

# SAP Analytics Customer Solution Adoption (CSA) How To Migrate to BPC 10 on HANA



## Applies to:

BPC 10 on HANA

## Summary

Concerns on migrating your current BPC 7.5 NW application set to BPC 10 powered by HANA? Follow this step by step guide and see the additional performance HANA provides.

**Author:** Rob Marshall

**Company:** SAP

**Created on:** 15 November 2012

## Author Bio



Rob Marshall is a certified BPC consultant working in the SAP Customer Solution Adoption (formerly RIG) group. While Rob has been working with BPC for over eight years, he has recently been focused on BPC 10 with emphasis on the EPM Add-in as well as HANA.

## Table of Contents

Solution Overview .....	3
Steps for Migration .....	3
Backup and Restore .....	3
Migration 7.5 to 10 .....	8
Migration from BPC 10 to BPC 10 Powered HANA .....	15
SPRO Parameters .....	18
Related Content .....	26
Related Blogs .....	26
Copyright .....	27

## Solution Overview

SAP Planning and Consolidation, version for SAP NetWeaver - Powered by SAP HANA is part of the Enterprise Performance Management suite and provides everything you need to meet your bottom-up and top-down financial and operational planning requirements, as well as a complete consolidation and reporting solution through a single application and user interface.

It can be used for the Business Planning (Budgeting, Sales/revenue planning, Expense planning), Consolidations (Intercompany matching/reconciliation/ eliminations, legal consolidations), Forecasting and consensus building and Financial reporting and analysis. With In-memory technology offered by HANA, SAP Planning and Consolidation, version for SAP NetWeaver - Powered by SAP HANA can handle big volumes of data easily, supports real-time planning and analysis, enables cross functional detailed planning and shrinks decision cycle time.

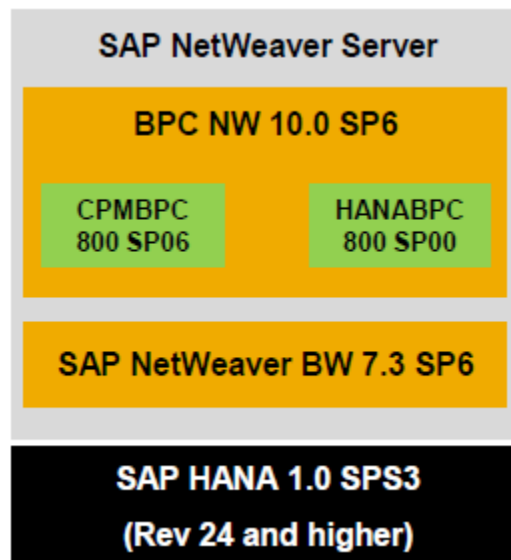
Key Benefits of SAP Planning and Consolidation, version for SAP NetWeaver - Powered by SAP HANA:

- Increased Agility – Helps to plan better and act fast with instant insight into all relevant information.
- Boost Performance – Accelerate planning and consolidation processing leveraging the power of in-memory technology.
- Engage Everyone - Simplify the input and exploration of data with a next generation mobile interface

## Steps for Migration

### Backup and Restore

While you can implement HANA on your current server, it is best practice to have a fresh install for HANA. The minimum requirements are:



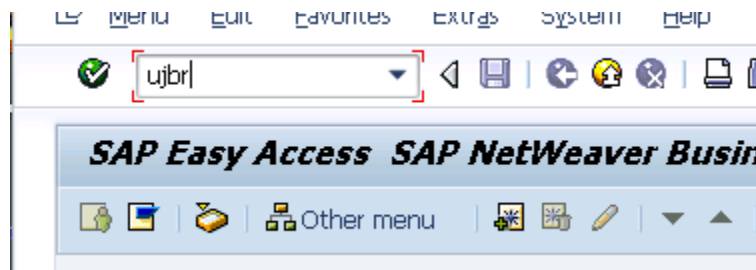
**Note:** BW 7.31 is not currently supported for the HANA component HANABPC, this is tentatively scheduled for Q1 2013.

Assuming you have already done a backup of the current system, this guide will start from the restoration step.

1. First, logon on to the application server via Remote Desktop Connection and copy the backed up BPC 7.5 NW application set to a specified directory.



2. Login to the SAP GUI and go to transaction UJBR.



3. In order to Restore the application set, select the following:

Execution  
*Execute Restore*

Execute in...  
*Background*

Parameters & Procedures

Environment ID: Enter the name of the BPC 7.5 application set, in this case it is *BPCP\_RJM*


Archive File Name: Enter the directory and zipped backup.

Often, you can restore Metadata Tables and Master Data at the same time, but if you have large dimensions, run these separately (Metadata first, then Master Data).

Use Tech Names from Backup Files: *Enabled*. This allows for BADI's and DTP's to be used and migrated to different environments. See [note 1689814](#) for more information.

Record Count = 0. If you are restoring transactional data at the same time, then enter 0, otherwise this parameter is not taken into consideration when restoring Metadata Tables and Master Data.

**BPC: Backup & Restore Tool**



Execution

☐ Execute Backup

☒ Execute Restore

Execute in...

☒ Background

☐ Foreground

Parameters & Procedures

Environment ID

Archive File Name

Restore Metadata Tables ☒


Restore Master Data ☒

Restore Transaction Data ☐


Use Tech Names from Backup Files ☒

Record Count ( 0 = All Records )

4. Click the Execute button



**BPC: Backup & Restore Tool**



Execution

☐ Execute Backup

☒ Execute Restore

Execute in...

☒ Background

☐ Foreground

Parameters & Procedures

Environment ID

Archive File Name

Restore Metadata Tables ☒

Restore Master Data ☒

Restore Transaction Data ☐

Use Tech Names from Backup Files ☒

Record Count ( 0 = All Records )

5. At the bottom of the screen, you will see that the job has been submitting.

 Job BPC\_RESTORE\_BPCP\_RJM submitted

6. To monitor the process, go to transaction SM37



7. Click the Execute button in the upper left-hand corner.

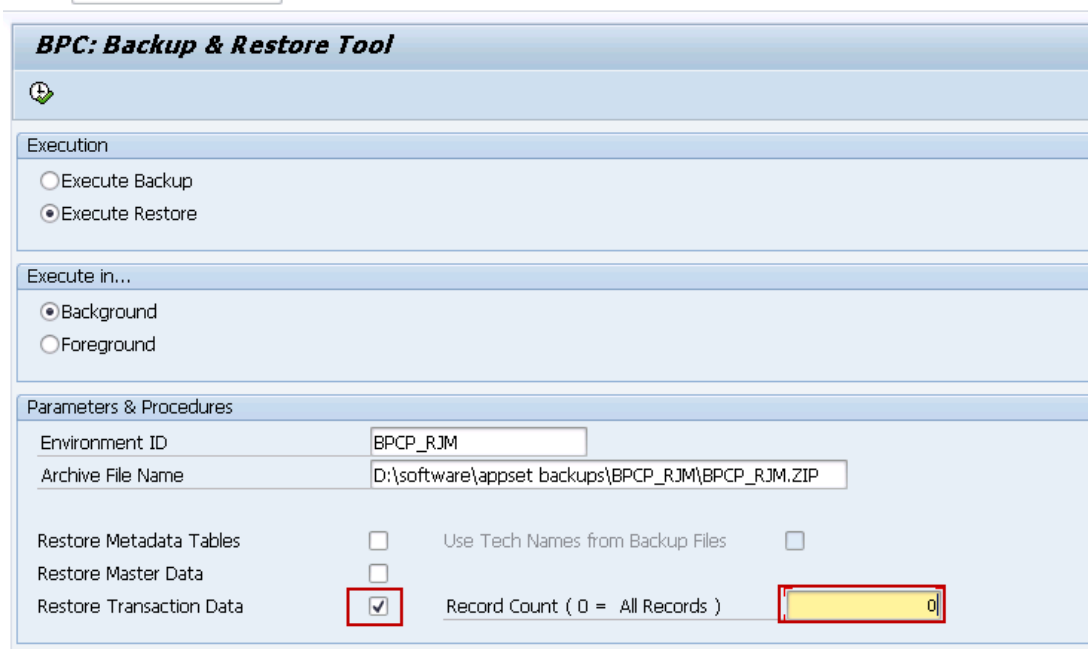
The 'Simple Job Selection' dialog box is shown. The 'Execute' button is highlighted with a red box. The 'Job name' field contains an asterisk (\*). The 'User name' field contains 'I821769'. The 'Job status' section has checkboxes for 'Sched.', 'Released', 'Ready', 'Active', 'Finished', and 'Canceled', with 'Released' and 'Ready' checked. The 'Job start condition' section shows date ranges from '15.11.2012' to '15.11.2012'. The 'Job step' section has a field for 'ABAP program name'.

8. By clicking on the Refresh button (upper left-hand corner), you will be able to see the job processing until it has *Finished*.

The 'Job Overview' table displays job processing details. The 'Refresh' button is highlighted with a red box. The table shows two jobs: 'BPC BACKUP\_BPCP\_RJM' and 'BPC\_RESTORE\_BPCP\_RJM', both with a status of 'Finished'.

Job	Job Coun	Spool	Job doc	Job CreatedB	Status	Start date	Start time	Duration(sec.)	Delay (sec.)
BPC BACKUP_BPCP_RJM	13524500			I821769	Finished	15.11.2012	13:52:45	10	0
BPC_RESTORE_BPCP_RJM	14060600			I821769	Finished	15.11.2012	14:06:06	174	0
*Summary								184	0

9. Go back to transaction UJBR to restore the transactional data. To do this, enter the same information, but instead of checking Metadata and Master Data, click *Restore Transaction Data*. Also, ensure you have 0 entered for the Record Count parameter.



**BPC: Backup & Restore Tool**

Execution

☐ Execute Backup

☒ Execute Restore

Execute in...

☒ Background

☐ Foreground

Parameters & Procedures

Environment ID: BPCP\_RJM

Archive File Name: D:\software\appset backups\BPCP\_RJM\BPCP\_RJM.ZIP

Restore Metadata Tables: ☐ Use Tech Names from Backup Files: ☐

Restore Master Data: ☐

Restore Transaction Data: ☒ Record Count ( 0 = All Records ): 0

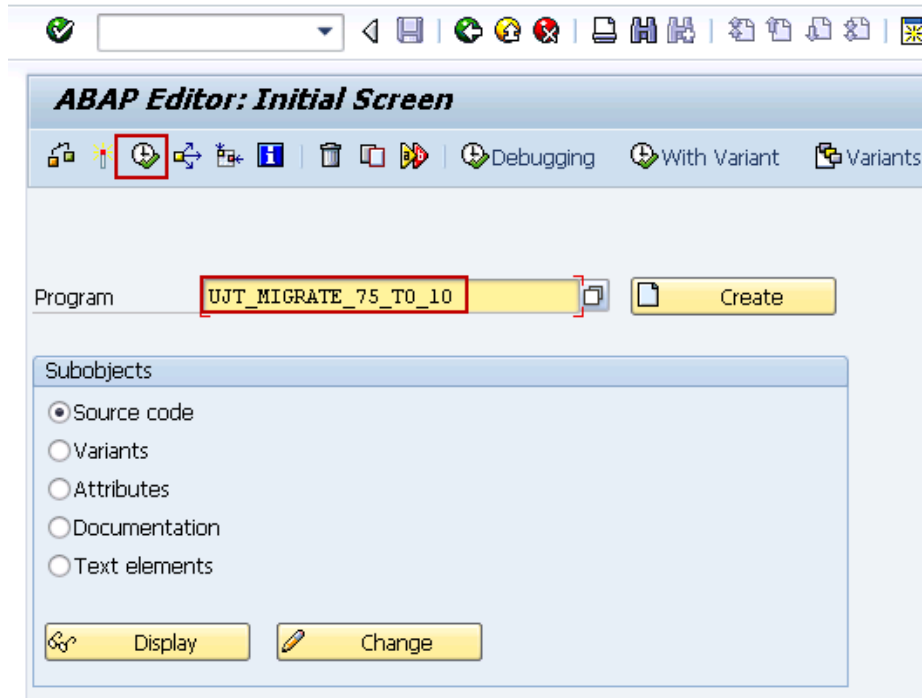
10. Click the Execute button



## Migration 7.5 to 10

Now that the BPC 7.5 application set has been restored to the HANA server, it is time to migrate the application set to a BPC 10 environment. Environment is the new terminology in BPC 10 for application set.

1. Go to transaction SE38 and run program UJT\_MIGRATE\_75\_TO\_10





2. Enter the environment to be migrated and select the following parameters to be migrated:
  - a. *Environments & Parameters*
  - b. *Controls*
  - c. *Library Content*
  - d. *Journals*
  - e. *Data manager*
  - f. *Business Process Flow*
  - g. *Business Rules*

**Migrate from BPC 7.5 to BPC 10.0**

Environment: BPCP\_RJM to [ ]

☒ Environments & Parameters

☐ Security

User mapping file: [ ]

☒ Controls

☒ Library Content

☒ Journal

☒ Data manager

☒ Business Process Flow

☒ Business Rules

☐ Test Run

3. Click the Execute button at the top left-hand corner.

**Migrate from BPC 7.5 to BPC 10.0**

Execute button (green circle with white arrow) highlighted with a red arrow.

Environment: BPCP\_RJM to [ ]

☒ Environments & Parameters

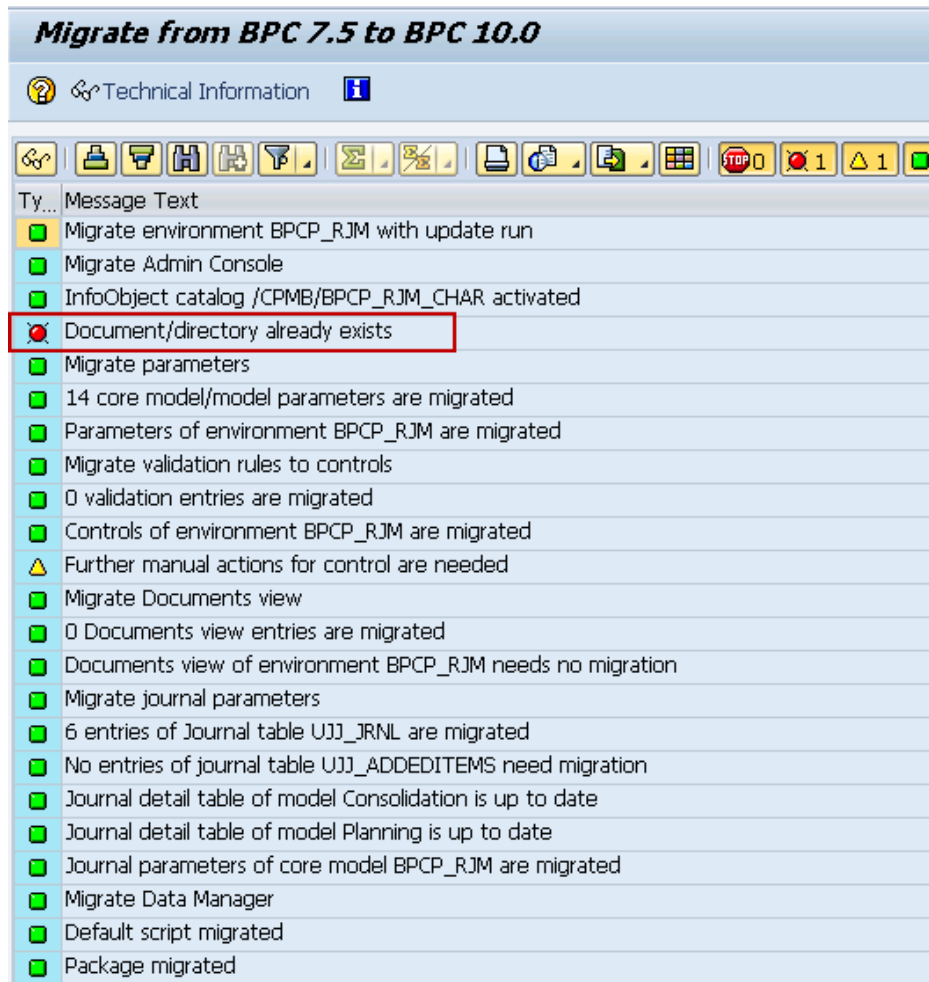
☐ Security

User mapping file: [ ]

☒ Controls

☒ Library Content

4. When the process has finished, you should get a listing of what has been completed. In the below screenshot, I received a warning stating the directory already exists because this environment had already been migrated. You should not get this warning.



5. Open an Internet Explorer session and type in the web address of the portal, in my case it is <http://address:port/sap/bpc/web>

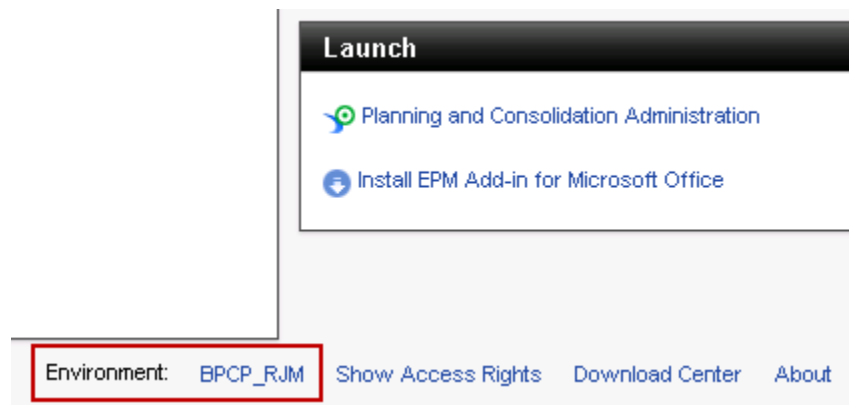
6. When the portal webpage renders, enter your User ID and Password.



7. If you get the following Warning screen, click the grey X in the upper right-hand corner.



8. At the bottom of the webpage, ensure the correct Environment is listed.



9. In the Launch area, click the *Planning and Consolidation Administration* hyperlink to take you to the administration page.



10. To display the dimensions, click on *Dimensions* under Dimensions and Models (left-hand side). If the *Status* is yellow (last column), go ahead and Process the dimension by clicking the *Process* button.

The screenshot shows the 'Administration of BPCP\_RJM' interface. On the left, the 'Dimensions and Models' menu is expanded, and 'Dimensions' is selected. The main area displays a table of dimensions. The 'Process' button in the top toolbar is highlighted with a red box. The 'ACCOUNT' dimension has a yellow status icon, which is also highlighted with a red box.

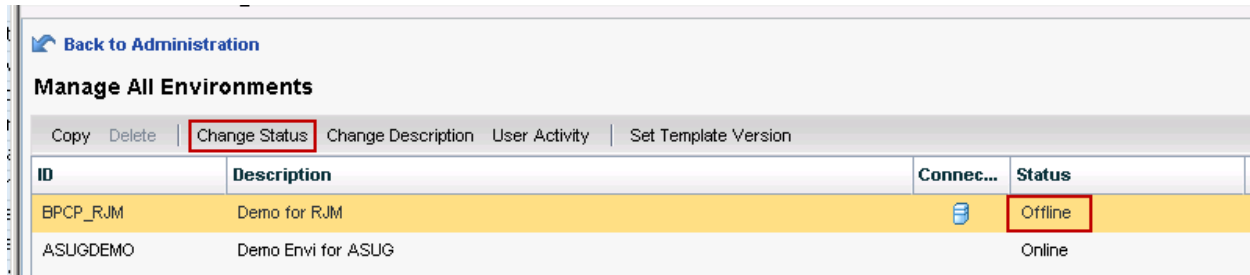
ID	Description	Type	Status
ACCOUNT	Account	Account - A	Yellow diamond icon
AUDITTRAIL	Audit Trail	Audit - D	Green circle icon
C_ACCOUNT	Consolidation Chart of Accounts	Account - A	Green circle icon
CATEGORY	Category	Category - C	Green circle icon
ENTITY	Entity	Entity - E	Green circle icon
FLOW	Flow	Subtables - S	Green circle icon
INPUTCURRENCY	Input Currency	Currency - R	Green circle icon
INTERCO	Intercompany Partner	Intercompany - I	Green circle icon
O_ACCOUNT	Ownership Account	Account - A	Green circle icon
PRODLINE	Product Line	User-defined - U1	Green circle icon

11. To set the environment back Online, click the *Manage All Environments* button in the upper right-hand corner.

The screenshot shows the 'Administration of BPCP\_RJM' interface. The 'Manage All Environments' button in the top right corner is highlighted with a red box. The 'Dimensions' table is visible, and the 'ACCOUNT' dimension now has a green status icon.

ID	Description	Type	Status
ACCOUNT	Account	Account - A	Green circle icon
AUDITTRAIL	Audit Trail	Audit - D	Green circle icon
C_ACCOUNT	Consolidation Chart of Accounts	Account - A	Green circle icon

12. Notice the *Status* is Offline for this environment is Offline. Click the *Change Status* button.



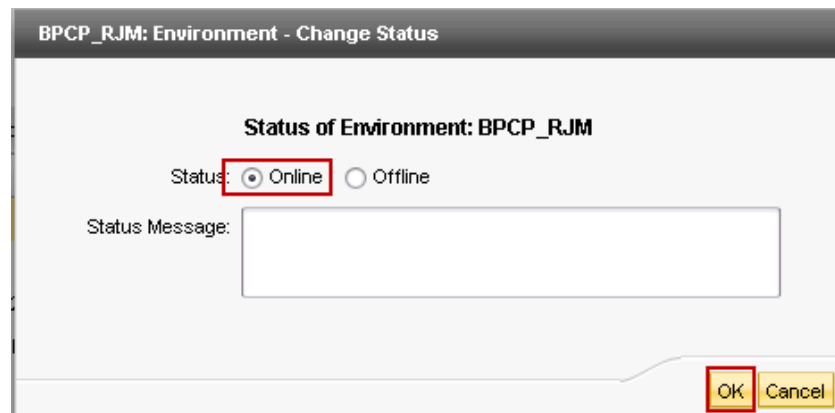
Back to Administration

**Manage All Environments**

Copy Delete **Change Status** Change Description User Activity Set Template Version

ID	Description	Conne...	Status
BPCP_RJM	Demo for RJM		Offline
ASUGDEMO	Demo Envi for ASUG		Online

13. Click the *Online* radio button and click *OK*.



**BPCP\_RJM: Environment - Change Status**

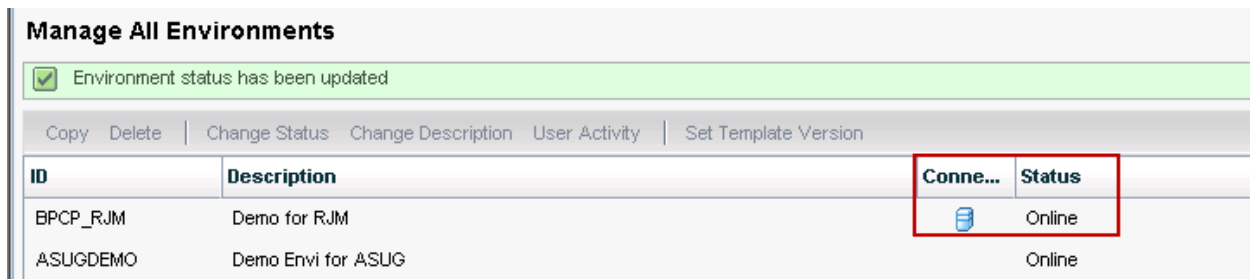
**Status of Environment: BPCP\_RJM**

Status: ☒ Online ☐ Offline

Status Message:

OK Cancel

14. Notice, the environment is now changed to Online.



**Manage All Environments**

☒ Environment status has been updated

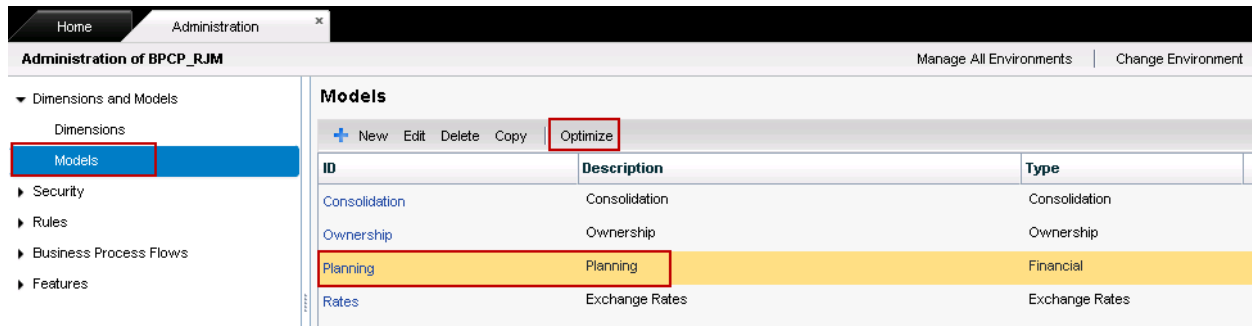
Copy Delete Change Status Change Description User Activity Set Template Version

ID	Description	Conne...	Status
BPCP_RJM	Demo for RJM		Online
ASUGDEMO	Demo Envi for ASUG		Online

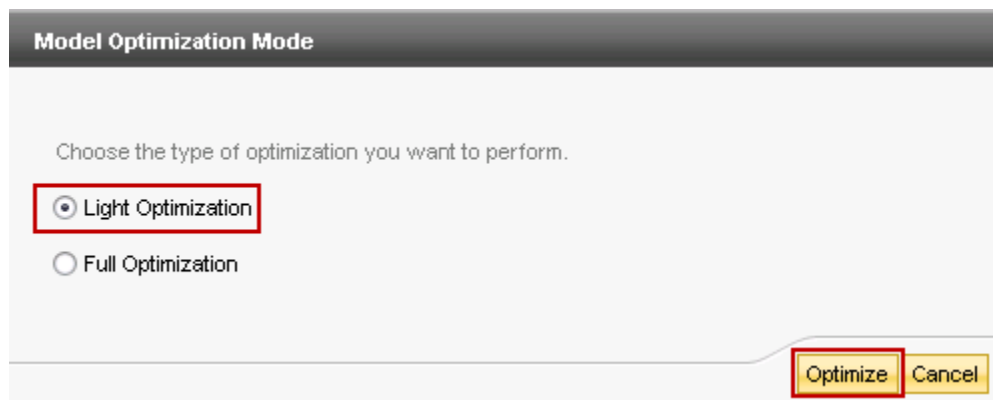
15. To return to main Administration page, click the hyperlink *Back to Administration*.



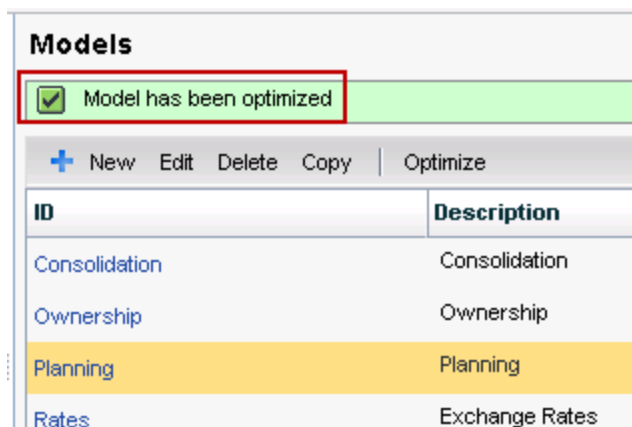
16. Lastly, the model needs to be *Optimized*. Under Dimensions and Models, click Models and select a model. With the model highlighted, select *Optimize*. Optimizations in BPC on HANA are much faster than BPC “Classic” because HANA optimized infocubes are “flat” with no dimension tables and one fact table plus there is no need to re-index the table or perform aggregations.



17. You can choose either Light or Full Optimization. Click Optimize.



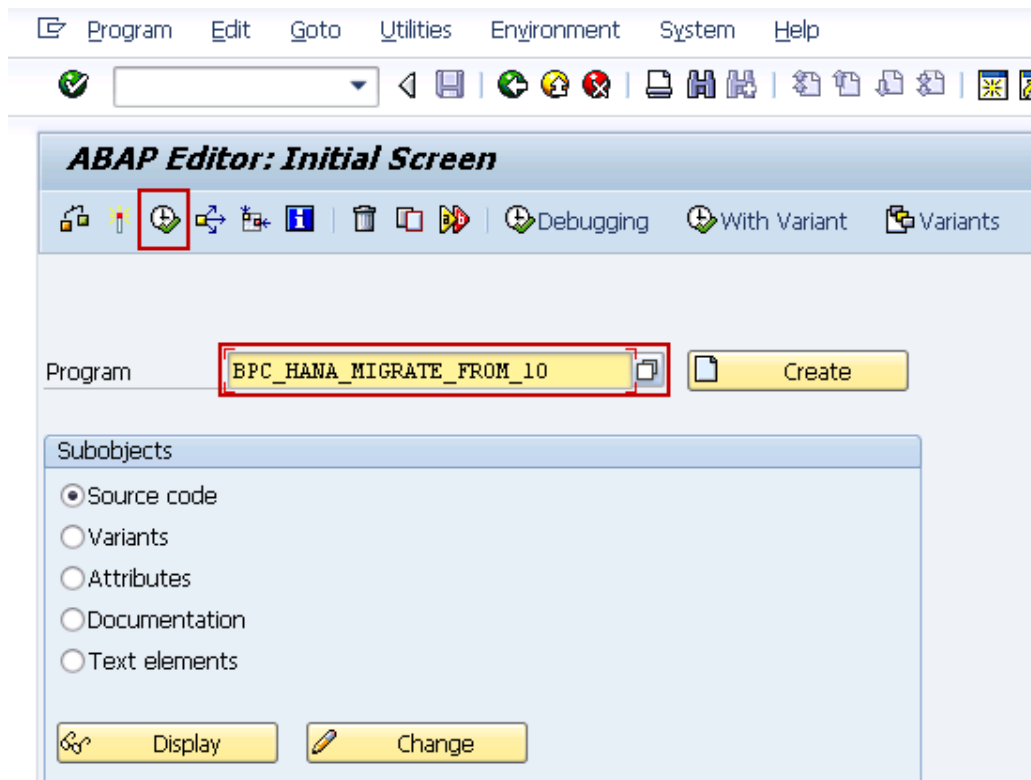
18. When the process has finished, you will see that the *Model has been optimized* in the green shade.



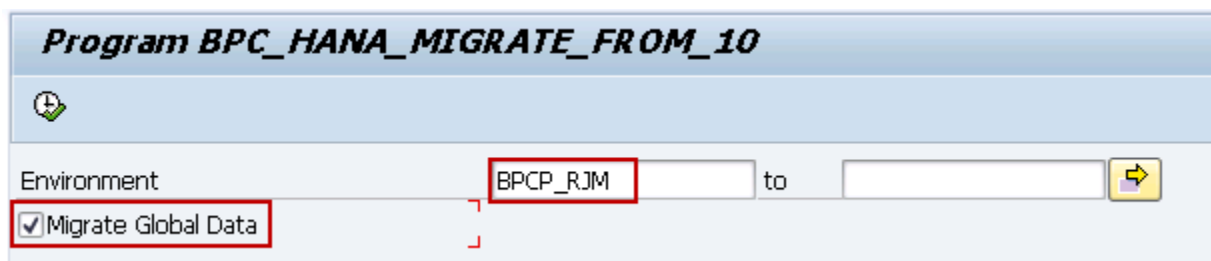
### Migration from BPC 10 to BPC 10 Powered HANA

Now that your BPC 7.5 application set has been migrated to a BPC 10 environment, it needs to be migrated to HANA.

1. Go back and login in to the SAP GUI, if needed. Go to transaction SE38 and run the program BPC\_HANA\_MIGRATE\_FROM\_10. Click the *Execute* button.



2. On the following screen, enter the Environment and check Migrate Global Data. \*\*\*Note: If you enter an \* in the environment, it will convert all BPC environments on the server to HANA. Click the *Execute* button.



3. If you are on BW SP08 or higher, you will get the following screen

<b>Program BPC_HANA_MIGRATE_FROM_10</b>				
	Message Class	Ms...	Me...	Message text
	BPC_HANA_INSTALL_EXP I		007	Begin to migrate BPCP_RJM.
	BPC_HANA_INSTALL_EXP I		008	Migrate BPCP_RJM successfully.
	BPC_HANA_INSTALL_EXP S		002	Migrate to BPC on HANA successfully

If your BW Service Pack is less than SP08, the following screen will appear.

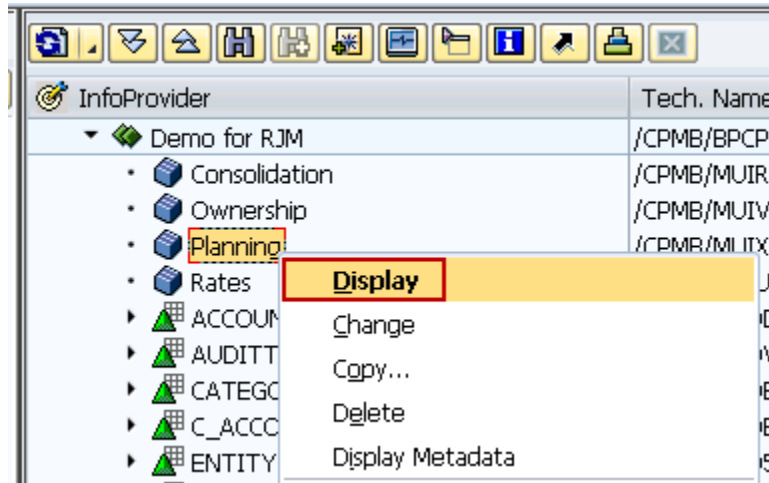
<b>Program BPC_HANA_MIGRATE_FROM_10</b>				
	Message Class	M	M...	Message text
	BPC_HANA_INSTALL_EXP	S	0...	Migrate to BPC on HANA successfully

4. To ensure the environment has been converted to HANA, go to transaction RSA1 and locate a model (new term for a BPC 7.5 application).

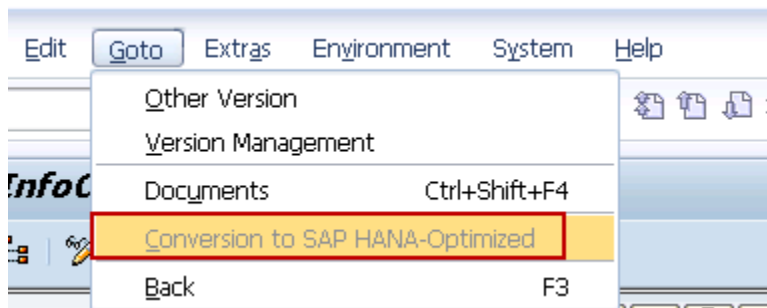
▼  Demo for RJM	/CPMB/BPCP_RJM
•  Consolidation	/CPMB/MUIR34K
•  Ownership	/CPMB/MUIV2DT
•  Planning	/CPMB/MUIXHC
•  Rates	/CPMB/MUIUCRA
▶  ACCOUNT	/CPMB/MUDD16I
▶  AUDITTR	/CPMB/MUIV2DT



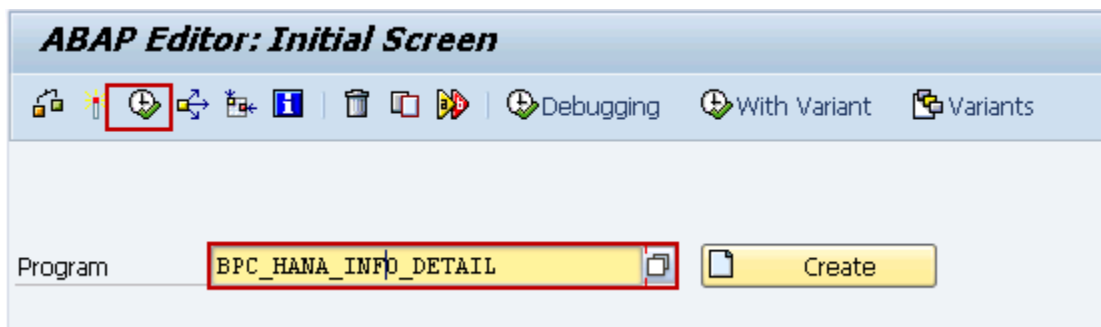
5. Highlight a model, right-click and select Display.



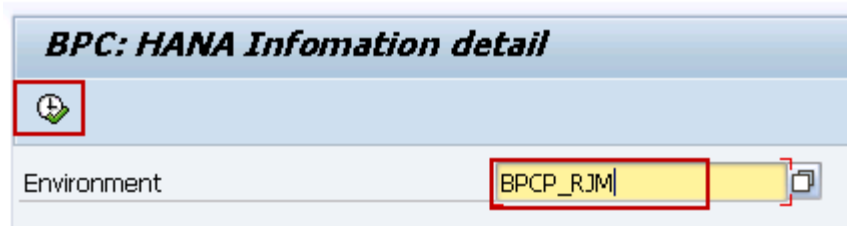
6. Select Goto from the menu. You will see Conversion to SAP HANA-Optimized is greyed out meaning the model has already been optimized.



7. Another way to ensure the environment has been HANA Optimized is to go to transaction SE38 and run the program BPC\_HANA\_INFO\_DETAIL. Click the *Execute* button.



8. Enter the environment and click the *Execute* button.



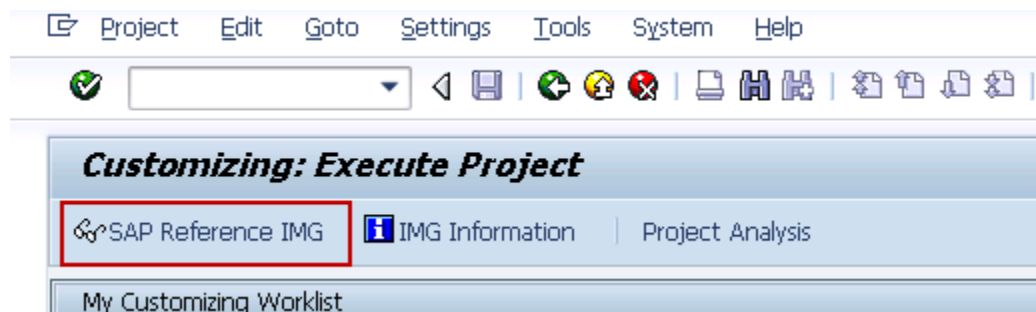
9. The BPC HANA detailed information will render showing the HANA tables and views.

<b>BPC: HANA Information detail</b>					
BPC: HANA Information detail					
Dimension ACCOUNT					
Hierarchy	HANA Table	Exist	HANA View	Exist	Count
PARENTH1	"\$BPC\$H\$MUDD16IP1"	X	"\$BPC\$V\$MUDD16IP1"	X	32
Dimension AUDITTRAIL					
Hierarchy	HANA Table	Exist	HANA View	Exist	Count
PARENTH1	"\$BPC\$H\$MUDVBBIP1"	X	"\$BPC\$V\$MUDVBBIP1"	X	14
Dimension CATEGORY					
Hierarchy	HANA Table	Exist	HANA View	Exist	Count
PARENTH1	"\$BPC\$H\$MUDVBBIP1"	X	"\$BPC\$V\$MUDVBBIP1"	X	14
Dimension C_ACCOUNT					
Hierarchy	HANA Table	Exist	HANA View	Exist	Count

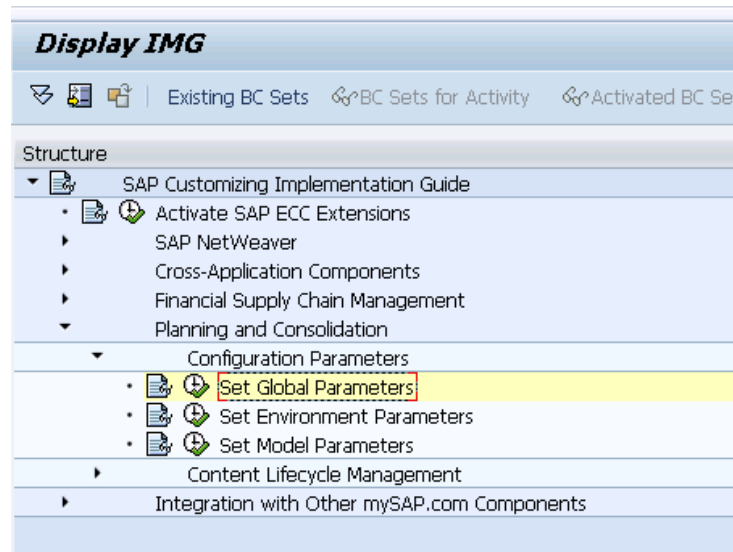
### SPRO Parameters

Certain parameters need to be set in transaction SPRO after the migration in order for HANA to perform at peak performance.

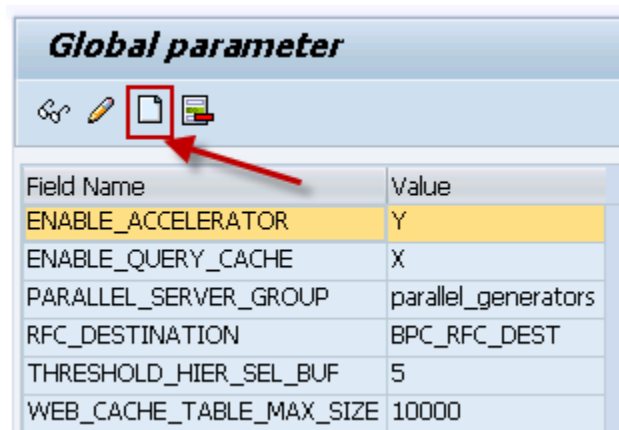
1. In the SAP GUI, go to transaction SPRO and click *SAP Reference IMG*



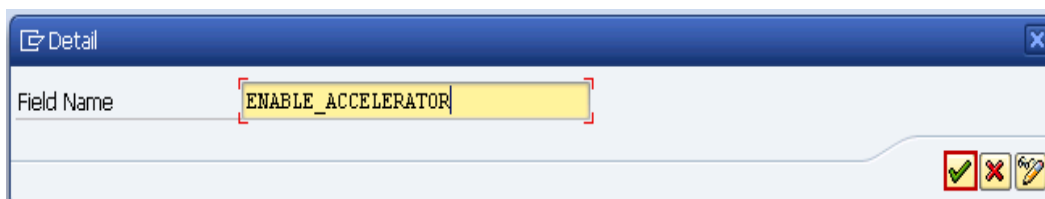
2. Navigate to Planning and Consolidation -> Configuration Parameters. This is where you can set the Global, Environment, and Model Parameters.



3. [Note 1743412](#) – How to enable HANA on BPC. This has two steps, one is a Global Parameter and one is an Environment Parameter.
  - a. Within SPRO, select the Execute button to the left of Set Global Parameters.
  - b. Click the Insert button



- c. Enter ENABLE\_ACCELERATOR for the Field Name and click the OK button.



- d. Enter a Y or X and click the OK button.

The screenshot shows a 'Detail' dialog box with a table. The table has two columns: 'Field Name' and 'Value'. The first row contains 'ENABLE\_ACCELERATOR' and 'Y'. The 'OK' button is highlighted with a red box.

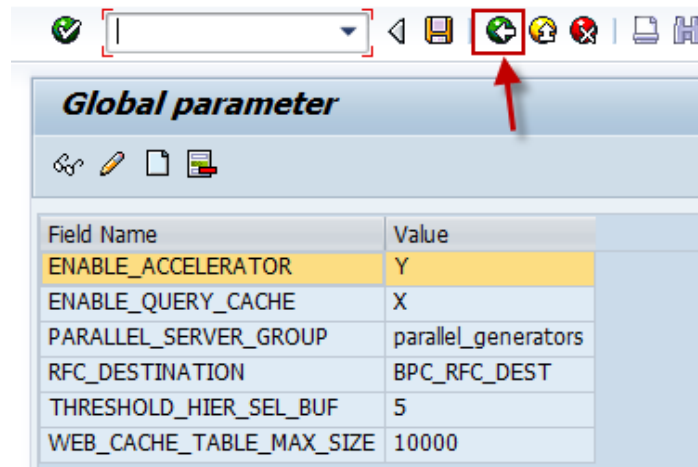
Field Name	Value
ENABLE_ACCELERATOR	Y

- e. Click the Save icon.

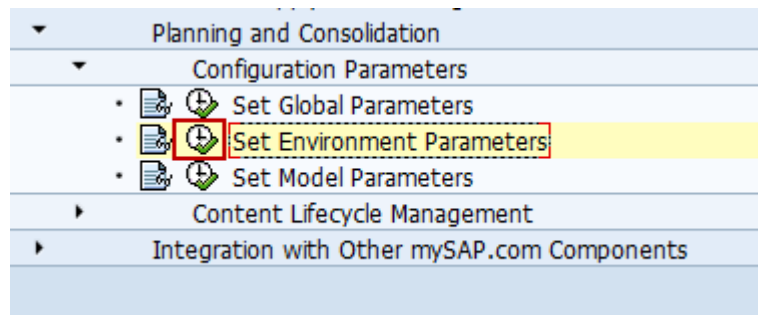
The screenshot shows a 'Global parameter' table. The table has two columns: 'Field Name' and 'Value'. The first row is highlighted with a red box. The 'Save' icon is highlighted with a red box.

Field Name	Value
ENABLE_ACCELERATOR	Y
ENABLE_QUERY_CACHE	X
PARALLEL_SERVER_GROUP	parallel_generators
RFC_DESTINATION	BPC_RFC_DEST
THRESHOLD_HIER_SEL_BUF	5
WEB_CACHE_TABLE_MAX_SIZE	10000

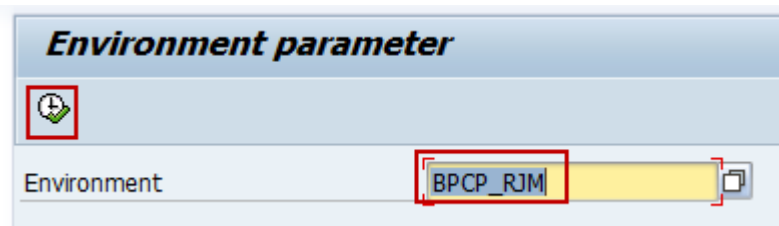
- f. For the Environment Parameter, click the back button



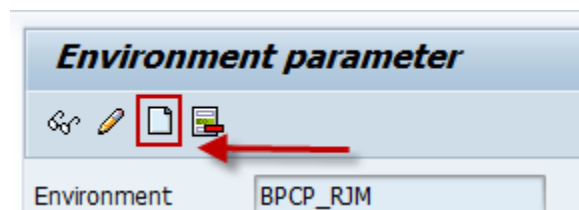
- g. Click the Execute button to the left of *Set Environment Parameters*.



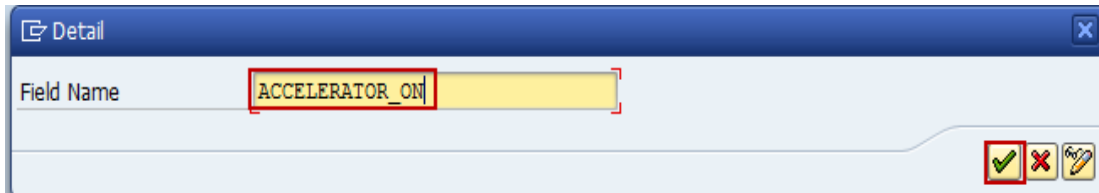
- h. Enter the Environment and click the *Execute* button.



- i. Click the Insert button



- j. For the Field Name, type `ACCELERATOR_ON` and click the **OK** button.



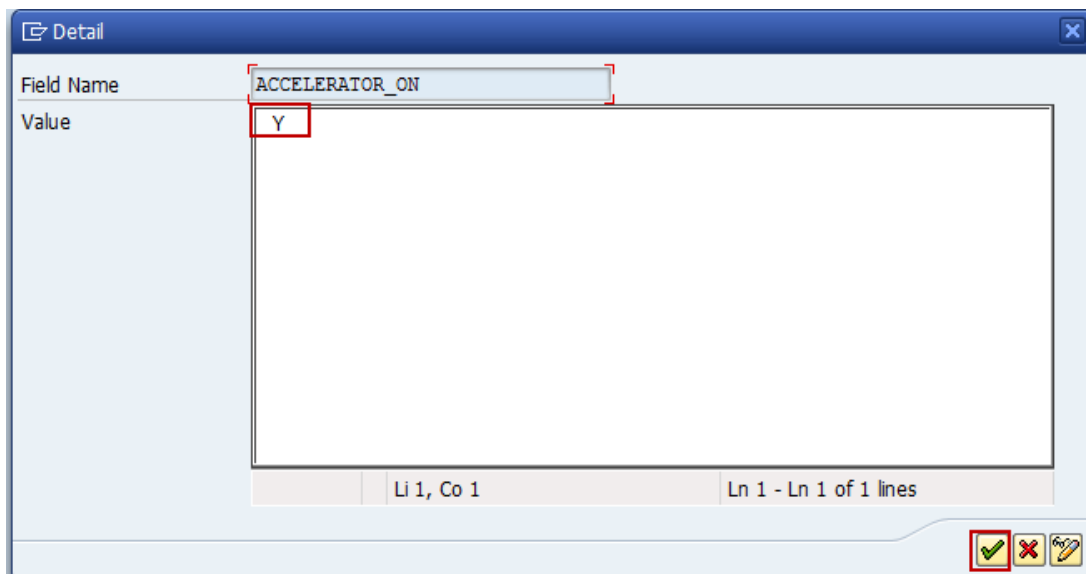
Detail

Field Name `ACCELERATOR_ON`

Value

OK (green checkmark icon)

- k. Enter `Y` and click the **OK** button.



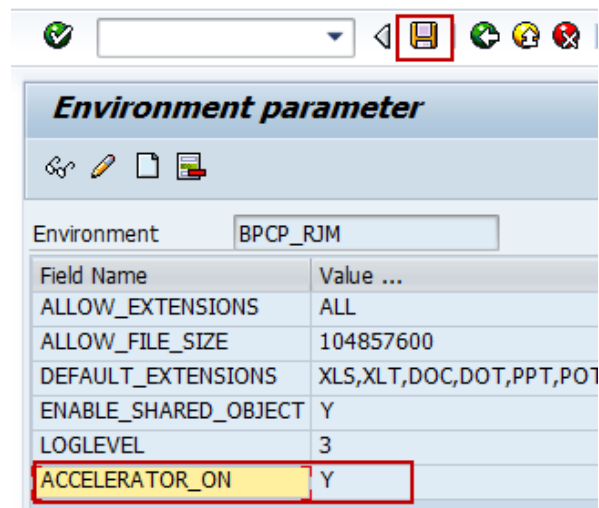
Detail

Field Name `ACCELERATOR_ON`

Value `Y`

OK (green checkmark icon)

- l. Click the **Save** icon.



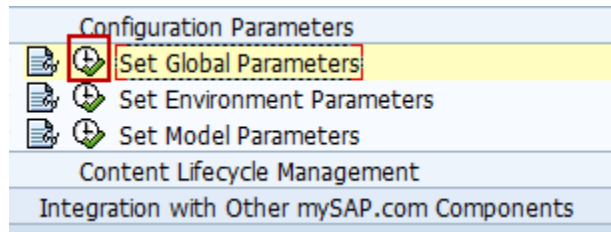
Environment parameter

Environment `BPC_RJM`

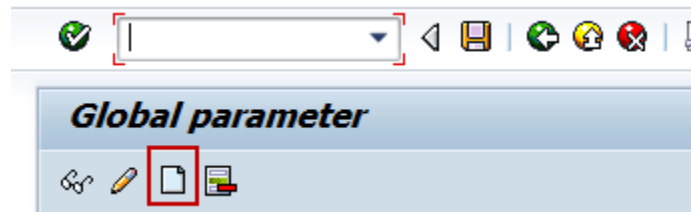
Field Name	Value ...
ALLOW_EXTENSIONS	ALL
ALLOW_FILE_SIZE	104857600
DEFAULT_EXTENSIONS	XLS,XLT,DOC,DOT,PPT,POT
ENABLE_SHARED_OBJECT	Y
LOGLEVEL	3
<code>ACCELERATOR_ON</code>	<code>Y</code>

Save (floppy disk icon)

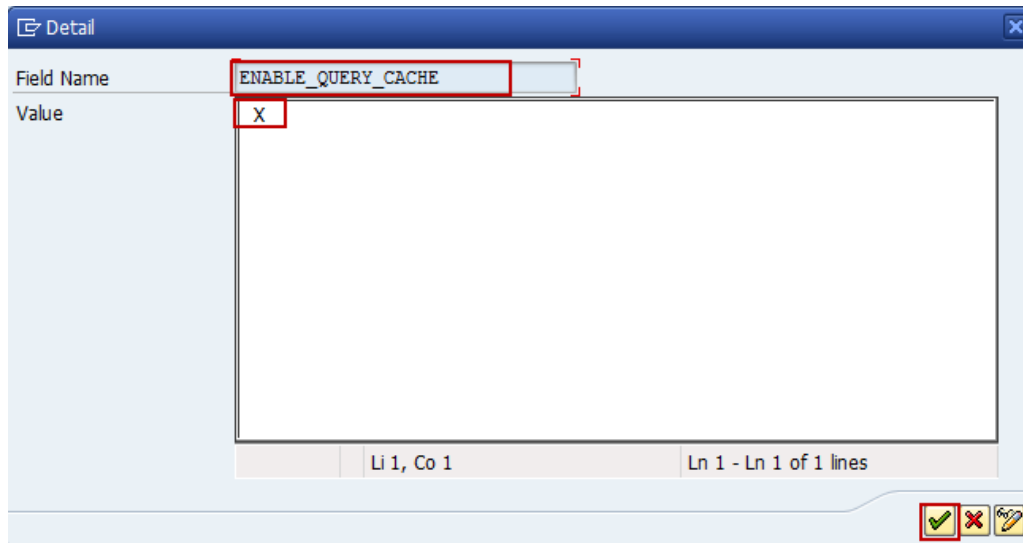
4. [Note 1723590](#) – Performance Improvement for Query in HANA
- Description: Further Performance Improvement for EPM Add-in Report on BPC HANA by leveraging report cache.
  - In SPRO, go to *Set Global Parameters*.



- c. Click the Insert icon



- d. For the Field Name, enter *ENABLE\_QUERY\_CACHE* with a value of X. Click OK.



- e. Click the Save icon.

Field Name	Value
ENABLE_ACCELERATOR	Y
<b>ENABLE_QUERY_CACHE</b>	<b>X</b>
PARALLEL_SERVER_GROUP	parallel_generators
RFC_DESTINATION	BPC_RFC_DEST
THRESHOLD_HIER_SEL_BUF	5
WEB_CACHE_TABLE_MAX_SIZE	10000

5. [Note 1657612](#) – Enable shared Memory (not BPC HANA only note)
- Description: The performance of reading hierarchy members has been improved by enabling shared memory, which allows each user session to share a global memory area reserved for the caching of BPC hierarchy members. Perform the following steps to enable Shared Memory for BPC NetWeaver Hierarchy Members.
  - Click on the Execute button to the left of *Set Environment Parameters*.

- c. Enter the Environment and click the Execute icon.

- d. Click the Insert icon.



- e. Enter *ENABLE\_SHARED\_OBJECT* for the Field Name and enter a Value of Y. Click OK.

Detail

Field Name: ENABLE\_SHARED\_OBJECT

Value: Y

Li 1, Co 1      Ln 1 - Ln 1 of 1 lines

- f. Click the Save icon.

Environment parameter

Environment: BPCP\_RJM

Field Name	Value ...
ALLOW_EXTENSIONS	ALL
ALLOW_FILE_SIZE	104857600
DEFAULT_EXTENSIONS	XLS,XLT,DOC,DOT,PPT,POT,XML,MHT
ENABLE_SHARED_OBJECT	Y
LOGLEVEL	3

6. [Note 1657623](#) – SAP Buffer Tuning for BPC 10 NW
7. [Note 1734706](#) – BPC 10.NW on HANA (HANABPC) Collective Note. This is a working note so please check it often as other notes will be included that may help increase the performance

## Related Content

**NEW SAP Community Network** - <http://scn.sap.com/welcome>

**BPC Blogs** - <http://wiki.sdn.sap.com/wiki/display/CPM/BPC+Blogs>

**EPM Add-in Academy** - <http://wiki.sdn.sap.com/wiki/display/CPM/EPM+Add-in+Academy>

**BPC Forums** - <http://scn.sap.com/community/epm/businessobjects-planning-and-consolidations-for-netweaver>

**EPM Roadmap** - <https://websmp103.sap-ag.de/roadmap>

**Idea Place to influence our software, submit an idea, vote, or add a comment** - <https://cw.sdn.sap.com/cw/community/ideas>

**Customer case studies and references** - <http://www.sap.com/solutions/sapbusinessobjects/large/enterprise-performance-management/customers/index.epx>

**Customer case studies and references** - <http://www.youtube.com/watch?v=nt4ab4APd2I>

**BPC How to Guides** - <https://wiki.sdn.sap.com/wiki/display/BPX/Enterprise+Performance+Management+%28EPM%29+How-to+Guides>

**BPC Sizing Guide** - <https://websmp110.sap-ag.de/sizing>

**BPC Help Files** - [http://help.sap.com/saphelp\\_bpc10\\_nw/helpdata/en/bpc\\_nw\\_index.htm](http://help.sap.com/saphelp_bpc10_nw/helpdata/en/bpc_nw_index.htm)

**BPC Install, upgrade, and logic Guides** - <https://websmp107.sap-ag.de/instguidesepm-bpc>

**BPC Release Notes** - <http://service.sap.com/releasenotes>

**BPC 10 Consolidation Demo on Youtube** - [http://www.youtube.com/watch?v=\\_5nu3v9sVzA](http://www.youtube.com/watch?v=_5nu3v9sVzA)

**BPC 10 Reporting Demo on Youtube** - <http://www.youtube.com/watch?v=8u6orTHi1Y>

**SAP Product Availability Matrix for support end of life and platform support** - <https://websmp110.sap-ag.de/pam>

## Related Blogs

**[Tom Chelednik - BPC on HANA – Inside the Numbers!](#)**

**[Jens Koerner - BPC on HANA: True Innovation Without Disruption](#)**

**[Jens Koerner - BPC Demos, Customer References, Roadmaps, Performance and Sizing Information, Training Documentation, and Tips and Tricks](#)**

**[Jens Koerner - BPC 10.0 NW NetWeaver sizing](#)**

**[David Williams - SAP BusinessObject Planning and Consolidation and SAP HANA: A Peanut Butter-and-Chocolate Combination – Sweet!](#)**

**[John Appleby - The Realtime Organisation - Planning when you need it with SAP BPC on HANA](#)**

**[Sheldon Edelstein - Installation Options for Business Objects Planning and Consolidation 10.0, version for Netweaver](#)**

## Copyright

© Copyright 2012 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft, Windows, Excel, Outlook, and PowerPoint are registered trademarks of Microsoft Corporation.

IBM, DB2, DB2 Universal Database, System i, System i5, System p, System p5, System x, System z, System z10, System z9, z10, z9, iSeries, pSeries, xSeries, zSeries, eServer, z/VM, z/OS, i5/OS, S/390, OS/390, OS/400, AS/400, S/390 Parallel Enterprise Server, PowerVM, Power Architecture, POWER6+, POWER6, POWER5+, POWER5, POWER, OpenPower, PowerPC, BatchPipes, BladeCenter, System Storage, GPFS, HACMP, RETAIN, DB2 Connect, RACF, Redbooks, OS/2, Parallel Sysplex, MVS/ESA, AIX, Intelligent Miner, WebSphere, Netfinity, Tivoli and Informix are trademarks or registered trademarks of IBM Corporation.

Linux is the registered trademark of Linus Torvalds in the U.S. and other countries.

Adobe, the Adobe logo, Acrobat, PostScript, and Reader are either trademarks or registered trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Oracle is a registered trademark of Oracle Corporation.

UNIX, X/Open, OSF/1, and Motif are registered trademarks of the Open Group.

Citrix, ICA, Program Neighborhood, MetaFrame, WinFrame, VideoFrame, and MultiWin are trademarks or registered trademarks of Citrix Systems, Inc.

HTML, XML, XHTML and W3C are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

Java is a registered trademark of Oracle Corporation.

JavaScript is a registered trademark of Oracle Corporation, used under license for technology invented and implemented by Netscape.

SAP, R/3, SAP NetWeaver, Duet, PartnerEdge, ByDesign, SAP Business ByDesign, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and other countries.

Business Objects and the Business Objects logo, BusinessObjects, Crystal Reports, Crystal Decisions, Web Intelligence, Xcelsius, and other Business Objects products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of Business Objects S.A. in the United States and in other countries. Business Objects is an SAP company.

All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serves informational purposes only. National product specifications may vary.

These materials are subject to change without notice. These materials are provided by SAP AG and its affiliated companies ("SAP Group") for informational purposes only, without representation or warranty of any kind, and SAP Group shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP Group products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.