

How to Setting up Matrix Consolidation with SAP BusinessObjects Planning and Consolidation



Applies to:

SAP BusinessObjects Planning and Consolidation 7.0, version for SAP NetWeaver, SAP BusinessObjects Planning and Consolidation 7.0, version for Microsoft, SAP BusinessObjects Planning and Consolidation 7.5, version for SAP NetWeaver, SAP BusinessObjects Planning and Consolidation 7.5, version for Microsoft. For more information, visit the [Enterprise Performance Management homepage](#).

Summary

This document describes how to set up Matrix Consolidation. As a starting point, the IFRS Starter Kit application set was used. It is available for downloads on the SAP Service Marketplace. Limitations to the approach will also be presented.

Author: Damien Fribourg

Company: SAP

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Author Bio



Damien Fribourg joined SAP through the OutlookSoft acquisition. He was Consulting Manager for OutlookSoft and was also directly involved in several customers' implementation. After the acquisition, he worked as Consulting Manager for the Netweaver architects at SAP France and ultimately reached the Solution Management group where he is in charge of all consolidation related features of SAP BusinessObjects Planning & Consolidation.

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Pre-requisites

- Restore the IFRS Starter Kit (or, instead, any application with Legal Consolidation enabled, i.e. Business Rules based eliminations and Ownership data).
- NB: Matrix Consolidation may be implemented in a similar fashion with a Finance type application (i.e. without Ownership data) but this will not be described in this document.

Introduction

Matrix Consolidation refers to Consolidation where not only the usual Legal entity dimension is used but an additional dimension, such as Profit/Cost Center or Business Unit is required. It is not only used for performing some breakdown analysis, but eliminations must be performed based on this alternate dimension.

Using the IFRS Starter Kit as a starting point, and its Consolidation application, a new application is then created, called Matrix. Compared to a “regular” consolidation application, two additional dimensions were added, in order to reflect the matrix consolidation aspects, i.e. Profit Center and Intercompany Profit Center.

As a result, we will hereafter illustrate what happens when:

- A profit center performs intercompany sales to another profit center from another Legal Entity
- A profit center performs intercompany sales to another profit center within the same Legal Entity.

In both cases, intra versus inter profit center eliminations will be discussed in order to highlight the overall approach and also see what are the limitations to it.

Known Limitations

- In SAP BusinessObjects Planning and Consolidation (BPC), organizations (i.e. entities and groups/consolidation scopes) can vary according to Category and Time. However, all the other dimensions are static, which means they have neither category nor time dependency. As a result, the model presented here will use static Profit Center and Intercompany Profit Center dimensions.
- Eliminations (so called Automatic Adjustments in BPC) are primarily driven by Legal Entity and Intercompany dimensions. As a result, when it comes to Matrix Consolidation, each elimination will still occur based on this fact. So, basically, an elimination is triggered if both an Entity and the Intercompany entity are being consolidated under the same node (i.e. Group or Consolidation scope). In other words, BPC does not evaluate as such the Profit Center and Intercompany Profit Center dimensions when it comes to performing eliminations. Amounts will be eliminated based on the Legal Entity view. However, it is possible to analyze and group eliminations by Profit Center later on. As a result, Matrix consolidation will heavily leverage the reporting/filtering capabilities of the product.

There are two consequences of this:

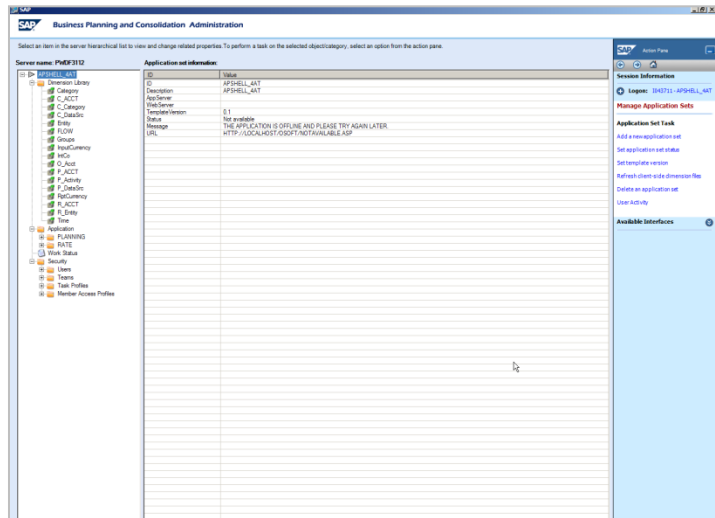
- At reporting time, selection of BOTH Profit Center and Intercompany Profit Center is critical in order to identify ‘intra’ versus ‘inter’ Profit Center eliminations.
- The elimination rule (for both triggering and calculating the % to be eliminated) is using entity and intercompany method and consolidation percents. This means that Proportionate entity would only eliminate the internal revenue, like 50% of the total revenue if that company (and partner) has a 50% consolidation percentage. Secondly, if an entity is only consolidated with the Equity consolidation method, then no elimination is performed, even though intra entity revenues would be accounted for in the books (from one Profit Center to Another, within the same entity).
- Finally, the Matrix Consolidation model is leveraging a BPC functionality in order to highlight how intra Entity eliminations can happen, which is a reflexive declaration of intercompany amounts. In other words, a legal Entity will have Intercompany transactions with itself as an intercompany entity, but from one Profit Center to another. Based on these criterias and the entity consolidation method, the elimination of the intercompany amount will happen.

The Step by Step Solution

What should be built in order to achieve Matrix Consolidation:

Setting up the Matrix Consolidation application

- Using the Consolidation app, create a copy or update the dimensionality in order to later add 2 new dimensions: ProfitCenter (Profit Center) and I_ProfitCenter (Intercompany Profit Center)



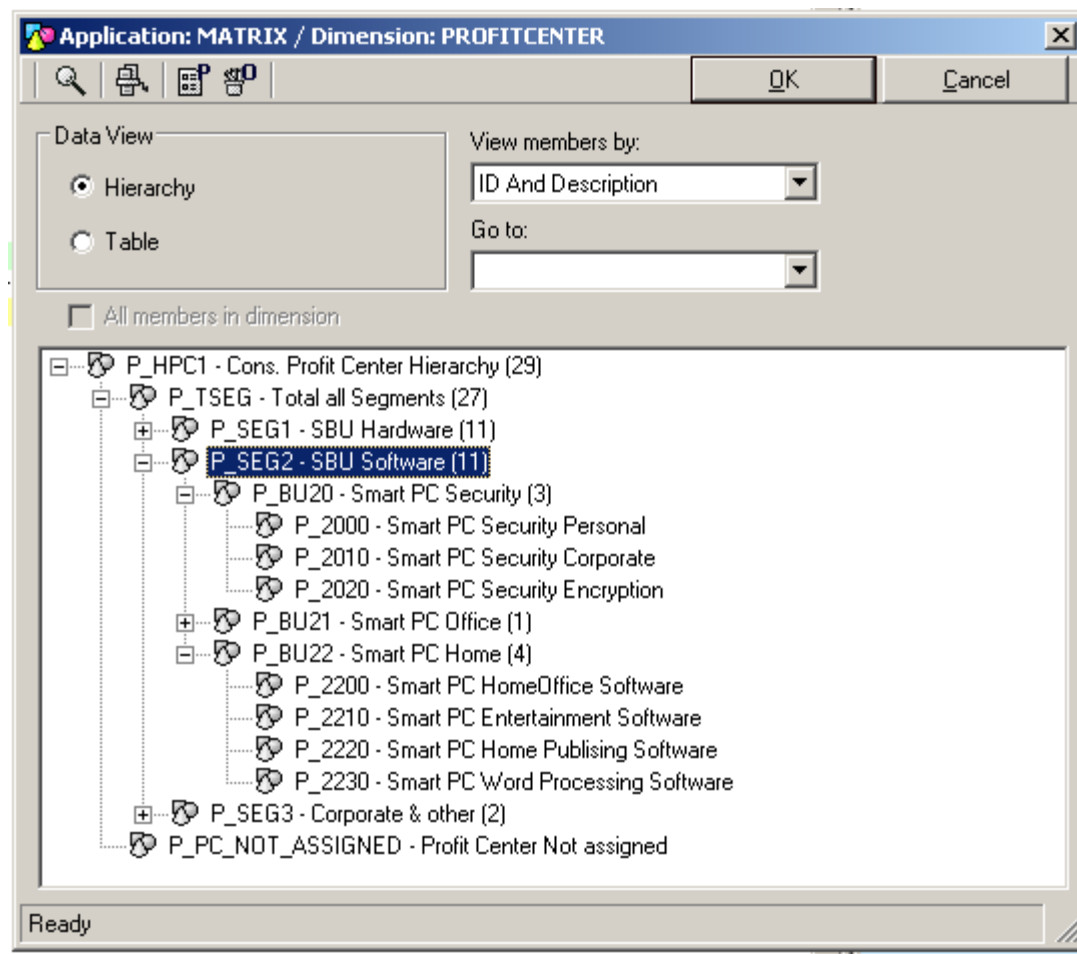
- In the dimension library, add 2 dimensions ProfitCenter (Profit Center) and I_ProfitCenter (Intercompany Profit Center). Please note that these 2 dimensions do not require any specific property to be set.
- Update both dimensions with required members as per your requirements (see the example below).

Profit Center dimension members:

ID	EVDESCRIPTION	PARENTH1
P_HPC1	Cons. Profit Center Hierarchy	
P_TSEG	Total all Segments	P_HPC1
P_SEG1	SBU Hardware	P_TSEG
P_BU10	Services	P_SEG1
P_1000	Financing	P_BU10
P_1010	Leasing	P_BU10
P_1020	Consulting Services	P_BU10
P_BU11	Peripherals	P_SEG1
P_1100	Printers	P_BU11
P_1110	PC Accessories	P_BU11
P_BU12	Personal Computers	P_SEG1
P_1200	Desktops	P_BU12
P_1210	Notebooks	P_BU12
P_1220	Handhelds	P_BU12
P_SEG2	SBU Software	P_TSEG
P_BU20	Smart PC Security	P_SEG2
P_2000	Smart PC Security Personal	P_BU20
P_2010	Smart PC Security Corporate	P_BU20
P_2020	Smart PC Security Encryption	P_BU20

P_BU21	Smart PC Office	P_SEG2
P_2100	Smart PC OfficeSuite Software	P_BU21
P_BU22	Smart PC Home	P_SEG2
P_2200	Smart PC HomeOffice Software	P_BU22
P_2210	Smart PC Entertainment Software	P_BU22
P_2220	Smart PC Home Publishing Software	P_BU22
P_2230	Smart PC Word Processing Software	P_BU22
P_SEG3	Corporate & other	P_TSEG
P_9000	Gen. Admin & other general Corporate	P_SEG3
P_9010	Corporate Marketing	P_SEG3
P_PC_NOT_ASSIGNED	Profit Center Not assigned	P_HPC1

Current view display



Intercompany Profit Center dimension members:

ID	EVDESCRIPTION	PARENTH1
IP_HPC1	Cons. Profit Center Hierarchy	
IP_TSEG	Total all Segments	IP_HPC1
IP_SEG1	SBU Hardware	IP_TSEG
IP_BU10	Services	IP_SEG1
IP_1000	Financing	IP_BU10
IP_1010	Leasing	IP_BU10
IP_1020	Consulting Services	IP_BU10
IP_BU11	Peripherals	IP_SEG1
IP_1100	Printers	IP_BU11
IP_1110	PC Accessories	IP_BU11
IP_BU12	Personal Computers	IP_SEG1
IP_1200	Desktops	IP_BU12
IP_1210	Notebooks	IP_BU12
IP_1220	Handhelds	IP_BU12
IP_SEG2	SBU Software	IP_TSEG
IP_BU20	Smart PC Security	IP_SEG2
IP_2000	Smart PC Security Personal	IP_BU20
IP_2010	Smart PC Security Corporate	IP_BU20
IP_2020	Smart PC Security Encryption	IP_BU20
IP_BU21	Smart PC Office	IP_SEG2
IP_2100	Smart PC OfficeSuite Software	IP_BU21
IP_BU22	Smart PC Home	IP_SEG2
IP_2200	Smart PC HomeOffice Software	IP_BU22
IP_2210	Smart PC Entertainment Software	IP_BU22
IP_2220	Smart PC Home Publishing Software	IP_BU22
IP_2230	Smart PC Word Processing Software	IP_BU22
IP_SEG3	Corporate & other	IP_TSEG
IP_9000	Gen. Admin & other general Corporate	IP_SEG3
IP_9010	Corporate Marketing	IP_SEG3
IP_PC_NOT_ASSIGNED	Profit Center Not assigned	IP_HPC1

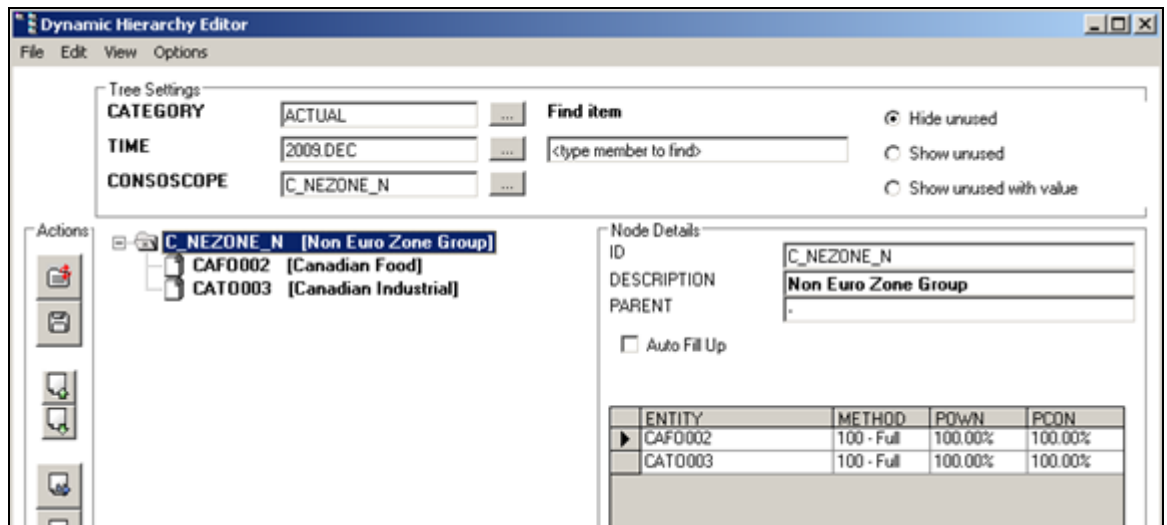
- Make sure the Intercompany Profit Center hierarchy is identical to the Profit Center hierarchy.
Hint: Copy and Paste the Profit Center members to the Intercompany Profit Center dimensions and use the 'I' prefix for all members.
- All other application components, like Business Rules and Ownership do not need to be updated.

Summary of application dimensions:

Application dimensions:		
Name	Caption	Type
Account		Account
AuditID		DataSrc
Category	Category	Category
ConsoScope	Conso scopes & Rep Currencies	Currency
Entity		Entity
Flow		SubTable
I_ProfitCenter		UserDefined
Interco		Intercompany
ProfitCenter		UserDefined
Time	Time	Time

Entering Data

- Case of inter-entity intercompany amounts (from a legal entity to another intercompany legal entity)
 - Data region to consider
 - Category: Actual
 - Time: 2009.Dec
 - Entity: CAFO002 – Canadian Food
 - Audit ID: INPUT
 - Groups: LC
 - Account: R1100 – Sales
 - Flow : F99
 - Besides that, it is considered that this entity's business is made of 2 profit centers being P_2010 (Smart PC Security Corporate) and P_2210 (Smart PC Entertainment Software). Secondly, this entity is doing intercompany transactions with another Canadian entity CAO003, which is being consolidated under the same consolidation node (scope).



- Other: The consolidation is performed into Group NEZONE_N, which uses USD as the consolidation currency. In order to simplify the example further, the exchange rate applied is 1, so 1 USD = 1 CAD.

- Input schedule screenshot

		I_NONE	I_NONE	I_CATO003	I_CATO003
		IP_2010	IP_2210	IP_2010	IP_2210
	No Inter-company			Canadian Industrial	Canadian Industrial
	Smart PC Security Corporate	5,000.00	1,000.00	Smart PC Security Corporate	Smart PC Entertainment Software
				2,500.00	500.00
P_TSEG	Total all Segments				
P_SEG1	SBU Hardware				
P_BU10	Services				
P_1000	Financing				
P_1010	Leasing				
P_1020	Consulting Services				
P_BU11	Peripherals				
P_1100	Printers				
P_1110	PC Accessories				
P_BU12	Personal Computers				
P_1200	Desktops				
P_1210	Notebooks				
P_1220	Handhelds				
P_SEG2	SBU Software	5,000.00	1,000.00	2,500.00	500.00
P_BU20	Smart PC Security	5,000.00	1,000.00	2,500.00	500.00
P_2000	Smart PC Security Personal				
P_2010	Smart PC Security Corporate				
P_2020	Smart PC Security Encryption	5,000.00	1,000.00	2,500.00	500.00
P_BU21	Smart PC Office				
P_2100	Smart PC OfficeSuite Software				
P_BU22	Smart PC Home				
P_2200	Smart PC HomeOffice Software				
P_2210	Smart PC Entertainment Software				
P_2220	Smart PC Home Publishing Software				
P_2230	Smart PC Word Processing Software				
P_SEG3	Corporate & other				
P_9000	Gen. Admin & other general Corporate				
P_9010	Corporate Marketing				
P_PC_NOT_ASSIGNED	Profit Center Not assigned				

As a remark, both non intercompany data as well as Intercompany data is broken down by Profit Center. Non intercompany Sales is 6000.

It is splitted over 2 profit centers:

- P_2010 Smart PC Security Corporate for a CAD 5000 amount
- P_2210 Smart PC Entertainment Software for a CAD 1000 amount.

Then, when it comes to Intercompany data, the CAD 5000 amount has a corresponding CAD 2500 intercompany amount with Legal Entity CAO003 within the same Profit Center. In turn, the CAD 1000 amount has a corresponding intercompany amount of CAD 500 with Profit Center BU22010.

- Case of intra-entity intercompany amounts (from a Profit Center to another intercompany Profit Center within a unique legal entity)
 - Data region to consider
 - Category: Actual
 - Time: 2009.Dec
 - **Entity: CAFO002 – Canadian Food**
 - **Intercompany: I_CAFO002 – Canadian Food**
 - Audit ID: INPUT
 - Groups: LC
 - Account: R1100 – Sales
 - Flow : F99
 - The key point to be considered here is that, whatever if the intercompany amounts refer to intra or inter Profit center, they will be entered against the Legal Entity versus itself as an intercompany partner. As a result, the elimination can take place during the consolidation process, as long as the legal entity is assigned the proper consolidation method which implies an elimination (Holding, full or proportionate consolidation).

	F	G	H	I	J	K
App		MATRIX				
ACCOUNT	R1100		Sales			
AUDITID	INPUT		Company Input			
CATEGORY	ACTUAL		Actual from GL			
CONSOSCOPE	LC		Local Currency			
ENTITY	CAFO002		Canadian Food			
FLOW	F99		Closing position			
INTERCO	ALL_INTERCO		All Inter-company			
I_PROFITCENTER	IP_HPC1		Cons. Profit Center Hierarchy			
MEASURES	YTD		YTD			
PROFITCENTER	P_HPC1		Cons. Profit Center Hierarchy			
TIME	2009.DEC		December 2009			
			I_NONE	I_NONE	I_CAFO002	I_CAFO002
			IP_2010	IP_2210	IP_2010	IP_2210
			No Inter-company	No Inter-company	Canadian Food	Canadian Food
			Smart PC Security Corporate	Smart PC Entertainment Software	Smart PC Security Corporate	Smart PC Entertainment Software
			5,000.00	1,000.00	1,000.00	100.00
P_TSEG	Total all Segments					
P_SEG1	SBU Hardware					
P_BU10	Services					
P_1000	Financing					
P_1010	Leasing					
P_1020	Consulting Services					
P_BU11	Peripherals					
P_1100	Printers					
P_1110	PC Accessories					
P_BU12	Personal Computers					
P_1200	Desktops					
P_1210	Notebooks					
P_1220	Handhelds					
P_SEG2	SBU Software		5,000.00	1,000.00	1,000.00	100.00
P_BU20	Smart PC Security		5,000.00	1,000.00	1,000.00	100.00
P_2000	Smart PC Security Personal					
P_2010	Smart PC Security Corporate					
P_2020	Smart PC Security Encryption		5,000.00	1,000.00	1,000.00	100.00
P_BU21	Smart PC Office					
P_2100	Smart PC OfficeSuite Software					
P_BU22	Smart PC Home					
P_2200	Smart PC HomeOffice Software					
P_2210	Smart PC Entertainment Software					
P_2220	Smart PC Home Publishing Software					
P_2230	Smart PC Word Processing Software					
P_SEG3	Corporate & other					
P_3000	Gen. Admin & other general Corporate					
P_3010	Corporate Marketing					
P_PC_NOT_ASSIGNED	Profit Center Not assigned					

- Input schedule screenshot

As a remark, when it comes to Intercompany data, the CAD 5000 amount has a corresponding CAD 1000 intercompany amount within the same Legal Entity (CAFO002) within the same Profit Center. In turn, the CAD 1000 amount has a corresponding intercompany amount of CAD 100 with Profit Center BU22010.

Reporting on Data after Consolidation

- Case of inter-entity intercompany amounts (from a legal entity to another intercompany legal entity)
 - Checking eliminations by Legal Entity view

D	E	F	G	H	I
App		MATRIX			
ACCOUNT	R1100		Sales		
AUDITID	AJ_JCEL		Intercompany Eliminations		
CATEGORY	ACTUAL		Actual from GL		
CONSOSCOPE	C_NEZONE_N		Non Euro Zone Group		
ENTITY	CAFO002		Canadian Food		
FLOW	F99		Closing position		
INTERCO	ALL_INTERCO		All Inter-company		
I_PROFITCENTR	IP_TSEG		Total all Segments		
MEASURES	YTD		YTD		
PROFITCENTR	P_BU20		Smart PC Security		
TIME	2009.DEC		December 2009		
			I_NONE	ALL_INTERCO	I_CATO003
			No Inter-company	All Inter-company	Canadian Industrial
INPUT	Company Input		6,000.00	3,000.00	3,000.00
AJ_JCEL	Intercompany Eliminations		(3,000.00)	(3,000.00)	(3,000.00)
ALL_AUDITID	Total Adjusted		3,000.00	0.00	0.00

Overall, the total USD 3000 was eliminated. We will see in the next chapter how to look at this elimination by Profit Center.

- Checking eliminations by Profit Centre

E	F	G	H
App	MATRIX		
ACCOUNT	R1100	Sales	
AUDITID	AJ_JCEL	Intercompany Eliminations	
CATEGORY	ACTUAL	Actual from GL	
CONSOSCOPE	C_NEZONE_N	Non Euro Zone Group	
ENTITY	CAFO002	Canadian Food	
FLOW	F99	Closing position	
INTERCO	ALL_INTERCO	All Inter-company	
I_PROFITCENTR	IP_BU20	Smart PC Security	
MEASURES	YTD	YTD	
PROFITCENTR	P_BU20	Smart PC Security	
TIME	2009.DEC	December 2009	
		IP_BU20	IP_2010
		Smart PC Security	Smart PC Security Corporate
P_BU20	Smart PC Security	(2,500.00)	(2,500.00)
P_2020	Smart PC Security Encryption	(2,500.00)	(2,500.00)

The most noticeable aspects are:

- The amount which was eliminated with respect to BU 020 Smart PC Security is 2500 as expected.
- However, the report selection is key for identifying intra Profit Center eliminations (on top of having the Intercompany Profit Center hierarchy which mirrors the Profit Center hierarchy). As a matter of fact, in order to restrict the eliminations to a BU, for a particular entity, the same Profit Center and Intercompany Profit Center must be selected.

Hint: Such a report will be more robust if the current view is setup in a way that the Intercompany Profit Center selection is derived from the Profit Center itself. In this example, the Intercompany Profit center is using a value being a concatenation of 'I' and the Profit Center formula value. Another method to achieve the same goal (instead of using concatenation) would be to use a property of the Profit Center telling which Intercompany Profit Center refers to it. This allows to perform dynamic selections which are not depending upon the coding applied to member IDs.

- Case of intra-entity intercompany amounts (from a Profit Center to another intercompany Profit Center within a unique legal entity)
 - Checking eliminations by Legal Entity view

E	F	G	H	I	J	
App	MATRIX					
ACCOUNT	R1100	Sales				
AUDITID	AJ_IJCEL	Intercompany Eliminations				
CATEGORY	ACTUAL	Actual from GL				
CONSOSCOPE	C_NEZONE_N	Non Euro Zone Group				
ENTITY	CAFO002	Canadian Food			+	
FLOW	F99	Closing position				
INTERCO	ALL_INTERCO	All Inter-company				
I_PROFITCENT	IP_TSEG	Total all Segments				
MEASURES	YTD	YTD				
PROFITCENT	P_BU20	Smart PC Security				
TIME	2009.DEC	December 2009				
			I_NONE	ALL_INTERCO	I_CAF0002	I_CATO003
			No Inter-company	All Inter-company	Canadian Food	Canadian Industrial
INPUT	Company Input		6,000.00	4,100.00	1,100.00	3,000.00
AJ_IJCEL	Intercompany Eliminations		(4,100.00)	(4,100.00)	(1,100.00)	(3,000.00)
ALL_AUDITID	Total Adjusted		1,900.00	0.00	0.00	0.00

In this case, the total intra entity revenue of USD 1100 was eliminated, across both Profit Centers.

- o Checking eliminations by Profit Center

E	F	G	H
App	MATRIX		
ACCOUNT	R1100	Sales	
AUDITID	AJ_JCEL	Intercompany Eliminations	
CATEGORY	ACTUAL	Actual from GL	
CONSOSCOPE	C_NEZONE_N	Non Euro Zone Group	
ENTITY	CAFO002	Canadian Food	
FLOW	F99	Closing position	
INTERCO	I_CAFO002	Canadian Food	
I_PROFITCENTER	IP_SEG2	SBU Software	
MEASURES	YTD	YTD	
PROFITCENTER	P_SEG2	SBU Software	
TIME	2009.DEC	December 2009	
		IP_2010	IP_2210
		Smart PC Security Corporate	Smart PC Entertainment Software
P_2020	Smart PC Security Encryption	(1,000.00)	(100.00)

The most noticeable aspects are:

- The amount which was eliminated with respect to the P_SEG2 Smart PC Security is USD 1100 as expected.
- However, it is possible to figure out which way Intra versus Inter Profit Center Eliminations were performed by selecting Profit Centers and InterCompany Profit Centers properly:

E	F	G
App	MATRIX	
ACCOUNT	R1100	Sales
AUDITID	AJ_JCEL	Intercompany Eliminations
CATEGORY	ACTUAL	Actual from GL
CONSOSCOPE	C_NEZONE_N	Non Euro Zone Group
ENTITY	CAFO002	Canadian Food
FLOW	F99	Closing position
INTERCO	I_CAFO002	Canadian Food
I_PROFITCENTER	IP_BU20	Smart PC Security
MEASURES	YTD	YTD
PROFITCENTER	P_BU20	Smart PC Security
TIME	2009.DEC	December 2009
		IP_2010
		Smart PC Security Corporate
P_2020	Smart PC Security Encryption	(1,000.00)

Only USD 1000 was eliminated for the BU20 Profit Center as internal to that Profit Center.

Conclusion

As emphasized many times throughout this document, Matrix Consolidation can be achieved in BPC but the reader has to keep in mind some limitations.

- The model is driven by the Legal Entity dimension but...
- A Profit Centers dimension (and the corresponding Intercompany dimension) can be setup and utilized to filter intra versus inter Profit Center eliminations;
- However, eliminations are still performed according to the Legal entity (E type dimension) and Groups (G type) dimension.

This setup is heavily leveraging the reporting capabilities of BPC where data must be smartly filtered in order to achieve the desired analysis.

Appendix

- Automatic Adjustments

Automatic adjustments details Definition:						
	Adjustment ID	Source account		Reverse sign	Destination "ALL" account	Destination group account
▶	ICEL	S_ICIS	...	<input type="checkbox"/>	S_ICIS	... PROP(ELIMACC)

This is a "Standard" IC Elimination, with no customization done for Profit Centers eliminations.

- Rule formulas

Consolidation rules formulas information:						
	Rule ID	Entity method	Intco method	"ALL" formula	Group formula	Minority formula
▶	RL_ICEL_CL	111,100,50	111,100,50	MIN(PCON,I_PCON)	MIN(PCON,J_PCON)	

- Consolidation Methods
 - 111 – Holding company
 - 100 – Full (Purchase) method
 - 50 – Proportionate consolidation

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