



PUBLIC

How-To Use the Upload Modes for Hierarchy Maintenance

Applicable Releases:

From MDG 9.2 and from S/4HANA 1809

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Document History

Document Version	Description
1.0	First official release of this guide (November 2023)

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1 Business Scenario

SAP Master Data Governance (MDG) provides business processes to find, create, change, and mark master data for deletion. It supports the governance of master data in a central hub and the distribution to connected operational and business intelligence systems.

The processes are workflow-driven and can include several approval and revision phases, and the collaboration of all users participating in the master data maintenance.

MDG offers change request (CR)-based processing of master data with integrated workflow, staging, approval, activation, and distribution.

This document describes the available upload modes for hierarchy maintenance, their differences and boundary conditions.

2 Introduction

2.1 Definitions

Node

A node is every individual element in the hierarchy. For the example hierarchy depicted in Figure 1 – Terminology the nodes are **CGH1**, **CG1**, **CG2**, **CG3**, **CC1**, **CC2**, **CG3**, **CC4** and **CC5**.

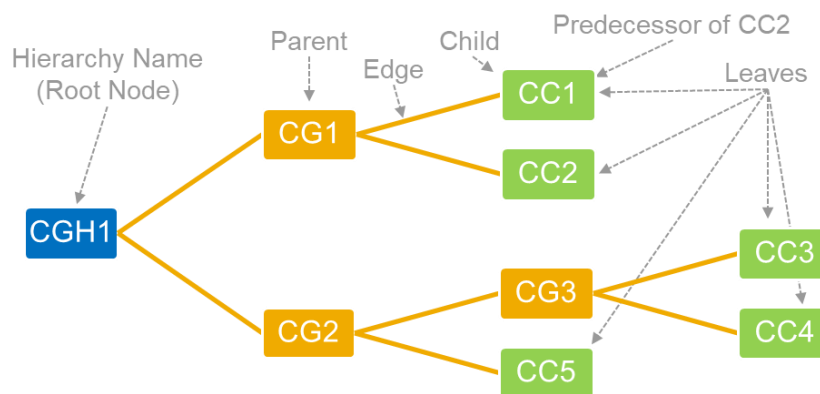


Figure 1 – Terminology

Hierarchy Name (Root Node)

The very top node of the hierarchy. It has no superordinate (parent). It is the origin of the hierarchy. There is exactly one such node for every hierarchy. Example from Figure 1 – Terminology: **CGH1** is the hierarchy name or root node.

Edge, Parent, Child

The link between two nodes in a hierarchy is called edge. The superordinate node is called parent. The subordinate node is called child. Examples from Figure 1: There is an edge between the node **CG1** and **CC1**. **CG1** is parent to **CC1**. **CC1** is child of **CG1**.

Leaf

A node which does not have any child is called leaf or leaf node. Examples from Figure 1: **CC1**, **CC2**, **CC3**, **CC4**, and **CC5** are leaves. In hierarchies in MDG Central Governance leaves might occur at any level of the hierarchy.

Predecessor

Given a non-leaf node with more than one child, the predecessor of a node is the sibling node (under the same parent node) which comes before this node in the sequence. Examples from Figure 1: CC1 is the predecessor of CC2. CG1 is the predecessor of CG2.

2.2 Hierarchy Types

Hierarchies in MDG Central Governance can have **versions** or could be **version independent**. A version dependent hierarchy allows for multiple hierarchy versions. They enable different views of the hierarchical dependencies. You define the required hierarchy versions in Customizing under *Master Data Governance, Central Governance > General Settings > Process Modeling > Hierarchies > Create Hierarchy Versions*.

Hierarchy Versions	
HierVers	Description (long text)
<input type="checkbox"/> 001	Version 1
<input type="checkbox"/> 002	Version 2
<input type="checkbox"/> ACT	Actual
<input type="checkbox"/> PLN	Planning

Figure 2 - Customizing: Hierarchy Versions

Moreover, hierarchies can be **(non-) synchronized**. In a synchronized hierarchy, the structure of the hierarchy's substructures is the same throughout. This means that when an entity of a certain entity type has one or more lower-level entities (in a specific order), this structure is used for all other hierarchies. In this case, you **cannot** define a different structure for the entity within the same hierarchy or in another hierarchy.

Both characteristics need to be defined for a hierarchy. For details refer to the documentation of data element **USMD_HRY**.

Version-dependence	Synchronization	
	Version-dependent & synchronized	Version-dependent & not synchronized
	Version-independent & synchronized	Version-independent & not synchronized

For synchronized hierarchies the edges are stored without a hierarchy name. This implies that the same edge can be present in multiple hierarchies. MDG for Financial data uses mostly synchronized hierarchies (examples: Cost Center Group (CCTRG), Profit Center Group (PCTRG), Cost Element Group (CELEMG)).

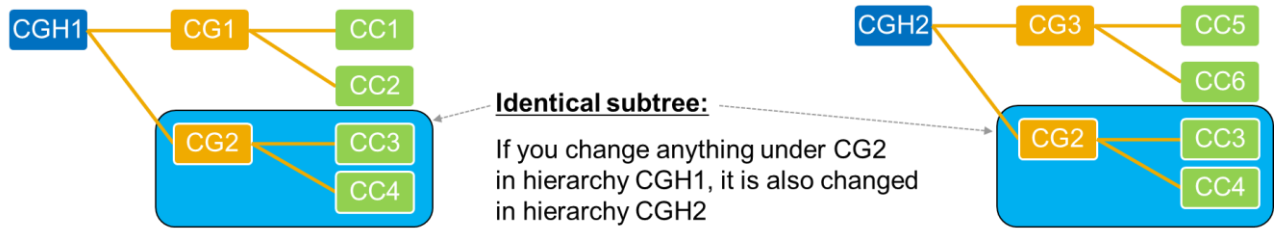


Figure 3 - Example of two synchronized hierarchies

3 Overview on upload modes for hierarchy maintenance

3.1 Delete All

The system deletes all edges in *all related* hierarchies. Which hierarchies are related to the edges that are specified in the upload file depend on if the hierarchy type is synchronized or non-synchronized.

Synchronized Hierarchies

The hierarchy's name is not stored with the edge. Moreover, the hierarchy's name is not required to be specified within the upload file. For example, in case there are five cost center hierarchies in controller area 0001 and one edge is uploaded in one of these hierarchies then all five hierarchies are completely deleted (all hierarchies in controlling area 0001).

Non-Synchronized Hierarchies

The hierarchy's name is stored with each edge, and it is also required to be specified in the upload file. The mode *Delete All* deletes all edges of the hierarchy specified in the upload file.

Note: It is not possible to remove only specific nodes or hierarchy parts from the hierarchy using this upload mode. For such removals it is required to use upload mode *Remove Edges* (see 3.5).

3.2 Overwrite or Add

Edges that are specified in the upload file which do not exist in the system are created. Existing edges are *not change or deleted*.

3.3 Move Children

When using upload mode *Move Children*, for each uploaded edge in the file, the system checks whether the child of that edge exists under different nodes within the *same hierarchy* and removes it from those. Then, this child is placed under the new parent as the *last* object.

For synchronized hierarchies, the hierarchy's name must be included in the file content. To prevent the unintended removal of occurrences of each child node in the uploaded file from hierarchies other than the one specified, only the existing occurrences of the specific nodes in the specified hierarchy are removed. Occurrences in other hierarchies remain untouched, but for synchronized hierarchies, other hierarchies may be affected.

In the subchapters special cases are explained in more detail. As the following hierarchies are used as baseline.

Synchronized Hierarchies

For synchronized hierarchies the context of profit center hierarchies / groups / centers is used. There are five profit center hierarchies HRY1 to HRY5. In HRY1 there are the profit center groups AMERICA, ASIA, EUROPE, and GERMANY. Assigned to these are the profit centers CANADA, TURKEY, INDIA, NORWAY, BW, BY and FRANCE. HRY1 and HRY2 have the exact same structure. HRY3's structure is similar but misses profit center groups ASIA. HRY4 contains profit center groups AUSTRALIA, with profit center NEWZEALAND assigned to it. HRY5 contains profit center groups ANTARCTIC, with the profit centers NEWZEALAND and NORWAY assigned. In addition, there is profit center group AFRICA as well as profit center SPAIN which are both unassigned. The assignments are shown in Figure 4.

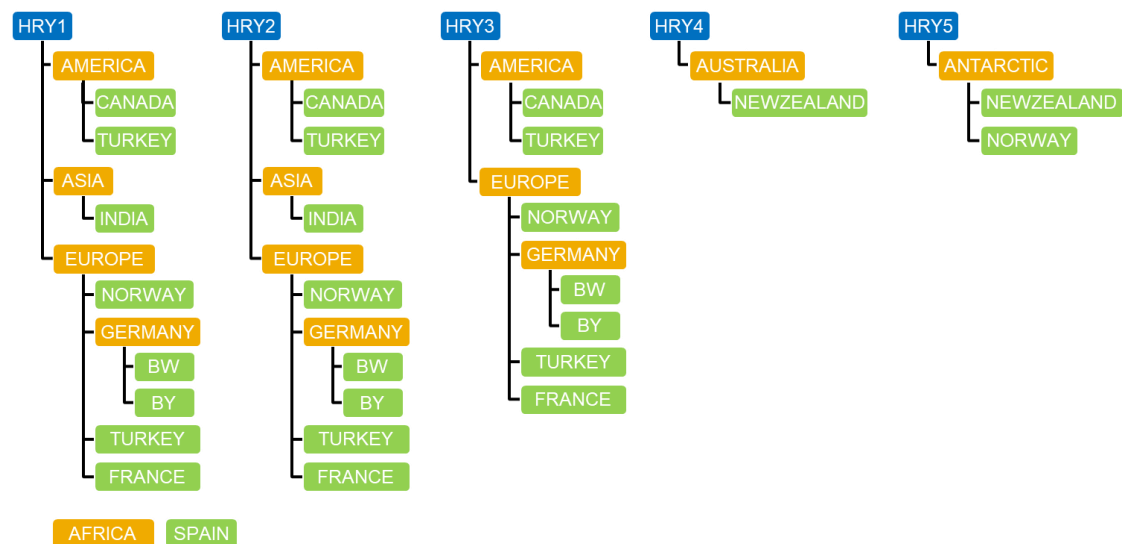


Figure 4 - Baseline for examples on synchronized hierarchies

Non-synchronized hierarchies

For non-synchronized the contact of financial reporting structure / item / account is used. There are five financial reporting structures (hierarchies) **FRS1** to **FRS5**. In **FRS1** there are the financial reporting structure items (in short 'item') **AMERICA**, **ASIA**, **EUROPE**, and **GERMANY**. Assigned to these are the **accounts** **CANADA** (10), **TURKEY** (20), **INDIA** (30), **NORWAY** (40), **BW** (50), **BY** (60) and **FRANCE** (70). **FRS1** and **FRS2** have the exact same structure. **FRS3**'s structure is similar but misses item **ASIA**. **FRS4** contains item **AUSTRALIA**, with account **NEWZEALAND** (80) assigned to it. **FRS5** contains items **ANTARCTIC**, with the accounts **NEWZEALAND** and **NORWAY** assigned. In addition, there is item **AFRICA** as well as account **SPAIN** which are both unassigned. The assignments are shown in Figure 5.

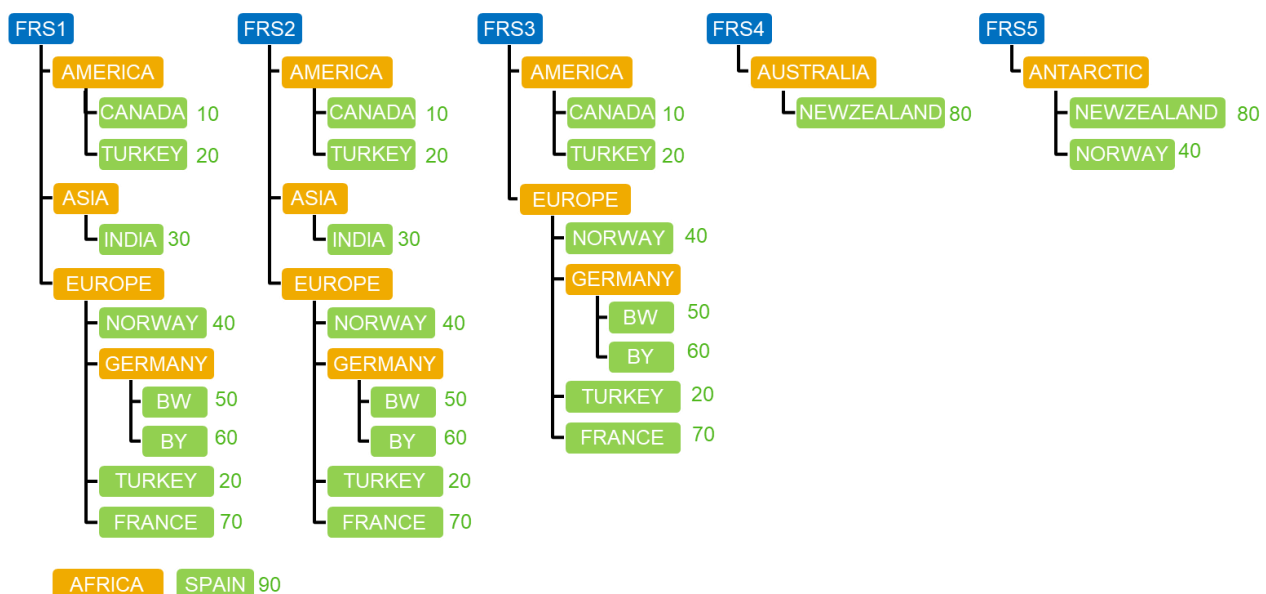


Figure 5 - Baseline for examples on non-synchronized hierarchies

3.3.1 Further important notes on the usage of these baselines (Acknowledge before proceeding!)

In the standard delivery there are settings in the customizing which typically hinder the application of the examples described in this document. To show the potential of the upload modes move children, replace nodes and remove edges the settings described in the following are changed. **These changes must not be**

applied in general. If you want to reproduce the examples shown in this document, you must not use a business-critical system. Instead use some 'playground' system and revert the settings after your tests.

In the IMG under Master Data Governance > Classic Mode in SAP MDG > Central Governance > Central Governance for Financials > Control of Validation Messages > Change Message Type for Validations the message type is set from **E** (error) to **W** (warning) for the following messages:

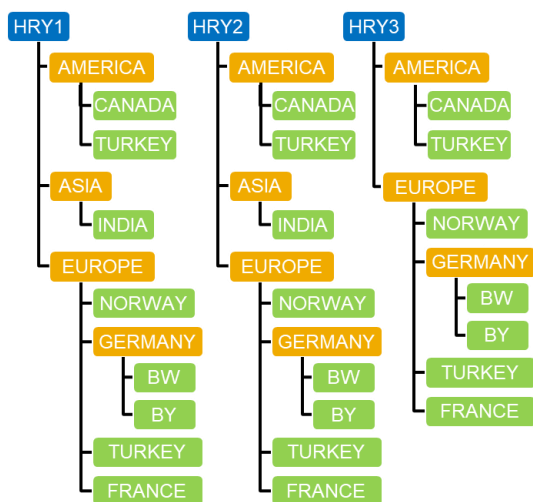
- **USMDZ3 – 219 – &1 &2 "&3" - Debit and credit indicator or contra item must be set**
- **USMDZ3 – 259 – &1 &2 Overlapping with fixed value &3 of financial statement item &4**
- **USMDZ3 – 266 – Profit center &3 is not part of the standard hierarchy &4**
- **USMDZ3 – 277 – &3 appears more than once in the hierarchy &4**

3.3.2 Move a node to another parent (and remove all occurrences of a node)

Synchronized Hierarchies

Use Case: Profit center **TURKEY** shall be moved to new parent profit center group **ASIA** and all occurrences of **TURKEY** shall be removed.

As is situation (relevant existing hierarchies):



Technically there are two relevant edges:

- Edge between **AMERICA** and **TURKEY** (occurs in **HRY1**, **HRY2**, and **HRY3**)
- Edge between **EUROPE** and **TURKEY** (occurs in **HRY1**, **HRY2**, and **HRY3**)

File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Controlling Area
- Profit Center Hierarchy

Data Row

- Higher-level Node
 - o Profit Center Group
- Lower-level Node
 - o Profit Center

As described at the beginning of chapter 3.3 the hierarchy's name (= the profit center group hierarchy) must be included in the file. In this example this is done as part of the header. Since **NEWZEALAND** shall be added to a profit center group (= the new parent), the higher-level node must contain this entity type (profit center group). Because the moved (added) node is a profit center, the lower-level node (= the node to move) contains entity type *profit center*.

File content:

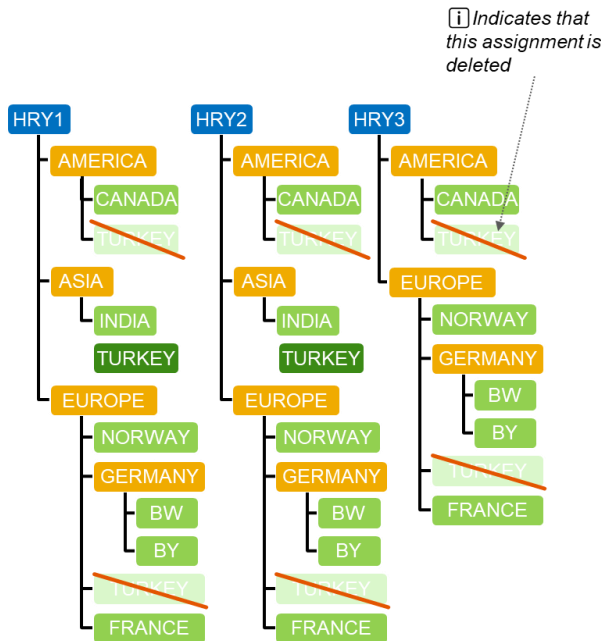
Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

1 *COAREA; PCTRH
2 0001; HRY1
3 *PCTRG; PCTR
4 ASIA; TURKEY;

File content visualized differently:

Controlling Area (COAREA)	Profit Center Hierarchy (PCTRH)
0001	HRY1
Higher-level Node	Lower-level Node
Profit Center Group (PCTRG)	Profit Center (PCTR)
ASIA	TURKEY

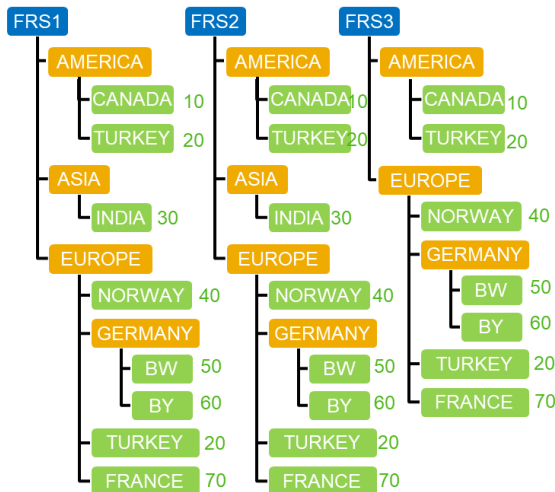
Result: An edge between ASIA and TURKEY is created, with predecessor INDIA. All other edges with TURKEY as child are removed. Since profit center group ASIA is part of HRY1 and HRY2 but not of HRY3, TURKEY occurs now only two times (in HRY1 and HRY2).



Non-Synchronized Hierarchies

Use Case: Account TURKEY (20) shall be moved to new parent item ASIA and all occurrences of TURKEY (20) shall be removed.

As is situation (relevant existing hierarchies):



Technically there are six relevant edges (since the hierarchy's name is part of the edge):

- Edge between AMERICA and TURKEY (20) in FRS1
- Edge between AMERICA and TURKEY (20) in FRS2
- Edge between AMERICA and TURKEY (20) in FRS3
- Edge between EUROPE and TURKEY (20) in FRS1
- Edge between EUROPE and TURKEY (20) in FRS2
- Edge between EUROPE and TURKEY (20) in FRS3

File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Chart of Accounts
- Financial Reporting Structure

Data Row

- Higher-level Node
 - o Financial Reporting Structure Item
- Lower-level Node
 - o Account

As described at the beginning of chapter 3.3 the hierarchy's name (= the financial reporting structure) must be included in the file. In this example this is done as part of the header. Since TURKEY (20) shall be added to an item (= the new parent), the higher-level node must contain this entity type (financial reporting structure item). Because the moved (added) node is an account, the lower-level node (= the node to move) contains entity type *account*.

File content:

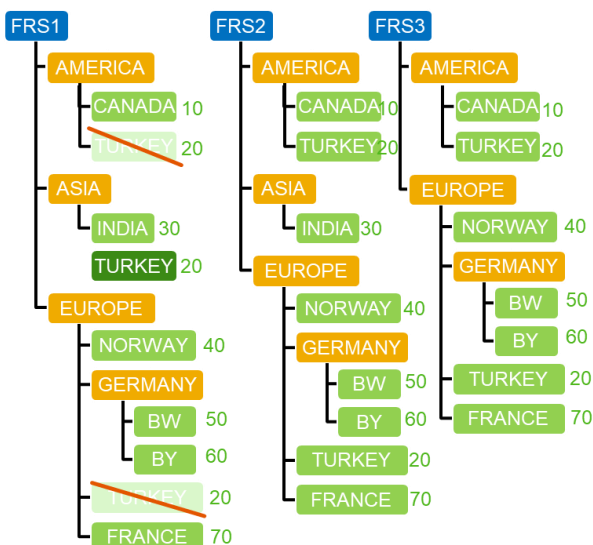
Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

```
1 *COA;FRS
2 INT;FRS1
3 *FRSI;ACCOUNT
4 ASIA;20;
```

File content visualized differently:

Chart of Accounts (COA)	Financial Reporting Structure (FRS)
INT	FRS1
Higher-level Node	Lower-level Node
Fin. Rep. Structure Item (FRSI)	Account (ACCOUNT)
ASIA	20

Result: An edge between ASIA and TURKEY (20) in FRS1 is created, with predecessor INDIA (30). All other edges with TURKEY (20) as child in FRS1 are removed. Since we are in the context of non-synchronized hierarchies the edges with TURKEY (20) as child in FRS2 and FRS3 are technically other edges and hence are not affected. As result FRS2 and FRS3 remain unchanged.

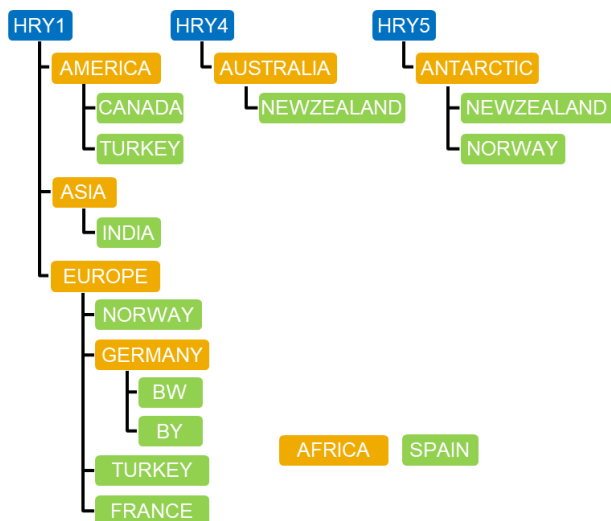


3.3.3 Using move for adding a new node to a hierarchy

Synchronized Hierarchies

Use Case: Profit center **NEWZEALAND** shall be added to profit center group **AMERICA**. **NEWZEALAND** currently is not part of **HRY1** but only present in **HRY4** and **HRY5**.

As is situation (relevant existing hierarchies):



File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Controlling Area
- Profit Center Hierarchy

Data Row

- Higher-level Node
 - o Profit Center Group
- Lower-level Node
 - o Profit Center

As described at the beginning of chapter 3.3 the hierarchy's name (= the profit center group hierarchy) must be included in the file. In this example this is done as part of the header. Since **NEWZEALAND** shall be added to a profit center group (= the new parent), the higher-level node must contain this entity type (profit center group). Because the moved (added) node is a profit center, the lower-level node (= the node to move) contains entity type *profit center*.

File content:

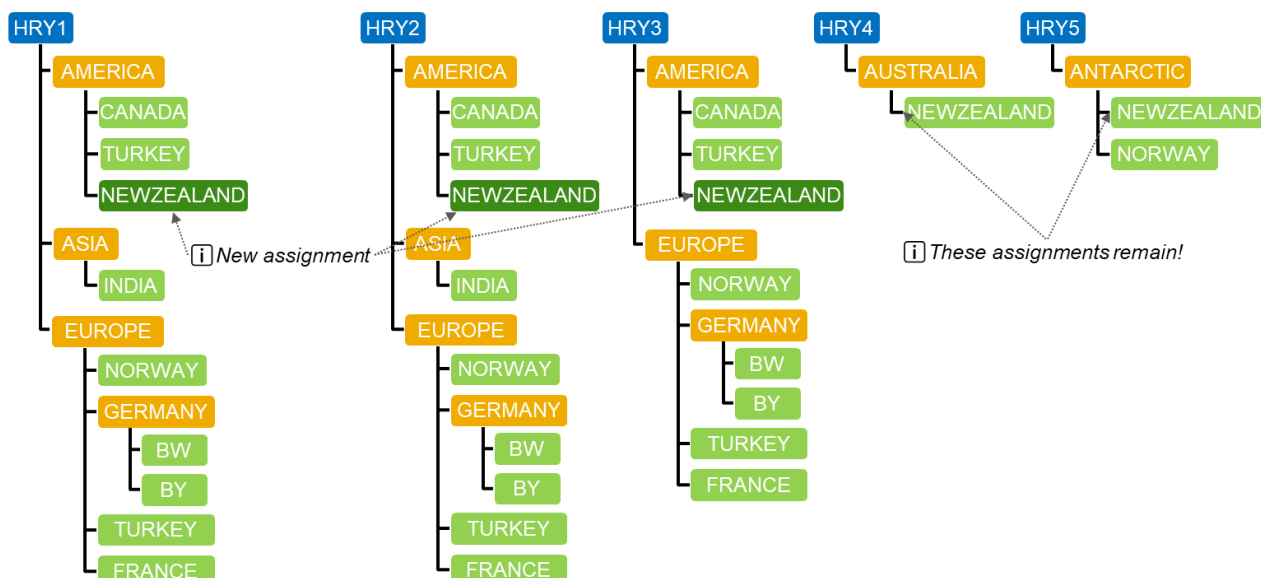
Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

```
1 *COAREA; PCTRH
2 0001; HRY1
3 *PCTRG; PCTR
4 AMERICA; NEWZEALAND;
```

File content visualized differently:

Controlling Area (COAREA)	Profit Center Hierarchy (PCTRH)
0001	HRY1
Higher-level Node	Lower-level Node
Profit Center Group (PCTRG)	Profit Center (PCTR)
AMERICA	NEWZEALAND

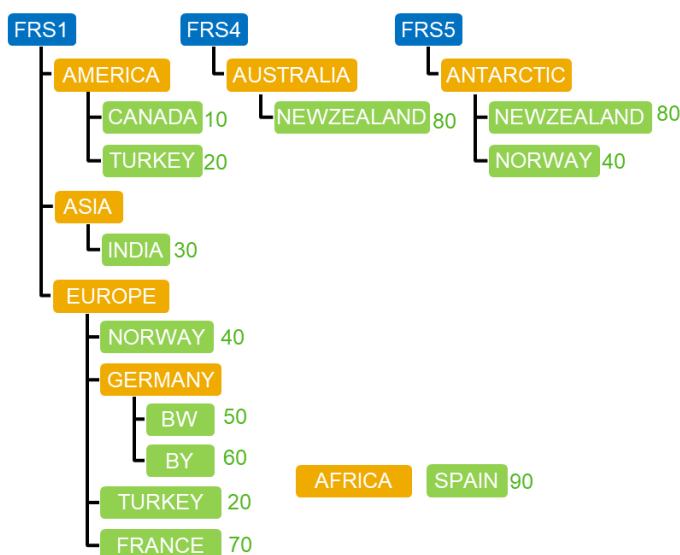
Result: **NEWZEALAND** is added to **AMERICA** in **HRY1**. The assignments in **HRY4** and **HRY5** remain as per definition of this upload mode. Since **HRY1** to **HRY5** are synchronized hierarchies there is technically only one assignment between **AMERICA** and **NEWZEALAND**. Due to the synchronicity, it occurs three times, in **HRY1**, **HRY2** and **HRY3** because **AMERICA** is part of all three. In case you would move **NEWZEALAND** again in **HRY1** from **AMERICA** to **ASIA** due to this synchronicity all three hierarchies would be changed. Mind this characteristic of synchronized hierarchies.



Non-Synchronized Hierarchies

Use Case: Account **NEWZEALAND (80)** shall be added to item **AMERICA**. **NEWZEALAND (80)** currently is not part of **FRS1** but only present in **FRS4** and **FRS5**.

As is situation (relevant existing hierarchies):



File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Chart of Accounts
- Financial Reporting Structure

Data Row

- Higher-level Node
 - o Fin. Reporting Structure Item
- Lower-level Node
 - o Account

As described at the beginning of chapter 3.3 the hierarchy's name (= the financial reporting structure) must be included in the file. In this example this is done as part of the header. Since **NEWZEALAND (80)** shall be

added to an item (= the new parent), the higher-level node must contain this entity type (financial reporting structure item). Because the moved (added) node is an account, the lower-level node (= the node to move) contains entity type *account*.

File content:

Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

```
1 *COA; FRS
2 INT; FRS1
3 *FRS1; ACCOUNT
4 AMERICA; 80;
```

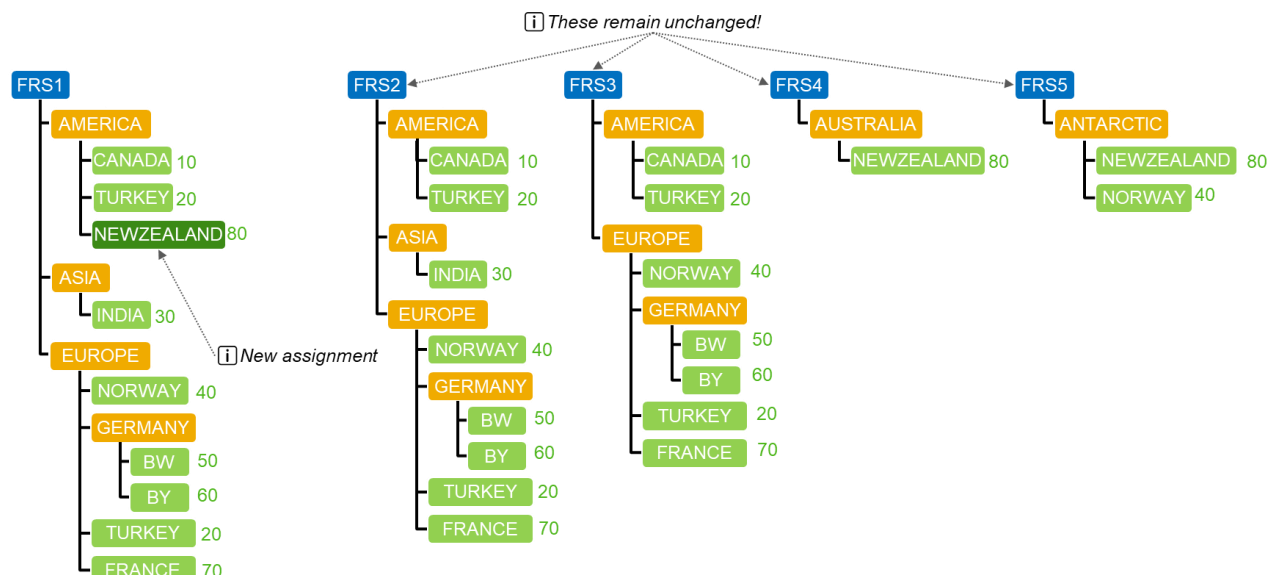
File content visualized differently:

Chart of Accounts (COA)	Financial Reporting Structure (FRS)
INT	FRS1
Higher-level Node	Lower-level Node
Fin. Rep. Structure Item (FRSI)	Account (ACCOUNT)
AMERICA	80

Result: NEWZEALAND (80) is added to AMERICA in FRS1. Like in the example for non-synchronized hierarchies (see above) the assignments in FRS4 and FRS5 remain as per definition of this upload mode. Since FRS1 to FRS5 are **non-synchronized** hierarchies there are technically three edges:

- Edge between AMERICA and NEWZEALAND (80) in FRS1
- Edge between AUSTRALIA and NEWZEALAND (80) in FRS4
- Edge between ANTARCTIC and NEWZEALAND (80) in FRS5

Hence, whatever operation is performed in the context of non-synchronized hierarchies does only affect the specified hierarchy. Vice versa there is no possibility other than the specified hierarchy is affected.



3.3.4 Multiple moves

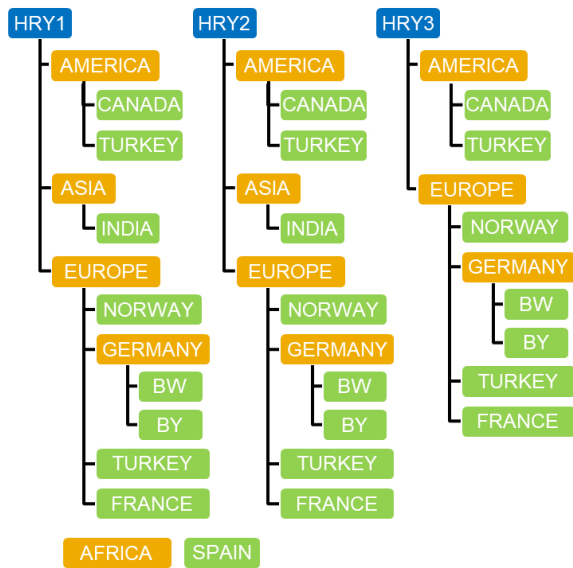
Synchronized Hierarchies

Use Case: Multiple moves for profit centers and a profit center group shall be performed:

- SPAIN (currently unassigned) shall be moved to AMERICA.
- GERMANY shall be added to AMERICA (and stay at EUROPE).
- INDIA shall remain at ASIA.**
- FRANCE shall be added to ASIA** (and stay at EUROPE).
- NEWZEALAND shall be added to ASIA.
- TURKEY shall be moved to ASIA.

**) We will try to put FRANCE to the 1st and put to INDIA to the 2nd position but will find this is not possible.

As is situation (relevant existing hierarchies):



File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Controlling Area
- Profit Center Hierarchy

Data Row

- Higher-level Node
 - o Profit Center Group
- Lower-level Node
 - o Profit Center Group
 - o Profit Center

As described at the beginning of chapter 3.3 the hierarchy's name (= the profit center group hierarchy) must be included in the file. In this example this is done as part of the header. Since all of the new parents are profit center groups, the higher-level node must contain this entity type (profit center group). Because the moved (added) nodes are profit centers as well as a profit center group (**GERMANY**), the lower-level node (= the node(s) to move) contains entity types *profit center* **and** *profit center group*.

File content:

Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content and that the letters in brackets are also not part of the file content but reference the aspects mentioned at 'Use Case'.

File content visualized differently:

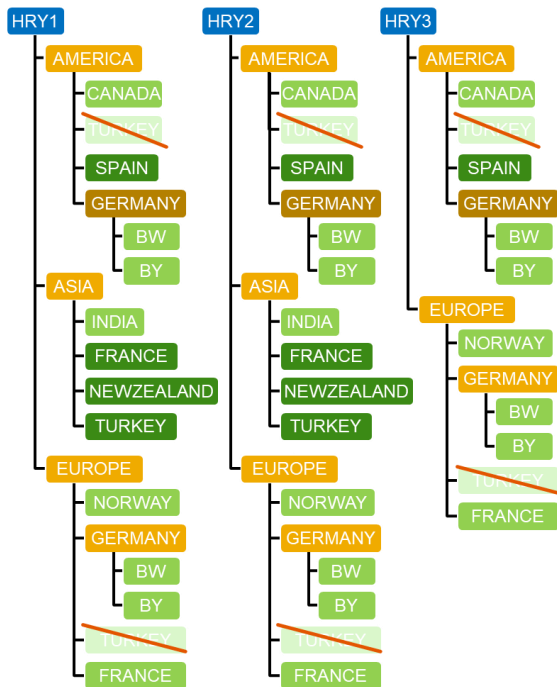
```
1 *COAREA;PCTRH
2 0001;HRY1
3 *PCTRG;PCTRG;PCTR
4 AMERICA;;SPAIN;
5 AMERICA;GERMANY;;
6 ASIA;;FRANCE;
7 ASIA;;INDIA;
8 ASIA;;NEWZEALAND;
9 ASIA;;TURKEY;
10 EUROPE;GERMANY;;
11 EUROPE;;FRANCE;
```

(a)
(b)
(d)
(c)
(e)
(f)
(b)
(d)

Controlling Area (COAREA)	Profit Center Hierarchy (PCTRH)	
0001	HRY1	
Higher-level Node	Lower-level Node	
Profit Center Group (PCTRG)	Profit Center Group (PCTRG)	Profit Center (PCTR)
AMERICA		SPAIN
AMERICA	GERMANY	
ASIA		FRANCE
ASIA		INDIA
ASIA		NEWZEALAND
ASIA		TURKEY
EUROPE	GERMANY	
EUROPE		FRANCE

Note: In the file content there are two lines required respectively for (b) and (d). If line 10 would miss, **GERMANY** would be removed from **EUROPE**. If line 11 would miss, **FRANCE** would be removed from **EUROPE**.

Result: **SPAIN** is added to **AMERICA**. This affects **HR1**, **HR2** and **HR3** since there is technically only a single edge between **AMERICA** and **SPAIN**. **GERMANY** is added to **AMERICA** and still assigned to **EUROPE**. **INDIA** is still assigned to **ASIA**. It is not possible to change the order of already assigned children. Although the edge between **INDIA** and **ASIA** is specified in the file (line 7) after the edge between **FRANCE** and **ASIA** (line 6), there is no effect. **INDIA** remains in the 1st position. **FRANCE** is added to **ASIA**. Because it is specified as the first new edge at it added at first after **INDIA**. Hence, it comes at the 2nd position. Due to line 11 the assignment between **FRANCE** and **EUROPE** remains. **NEWZEALAND** is added to **ASIA**. Because it is specified as the 2nd new edge it comes at the 2nd new position (= 3rd overall position). **TURKEY** is removed from all former occurrences and added to **ASIA**. Because in the file content this edge is the last edge defined for **ASIA** (line 9), it is in the 4th (last) position.



Non-Synchronized Hierarchies

Use Case: Multiple moves for accounts and a financial reporting structure item shall be performed:

- SPAIN** (90) (currently unassigned) shall be moved to **AMERICA**.
- GERMANY** shall be added to **AMERICA** (and stay at **EUROPE**).
- INDIA** (30) shall remain at **ASIA**. **
- FRANCE** (70) shall be added to **ASIA** ** (and stay at **EUROPE**).
- NEWZEALAND** (80) shall be added to **ASIA**.
- TURKEY** (20) shall be moved to **ASIA**.

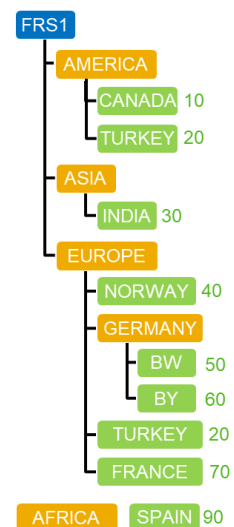
** We will try to put **FRANCE** (70) to the 1st and put to **INDIA** (30) to the 2nd position but will find this is not possible.

As is situation (relevant existing hierarchies):

(refer to the right)

Technically there are six edges (since the hierarchy's name is part of the edge):

- Edge between **AMERICA** and **TURKEY** (20) in **FRS1**
- Edge between **AMERICA** and **TURKEY** (20) in **FRS2**



- Edge between AMERICA and TURKEY (20) in FRS3
- Edge between EUROPE and TURKEY (20) in FRS1
- Edge between EUROPE and TURKEY (20) in FRS2
- Edge between EUROPE and TURKEY (20) in FRS3

File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Chart of Accounts
- Financial Reporting Structure

Data Row

- Higher-level Node
 - o Financial Reporting Structure Item
- Lower-level Node
 - o Financial Reporting Structure Item
 - o Account

As described at the beginning of chapter 3.3 the hierarchy's name (= the financial reporting structure) must be included in the file. In this example this is done as part of the header. Since all the new parents are financial reporting structure items, the higher-level node must contain this entity type (financial reporting structure item). Because the moved (added) nodes are accounts as well as a financial reporting structure item (GERMANY), the lower-level node (= the node(s) to move) contains entity types *financial reporting structure item* and *account*.

File content:

Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content and that the letters in brackets are also not part of the file content but reference the aspects mentioned at 'Use Case'.

File content visualized differently:

```

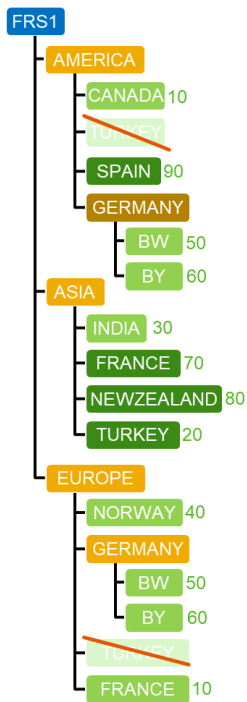
1  *COA;FRS
2  INT;FRS1
3  *FRSI;FRSI;ACCOUNT
4  AMERICA;;90;          (a)
5  AMERICA;GERMANY;;    (b)
6  ASIA;;70;            (d)
7  ASIA;;30;            (c)
8  ASIA;;80;            (e)
9  ASIA;;20;            (f)
10 EUROPE;GERMANY;;      (b)
11 EUROPE;;70;          (d)

```

Chart of Accounts (COA)	Financial Reporting Structure (FRS)	
0001	FRS1	
Higher-level Node	Lower-level Node	
Fin. Rep. Structure Item (FRSI)	Fin. Rep. Structure Item (FRSI)	Account (ACCOUNT)
AMERICA		SPAIN (90)
AMERICA	GERMANY	
ASIA		FRANCE (70)
ASIA		INDIA (30)
ASIA		NEWZEALAND (80)
ASIA		TURKEY (20)
EUROPE	GERMANY	
EUROPE		FRANCE (70)

Note: In the file content there are two lines required respectively for (b) and (d). If line 10 would miss, GERMANY would be removed from EUROPE. If line 11 would miss, FRANCE (70) would be removed from EUROPE.

Result: SPAIN (90) is added to AMERICA. This affects FRS1 only. All other hierarchies are not affected. GERMANY is added to AMERICA and still assigned to EUROPE. INDIA (30) is still assigned to ASIA. It is not possible to change the order of already assigned children. Although the edge between INDIA (30) and ASIA is specified in the file (line 7) after the edge between FRANCE (70) and ASIA (line 6), there is no effect. INDIA (30) remains in the 1st position. FRANCE (70) is added to ASIA. Because it is specified as the first new edge at it added at first after INDIA (30). Hence, it comes at the 2nd position. Due to line 11 the assignment between FRANCE (70) and EUROPE remains. NEWZEALAND (80) is added to ASIA. Because it is specified as the 2nd new edge it comes at the 2nd new position (= 3rd overall position). TURKEY (20) is removed from all former occurrences and added to ASIA. Because in the file content this edge is the last edge defined for AISA (line 9), it is in the 4th (last) position.



3.4 Replace Nodes

When using upload mode *Replace Nodes*, for each uploaded edge in the file, the system deletes all direct children of the parent node from the uploaded edge and creates only children specified in the upload file. The sequence of the children from the file is considered.

In the subchapters special cases are explained in more detail.

3.4.1 Multiple replacements

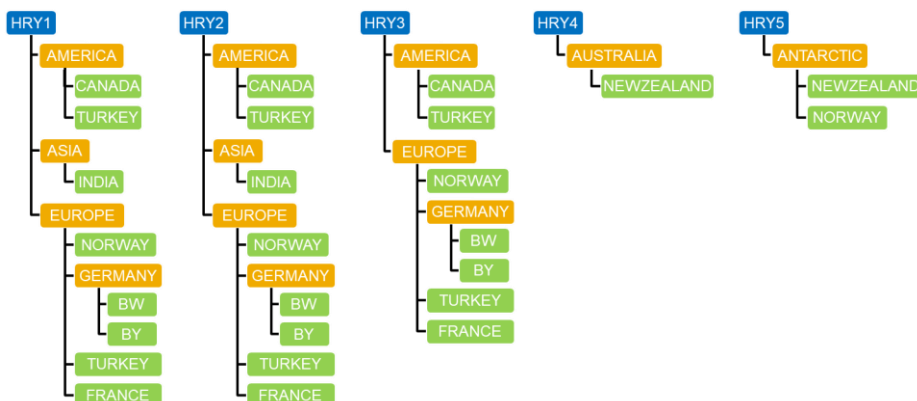
Synchronized Hierarchies

Use Case: The following replacements shall be done:

- INDIA at ASIA shall be replaced by TURKEY.
- The ordering of NEWZEALAND and NORWAY at ANTARCTIC shall be switched.
- FRANCE and GERMANY shall be inserted** before the already existing node NEWZEALAND.

**) Technically the existing node NEWZEALAND is replaced by FRANCE, GERMANY and NEWZEALAND.

As is situation (relevant existing hierarchies):



File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Controlling Area

Data Row

- Higher-level Node
 - o Profit Center Group
- Lower-level Node
 - o Profit Center Group
 - o Profit Center

Since only entity type profit center group is affected as parent, the higher-level node must contain this entity type (profit center group). Because the nodes which shall be inserted as replacement are profit center groups as well as profit centers, the lower-level node contains entity types *profit center group* and *profit center*.

File content:

Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

File content visualized differently:

1	*COAREA		
2	0001		
3	*PCTRG;PCTRG;PCTR		
4	ASIA;;TURKEY;	(a)	
5	ANTARCTIC;;NORWAY;	(b)	
6	ANTARCTIC;;NEWZEALAND;	(b)	
7	AUSTRALIA;;FRANCE;	(c)	
8	AUSTRALIA;GERMANY;;	(c)	
9	AUSTRALIA;;NEWZEALAND;	(c)	

Controlling Area (COAREA)		
0001		
Higher-level Node		Lower-level Node
Profit Center Group (PCTRG)	Profit Center Group (PCTRG)	Profit Center (PCTR)
ASIA		TURKEY
ANTARCTIC		NORWAY
ANTARCTIC		NEWZEALAND
AUSTRALIA		FRANCE
AUSTRALIA	GERMANY	
AUSTRALIA		NEWZEALAND

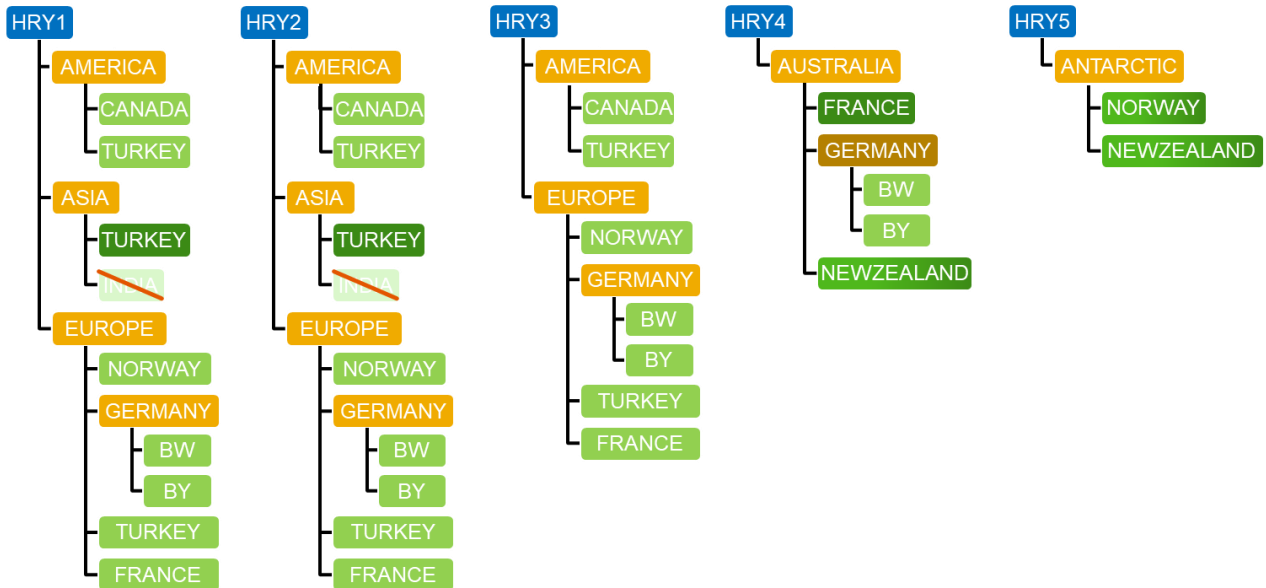
Result: Let's first list all affected parent nodes (i.e., all nodes which are specified as higher-level node):

ASIA, ANTARCTIC, and AUSTRALIA. All children below these nodes will be changes according to what is specified in the uploaded file.

All existing edges between ASIA and its children are removed and an edge between ASIA and TURKEY is created. TURKEY is the only child under ASIA. This change affects HRY1 and HRY2. Due to the synchronicity, there is only a single edge between ASIA and TURKEY.

In HRY4 all edges under AUSTRALIA are replaced (= remove all + insert what is specified in the file). As specified in the file content (line 7) the first child is FRANCE, followed by GERMANY (line 8) and NEWZEALAND (line 9). Note: The original edge between AUSTRALIA and NEWZEALAND is removed and created (again) with predecessor GERMANY. Technically the original edge is not retained or changed but deleted. The result only looks like FRANCE and GERMANY are inserted as predecessors to NEWZEALAND.

In HRY5 it looks like the order of children under ANTARCTIC is reversed. But technically all formerly existing edges (ANTARCTIC – NEWZEALAND (w/o predecessor) and ANTARCTIC – NORWAY (w/ predecessor NEWZEALAND)) are deleted and the edges ANTARCTIC – NORWAY (w/o predecessor) according to line 5 and ANTARCTIC – NEWZEALAND (w/ predecessor NORWAY) according to line 6 are created.



Non-Synchronized Hierarchies

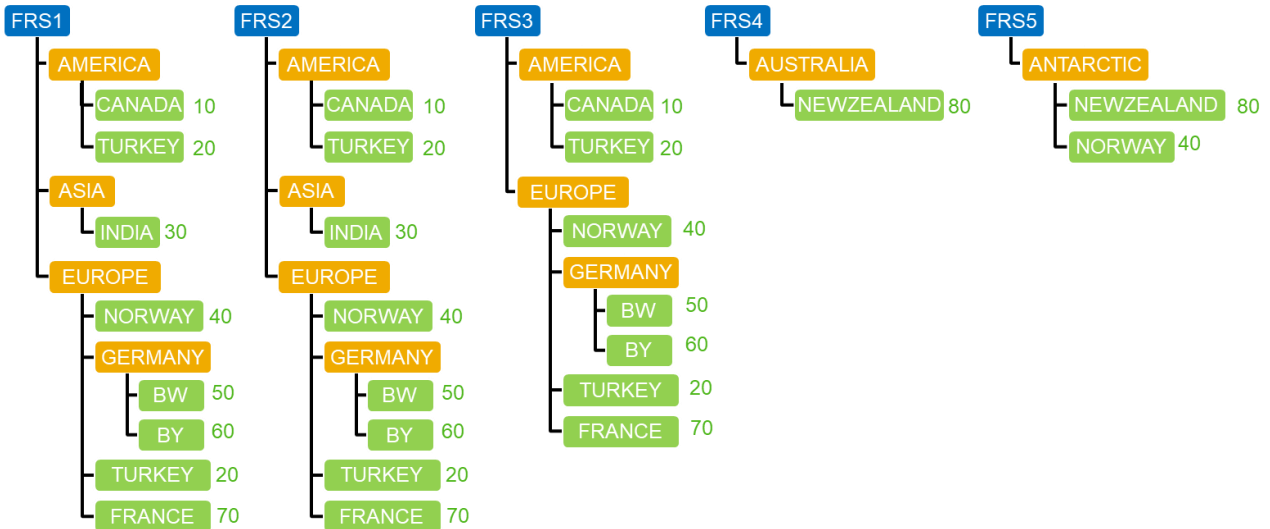
Use Case: The following replacements shall be done:

- INDIA (30) at ASIA shall be replaced by TURKEY (20).
- The ordering of NEWZEALAND (80) and NORWAY (40) at ANTARCTIC shall be switched.
- FRANCE (70) and GERMANY shall be inserted** before the already existing node NEWZEALAND (80).

** Technically the existing node NEWZEALAND (80) would be replaced by FRANCE (70), GERMANY and NEWZEALAND (80).

Note: We will find that multiple replacements in multiple hierarchies are not possible for non-synchronized hierarchies.

As is situation (relevant existing hierarchies):



File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Chart of Accounts

Data Row

- Higher-level Node
 - o Financial Reporting Structure
 - o Financial Reporting Structure Item
- Lower-level Node
 - o Financial Reporting Structure Item
 - o Account

Since only entity type financial reporting structure item is affected as parent, the higher-level node must contain this entity type (financial reporting structure item). Because the nodes which shall be inserted as replacement are financial reporting structure items as well as accounts, the lower-level node contains entity types *financial reporting structure item* and *account*.

File content:

Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

File content visualized differently:

```
1  *COA
2  INT;
3  *FRS;FRSI;FRSI;ACCOUNT
4  FRS1;ASIA;;20;          (a)
5  FRS5;ANTARCTIC;;40;    (b)
6  FRS5;ANTARCTIC;;80;    (b)
7  FRS4;AUSTRALIA;;70;    (c)
8  FRS4;AUSTRALIA;GERMANY;; (c)
9  FRS4;AUSTRALIA;;80;    (c)
```

Chart of Accounts (COA)			
INT			
Higher-level Node		Lower-level Node	
Fin. Rep. Structure (FRS)	Fin. Rep. Structure Item (FRSI)	Fin. Rep. Structure Item (FRSI)	Account (ACCOUNT)
FRS1	ASIA		20
FRS5	ANTARCTIC		40
FRS5	ANTARCTIC		80
FRS4	AUSTRALIA		70
FRS4	AUSTRALIA	GERMANY	
FRS4	AUSTRALIA		80

Result: Two errors occur:

- Different hierarchies INT/FRS5 and INT/FRS1 being used
 - o Message class and no.: USMD6 / 092
 - o Row no.: 5
 - o Field name: FRSI
- Different hierarchies INT/FRS4 and INT/FRS1 being used
 - o Message class and no.: USMD6 / 092
 - o Row no.: 7
 - o Field name: FRSI

These errors are raised because replacements in multiple non-synchronized are not possible at once. Both messages tell that the system found different hierarchy names (INT/FR5 and INT/FRS4) as first occurrences in line 5 of the file content (in case of INT/FR5) and in line 7 (in case of INT/FRS4). However the first mentioned hierarchy name in the file content is INT/FRS1.

These errors need to be resolved by splitting the replacements into multiple files. One file per hierarchy name is required for non-synchronized hierarchies. For a single hierarchy multiple replacements are possible.

3.5 Remove Edges

When using upload mode *Remove Edges*, for each uploaded edge in the file, the system deletes such edge in the system if it exists. For all uploaded edges which do not exist in the system a warning message is raised but other removals are still performed.

Note: Only a single hierarchy can be specified explicitly when using this upload mode. As a result, in case of **non-synchronized** hierarchies only a *single* hierarchy can be affected by removals, because the hierarchy name is an obligatory part the of specified edges for non-synchronized hierarchies.

For **synchronized** multiple hierarchies can be affected by removals in case none or only a single hierarchy name needs to be specified explicitly in the upload file. Specifying more than one hierarchy name in the upload file results in errors.

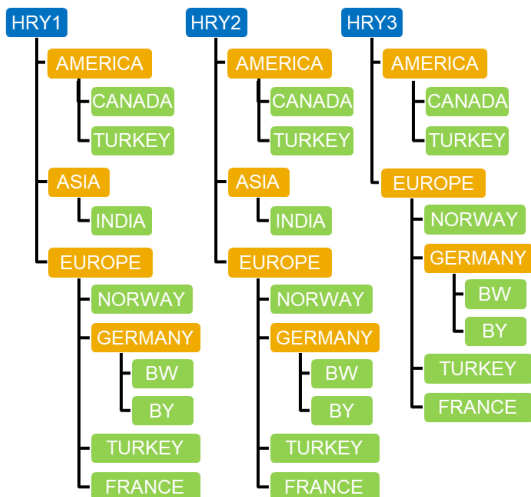
In the subchapters special cases are explained in more detail.

3.5.1 Remove a single edge

Synchronized Hierarchies

Use Case: Profit center group **GERMANY** shall be removed from profit center group **EUROPE**.

As is situation (relevant existing hierarchies):



Technically there is one relevant edge:

- Edge between **EUROPE** and **GERMANY** (occurs in **HRY1**, **HRY2**, and **HRY3**)

File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Controlling Area

Data Row

- Higher-level Node
 - o Profit Center Hierarchy
 - o Profit Center Group
- Lower-level Node
 - o Profit Center Group

Although we will see that the specification of the hierarchy's name is optional for synchronized hierarchies when using upload mode *remove edge* it is defined as part of the file structure in the higher-level node section. Since in this example a child shall be removed from a profit center group (= parent node), the higher-level node must contain this entity type (profit center group). As the removed child is a profit center group, the lower-level node (= the node to remove) contains entity type *profit center group*.

File content:

Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

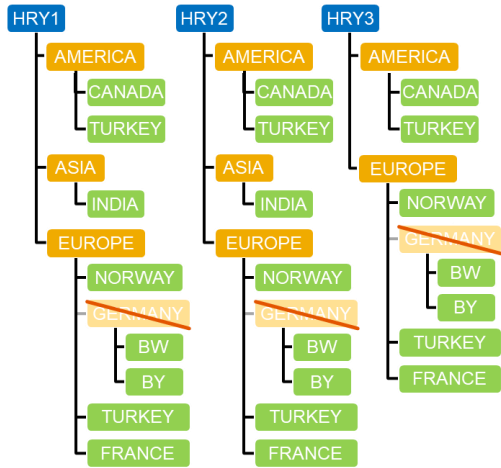
```
1 *COAREA
2 0001;
3 *PCTRH; PCTRG; PCTRG
4 ; EUROPE; GERMANY;
```

File content visualized differently:

Controlling Area (COAREA)		
0001		
Higher-level Node		Lower-level Node
Profit Center Hierarchy (PCTRH)	Profit Center Group (PCTRG)	Profit Center Group (PCTRG)
	GERMANY	GERMANY

Note: No profit center hierarchy is specified. The value is left empty.

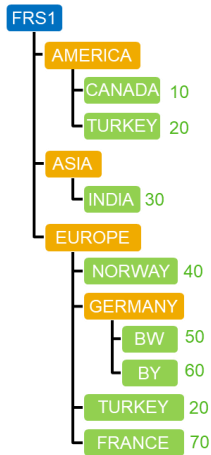
Result: The edge between EUROPE and GERMANY is deleted. Due to the synchronicity this takes effect HRY1, HRY2, and HRY3. Note: The inner structure of GERMANY is not changed. The edges between GERMANY and BW as well as GERMANY and BY still exist.



Non-Synchronized Hierarchies

Use Case: Financial reporting structure item GERMANY shall be removed from financial reporting structure item EUROPE in FRS1.

As is situation (relevant existing hierarchies):



File structure: In step 2 *Define File Structure* of the file upload application the following structure is defined:

Header

- Chart of Accounts
- Financial Reporting Structure

Data Row

- Higher-level Node
 - o Financial Reporting Structure Item
- Lower-level Node
 - o Financial Reporting Structure Item

Unlike for synchronized hierarchies, in case of non-synchronized hierarchies the hierarchy's name must be specified and cannot be empty (e.g., as kind of a wildcard). In this example this is done as part of the header. Since **GERMANY** shall be removed from a financial reporting structure item, the higher-level node must contain this entity type (financial reporting structure item). Because the removed node is a financial reporting structure item, the lower-level node (= the node to remove) contains entity type *financial reporting structure item*.

File content:

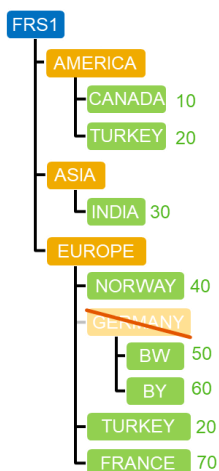
Before content is listed it shall be noted that the row numbers are just for your reference and are not part of the file content.

```
1 *COA; FRS
2 INT; FRS1
3 *FRSI; FRSI
4 EUROPE; GERMANY;
```

File content visualized differently:

Chart of Accounts (COA)	Financial Reporting Structure (FRS)
INT	FRS1
Higher-level Node	Lower-level Node
Fin. Rep. Structure Item (FRSI)	Fin. Rep. Structure Item (FRSI)
EUROPE	GERMANY

Result: The edge between **EUROPE** and **GERMANY** is deleted in **FRS1**. Due to the non-synchronicity no other hierarchy is affected. Note: The inner structure of **GERMANY** is not changed. The edges between **GERMANY** and **BW (50)** as well as **GERMANY** and **BY (60)** still exist.



4 Additional Information

4.1 Further Reading

4.1.1 Information on SAP MDG on SAP S/4HANA

- Exchange knowledge: [SAP Community](#) | [Q&A](#) | [Blog](#)
- Try SAP Master Data Governance on S/4HANA for free: [Trial Version](#)
- Learn more: [Latest Release](#) | [Webinars](#) | [Help Portal](#) | [How-to Information](#) | [Key Presentations](#)

4.1.2 SAP Roadmap Explorer

- Please see the [roadmap for SAP Master Data Governance](#)

4.1.3 Related Information

- Learn more: [Floorplan Manager for Web Dynpro ABAP](#) | [How to Adapt FPM](#) | [FPM Blog](#) | [How-to Information](#) | [Service Mapping Tool](#)

4.2 SAP Notes

In addition to the detailed explanations written in this document, please see the following SAP Notes for further important information.

Note	Description
1619534	How to Create, Enhance and Adapt FPM Applications
1637249	MDG: Information for efficient message processing
2105467	MDG Performance
2561461	Scope of support for SAP Master Data Governance (MDG)

