

QuickStart Guide 5 - Data Consolidation

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This document provides an overview and Step-by-Step implementation instructions for the clearMDM Reparenting and Custom Rollup MDM operations.

The document Appendices also provide additional reference materials.

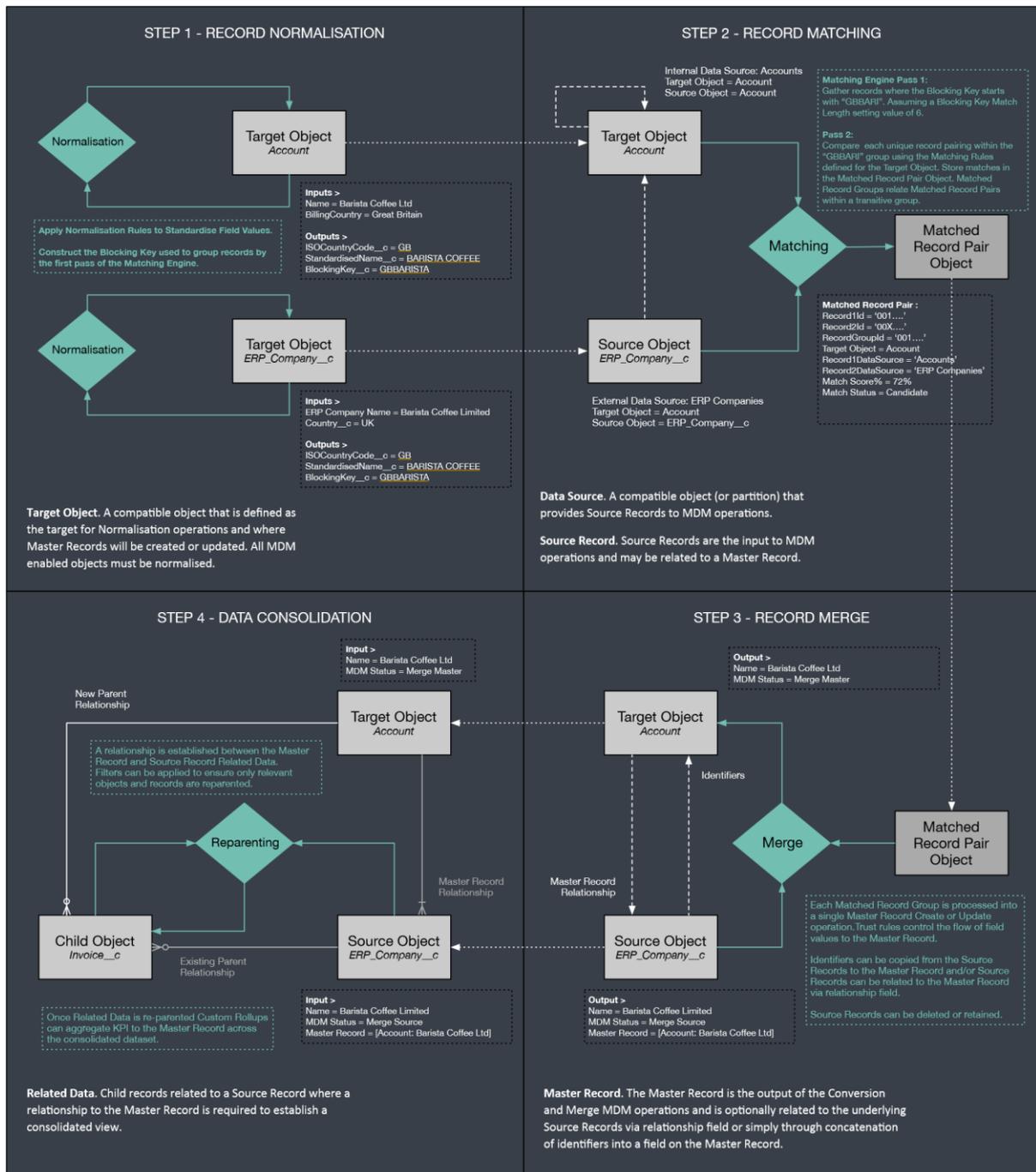
For practitioner guidance in respect to the implementation of clearMDM please refer to the Implementation Model documentation provided on the website, or upon request.

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MDM Process Overview

The diagram below provides an overview of the core MDM operations in sequence. This document relates to STEP4 – DATA CONSOLIDATION.



Data Consolidation Introduction

Definition

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Data Consolidation follows-on from the matching and merging of duplicate records and is tasked with relating child records (Invoices, Purchase Transactions, Open Opportunities, Active Cases, Tasks etc.) at the Source Record level to the parent Master Record. In creating such relationships a complete (consolidated) view of all data-points is established at the Master Record level – that spans all related duplicates (i.e. the Source Records). The consolidated data-set is often referred to as the 360° view and provides unique insight into Customer or Supplier activity (for example) that spans external system or internal department boundaries. The 360° view provides a basis for accurate segmentation and personalisation strategies in the marketing or operational (service and sales) contexts.

The **Reparenting MDM operation** enables selective reparenting of Child Records from Source Record to Master Record.

The **Custom Rollup MDM operation** enables calculation of Key Performance Indicators (KPI) across the consolidated data set. Custom Rollups are similar to Rollup Summary Fields, but support lookup relationship and provide text concatenation functionality.

Note, Data Consolidation requires that a persistent relationship is established between Master Record and Source Record by the Merge MDM operation and that Source Records are retained until Data Consolidation related activities are completed.

For further information in relation to the MDM Merge operation (and related concepts) please refer to the document clearMDM – QuickStart Guide 4 – Merge.

Key Concepts

Concept	Definition
Target Objects	<p>A compatible object that is defined as the target for Matching and Merge operations and where Master Records will be created or updated. Account, Contact, Lead Standard Objects are typically configured as Target Objects, where duplicate records may exist directly in the object or indirectly in a separate object.</p> <p>A broad range of Standard Objects (including Person Accounts) are supported as both Target Objects and Data Sources. Custom Objects are also supported.</p>
Data Sources	<p>A compatible object that provides data to MDM operations. Each Data Source has a Source Object and a Target Object setting.</p> <p>Internal Data Sources expose data held in the Target Object. Data Source (Account) > Target Object (Account)</p> <p>External Data Sources expose data held in a different object. Data Source (ERP Companies) > Target Object (Account)</p>

	<p>Partition Data Sources enable a single object to support multiple Data Sources with distinct settings. Partition Data Sources are typically used to group records relating to an external system (e.g. SAP, Sage X3) or to isolate records at different quality grades (e.g. High, Medium and Low).</p> <p>Master Record Data Sources allow Master Records to be exposed to MDM operations via a distinct Data Source with appropriate settings such as elevated merge field priorities. A Master Record Partition data source is implemented as a partition data source that references the record MDM status value.</p>
Master Records	<p>The Master Record is the output of MDM processing and is optionally related to the underlying Source Records (or duplicates) via relationship field or simply through the concatenation of record identifiers into a field on the Master Record.</p> <p>Most typically a Master Record is a de-duplicated Account, Person Account, Contact or Lead record enriched with data from its related Source Records.</p> <p>Where Source Records (or duplicates) are not removed, it is typical to use the Salesforce sharing model to present Salesforce end-users with access to Master Records only – thereby removing the visibility of duplicates.</p> <p>clearMDM implements a custom merge engine that works across object boundaries and can create as well as update Master Records.</p>
Source Records	<p>Source Records are the input to MDM operations and may be related to a Master Record. Source Records can be retained or deleted. Source Records can be considered as the underlying duplicates that are often hidden from view for Salesforce end-users or deleted entirely once processed.</p>
Settings	<p>Data Consolidation is configured per Target Object on the Target Object Settings page and also at the Data Source level on the Data Source settings page.</p> <p>A setting-by-setting definition for the Data Consolidation Settings is provided in the appendices - Appendix A.</p>

<p>Reparenting State</p>	<p>A given record is either exposed to the Reparenting operation or not.</p> <p>The [Is Active for Reparenting?] field (record-level flag) is typically configured to express this key activation state value.</p> <p>The Merge and Synchronisation MDM operations will set this flag to true when Source Records are processed. The Reparenting MDM operation will set the flag to false on completion via the Reparenting Reset job.</p> <p>Where child records modifications occur independently of the parent Source Record the flag must be set from a Process Builder Process (or other means) defined on the child object.</p>
	<p>For example, when a new invoice record is created (via external system data integration task) the parent Source Record should have the [Is Active for Reparenting?] flag set to true to allow the Reparenting MDM operation to create a relationship to the Master Record.</p>
<p>Reparenting Rules</p>	<p>Reparenting Rules are configured per Data Source and specify the Child Object Relationship that will be re-parented plus the name of the field on the child object into which the Master Record Id will be populated.</p> <p>For Internal Data Sources (where Source Records and Master Record are the same SObjectType), the Master Record Id replaces the Source Record Id as the parent record in the standard field (e.g. AccountId). For this reason, it is imperative that such fields have Field History Tracking enabled – to allow for traceability and reversion at a later stage.</p> <p>For External Data Sources (where Source Records and Master Record are not the same SObjectType), the Master Record Id is placed in a specific lookup field related to the Target Object SObjectType. In such a model the existing Source Record relationship is retained and the child record has 2 parent relationships.</p> <p>Note, Master Detail relationships will be displayed only where the relationship Custom Field is configured to allow reparenting.</p>

<p>Data Consolidation Algorithm</p>	<p>Step 1: Reparenting MDM Operation</p> <ul style="list-style-type: none"> • Gather unique Child Object Relationships across the Data Sources configured for the Target Object. • For each Child Object Relationship gather Child Records where the parent Source Record has [Is Active for Reparenting?]=True. <ul style="list-style-type: none"> ○ For External Data Sources; if the field specified for the Master Record Id does not contain the correct Master Record Id then update the field to the Master Record Id for the Source Record. ○ For Internal Data Sources; update the parent Id field to the Master Record Id for the Source Record. <p>Step 2: Custom Rollup MDM Operation</p> <ul style="list-style-type: none"> • For each active Custom Rollup setting gather child records and group by parent Master Record. • For each grouping apply the required calculation and update the specified Target Field with the output.
<p>Reparenting Filters</p>	<p>Reparenting Filters apply logical conditions to the selection of Child Records for reparenting. Such conditions are typically used to avoid over-populating the Master Record with relationships to redundant (or obsolete) data.</p> <p>Standard Reparenting Filters are applied to Task (Open only) and Event (future dated). Custom Reparenting Filters or changes to the standard filters can be requested via clearMDM support (support@clearmdm.com).</p>
<p>Selective Reparenting – Manual Merge</p>	<p>The Reparenting MDM operation processes all Source Records that are active for reparenting. Where manual merge takes place there may be the requirement to immediately apply reparenting to the merged Matched Record Group such that the Master Record is fully populated without waiting for the next full reparenting operation.</p> <p>The Merge page supports automated invocation of the Reparenting MDM operation in selective mode.</p> <p>Note, the Custom Setting [Manual Merge Settings] controls whether the option to invoke the MDM Reparenting operation option is visible and its default state. This approach allows some user populations to be given the option whilst for others the option is not displayed and reparenting runs automatically following every manual merge.</p>

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MDM Reset	<p>When the MDM Reset functionality is invoked to a Matched Record pair which also has Reparenting values (e.g. Transactions), then the reparenting Processor will be triggered. This will not only reset the MDM status, but it will also disconnect the reparenting relationship and return the 'Transactions' to the Merge Source record.</p> <p>If the records are subsequently Matched and Merged again, the Reparenting process will update the Master Record with the 'Transactions' as previously done before the MDM Reset was invoked.</p>

Data Consolidation Methods

The table below outlines the supported methods for invocation of the Reparenting and Custom Rollup MDM Operation. Setting references refer to the Target Object Reparenting settings.

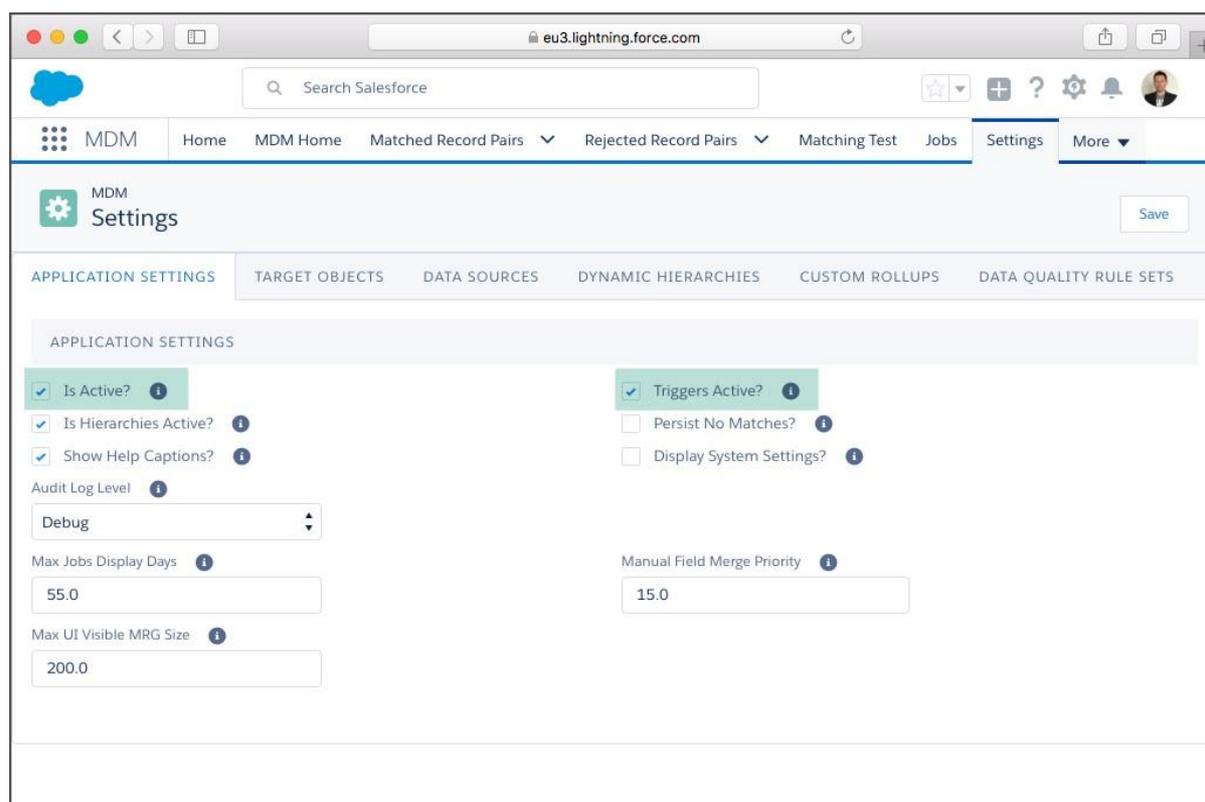
Method	Definition
Batch Job	<p>The clearMDM Jobs page can be used to schedule the MDM operations to run for a given Target Object immediately or on a scheduled basis.</p> <p>Where a daily batch processing model is implemented for MDM processing, the Data Consolidation MDM operations will typically be the final jobs in the sequence.</p>
Action	<p>Records can be Re-parented by Process Builder as part of a custom process automation. Note, Selective Reparenting is applied.</p> <p>To configure a Process Builder Action for this purpose, add an Action with properties set as below.</p> <ol style="list-style-type: none"> 1. Action Type = Apex 2. Apex Class = "Reparent Records Action" 3. Record ID parameter = Reference [Object Id field]. <p>The Action can also be implemented within a Visual Workflow (or Flow).</p>
UI	<p>Selective Reparenting is invoked from the Merge page – as described below.</p> <p>Record Merge can be applied manually via the Merge page accessible from the Matched Record Group page or from the MDM Reset and Matching Test features.</p> <p>Merge</p> <p>The Merge page supports the following functions:</p> <ol style="list-style-type: none"> 1. Selection of the Master Record for the group. 2. Selection of Master Record field values. 3. Automated invocation of the Reparenting MDM operation. <p>Note, the Custom Setting [Manual Merge Settings] controls whether the option to invoke the MDM Reparenting operation option is visible and its default state. This approach allows some user populations to be given the option whilst for others the option is not displayed and reparenting runs automatically following every manual merge.</p> <p>Note, a Reparenting MDM operation invoked from the manual Merge page processed just the Matched Record Group that has been merged. The Batch Job type is set to "Reparenting Selective".</p>

Step 1 Configure Application Settings

Pre-requisite: clearMDM must be set to Active via the Application Settings page.

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To complete this step, first navigate to the MDM App, open the Settings tab, tick the two fields highlighted below and click the Save button.

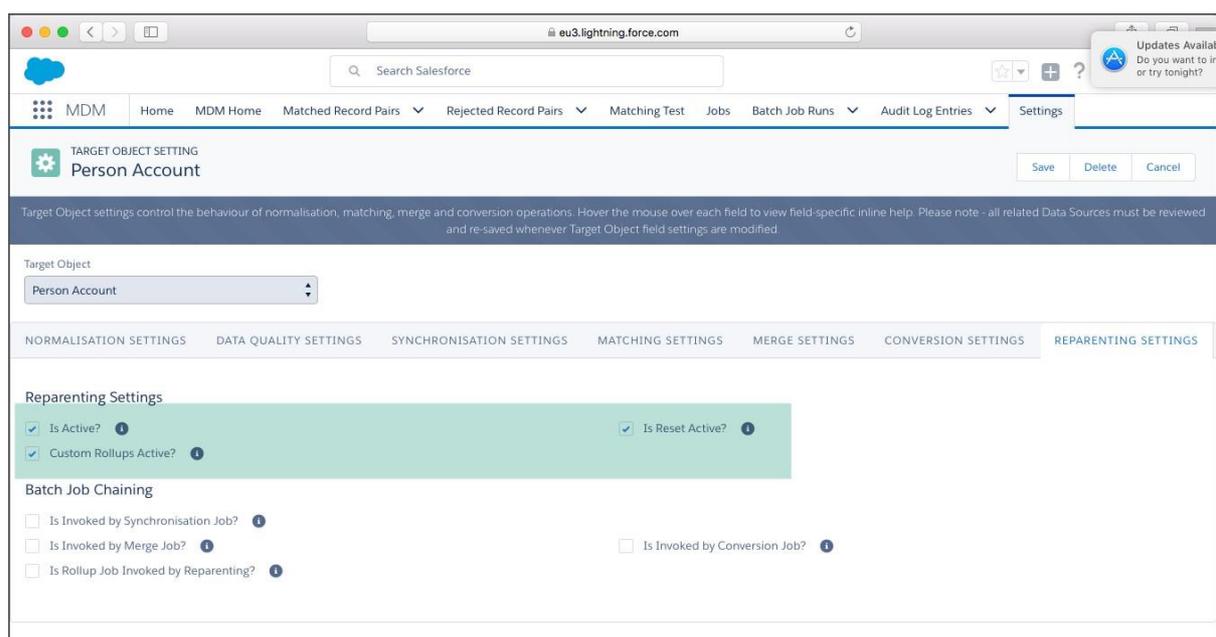


Step 2 Activate the Target Object for Data Consolidation

To complete this step, first navigate to the MDM App, open the Settings tab, select the Target Objects tab and click the Edit link next to the required Target Object. Note, for Lightning Experience the Edit menu is accessible via the Dropdown menu in the rightmost table column.

Next, set the [Is Active?], [Custom Rollups Active?] and [Is Reset Active?] flags equal to true in the Reparenting Settings section (or Reparenting Settings tab in Lightning Experience) and ensure the relevant settings are configured correctly.

[Appendix A](#) provides a Settings reference.

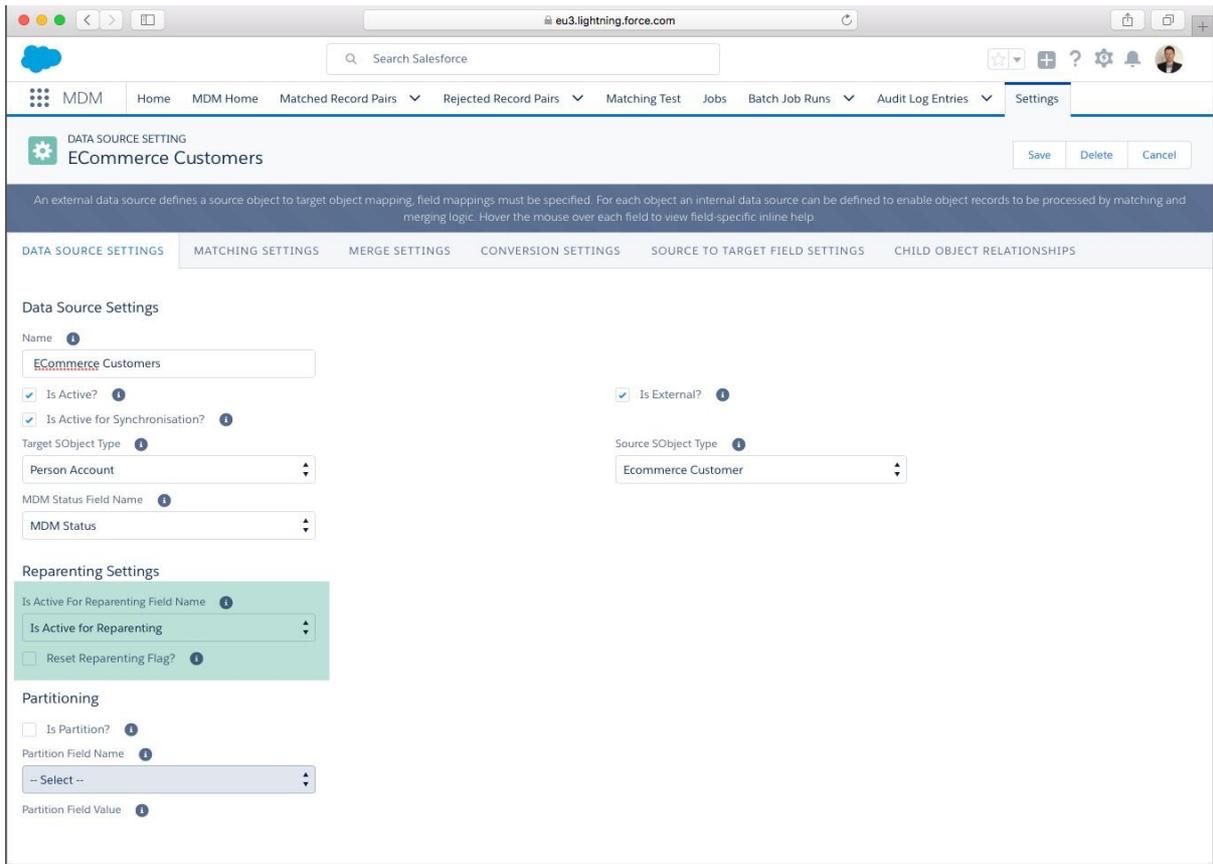


Step 3 Activate the Data Source for Data Consolidation

To complete this step, first navigate to the MDM App, open the Settings tab, select the Data Sources tab and click the Edit link next to the required Data Source. Note, for Lightning Experience the Edit menu is accessible via the Dropdown menu in the rightmost table column.

Next, set the [Is Active for Reparenting Field Name] setting in the Data Source Settings sections (or tab in Lightning Experience) and ensure the relevant settings are configured correctly.

[Appendix A](#) provides a Settings reference.

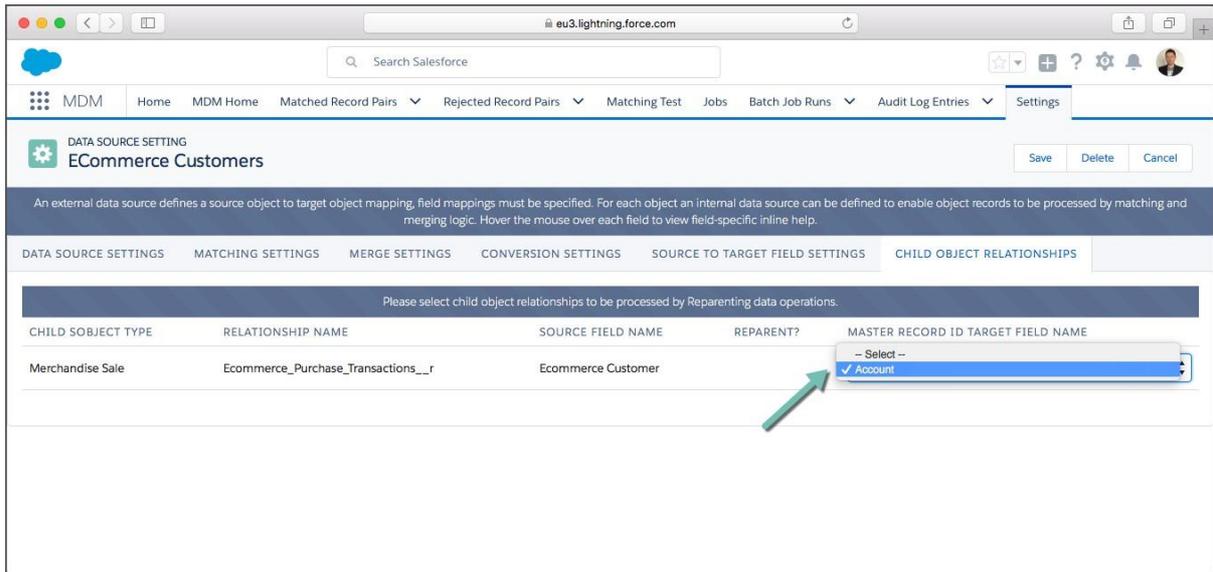


Step 4 Configure Reparenting Rules

To complete this step, first navigate to the MDM App, open the Settings tab, select the Data Sources tab and click the Edit link next to the required Data Source. Note, for Lightning Experience the Edit menu is accessible via the Dropdown menu in the rightmost table column. On the Data Source settings page navigate to the “Child Object Relationships” page section or click the tab in Lightning Experience.

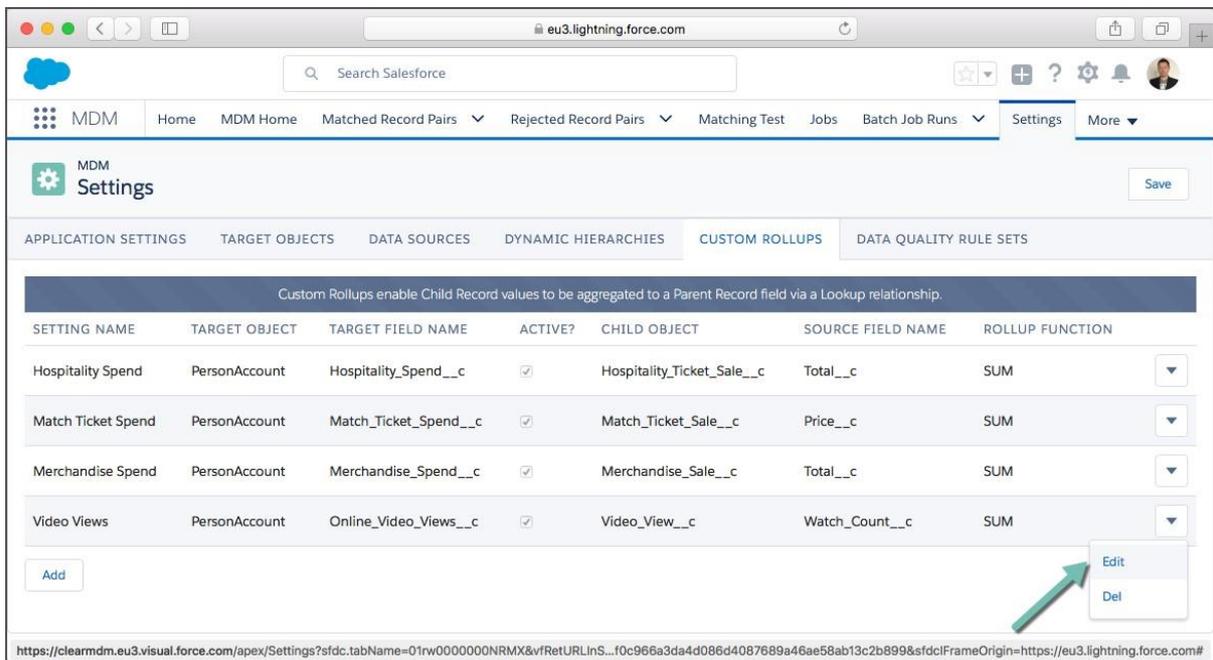
Next, either click the [Reparent?] checkbox or select the [Master Record Id Target Field Name] option to enable the Child Object Relationship.

Finally click the Save button.



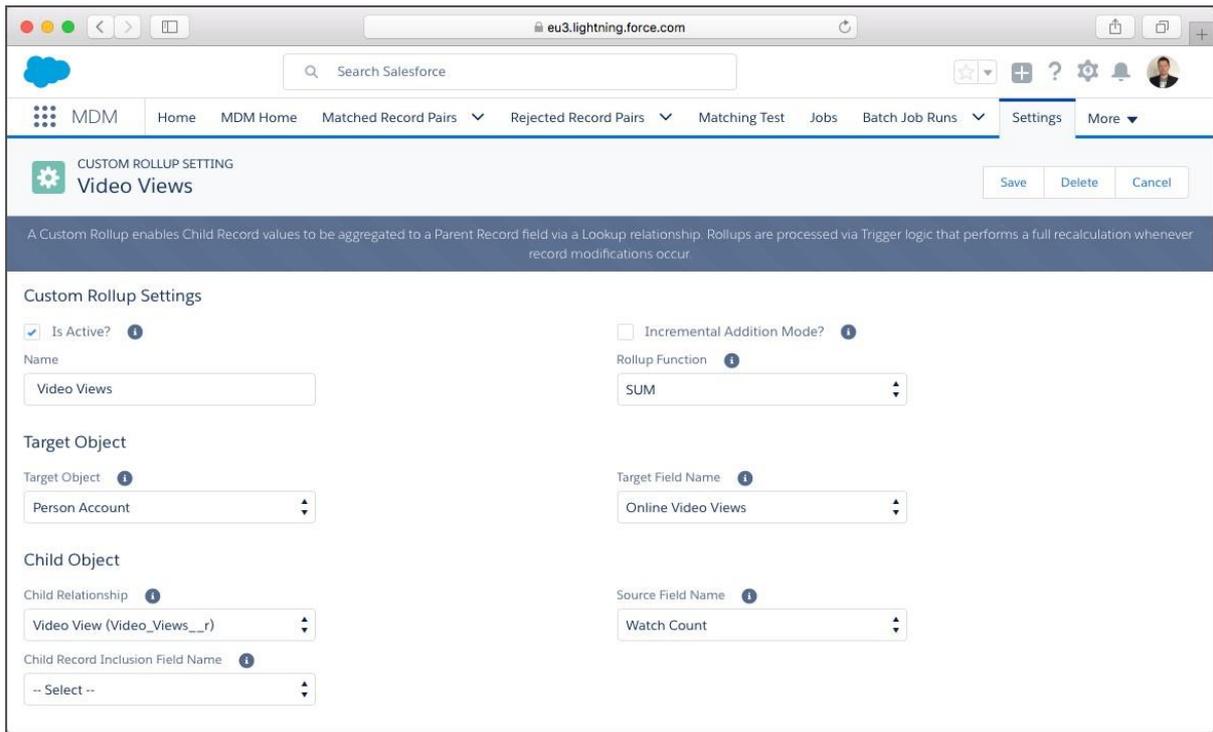
Step 5 Configure a Custom Rollup Setting

To complete this step, first navigate to the MDM App, open the Settings tab, select the Custom Rollups tab and click the Add button or link.



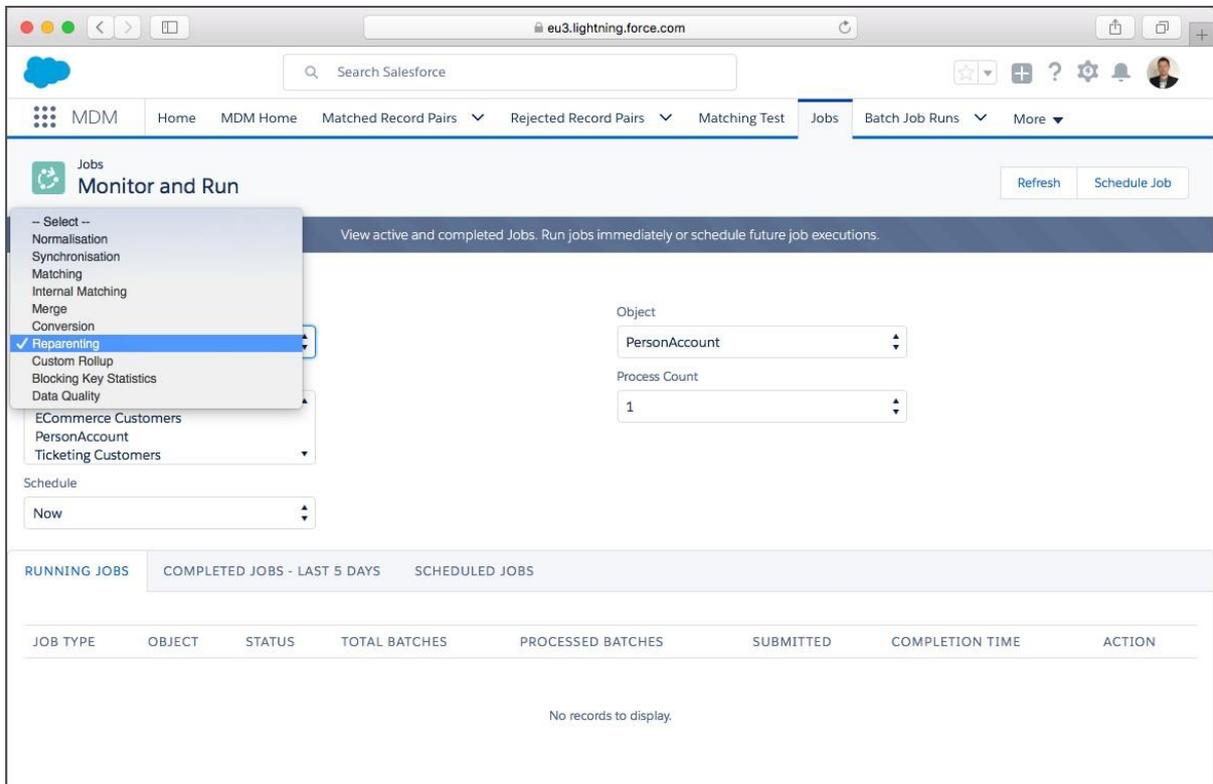
Next, on the Custom Rollup settings page populate the settings as required. [Appendix A](#) provides a Settings reference.

Finally click the Save button.



Step 6 Run the Reparenting Job

To complete this step, first navigate to the MDM App, open the Jobs tab, select the Reparenting Job type and the required Target Object. Finally select the required Job Schedule and click the “Schedule Job” button.



Note, the Custom Rollup job is typically invoked by Reparenting jobs but can run independently.

Step 7 View Data Consolidation Results

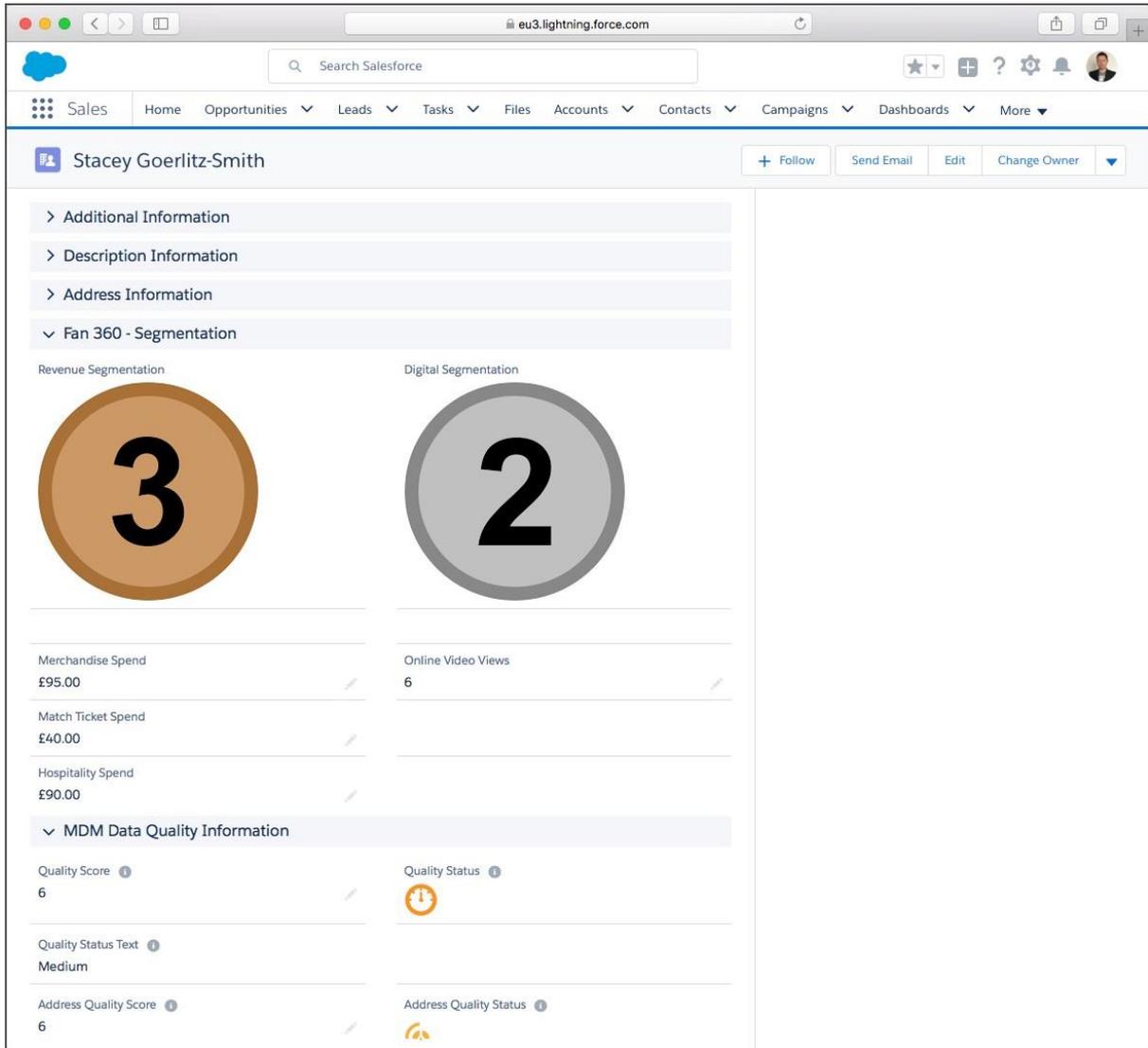
The screenshots below show the outputs of Data Consolidation displayed on an example record. Placement of MDM fields on layouts for administrators, data stewards and end-users is a key implementation decision.

In the example below the Match Ticket Sales and Merchandise Sales have been re-parented to the Master Record Person Account.

The screenshot displays a Salesforce Person Account record for Stacey Goerlitz-Smith. The record is owned by Mark C... and includes contact information such as phone and email. The 'RELATED' section shows four data consolidation results:

- Ticketing Customers (1):** A table with columns FAN ID, FIRST NAME, LAST NAME, and EMAIL. One record is shown: FAN-9999, Stacey, Goerlitz, stacey.goerlitz@goerlitz.co.uk.
- Match Ticket Sales (2):** A table with columns MATCH DAY TICKET NO, SEASON, FIXTURE, and ZONE. Two records are shown: TICKET0001 and TICKET0002, both for the 2016-2017 season at Everton v Crystal Palace in Zone A.
- Ecommerce Customers (1):** A table with columns ECOMMERCE CUSTOMER ID, FIRST NAME, LAST NAME, and EMAIL. One record is shown: E0000\1800, Stacie, Goerlitz, stacey.goerlitz@goerlitz.co.uk.
- Merchandise Sales (2):** A table with columns MERCHANDISE SALE NO, MERCHANDISE ITEM, TOTAL, and PURCHASE DATE. Two records are shown: TX-4474 (Away Shirt 2016 Season, £80.00) and TX-4475 (Club Scarf 2016 Season, £15.00), both purchased on 09/09/2016.

The 'ACTIVITY' and 'CHATTER' sections on the right show no next steps or past activity.



In the example above the consolidated data has been aggregated to calculate cross-channel Revenue Spend and Digital Engagement KPI.

Appendix A – Data Consolidation Settings Reference

Target Object Reparenting Settings are configured on the Target Object settings page.

Setting	Definition
Is Active?	If set to False the Target Object will be excluded from all Reparenting MDM operations.
Is Recently Modified?	If set to True , Source Records are processed by the Reparenting Job only if the LastModifiedDate is within the date range set by the Application Setting (Recent Days Limit).
Is Reset Active?	If set to True then Reparenting jobs will invoke a Reparenting Reset job for the same Target Object upon completion. The Reparenting reset job will set the [Is Active for Reparenting?] flag equal to false on all Source Records for the Target Object.

Custom Rollups Active?	If set to True then the Target Object is available for selection when defining a Custom Rollup setting. If set to False the Target Object will be excluded from all Custom Rollup MDM operations.
Is Invoked by Synchronisation Job?	If set to True then Synchronisation jobs will invoke a Reparenting job for the same Target Object upon completion.
Is Invoked by Merge Job?	If set to True then Merge jobs will invoke a Reparenting job for the same Target Object upon completion.
Is Invoked by Conversion Job?	If set to True then Conversion jobs will invoke a Reparenting job for the same Target Object upon completion.
Is Rollup Job Invoked by Reparenting?	If set to True then Reparenting jobs will invoke a Custom Rollup job for the same Target Object upon completion.

Data Source Settings are configured on the Data Source settings page.

Setting	Definition
Data Source Reparenting Settings	
Is Active for Reparenting Field Name?	A checkbox field on the Source Object that is populated with a true value when a record should be exposed to the Reparenting MDM operation. This is typically set by the Merge or Synchronisation MDM operations.
Reset Reparenting Flag?	If set to True then the Matching MDM operation will set the [Is Active for Reparenting?] flag equal to false.
Data Source Child Object Relationship Settings	
Child SObjectType	The name of the Child Object on which the relationship is defined.
Relationship Name	The name of the Child Object Relationship.
Source Field Name	The name of the Child Object Field on which the relationship is defined (Lookup or Master Detail). Note, Master Detail relationships only appear if the underlying field is configured to allow reparenting.
Reparent?	If set to False then the Child Object Relationship will be skipped by the MDM Reparenting operation.
Master Record Id Target Field Name	The name of the Child Object Field into which the Master Record Id will be set.

Custom Rollup Settings are configured on the Custom Rollup settings page.

Setting	Definition
Is Active?	If set to False the Custom Setting will be excluded from all Custom Rollup MDM operations.

Incremental Addition Mode?	<p>For the SUM rollup function the system can track the creation date of the last child record processed and use this date as the starting point for the next operation. In such a model the newly calculated value is added to the previous value and the assumption is made that child records are not modified or deleted on the Salesforce platform.</p> <p>Incremental Addition Mode adds processing efficiency for larger data sets.</p>
Name	The unique name for the Custom Rollup, typically this describes the calculated output.
Rollup Function	The rollup function; SUM, AVG, MIN, MAX, COUNT and TEXT.
Target Object	The name of the Target Object where the Master Record exist that will be updated.
Target Field Name	A numeric or text field (function dependent) on the Target Object that will be updated with the calculated value.
Child Relationship	The Child Object Relationship which defines the records to use in calculating the outcome.
Source Field Name	The numeric or text field (function dependent) on the Child Object which provides the input to the calculation.
Child Record Inclusion Field Name	<p>A checkbox field on the Child Object that return True where the Child Record should be processed and false otherwise.</p> <p>This approach enables logical filter conditions as to which records are included to be encapsulated into a formula expression.</p> <p>For example the [Sales Current FY] would process only Sales Transactions for the current FY using a formula expression to determine inclusion.</p>

Appendix B – Troubleshooting

All clearMDM MDM operations log activity (Start and End times etc.) and errors to the Audit Log Entry object. The MDM application includes an **Audit Log Entry** tab to provide convenient access to this data. Each Audit Log Entry record is time-stamped and related to the parent Batch Job Run record: all MDM operations that run via the Job Method created a Batch Job Run record that records job statistics and status. Monitoring of the Audit Log should be a frequent activity performed by the Administrator or Data Steward responsible for the clearMDM implementation.

Best Practice: Salesforce Reporting Notifications provide a proactive means of reporting on errors generated by clearMDM operations. In this model a standard report is used to return data from the Audit Log Entry object where required conditions are met. Only when records meet the criteria is a report sent to the Administrator or Data Steward responsible.

Data Consolidation Log Types

CLEARMDM

Rule Type	Definition
Missing or Inactive Target Object Reparenting settings	This error can occur where the Target Object Reparenting settings are inactive, deleted or the Salesforce User does not have permissions to the object or fields referenced.