

Oracle® Enterprise Data Quality

Customer Data Services Pack Customization Guide

11g Release 1 (11.1.1.7)

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Oracle Enterprise Data Quality Customer Data Services Pack (EDQ-CDS) has been designed to perform well with minimal customization. Ready-to-use, the application can perform clustering and matching of individual, entity and address data in connected supported applications with little or no configuration changes required.

This document describes how EDQ-CDS can be customized to take advantage of some of the more advanced features of the product. Therefore, it is assumed that you have a good working knowledge of EDQ and the EDQ-CDS components.

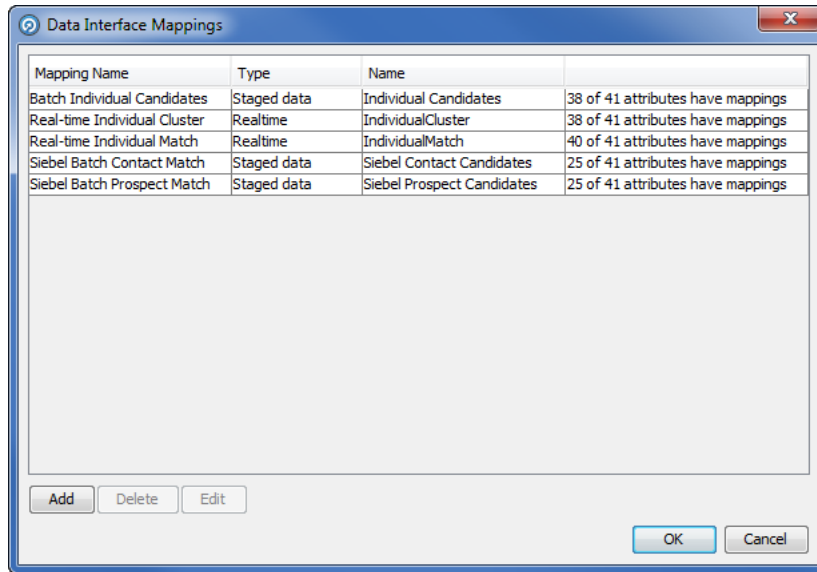
1 Stand-Alone Use of Batch Matching

EDQ-CDS is designed to process customer data from any external system or stand-alone source. By default, pre-configured batch jobs are provided that work with a set of staging tables. Reconfiguring the product to process data from other sources, such as a text file, is straightforward.

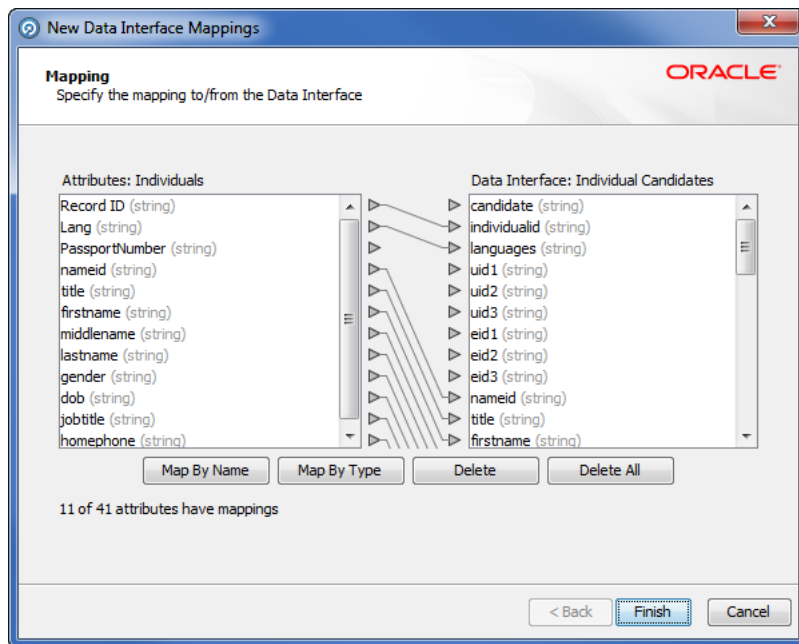
In order to reuse the batch data matching services provided, it is necessary to create new input and output mappings for the data interfaces. The following examples demonstrate how to do this and how to run matching using a modified copy of an existing job configuration.

1.1 Example: Stand-Alone Individual Batch Matching

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project, create a new server-side data store named **File In: Individuals** that points to the structured text file containing the customer data to be processed. It is important that this is created as a server-side data store in order to be used within a job definition.
3. Create a new snapshot named **Individuals** using the **File In: Individuals** data store as a source.
4. Create the Input Data Interface mappings as follows:
 - a. Right-click the **Individual Candidates** data interface and select **Mappings...** to open the **Data Interface Mappings** dialog.



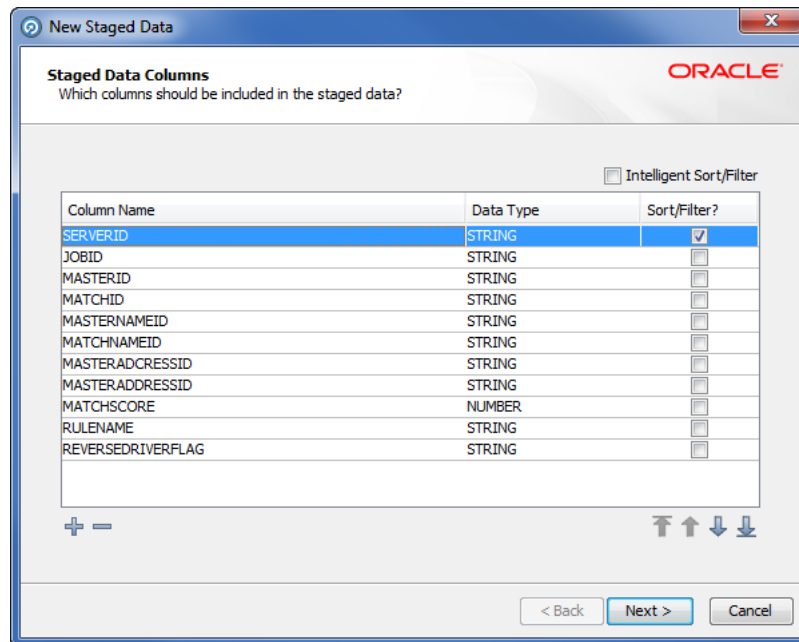
- b. Click **Add** to open the **New Data Interface Mappings** dialog.
- c. Select the **Individuals** snapshot as the source and click **Next**. The Staged data default type is used.
- d. Map the Customer Data Attributes on the left of the dialog to the Data Interface Attributes on the right as follows:



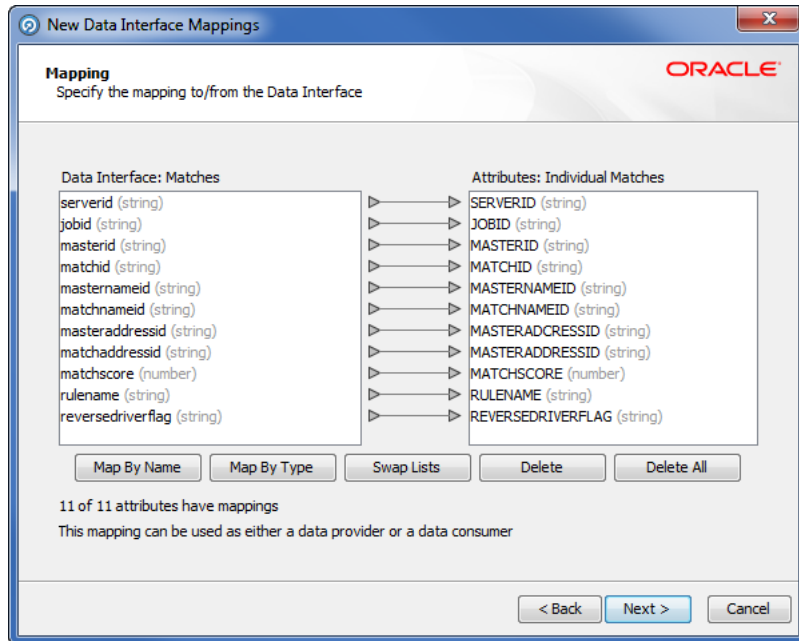
Note : In some instances, it may be necessary to construct a process that reads from the snapshot and reshapes the data to match the Data Interface, see [Section 1.2, "Example: Converting Data to the Interface Format."](#)

- e. Click **Next**.

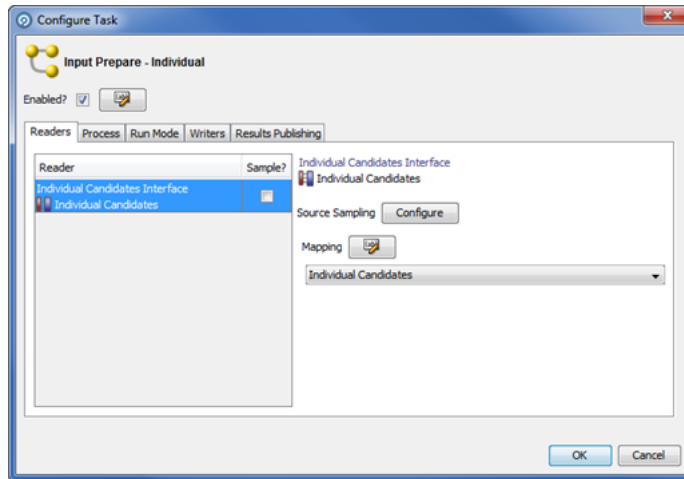
- f. Name the data interface mapping **Individual Candidates** and click **Finish** to save.
 - g. Click **OK**.
5. Create a new Staged Data named **Individual Matches** with the following columns:



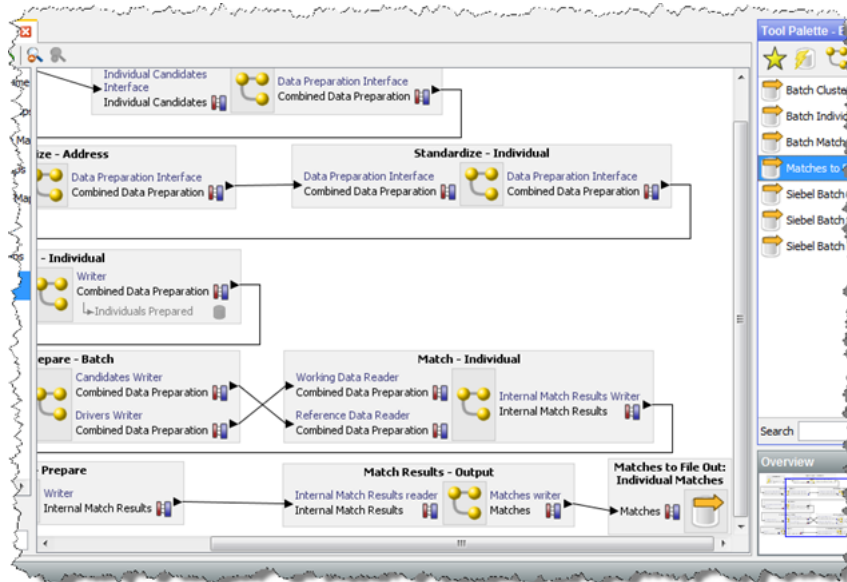
6. Create the Output Data Interface mappings as follows:
- a. Right-click the **Matches** data interface and select **Mappings...** to open the **Data Interface Mappings** dialog.
 - b. Click **Add** to open the **New Data Interface Mappings** dialog.
 - c. Select the **Individual Matches** staged data as the target and click **Next**.
 - d. Map the **Matches** data interface attributes on the left to the **Result Staged Data** attributes on the right as required.



- e. Click **Next**.
 - f. Name the Data Interface mapping **Individual Matches** and give it a description, then click **Finish**.
 - g. Click **OK** to close the dialog.
7. Create a new server-side delimited text data store called **File Out: Individual Matches** to use as a target for the match results. Alternatively, the data can be written to a database if required.
 8. Create a new export called **Matches to File Out: Individual Matches** that uses the **Matches** data interface as the source to export from, and the **File Out: Individual Matches** as the target for the export.
 9. Create and configure a job to run matching as follows:
 - a. Create a copy of the **Batch Individual Match** job, rename it **Batch Individual Match using Text File**, and then open it.
 - b. Open the **Individual Match** job phase, change the source of the input data by double-clicking on the **Individual Candidates** data interface and selecting the **Individual Candidates** mapping.



- c. Click **OK** to apply the changes. The job configuration is modified accordingly and the old snapshot and staged data items are disconnected.
- d. Delete the **Individual Candidates** snapshot task.
- e. Drag the **Individuals** snapshot from the **Snapshot** in the **Tool Palette** into the open job phase and make sure it is connected to the **Individual Candidates** mapping.
- f. Drag the **Matches to File Out: Individual Matches** export task from the **Export** in the **Tool Palette** into the open job phase and connect it to **Match Results - Output**.
- g. Delete the **Batch Matches** export task.



10. Close the job and save the configuration changes.

1.2 Example: Converting Data to the Interface Format

It may not always be possible to directly map the input source to the candidates interface if:

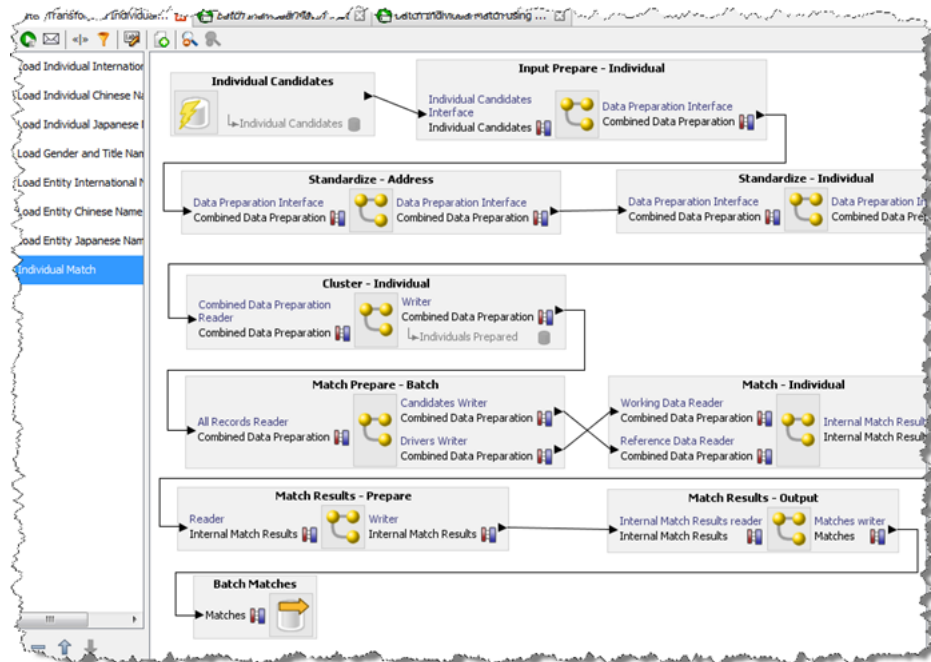
- fields are of the wrong data type (for example, "Date of Birth" in a date field); or
- fields need transforming to a compatible format/structure (for example, Individual names in a full name field).

If this is the case, then the input data should be run through a custom EDQ process to convert the data as appropriate.

1. Ensure that no jobs are currently running.
2. Create a data store and snapshot for the input data as in steps 2 and 3 from [Section 1, "Stand-Alone Use of Batch Matching."](#)
3. In the EDQ-CDS project, right-click the **Processes** node in the Project Browser and select **New Process...** to open the **New Process** wizard.
4. Select the snapshot created in step 2 as the data source.
5. Click **Next**.
6. On the last page of the wizard, rename the process **Transform Individuals**, then click **Finish** button to create the process.
7. On the Process canvas, add the necessary processors to transform the data to the interface format. For example, use a **Convert Date to String** processor to convert a date of birth in date format to the required format for the Candidates interface (for example, either yyyyMMdd, MM/dd/yyyy, yyyy-MM-dd or dd-MMM-yy).
8. Add a Writer processor to the process canvas and connect it to the process data stream:



9. In the **Writer Configuration** dialog, select the **Individual Candidates** data interface and map the attributes accordingly.
10. Create and configure a new job as follows:
 - a. Make a copy of **Batch Individual Match** job, renaming it **Batch Transformed Individual Match**.
 - b. Open the new job.
 - c. Double-click on the **Individual Match** job phase.
 - d. Drag the **Individuals** snapshot task from the **Snapshot** tool palette onto the **Individual Match** phase of the job.
 - e. Double-click the **Individual Candidates** interface and select the **Individual Candidates** mapping.
 - f. Click **OK** to apply the changes. The job configuration will be modified accordingly and the snapshot and staged data items will be disconnected. Delete both these items by deleting the Snapshot task. The start of the job phase should now appear as follows:



- g. Use steps 9.d. - 10 of [Section 1.1, "Example: Stand-Alone Individual Batch Matching"](#) from step 9.d onwards, remembering to modify the job configuration to include the new transformation process and use the modified data interface mappings.

2 Cleaning Services

The cleaning processes provided with EDQ-CDS are provided as templates only, with the exception of the Address Cleaning process which is fully functional and uses EDQ-AV for address verification and standardization. The Individual and Entity cleaning processes are intended to be customized to meet the data standardization requirements of the implementation.

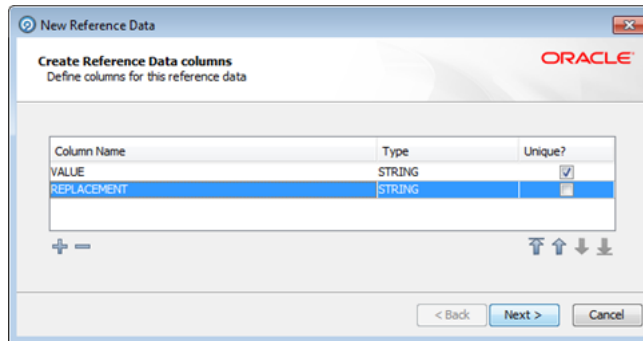
2.1 Customizing the Cleaning Services

The following examples demonstrate modifying the cleaning services provided with EDQ-CDS.

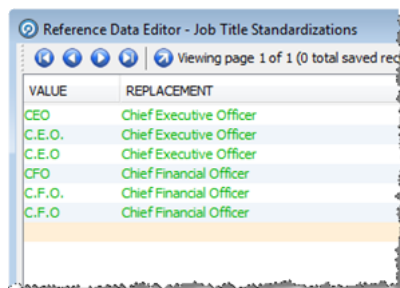
2.1.1 Example: Job Title Standardization

Modify the Individual Cleaning service to standardize job titles as follows.

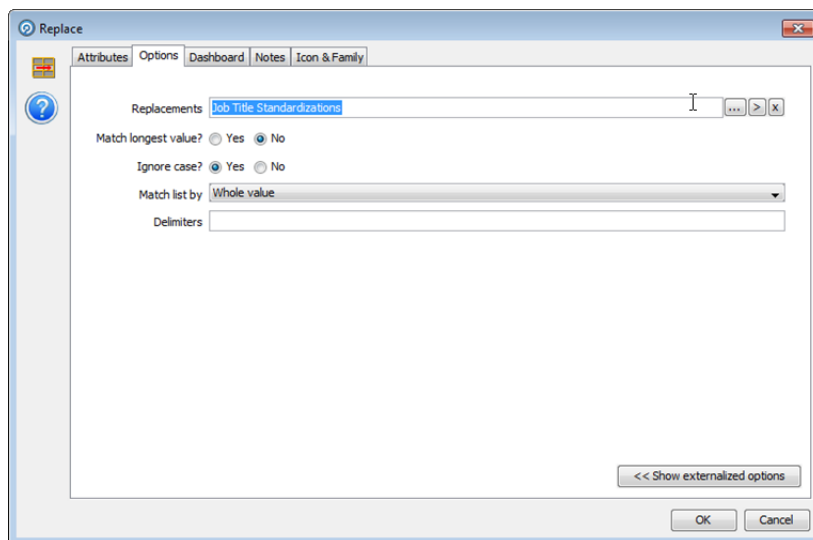
1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project, create a new Reference Data set with the columns as follows:



3. Click **Next** through the **New Reference Data** wizard with the name **Job Title Standardizations**.
4. Click **Finish** to close the wizard. The **Reference Data Editor** dialog opens.
5. Add the required job title standardizations; for example:

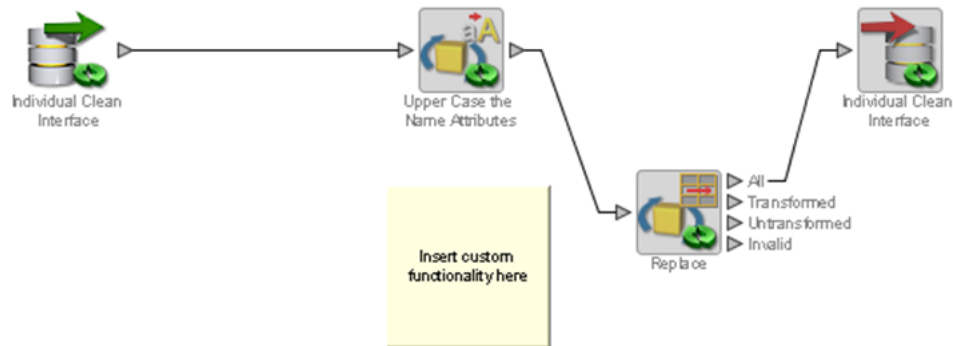


6. Open the **Clean - Individual** process.
7. Add a new **Replace** processor to the Process Canvas and connect it to the output of the **Upper Case the Name Attributes** processor.
8. In the **Processor Configuration** dialog, set the **jobtitle** attribute as the Input field, and on the Options tab select the **Job Title Standardizations** Reference Data in the **Replacements** field.



9. Click **OK** to close the processor configuration dialog.

10. Connect the **All** output of the **Replace** processor to the **Writer**, then click **OK** without making any changes to the **Writer** configuration.
11. On the Process Canvas delete the direct link between the **Upper Case** processor and the **Writer**.



12. Close the process and save the changes.
13. Test the modified cleaning service.

2.1.2 Country-Specific Address Cleaning Settings

The default settings (Allowed Verification Results, Minimum Verification Level and Minimum Match Score) used in the Address Cleaning process that uses EDQ-AV can be overridden on a per-country basis by simply modifying reference data.

2.1.3 Example: Reducing the Strictness of German Address Validation

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project edit the **Address Clean - Country verification level and results** Reference Data.
3. Add the following row:
 - Country Code: DE
 - Allowed Verification Results: VPA
 - Minimum Verification Level: 3
 - Minimum Match Score: 90

Country Code	Allowed Veri...	Minimum Ve...	Minimum Ma...	Comment	State	Modified By	Modified On
US	VP	2	95		Active	dnadmin	02-Feb-2012 14:55:23
GB	VPA	3	95		Active	dnadmin	06-Feb-2012 15:58:26
CA	V	3	98		Active	dnadmin	02-Feb-2012 16:57:24
DE	VPA	3	90		Active	dnadmin	24-May-2012 15:43:32

4. Click **OK** to close the dialog.

3 Adjusting Matching

This section explains how you can change the EDQ matching settings.

3.1 Changing the Match Clusters To Use

By default, the clusters that are used during matching depend on the value of the `clusterlevel` setting. All clusters for the specified level and all lower levels are applied. It is possible to customize the system to turn off particular clusters on an individual basis. However, this is only necessary if greater granularity than the three standard cluster levels is required.

The methods for controlling which Match Clusters are used differs for Batch and Real-Time processing. The following examples show you how to modify the clusters used.

3.1.1 Example: Turning Off Clusters in Individual Batch Matching

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project, open the **Match - Individual** process.
3. Double-click on the **Individuals - Match** processor to open the processor tab.
4. Select the Cluster icon, and select or unselect the Cluster options as required.

Note: You should always select the **Real-time Cluster** option otherwise real-time matching will no longer operate. The match processors are shared between real-time and batch jobs.

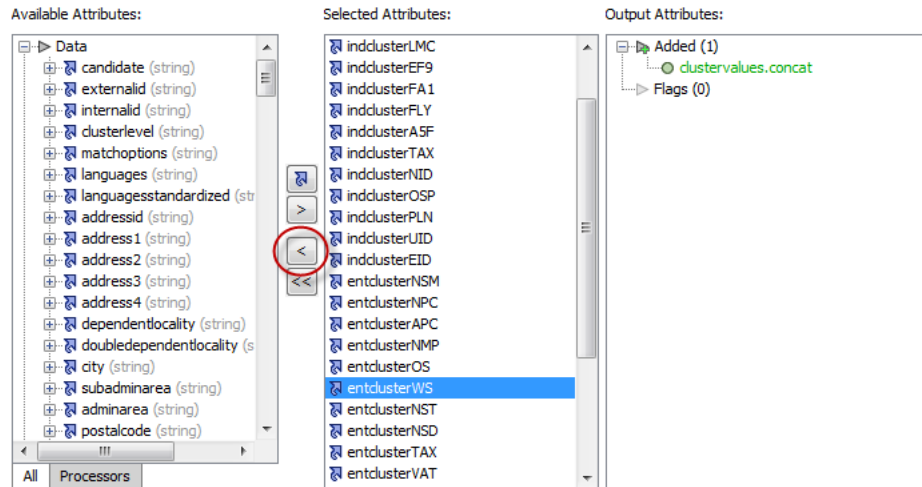
5. Close the tab, and click **Yes** to save the changes.

3.1.2 Example: Turning Off Clusters in Entity Real-Time Matching

In Real-Time matching, each driving record is compared against every other record in the input set; clustering is performed as a separate, prior call. Therefore, in order to turn off a cluster it must be suppressed at the time of generation.

Note : This will only affect new records, unless all cluster keys are re-created.

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project, open the **Cluster Results – Realtime Output** process.
3. Double-click on the **Concatenate All Clusters** processor to open the **Processor Configuration** dialog.
4. Select the Cluster Attributes in the **Selected Attributes** list as appropriate and click on the left-arrow button to remove them. For example, `entclusterWS`, the Website cluster as in the following:



5. Click OK to close the dialog.
6. Close the process and save the configuration changes.

3.2 Changing Match Rule Enablement

Match rule enablement is externalized in this release. You can override this behavior by adding the name...address conflict properties to your edq-cds.properties file then editing the values as in the following example:

```
# Disable all entity "name...address conflict" type rules.
phase.*.process.Match\ -\ Entity.[E010V]\ Script\ full\ name\ exact\;\ address\
conflict.entity_match_rules_enabled = false
phase.*.process.Match\ -\ Entity.[E020V]\ Full\ name\ exact\;\ address\
conflict.entity_match_rules_enabled = false
phase.*.process.Match\ -\ Entity.[E030V]\ Standardized\ full\ name\ exact\;\
address\ conflict.entity_match_rules_enabled = false
phase.*.process.Match\ -\ Entity.[E040V]\ Script\ full\ name\ without\ suffixes\
exact\;\ address\ conflict.entity_match_rules_enabled = false
phase.*.process.Match\ -\ Entity.[E050V]\ Full\ name\ without\ suffixes\ exact\;\
address\ conflict.entity_match_rules_enabled = false
```

Capitalization must be respected and characters must be escaped as required. The asterisk (*) character denotes a wildcard, which specifies that the above rule applies to all phases and all processes.

3.3 Turning off Unused Match Functionality

The value of the matchthreshold setting is used to control the strength of matches that are returned from the Matching services by filtering out results that fall below the specified threshold. Match rules with a priority score below this value are effectively redundant.

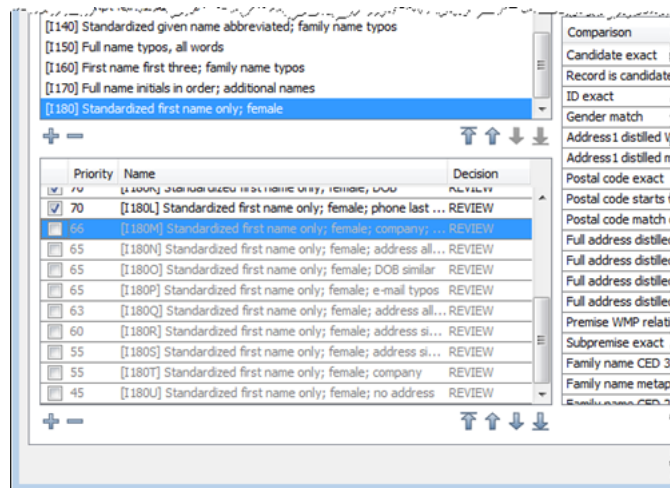
Also, the match processes output a number of additional attributes which are not used in the default configuration and can be removed without loss of functionality. These attributes may be required for use in customizations of EDQ-CDS. For more information, see [Section 3.3, "Turning off Unused Match Functionality."](#)

3.3.1 Example: Disabling Rules with Lower Scores

The `matchthreshold` setting has been configured to have a value of 70, so all Match rules with a lower priority score will be disabled.

The following steps describe how to disable Match rules for any Match process (for example, **Match - Individual**, **Match - Entity** or **Match - Address**):

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project, open the Match process.
3. Double-click the Match processor to open the **Match Configuration** tab.
4. Double click the **Match** sub-processor icon to open the **Match Configuration** dialog.
5. Select the **Match Rules** tab and select the last Match group.
6. Clear the check box beside each Match rule with a Match Priority score lower than 70 to disable it.



7. Repeat for each Match group until all rules with a score less than 70 have been disabled.
8. Click **OK** to close the dialog.
9. Close the process and save the configuration changes.

3.4 Reviewing Matches in EDQ

The EDQ-CDS Matching services return only those records that matched with a score equal to or greater than the `matchthreshold` setting, and for those records it only returns the record ID, rule name and score. It is useful to be able to view the full record details during rule tuning in order to analyze matches. The Match Review application is a helpful tool in this process.

3.4.1 Example: Enabling Match Review in Individual Batch Matching

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS project, open the **Match - Individual** process.
3. Double-click on the **Match Individuals** processor to open the **Match Configuration** dialog.

4. Click **Advanced Options**.
5. From the Review System list, select **Match Review**, and then click **OK**. This makes the Assign Relationship Review option active.
6. Click **Assign Relationship Review**.



7. In the dialog displayed, select the appropriate user or user group in the **Assigned To** drop-down field.
8. Click **OK** to close the dialog.
9. Close the process and save the configuration changes.
10. Open the **Batch Individual Match** job.
11. Locate the Match phase, right-click on the **Match Prepare** task and select **Configure**. The **Task Configuration** dialog opens.
12. Select the **Process** tab, and check the **Enable Sort/Filter in Match?** option.
13. Click **OK** and close the job, saving changes when prompted.
14. Run the job from Director with the appropriate run profile and no run label to regenerate the data.

Note: In order to generate Match Review data, you must run jobs without a run label.

Matches can be reviewed as follows:

1. On the Launchpad page, click **Match Review** icon.

Note : If this application is not visible then you will need to publish it via the launchpad server configuration pages.

2. Login as a user with the appropriate security permissions (for example, a user that is a member of the group selected in step 5).
3. Select **Match - Individual** in the **Reviews** list in the left-hand panel to view the Match Review statistics.
4. Click the **Launch Review Application** link to start reviewing matches for the selected Review.

4 Modifying Reference Data Used in Matching

This section explains how you can modify your data to improve matching and provides examples to aid you.

4.1 Stripping Words/Phrases from Name Fields

It is possible to customize the system to strip certain words and phrases from names that are deemed to be noise and/or add little information, and therefore may lead to potential missed matches.

4.1.1 Example: Removing Noise from Individual Names

Name fields in customer data systems are often overfilled with additional (non-name) information, either because there are no other suitable fields available or due to errors made by Data Entry users. Common examples include "Fred SMITH (DO NOT CALL)" and "John DOE (DECEASED)". This extraneous information can be removed during name standardization when a "distilled" name is created for use in matching.

Use the following procedure:

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS - **Initialize Reference Data** project open the **Strip List – Titles Latin** Reference Data.
3. Add the following rows to the Reference Data set:
 - DO NOT CALL
 - DECEASED
4. Click **OK** to close the dialog.
5. Re-run the **MAIN Initialize Reference Data** job from the Server Console to re-prepare the Reference Data files that are used by the Matching services.

Note : The Real-Time services will use the modified Reference Data sets the next time the full **Real-time START ALL** job (which re-snapshots the prepared Reference Data from files) is run.

To remove words and phrases from individual names in non-Latin scripts use the reference data **Strip List – Individual Script Strip List** Reference Data . This Reference Data set is used as a replacement map and should have a blank value in the second column.

4.1.2 Example: Removing Noise from Entity Names

Noise words/phrases or common business words (including suffixes) in Entity names that add little value in matching can be removed during name standardization when a "distilled" name is created. An example of such a noise word is "International", which is often found in organization name fields.

Due to the high frequency of occurrence of this term it is often omitted or shortened when entering the name, which may lead to potential matches being missed. Therefore it may be more appropriate to remove the term and all known variants for the purposes of matching.

1. Ensure that no jobs are currently running.
2. In the EDQ-CDS - **Initialize Reference Data** project open the **Strip List – Entity Latin** Reference Data.
3. Add the following rows to the Reference Data set:
 - INTERNTL

- INTL
 - INT
4. Click **OK** to close the dialog.
 5. Re-run the **MAIN Initialize Reference Data** job from the Server Console to prepare the data.

To remove words and phrases from entity names in non-Latin scripts use the **Strip List – Entity Script Suffixes** Reference Data.

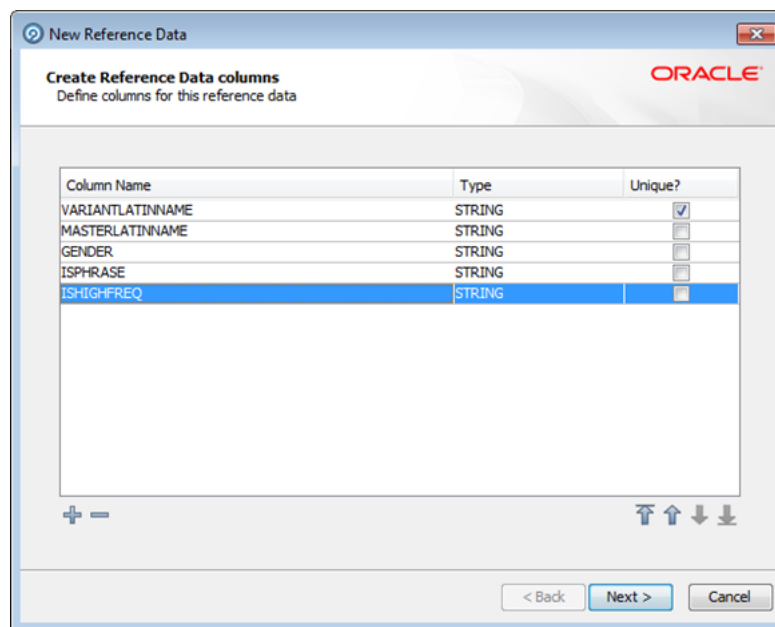
4.2 Changing Name Standardization

EDQ-CDS uses a name standardization technique in order to match name variants. It is supplied with a large collection of common name variants for various language domains. It is possible to customize these lists.

Note : If a name standardization is changed or added, the subsequent results may be eliminated during Conflict Resolution. For further details, see [Section 4.3, "Conflict Resolution"](#).

4.2.1 Example: Adding Individual Name Standardizations

1. Ensure that no jobs are currently running.
2. In the **EDQ-CDS - Initialize Reference Data** project create a new Reference Data set with columns as in the following:



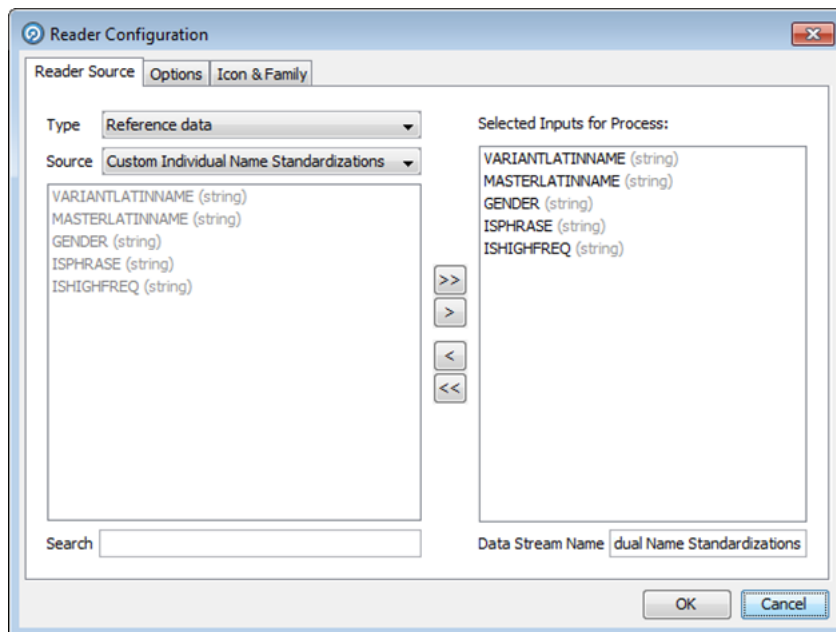
3. Click **Next** through the **New Reference Data** wizard and name it **Custom Individual Name Standardizations**.
4. Click **Finish** to close the dialog.
5. The **Reference Data Editor** dialog will open. Add the required name standardizations, where:
 - VARIANTLATINNAME is the name to be standardized.

- MASTERLATINNAME is the standardized version of variant name.
- GENDER takes the value M for male, F for Female, or U for unknown or ambiguous.
- ISPHRASE takes the value N for single token names and Y for multi-token names containing whitespace.
- ISHIGHFREQ is set to Y.

Note : It is important to ensure that data is entered in upper case and that variant names only have a single master across all language domains.

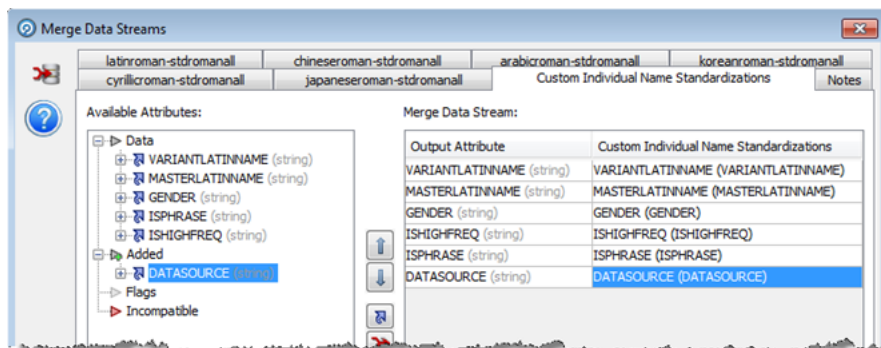
VARIANTLA...	MASTERLAT...	GENDER	ISPHRASE	ISHIGHFREQ	Comn
MILIO	EMIL	M	N	Y	
ILIO	EMIL	M	N	Y	

6. Click **OK** to close the dialog.
7. Open the **[D] Initialise Individual Latin to Latin Data** process.
8. Add a **Reader** process to the Process Canvas and configure it to use the **Custom Individual Name Standardizations** Reference Data as the source, selecting all attributes for input to the process.



9. Add a new **Add String Attribute** processor to the process canvas and connect the reader to the new processor. In the processor configuration dialog rename the new attribute **DATASOURCE** and set the attribute value to **CUSTOM**.

10. Connect the output of the **Add String Attribute** processor to the **Merge Data Streams** processor.
11. In the **Custom Individual Name Standardizations** tab of the **Processor Configuration** dialog associate the Available Attributes with the Output Attributes in the **Merged Data Stream** area:



12. Click **OK** to close the dialog.
13. Close the process and save the configuration changes.
14. Re-run the **MAIN Initialize Reference Data** job from the Server Console to prepare the data.

4.3 Conflict Resolution

Conflict resolution is performed to resolve issues arising when name standardization rules try to standardize names to more than one Master name. For example, if there is a rule that maps "Jon" to a Master of "John" and another that maps "Jon" to "John-Boy", there is a conflict. This conflict is resolved by assessing the importance of each Master name in the given standardization data. The best candidate is then selected as the primary Master, and other standardization maps conflicting with it are removed and quarantined.

As part of conflict resolution, each removed record is assigned one or more Reason Codes explaining why it is in conflict. These codes are displayed in the **REASON** column in the Server Console **Results** window:

VARIANTLATINNAME	MASTERLATINNAME	GENDER	ISPHRASE	ISHIGHFREQ	ORIGIN	REASON
TONGSIN	TONGXIN	U	N	Y	ZHO	PVOM
NOZOMU	KAN	M	N	N	ARA JPN KOR	PVOM PVIM
TUNGYU	TONGYOU	U	N	Y	ZHO	PVOM
FACHI	FIQHI	U	N	N	ARA	PVOM
TUNGYU	TONGYU	U	N	Y	ZHO	PVOM
TOYOCA	TOYOKA	F	N	Y	JPN	PVOM PVIM
TOUSHI	EI	F	N	Y	JPN	PVIM
TOUSI	EI	F	N	Y	JPN	PVIM
UTA	EI	F	N	Y	JPN	PVIM
UTSUCHI	EI	F	N	Y	JPN	PVIM
UTSURI	EI	F	N	Y	JPN	PVIM

The Reason Codes are as follows:

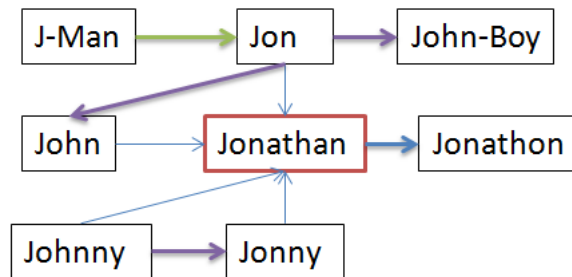
- **PIV**: The Primary record of a cluster of records (for example, the best Master identified for a set of equivalences) is also present as a variant to other Masters. All the instances where this Primary name is a variant are removed.

- **PVOM:** The records that are variants of the current Primary are also variants of other Masters. All the records for these variants pointing to other Masters are removed.
- **PVIM:** The records that are variants of the current Primary are also Masters to other variants. All the records where this variant is a Master are removed.
- **PIVCUTOFF:** Whereas the other removals take place after identification of Primary clusters, there comes a time where it is not efficient to continue to identify the Primaries, and the remaining records where the Master name also exists as a variant have all the variant versions removed in a final cull of records that violate integrity.



Expanding on the simple example given at the beginning of this section, let us assume that there are the following name standardization rules:



Master	Primary
J-MAN	JON
JOHN	JONATHAN
JOHNNY	JONNY
JON	JOHN
JON	JONATHAN
JON	JOHN-BOY
JONNY	JONATHAN
JONATHAN	JONATHON
JOHNNY	JONATHAN

These rules contain a number of inherent conflicts. This is illustrated in the following diagram in which JONATHAN is identified as the Primary:

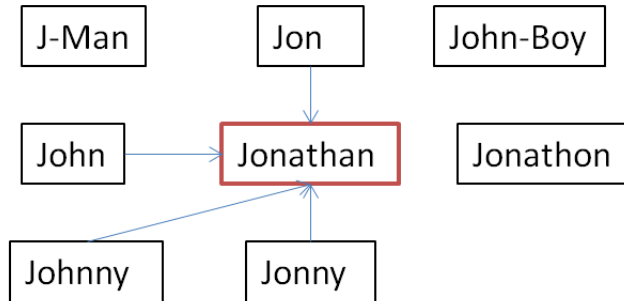


The arrows indicate the following:

Arrow Type	Reason for Conflict
	N/A (No conflict exists)
	PIV

Arrow Type	Reason for Conflict
	PVIM
	PVOM

The conflict resolution rules will discard the mappings that cause conflicts, as follows:



Resulting in the following mappings being created:

Name	Primary
JOHN	JONATHAN
JON	JONATHAN
JONNY	JONATHAN
JOHNNY	JONATHAN

5 Related Documents

For more information, see the following documents in the Oracle Enterprise Data Quality documentation set:

- *Oracle Enterprise Data Quality Release Notes*
- *Oracle Enterprise Data Quality Installation Guide*
- *Oracle Enterprise Data Quality Architecture Guide*
- *Oracle Enterprise Data Quality Siebel Connector Installation Guide*
- *Oracle Enterprise Data Quality Customer Data Services Pack Installation Guide*
- *Oracle Enterprise Data Quality Customer Data Services Pack Siebel Integration Guide*
- *Oracle Enterprise Data Quality Customer Data Services Pack Matching Guide*
- *Oracle Enterprise Data Quality Customer Data Services Pack Data Quality Health Check Guide*
- *Oracle Enterprise Data Quality Customer Data Services Pack Customization Guide*
- *Oracle Enterprise Data Quality Customer Data Services Pack Business Services Guide*

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