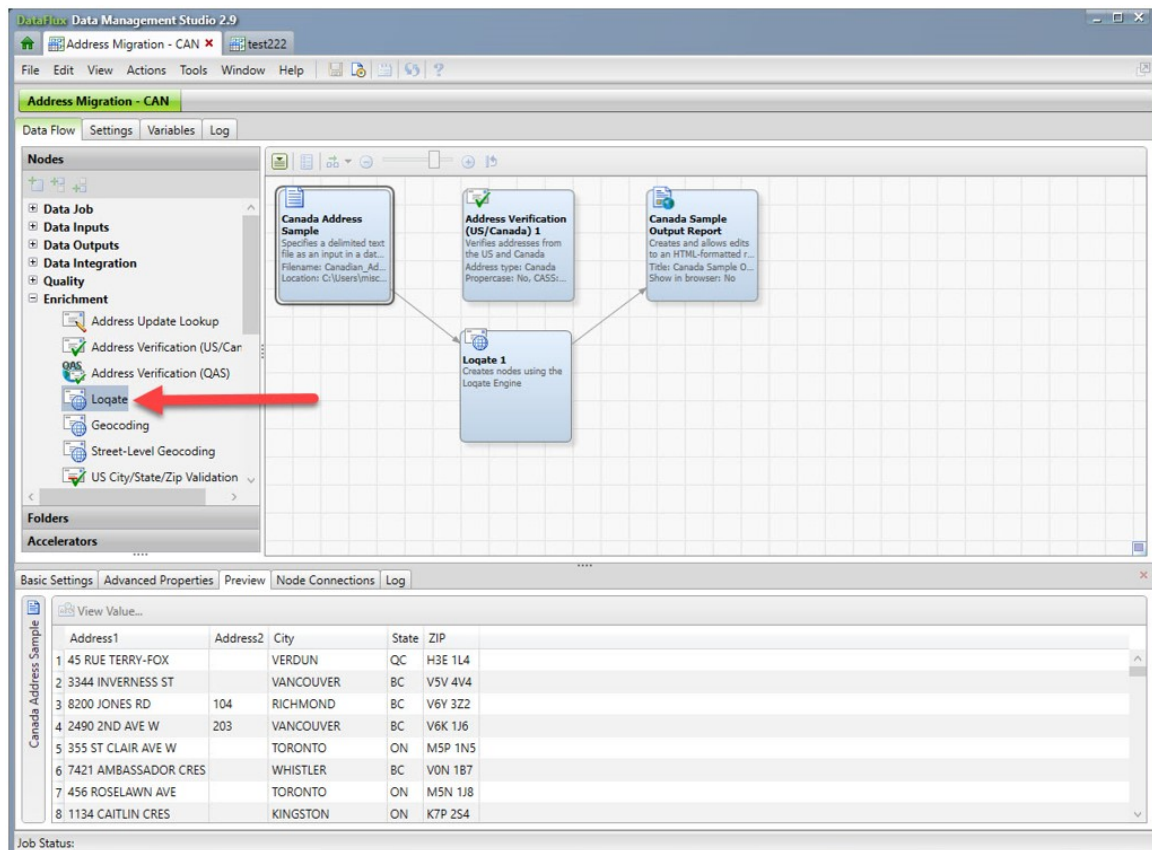
In the screenshot below, you see the properties of the **Address Verification (US/Canada)** node for Canada.

- Part 1 - These are the **Input** fields for the node. Remember that you need, at a minimum, an address line and either a city and state or a ZIP code for the node to be able to verify an address.
- Part 2 - In the **Options** window, you can tell the node which parts of the reference data to use when verifying Canadian addresses. Please note that these options are different in the **Loqate Address Verification** node.
- Part 3 - Determine which output fields you need and select those for output in the node.



Step 3 – Adding the Loqate Node to a SAS Job

In the screenshot below, a **Loqate** node is added to the design canvas and the source and targets are connected to the **Loqate** node. Once everything is configured, the **Address Verification (US/Canada)** node can be deleted.



Step 4 – Configuring the Address Tab within the Loqate Node


In the next screenshot, you see the **Properties** for the **Address** tab within the **Loqate** node.

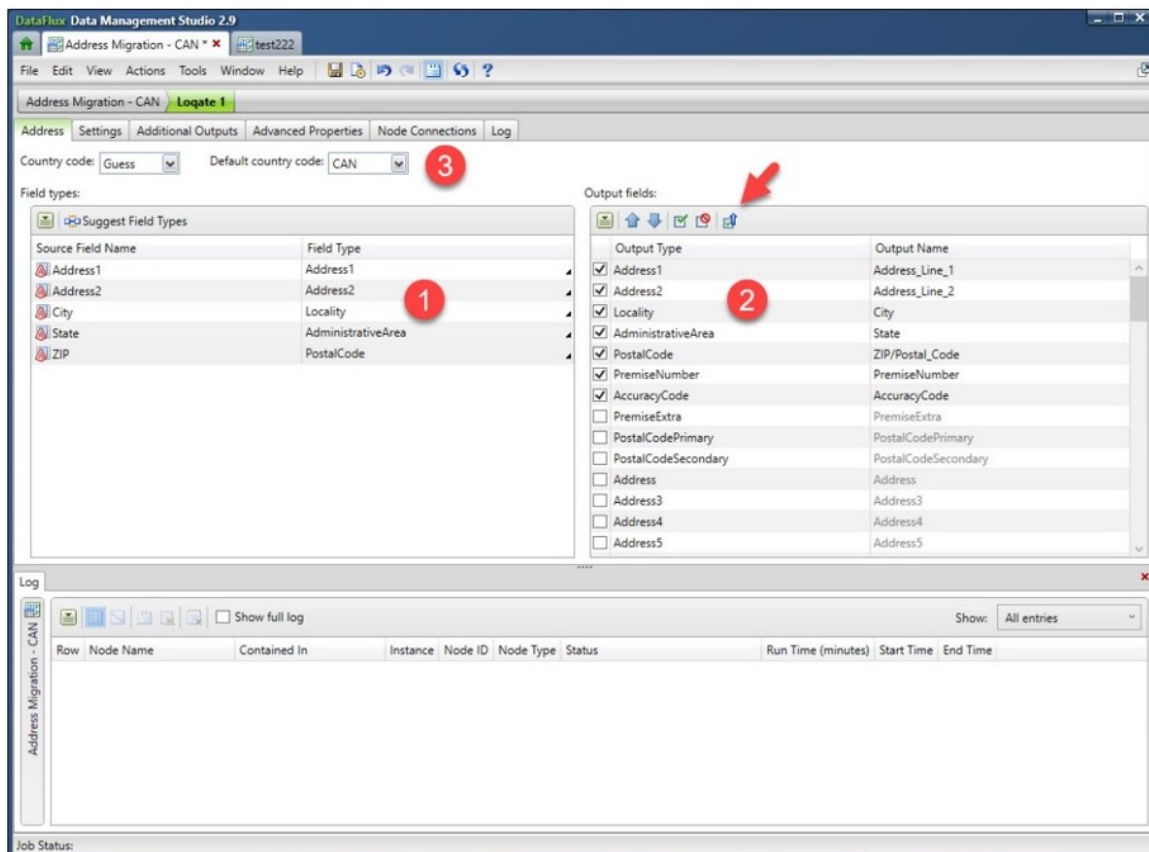
Part 1 - These are the **Input** fields for the node. Remember that you need, at a minimum, an address line and either a city and state or a ZIP code for the node to be able to verify an address.

Part 2 -Determine which output fields you need and then select them for output. Please review the **Field Mappings** document for a detailed explanation of the different field output tokens, as the names are different within the **Loqate** node.

NOTE: You can rename Output Names by, double-clicking the **Output Name** field and rename.

Part 3 - Select **CAN** as the default country code.

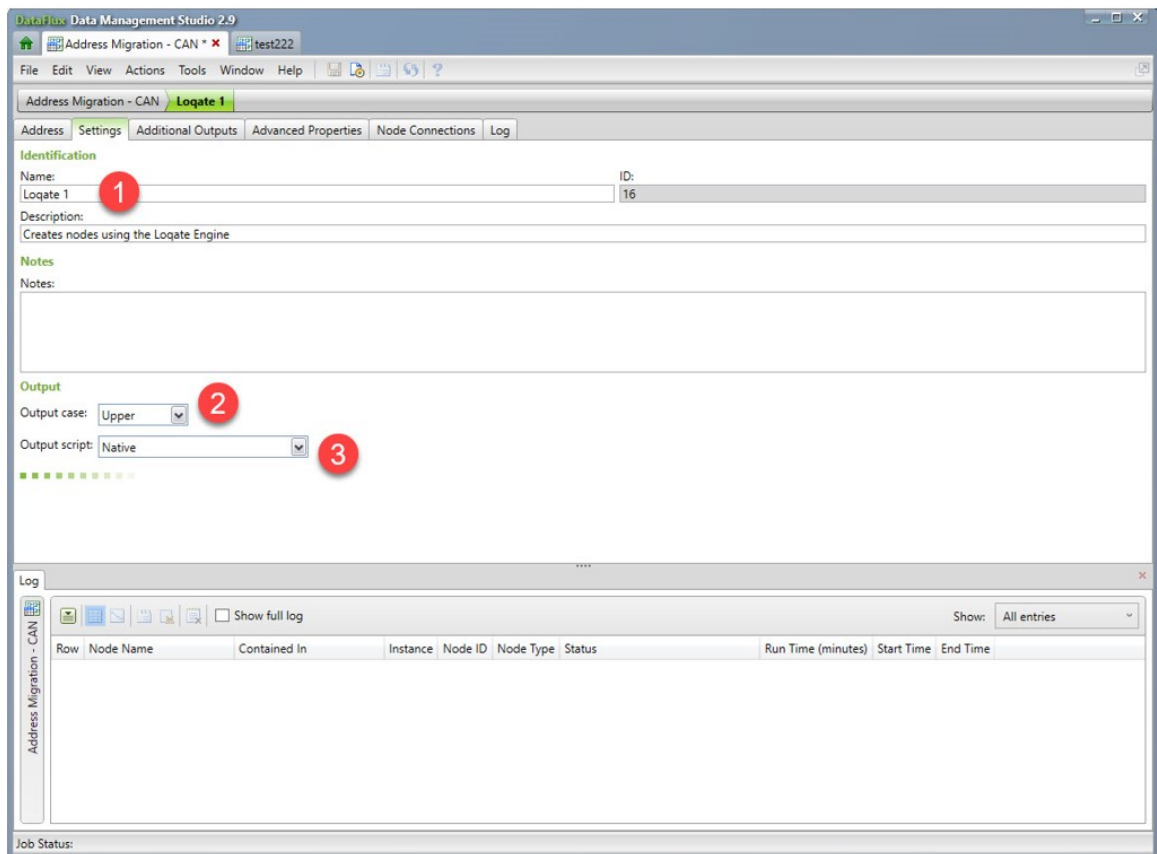
In the **Output** field ribbon , click the **Moved Checked to Top** icon to move all the selected output fields to the top of the list.



Configuring the Settings Tab within the Loqate Node

In the next screenshot, you can see the properties for the **Settings** tab within the **Loqate** node.

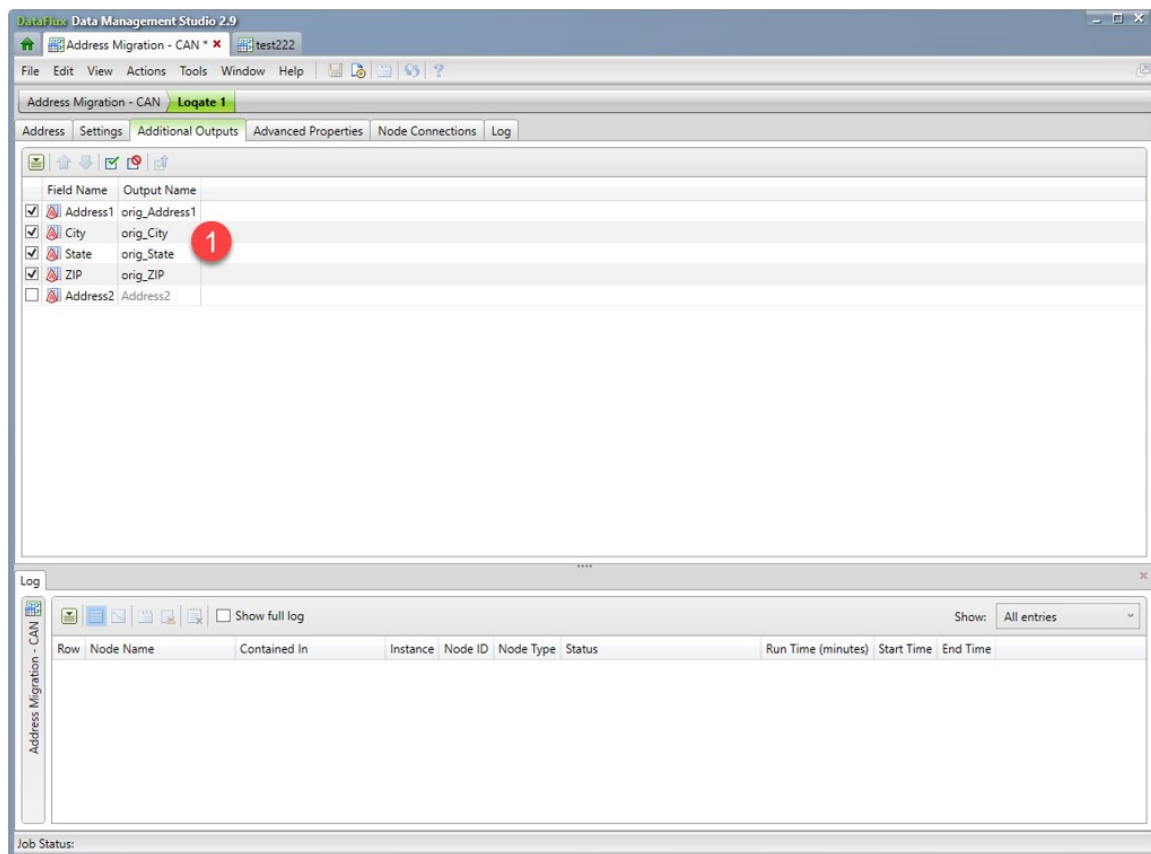
- Part 1 - You can choose to rename the node in the **Name** field in case you are performing branching within a job and have multiple **Loqate** nodes.
- Part 2 - Determine the output casing for the **Loqate** node. The options available include the following:
 - Upper (VANCOUVER)
 - Title (Vancouver)
 - Lower (vancouver)
- Part 3 - Determine the output script for the **Loqate** node. For example:
 - Latn – Latin (Montreal)
 - Native (Montréal)



Configuring the Additional Outputs Tab within the Loqate Node

In the screenshot below, you see the **Properties** of the **Additional Outputs** tab within the **Loqate** node.

Part 1 - Select which input fields are passed to the output file. Please note that by default no input fields are passed. You must select the fields.



Previewing Address Verification (US/Canada) Output

In the next screenshot, a configured **Address Verification (US/Canada)** node is being previewed to show the original data and the validated address data. You can tell that this is validated and enriched data because the output has a `ZIP/Postal_Code` and the `Canada_Result_Code` that contains a 0 indicating that it was successfully verified. The `Canada_Result_Code` can tell you why verification of the address failed.

Nodes:

- Canada Address Sample
- Address Verification (US/Canada) 1
- Canada Sample Output Report
- Loqate 1

Basic Settings:

orig_Address1	orig_Address2	orig_City	orig_State	orig_ZIP	Address_Line_1	City	State	ZIP/Postal_Code	Country	Canada_Result_Code
16 68 CORPORATE DR	621	SCARBOROUGH	ON	M1H 3H3	621-68 CORPORATE DR	SCARBOROUGH	ON	M1H 3H3	Canada	0
17 555 SHERBOURNE ST		TORONTO	ON	M4X 1W6	555 SHERBOURNE ST	TORONTO	ON	M4X 1W6	Canada	0
18 1245 ROCKLIN DR		COQUITLAM	BC	V3B 2W7	1245 ROCKLIN ST	COQUITLAM	BC	V3B 2W7	Canada	0
19 25 BRIARSDALE CRES			ON		25 BRIARSDALE CRES		ON		Canada	11
20 59 SUFFOLK ST		ANCASTER	ON	L9K 1M9	59 SUFFOLK ST	ANCASTER	ON	L9K 1M9	Canada	0
21 33 SAINT JOHNS RD		TORONTO	ON	M6P 1T7	33 ST JOHNS RD	TORONTO	ON	M6P 1T7	Canada	0
22 2531 OLD LAKESHORE RD			ON		2531 OLD LAKESHORE RD		ON		Canada	11
23 326			BC	326			BC		Canada	11

Previewing Loqate Output

In the screenshot below, a configured **Loqate** node is previewed to show the original data and the validated address data. You know that this is validated and enriched data because the output now has a populated ZIP/Postal_Code. Note that the **AccuracyCode** field "V" shows you that a complete match was made between the input and the reference data.

NOTE: By renaming columns, you can replicate all the output fields that were generated in the **Address Verification (US/Canada)** node preview. An **Expression** node can be added that converts the **Loqate Accuracy Code** field over to a **Canada_Result_Code** field if that is the desired output.

The screenshot shows the DataFlow Data Management Studio 2.9 interface. The job flow consists of four nodes: 'Canada Address Sample' (input), 'Address Verification (US/Canada) 1' (verification), 'Loqate 1' (output), and 'Canada Sample Output Report' (report). A red arrow points to the 'View Value...' table, which displays the results of the job flow.

	orig_Address1	orig_City	orig_State	orig_ZIP	Address_Line_1	City	State	ZIP/Postal_Code	CountryName	AccuracyCode
16	68 CORPORATE DR	SCARBOROUGH	ON	M1H 3H3	621-68 Corporate Dr	Scarborough	ON	M1H 3H3	Canada	V44-I55-P6-100
17	555 SHERBOURNE ST	TORONTO	ON	MAX 1W6	555 Sherbourne St	Toronto	ON	MAX 1W6	Canada	V44-I44-P6-100
18	1245 ROCKLIN DR	COQUITLAM	BC		1245 Rocklin St	Coquitlam	BC	V38 2W7	Canada	V42-I44-P3-095
19	25 BRIARSDALE CRES		ON		25 Briarsdale Cres		ON		Canada	U00-I11-P0-100
20	59 SUFFOLK ST	ANCASTER	ON	L9K 1M9	59 Suffolk St	Ancaster	ON	L9K 1M9	Canada	V44-I44-P6-100
21	33 SAINT JOHNS RD	TORONTO	ON	M6P 1T7	33 St Johns Rd	Toronto	ON	M6P 1T7	Canada	V44-I44-P6-100
22	2531 OLD LAKESHORE RD		ON		2531 Old Lakeshore Rd		ON		Canada	U00-I11-P0-100
23	326		BC		326		BC		Canada	U00-I11-P0-100

Geocode

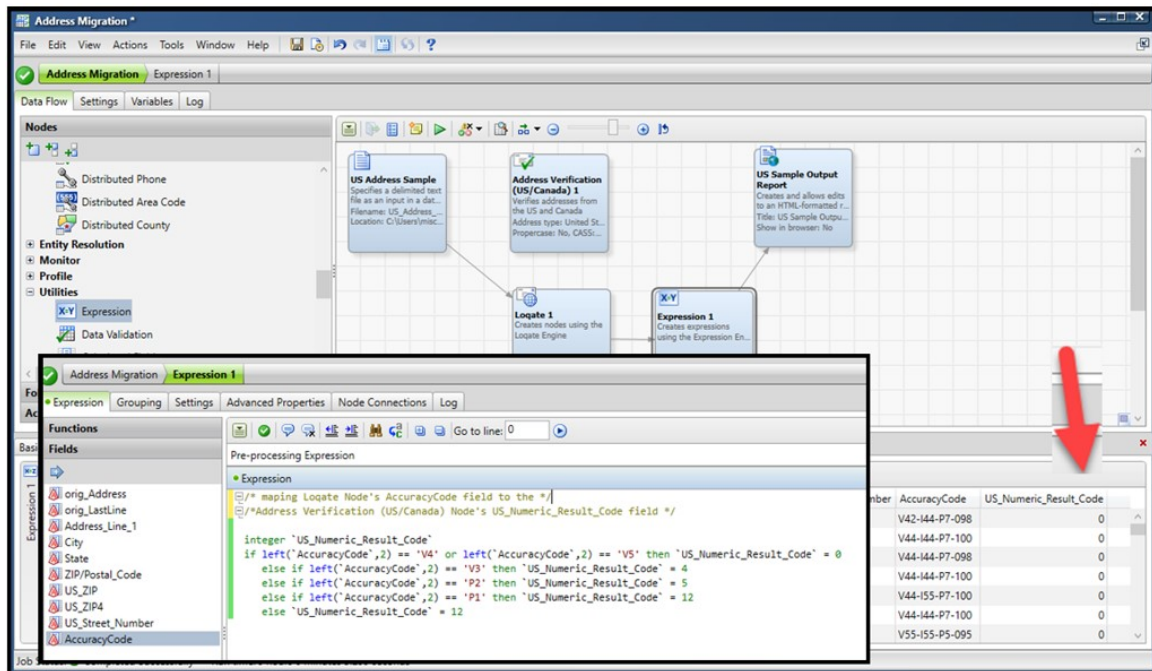
NOTE: Refer to the section, [Introduction to the Migration Guide for Data Packs](#) for information about migrating your SAS Data Management Studio **Address Verification (US/Canada)** jobs to **Loqate**.

Optional Address Verification Steps

Adding Expression Engine Language (EEL) Code for Loqate Accuracy Code Equivalency with the US Numeric Result Code

In the example below, an **Expression** node has been added to the job flow with an EEL to create a Result Code equivalency between the **Loqate Accuracy Code** and the `US_Numeric_Result_Code`.

NOTE: The EEL shown below is a sample and is not representing all potential `US_Numeric_Result_Codes`.



Adding EEL Code for Loqate Accuracy Code Equivalency with the Canada Result Code

The next example displays an **Expression** node that has been added to the job flow with an EEL to create a Result Code equivalency between the **Loqate Accuracy Code** and the `Canada_Result_Code`.

NOTE: The EEL shown below is a sample and does not represent all potential `Canada_Result_Codes`.

DataFlux Data Management Studio 2.9

Address Migration - CAN * test222 Demo - International Data Address Migration - US

File Edit View Actions Tools Window Help

Address Migration - CAN Expression 1

Data Flow Settings Variables Log

Nodes

- Phone
- Area Code
- Canadian Postal Code Looku
- Distributed Geocoding
- Distributed Address Verificat
- Distributed Phone
- Distributed Area Code
- Distributed County
- Entity Resolution
- Monitor
- Profile
- Utilities

Canada Address Sample
Specifies a delimited text file as an input in a dat...
Filename: Canadian_Ad...
Location: C:\Users\jmic...

Address Verification (US/Canada) 1
Verifies addresses from the US and Canada
Address type: Canada
Properties: No, CASS...

Canada Sample Output Report
Creates and allows edits to an HTML-formatted r...
Title: Canada Sample O...
Show in browser: No

Loqate 1
Creates nodes using the Loqate Engine

Expression 1
Creates expressions using the Expression En...

Functions

Fields

- orig_Address1
- orig_City
- orig_State
- orig_ZIP
- Address_Line_1
- City
- State
- ZIP/Postal_Code
- CountryName
- AccuracyCode

Pre-processing Expression

```

/* mapping Loqate Node's AccuracyCode field to the */
/*Address Verification (US/Canada) Node's US_Numeric_Result_Code field */

Integer 'Canada_Result_Code'
If left('AccuracyCode',2) == 'V4' or left('AccuracyCode',2) == 'V5' or left('AccuracyCode',2) == 'V2' then 'Canada_Result_Code' = 0
else if left('AccuracyCode',2) == 'U0' then 'Canada_Result_Code' = 11
else if left('AccuracyCode',2) == 'P2' then 'Canada_Result_Code' = 5
else if left('AccuracyCode',2) == 'P3' then 'Canada_Result_Code' = 5
else 'Canada_Result_Code' = 11

```

53 13891 HURONTARIO ST ON 13891 Hurontario St ON Canada

Job Status:

AccuracyCode	Canada_Result_Code
V44-I44-P4-086	0
V44-I55-P6-100	0
P33-I33-P6-100	5
V44-I44-P6-100	0
P22-I24-P2-100	5
V44-I44-P6-100	0
V44-I44-P6-100	0
U00-I11-P0-100	11

Reference Information

Loqate Reference Data Source for SAS Data Management Server

Only after configuration is validated and jobs have been edited in SAS Data Management Studio can a similar configuration be set up for SAS Data Management Server. It is important that your Loqate jobs run successfully in SAS Data Management Studio before you proceed to this next step.

Adding a Loqate Reference Data Source to SAS Data Management Server

Your SAS Data Management Server instance can be installed on several platforms. However, you need to modify the `app.cfg` file for your SAS Data Management Server instance. Here is an example for Windows:

1. Navigate to the **etc** folder in your SAS Data Management Server directory. For example: `C:\Program Files\SASHome\SASDataManagementServer\2.9\etc`.
2. Edit the `app.cfg` file and add a `VerLQT/Loqate_Date Path` entry for example, `VERLQT/LOQATE_DATA_PATH=C:\Program Files\SAS\VerifyData\data\XXXX\world`.
3. Confirm that your SAS Data Management Server points to the correct Loqate Data directory.

Loqate Output Fields

For more information about Loqate and its address or geocoding output fields, see the following websites for additional information:

- Address Output Fields: <https://support.loqate.com/documentation/fielddescrip/addfields/>
- Geocode Output Fields: <https://support.loqate.com/documentation/fielddescrip/geocode-fields/>
- GeoAccuracy Code: <https://support.loqate.com/documentation/reportcodes/geoaccuracy-code/>
- Address Verification Code: <https://support.loqate.com/documentation/reportcodes/address-verification-code/>

Note: Environments and circumstances are different. This document does not document every scenario. Please contact SAS Technical Support if you need assistance.

Canadian Result Codes

Indicates whether the address was successfully verified. In case the address was not successfully verified, the Canada Return Codes shown in the following table indicate the cause of address verification failure.

RESULT CODE	DESCRIPTION
0	No Error Occurred
1	Internal Error
2	Cannot load database
3	Invalid - Unspecified reason
4	Invalid civic number
5	Invalid street
6	Invalid unit
7	Invalid delivery mode
8	Invalid delivery installation
9	Invalid city
10	Invalid province
11	Invalid postal code
12	Address is not Canadian

Canadian Result Codes

US Result Codes

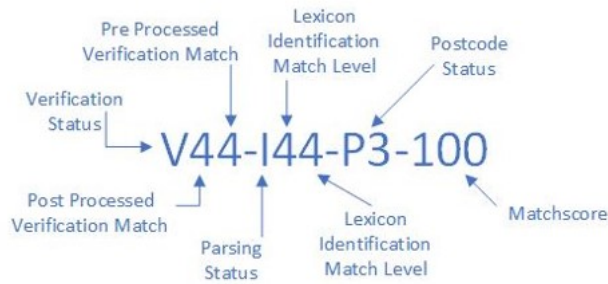
Indicates whether the address was successfully verified. In case the address was not successfully verified, a US Return Code indicates the cause of address verification failure, as shown in the following table:

TEXT RESULT CODE	NUMERIC RESULT CODE	DESCRIPTION
OK	0	Address was verified successfully.
PARSE	11	Error parsing address. Components of the address might be missing.
CITY	12	Could not locate city/state or ZIP in the USPS database. At least (city and state) or ZIP must be present in the input.
MULTI	13	Ambiguous address. There were two or more possible matches for this address with different data.
NOMATCH	14	No matching address found in the USPS data.
OVER	15	One or more input strings is too long (maximum 100 characters).

US Result Codes

Loqate Address Verification Code

A Loqate Address Verification Code can be broken into the following parts:



See <https://support.loqate.com/documentation/reportcodes/address-verification-code/> for more information.

Address Verification Code – Verification Status

CODE	DESCRIPTION
V	Verified – A complete match was made between the input data and a single record from the available reference data
P	Partially Verified - A partial match was made between the input data and a single record from the available reference data
A	Ambiguous - More than one close reference data match
R	Reverted - Record could not be verified to the specified minimum acceptable level. The output fields contain the input data
U	Unverified - Unable to verify. The output fields contain the input data

Address Verification Code - Verification Status

Post-Processed Verification Match Level

The post-processed verification match level gives the level to which the input data matches the available reference data once all changes and additions performed during the verification process have been taken into account.

CODE	DESCRIPTION
5	Delivery Point (PostBox or SubBuilding)
4	Premise (Premise or Building)
3	Thoroughfare
2	Locality or PostalCode
1	AdministrativeArea
0	None

Post-Processed Verification Match Level

Pre-Processed Verification Match Level

The pre-processed verification match level gives the level to which the input data matches the available reference data prior to any changes or additions performed during the verification process.

CODE	DESCRIPTION
5	Delivery Point (PostBox or SubBuilding)
4	Premise (Premise or Building)
3	Thoroughfare
2	Locality or PostalCode
1	AdministrativeArea
0	None

Pre-Processed Verification Match Level

Parsing Status

CODE	DESCRIPTION
I	Identified and Parsed – All input data has been able to be identified and placed into components.
U	Unable to parse – Not all input data has been able to be identified and parsed.

Parsing Status

Lexicon Identification Match Level

The lexicon identification match level gives the level to which the output data has some recognized form, through the use of pattern matching. For example, a numeric value could be a premise number and lexicon matching 'rd' could be a ThoroughfareType, 'Road'; 'London' could be a Locality.

CODE	DESCRIPTION
5	Delivery Point (PostBox or SubBuilding)
4	Premise (Premise or Building)
3	Thoroughfare
2	Locality or PostalCode
1	AdministrativeArea
0	None

Lexicon Identification Match Level

Context Identification Match Level

The context identification match level gives the level to which the output data can be recognized based on the context in which it appears. This is the least accurate form of matching and is based on identifying a word as for example, a Thoroughfare based on it being preceded by something that could be a Premise. Then followed by something that could be a Locality, the latter items being identified through a match against the reference data or the lexicon.

CODE	DESCRIPTION
5	Delivery Point (PostBox or SubBuilding)
4	Premise (Premise or Building)
3	Thoroughfare
2	Locality or Postal Code
1	AdministrativeArea
0	None

Context Identification Match Level

Postcode Status

CODE	DESCRIPTION
P8	PostalCodePrimary and PostalCodeSecondary verified
P7	PostalCodePrimary verified, PostalCodeSecondary added or changed
P6	PostalCodePrimary verified
P5	PostalCodePrimary verified with small change
P4	PostalCodePrimary verified with large change
P3	PostalCodePrimary added
P2	PostalCodePrimary identified by lexicon
P1	PostalCodePrimary identified by context
P0	PostalCodePrimary empty

Postcode Status

Matchscore

The matchscore indicates how much the input data has been changed during the verification process to achieve the post-processed verification match level. The result 100% means that no changes have been made. Data additions are not measured by the matchscore, only changes. Generally, a matchscore of 95 or above indicates that only a character or two have been changed during the process. If the input data is less clean, then a threshold of 80 might be considered, since significantly larger changes to the input data are then allowed. Note that this value gives no indication of the level of verification, that is given by the post-processed verification match level.

Geocoding Status

CODE	DESCRIPTION
P	A single geocode was found matching the input address.
I	A geocode was able to be interpolated from the input address's location in a range.
A	Multiple candidate geocodes were found to match the input address, and an average of these was returned.
U	A geocode was not able to be generated for the input address.

Geocoding Status

GeoAccuracy Code – Geocoding Level

CODE	DESCRIPTION
4	Premise (Premise or Building)
3	Thoroughfare
2	Locality
1	AdministrativeArea
0	None

GeoAccuracy Code - Geocoding Level

GeoDistance Definition

This field holds the radius of accuracy in meters, giving an indication of the likely maximum distance between the given geocode and the physical location. Please note that this field is derived from and therefore dependent on the accuracy and coverage of the underlying reference data.