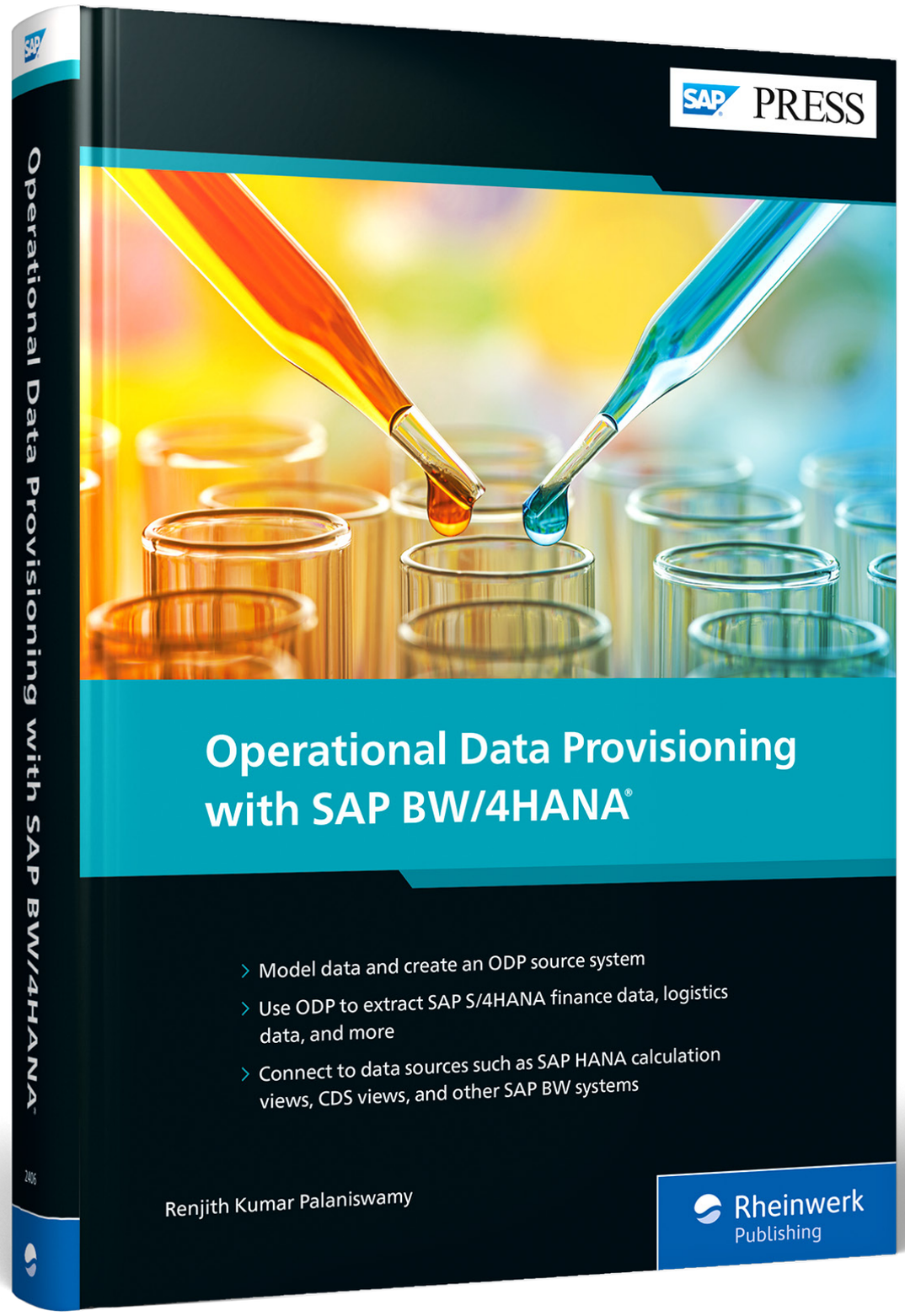


Reading Sample

This sample chapter describes how to work with extractors, which are objects that reside in a source system and encapsulate extraction logic. These extractors are replicated to SAP BW/4HANA to create a link to the source system. In this chapter, you'll learn about the available extractors, how they work, and how these operational data provisioning (ODP) extractors compare to previously available Service Application Interface (SAPI) extractors.

"Work with SAP Extractors"

Contents

Index

The Authors

Renjith Kumar Palaniswamy

Operational Data Provisioning with SAP BW/4HANA

608 pages | 08/2023 | $89.95 | ISBN 978-1-4932-2406-7

www.sap-press.com/5676

Chapter 4
Working with SAP Extractors

This chapter discusses standard SAP extractors in different functional areas in logistics. You'll learn about the extractor types and the differences between them.

When you want to extract data from any SAP ERP system into SAP BW/4HANA, you need *extractors* or DataSources that fetch and send data between the two systems. In this chapter, you'll be introduced to the extractors in each functional area in Section 4.1.

There are many extractors that are delivered across multiple functional areas, and each functional area has its own logic to send historical and delta records to SAP BW/4HANA using DataSources. You'll learn about the types of SAP-delivered extractors in Section 4.2. You'll explore the logistics Extractors in Section 4.2.1, where we'll focus on logistics applications like sales and distribution, materials management, purchasing, plant maintenance, and so on. Then we'll talk about the finance extractors in Section 4.2.2, with extractors for areas like accounts receivable, accounts payable, and the general ledger. Finally, we'll look at human resources extractors in Section 4.2.3.

Section 4.3 looks at generic extractors, and then you'll learn about installing SAP BusinessObjects Business Intelligence (SAP BusinessObjects BI) content in Section 4.4. Once you complete the chapter, you'll have a strong foundation for learning about data loading from SAP S/4HANA in later chapters.

4.1 Introduction to SAP Extractors

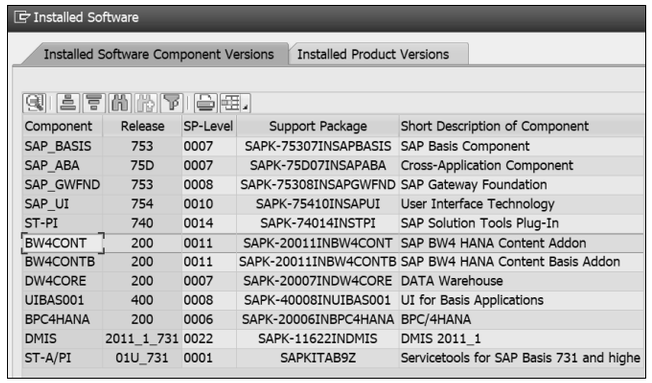
This section covers types of SAP ERP systems and their associated SAP BusinessObjects BI content and discusses the availability of SAP extractors and DataSources.

SAP ERP System and Extractors

SAP BW/4HANA can be connected to SAP ERP and SAP S/4HANA. There have been major functional-level changes between these two systems, and new tables have replaced some old tables in SAP S/4HANA. The important SAP S/4HANA versions start from SAP S/4HANA 1610, which was released in May 2016, and the latest version is SAP S/4HANA 2022. Most of the SAP business content extractors that worked with SAP ERP are still used in SAP BW/4HANA. A few DataSources are depreciated with SAP

S/4HANA. For some DataSources, alternatives have been provided in SAP S/4HANA. We'll focus on the most common application areas here and their associated extractors, where most SAP BW reporting is used.

To extract data from SAP ERP, many DataSources have been developed by SAP across multiple application components. These DataSources can be accessed using specific transactions in SAP S/4HANA or SAP ERP systems. For SAP BW systems, these DataSources have been updated and shipped using the `BI_CONT` add-on, which can be installed in SAP BW 7.X systems; for example, SAP BusinessObjects BI content 7.57 is the add-on for 7.5. It includes SAP HANA–optimized business content. When SAP BW/4HANA is used, you'll see two new components: BW4CONT and BW4CONTB. BW4CONTB contains objects like InfoAreas, application components, InfoObjects, and so on. BW4CONT has dataflows, aDSOs, CompositeProviders, InfoSources, and transformations. You can see the BW4CONT component in Figure 4.1.



Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	753	0007	SAPK-75307INSAPBASIS	SAP Basis Component
SAP_ABA	75D	0007	SAPK-75D07INSAPABA	Cross-Application Component
SAP_GWFND	753	0008	SAPK-75308INSAPGWFND	SAP Gateway Foundation
SAP_UI	754	0010	SAPK-75410INSAPUI	User Interface Technology
ST-PI	740	0014	SAPK-74014INSTPI	SAP Solution Tools Plug-In
BW4CONT	200	0011	SAPK-20011INBW4CONT	SAP BW4 HANA Content Addon
BW4CONTB	200	0011	SAPK-20011INBW4CONTB	SAP BW4 HANA Content Basis Addon
DW4CORE	200	0007	SAPK-20007INDW4CORE	DATA Warehouse
UIBAS001	400	0008	SAPK-40008INUIBAS001	UI for Basis Applications
BPC4HANA	200	0006	SAPK-20006INBPC4HANA	BPC/4HANA
DMIS	2011_1_731	0022	SAPK-11622INDMIS	DMIS 2011_1
ST-A/PI	01U_731	0001	SAPKITAB9Z	Servicetools for SAP Basis 731 and highe

Figure 4.1 BW4CONT and BW4CONTB

Types of SAP extractors include the following:

- **Application-specific**
  - Business content extractors—widely used
  - Customer-generated extractors—not used much with SAP S/4HANA
- **Cross-application**
  - Generic extractors
  - Custom CDS views

4.2 SAP-Delivered Business Content Extractors

For application-specific business content extractors, SAP delivers the business content completely, which means the DataSource is already developed by SAP. During the

implementation, it's enough to activate the DataSource and consume the data from the source system. SAP-delivered extractors include logistics extractors, finance extractors, and HR extractors. Let's look at these extractors in detail in the following sections.

4.2.1 Logistics Extractors

SAP has delivered many DataSources to extract data from logistics-based applications, including the following functional applications:

- Sales and distribution
- Purchasing
- Materials management
- Shop floor control
- Quality management
- Plant maintenance
- Invoice verification

The DataSources can be accessed from Transaction LBWE in SAP S/4HANA (the Logistics Cockpit), which has information about all logistics DataSources. Each logistics application is identified with a unique two-digit number, as you can see in Figure 4.2.

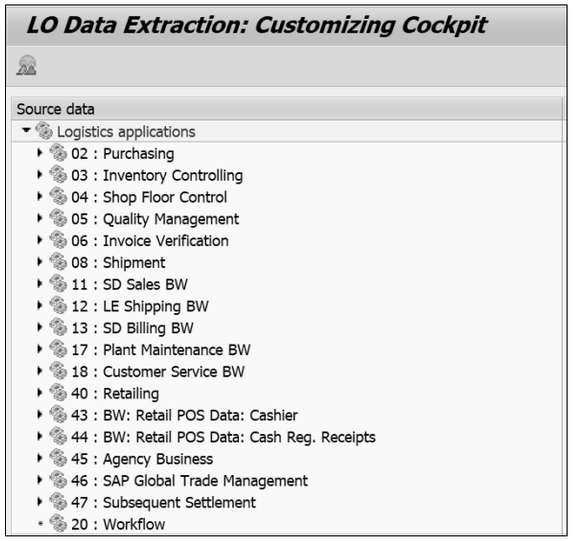


Figure 4.2 LO Cockpit

When you expand any application component number, you can see the details of the extractors that are delivered by SAP under **Extract Structures**, as shown in Figure 4.3.

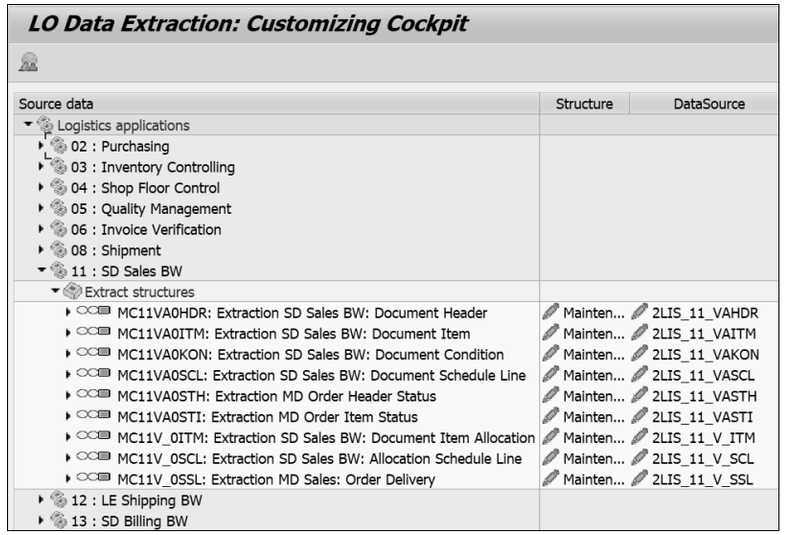


Figure 4.3 Extractors in LO Cockpit

Application component 11, SD Sales BW, which is used to extract sales and distribution data, has many DataSources, as listed in Figure 4.3. Chapter 5 will discuss how to use these DataSources and extract data to SAP BW/4HANA.

When extracting the data from the logistics DataSources, you need to fill in the setup table, which is a temporary table for loading the historical data, and then use the logistics-based delta logic to get the new and changed records.

When handling scenarios like inventory management, the data should not be cumulated in SAP BW because inventory deals with the inflow and outflow of materials. To handle such scenarios, use materials management DataSources that deal with extraction of inventory data. They support noncumulative key figures in SAP BW/4HANA. When extracting data using these DataSources, there is an additional process that needs to be followed. The DataSources can be seen in the application component for inventory management, as shown in Figure 4.4.

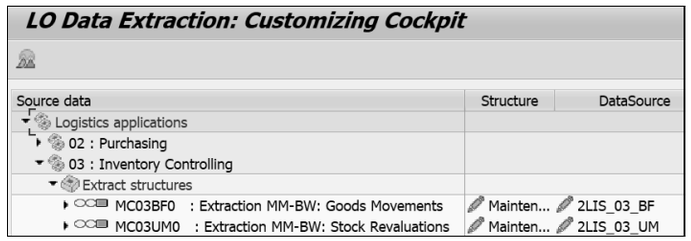


Figure 4.4 Inventory Management Extractors

4.2.2 Finance Extractors

There are many SAP standard-delivered DataSources that extract data from finance application components. The common finance applications used most commonly until SAP BW 7.5 include the following:

- Accounts receivables
- Accounts payable
- New general ledger

With SAP S/4HANA, there has been a major change in finance applications and how data is stored in the tables; many old finance tables have been replaced by table ACDOCA. With SAP S/4HANA, new DataSources based on table ACDOCA have been delivered to replace old finance DataSources. You can see the 0FI_ACDOCA_10 and 0FI_ACDOCA_20 DataSources in Figure 4.5.

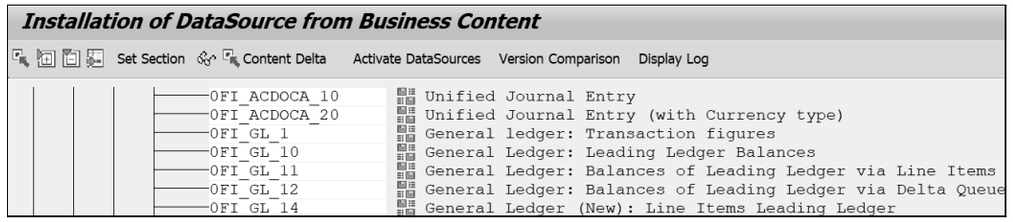


Figure 4.5 Table ACDOCA and Finance DataSources

Unlike logistics DataSources, there is no need for a setup table to do a historical data load here. Finance extractors use timestamps for fetching new and changed records in delta extraction. You'll learn more about this logic in Chapter 5.

4.2.3 HR Extractors

You may need to extract data from HR or SAP ERP Human Capital Management–based applications for SAP BW reporting, and SAP has delivered DataSources for these scenarios. Note that SAP SuccessFactors is also used for many HR-based activities, and SAP BW/4HANA can also extract from that application. An example of the personnel administration application is shown in Figure 4.6.

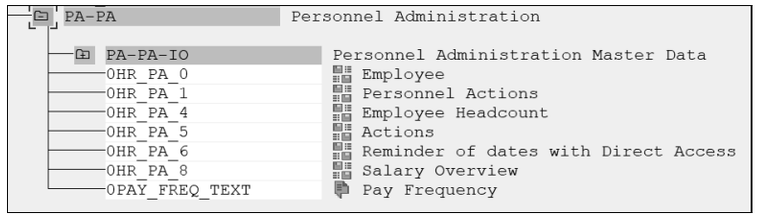


Figure 4.6 HR Personnel Administration DataSources

You can also see the DataSources for payroll and time management in Figure 4.7.

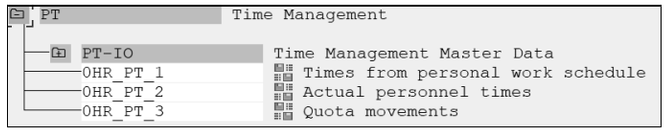


Figure 4.7 HR Time Management DataSources

SAP HANA-Optimized Business Content

When you install the latest SAP BusinessObjects BI content add-on, you'll get SAP HANA–optimized business content objects. There are many in-memory objects, like aDSOs and SAP HANA composite providers. These objects support new data models that follow recommendations based on Layered Scalable Architecture++ (LSA++).

DataSource Enhancement

In any SAP-delivered extractor, there is an option to enhance the standard extractor. If you have a business requirement that can be achieved by enhancing a standard extractor, like adding a few fields, that's possible with DataSource enhancement. You need to enhance the DataSource fields and, if required, write the enhancement logic to extract the data for the enhanced fields. If the business requirement is so complex that an enhancement won't be enough, then the only option is to create a custom DataSource based on the business requirement by creating your own extractor, as we'll discuss in the next section.

4.3 Generic Extractors

When the SAP-delivered business content-based extractors can't meet your business requirements, then you can create generic extractors or user-developed extractors. The end-to-end process of creating an extractor and enabling the delta process should be done by the extractor developer who is implementing the solution. SAP has provided multiple methods to create custom DataSources, including the following:

- Generic DataSource based on views
- Generic DataSource based on InfoSets
- Generic DataSource based on function modules
- SAP BW BAdI providers
- Custom CDS views
- Custom SAP HANA calculation views

When you want to create a generic DataSource in SAP S/4HANA, you can use Transaction RSO2. It will have various options to create the DataSource, as shown in Figure 4.8.

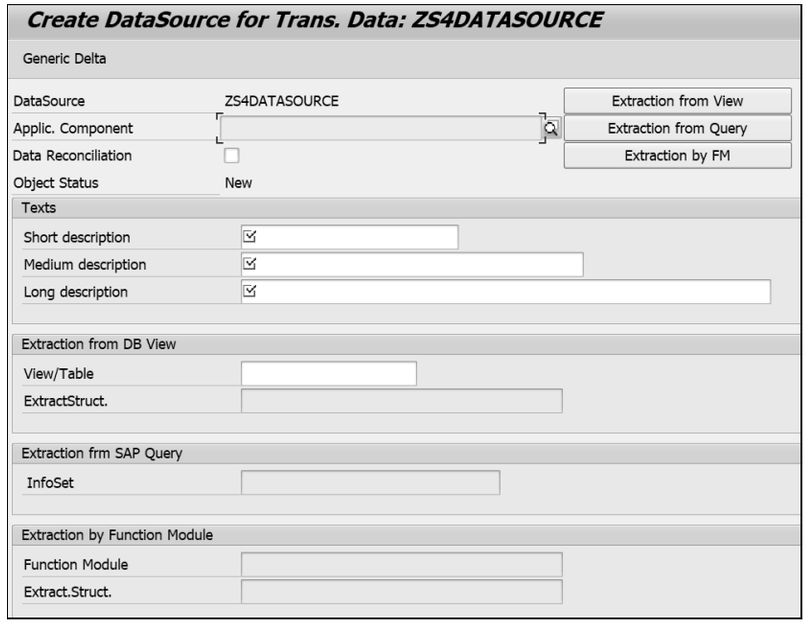


Figure 4.8 Generic DataSource Creation: Transaction RSO2

Transaction RSO2 will work only in the SAP S/4HANA or SAP ERP source system. In SAP BW/4HANA, you can only display the DataSource; the **Create** option will be disabled, as shown in Figure 4.9.

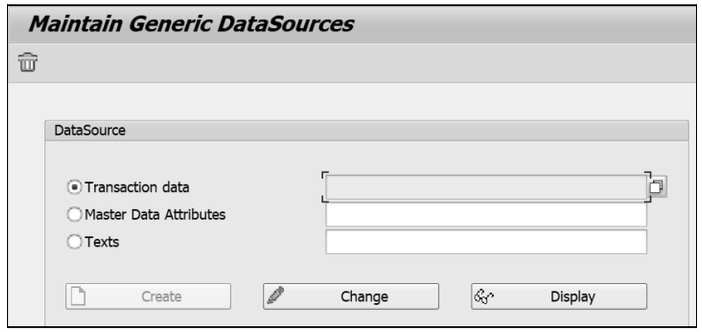


Figure 4.9 Transaction RSO2: SAP BW/4HANA

Because Transaction RSO2 is not available in SAP BW/4HANA, the alternate option is to create the generic DataSource within the SAP BW/4HANA system, using the following options:

- **ABAP CDS views (using custom logic)**
  ABAP CDS views help you create complex and semantically rich data models. Using CDS views, you can create views based on table fields according to application-specific needs for your business. These CDS views are a kind of virtual data model that allows direct access to the tables.
- **SAP HANA calculation views (custom calculations)**
  An SAP HANA calculation view is a type of information view that you can use to define more advanced slices of data available in the SAP HANA database. You can create joins and projections on tables that reside in the database.
- **BAdI InfoProvider as an ODP SAP BW provider**
  A BAdI InfoProvider is an InfoProvider that you can enhance by means of ABAP implementation. It's created using the `RSO_BADI_PROVIDER` BAdI.

4.4 Installing SAP BusinessObjects Business Intelligence Content

When you need to use SAP-delivered business content objects or dataflows in SAP BW/4HANA, you need to install the SAP BusinessObjects BI content. Execute Transaction RSA1, and you can find the **BI Content** button, as shown in Figure 4.10.

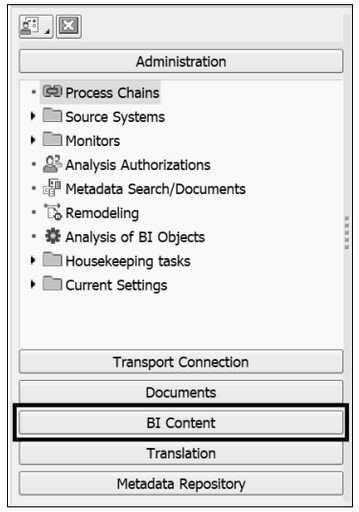


Figure 4.10 BI Content Option

Once you choose **BI Content**, you will have the option to install required objects, as shown in Figure 4.11:

❶ Choose **Object Types**.

❷ Choose the object type that you need to install and click **Choose Objects**. The system will show a popup with a list of available objects based on the type.

❸ Select the SAP BusinessObjects BI content object that you want to install (you can use the **Search** icon to find an object).

❹ Choose **Transfer Selections**, which will collect all the related objects upward and downward for installation. For example, if you choose an aDSO, then the downwards objects in the dataflow for the aDSO are InfoObjects, DataSources, and transformations. The upwards objects are SAP HANA composite providers and the associated queries. All these objects will be collected for the installation.

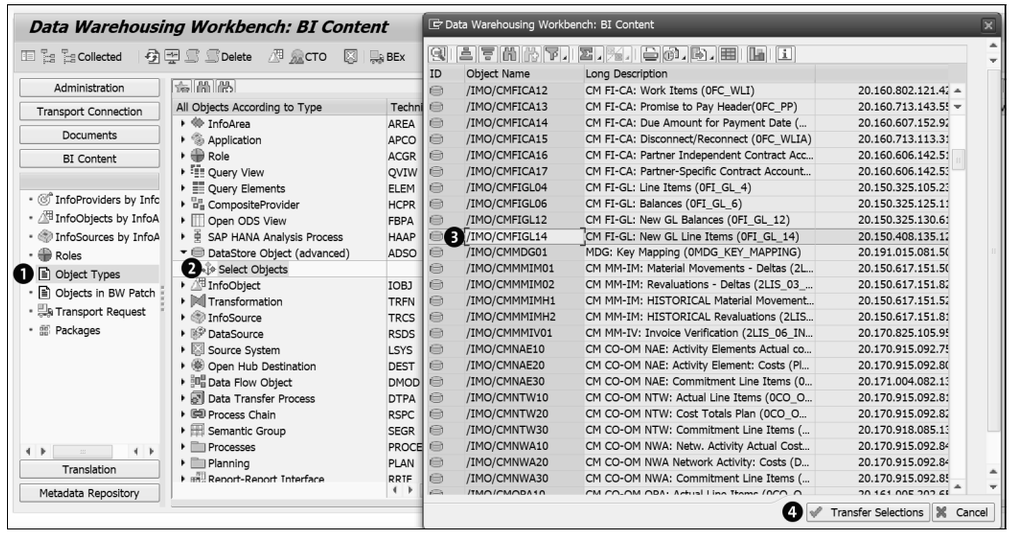


Figure 4.11 Object Types in SAP BusinessObjects BI Contents

When installing, you will have option to group objects as shown in Figure 4.12, with the following options:

- **Only Necessary Objects** will collect the important objects for the required SAP BW object that needs to be installed.
- **Data Flow Before** will collect all the objects that connect to the current object; for example, for an aDSO, you'll get the InfoObject, transformations, and so on.
- **Data Flow Afterwards** will collect all objects above the current installation object. For example, the aDSO will get all objects that have queries and other reporting elements.
- **Data Flow Before and After** will collect all data flow–based objects like InfoObjects, transformations, aDSOs, queries, and so on.

Once you've decided on a grouping option, you can install the object with the **Install** option, as shown in Figure 4.13.

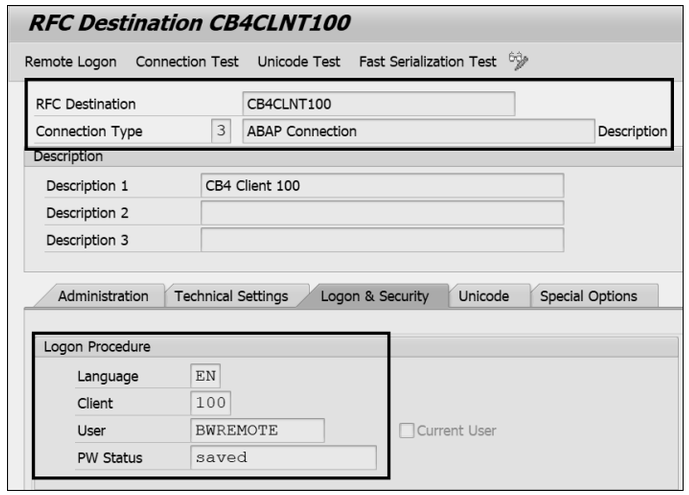


Figure 4.12 Grouping

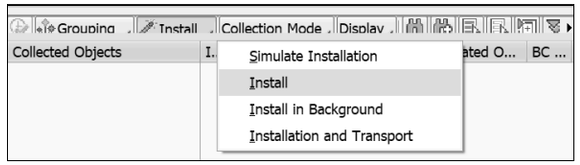


Figure 4.13 Install SAP BusinessObjects BI Content Object

4.5 Summary

In this chapter, you learned the basics of SAP extractors. We looked at the different types of extractors across different functional areas. We walked you through the standard-delivered extractors in the LO cockpit and explained how the application numbers are used in logistics extractors. We also walked through the different categories of extractors in finance applications. Finally, we looked at the extractors used in HR applications. You also learned about generic extractors and the steps to install the BI content objects in an SAP BW/4HANA system. These basics will be used as the foundation for data staging from the next chapter on.

In the next chapter, we'll focus on extracting data from SAP logistics applications to SAP BW/4HANA. This will be one of the most important chapters in the book. We'll detail the steps thoroughly so that the data staging can be understood from end to end.

Contents

Preface 15

1 Introduction 21

1.1 History of SAP BW/4HANA 21

1.2 SAP BW/4HANA Overview and Design Principles 22

1.3 Eclipse and SAP HANA Studio 26

1.3.1 Installing SAP HANA Studio 27

1.3.2 Installing SAP BW/4HANA Modeling Tools 31

1.3.3 Adding an SAP BW/4HANA System 33

1.4 Overview of Operational Data Provisioning 35

1.4.1 ODP Features and Architecture 35

1.4.2 Introduction to ODP SAP Extractors 38

1.4.3 Data Extraction Essentials 41

1.4.4 Data Acquisition Process in ODP 42

1.4.5 Monitoring 45

1.5 Summary 54

2 Data Modeling in SAP BW/4HANA 57

2.1 Creating InfoAreas 57

2.2 Creating Source Systems 58

2.3 Creating Flat File Sources 60

2.4 Creating a DataSource 61

2.5 Creating InfoObjects 66

2.6 Creating Transformations 74

2.7 Creating a Data Transfer Process 76

2.8 Creating Key Figures 83

2.9 InfoObjects Advanced Properties 85

2.9.1 Usable as InfoProvider 85

2.9.2 Enhanced Master Data Update 86

2.9.3 Enable External View 89

2.10 Creating Advanced Data Store Objects 91
2.11 Creating an SAP HANA Composite Provider 99
2.12 Creating an SAP BW Query 102
2.13 Summary 105

3 Creating an Operational Data Provisioning Source System 107

3.1 Introduction to Source Systems 107
3.1.1 Logical System 108
3.1.2 Creating Background Users for SAP BW/4HANA Extraction 110
3.1.3 RFC Destination 113
3.2 Creating an ODP Source System 115
3.2.1 SAP BW/4HANA and ODP Source System Types 115
3.2.2 Creating an ODP Source System for SAP S/4HANA and SAP ERP 117
3.2.3 Creating ODP Source in SAP BW Context 121
3.2.4 Creating an ODP Source System in an SAP HANA Context 124
3.2.5 Creating an ODP Source System in a CDS View Context 127
3.2.6 Access Local SAP HANA Database Schema 129
3.3 Summary 132

4 Working with SAP Extractors 133

4.1 Introduction to SAP Extractors 133
4.2 SAP-Delivered Business Content Extractors 134
4.2.1 Logistics Extractors 135
4.2.2 Finance Extractors 137
4.2.3 HR Extractors 137
4.3 Generic Extractors 138
4.4 Installing SAP BusinessObjects Business Intelligence Content 140
4.5 Summary 142

5 Extracting Logistics Data 143

5.1 Logistics Extraction with the ODP Framework 143
5.1.1 Logistics Extraction Overview 144
5.1.2 Architecture 144
5.1.3 Update Method 152
5.1.4 DataSource Activation 164
5.2 Logistics Data Extraction in SAP S/4HANA 169
5.2.1 Exposing Logistics DataSource to Operational Data Provisioning 169
5.2.2 Logistics Cockpit 170
5.2.3 Filling the Setup Table and Testing the Extraction 171
5.2.4 Testing Setup Table Extraction Replication Using ODP Framework 180
5.3 Logistics Data Extraction in SAP BW/4HANA 182
5.3.1 Replicating ODP DataSources in SAP BW/4HANA 182
5.3.2 Creating aDSOs with Logistics Sales and Distribution DataSources 190
5.3.3 Data Extraction from SAP S/4HANA to SAP BW/4HANA: Full Upload 206
5.4 Transaction ODQMON: Logistics Full Upload 217
5.5 Delta Extraction based on ODP in Logistics Extraction 221
5.5.1 Settings for Logistics Delta Extraction in SAP S/4HANA 221
5.5.2 Post a Delta in SAP S/4HANA 224
5.5.3 Transaction ODQMON Checks for Delta Extraction 239
5.5.4 Loading the Logistics Sales Document Item aDSO Using ODP 244
5.5.5 Transaction ODQMON for Logistics Sales Item 248
5.6 Extracting Logistics DataSources from Other Applications 251
5.6.1 Introduction to Logistics-Based Functional Modules 251
5.6.2 Extraction of Purchasing Data into SAP BW/4HANA 252
5.6.3 Other Logistics-Based Applications and DataSources 268
5.6.4 Asset Management Components in the Logistics Cockpit 276
5.6.5 Setting Up Logistics Extraction for All Applications 280
5.7 Summary 280

6 Extracting Master Data 283

6.1 Introduction to Master Data in SAP S/4HANA 283
6.2 DataSource for Master Data 288
6.2.1 Check the Master DataSource in SAP S/4HANA 288
6.2.2 DataSource for Material Master 295

6.3 Standard Logistics InfoObjects with Master Data 296
6.3.1 Install Master Data InfoObjects from Business Content 296
6.3.2 InfoObjects and Master Data–Based Sources 300
6.3.3 Load the Data from the Master Data Source to the InfoObject 303
6.4 Summary 309

7 Extracting Inventory Management Data 311

7.1 Introduction to Inventory Management in SAP BW/4HANA 312
7.2 Inventory Management Extraction Logic 314
7.2.1 Fundamentals of Inventory and Noncumulative Key Figures 314
7.2.2 Understanding the Inventory Management Extraction Logic in SAP BW/4HANA 318
7.3 Implementing Inventory Management Extraction Using Logistics Cockpit DataSources 342
7.3.1 Business Content Extractors and Inventory Dataflow 343
7.3.2 Installing IMO Objects in SAP BW/4HANA 345
7.3.3 Filling the Setup Table for Inventory Data Loading 351
7.3.4 Implementing Logistics-Materials Management Inventory Data Loading 358
7.4 Summary 370

8 Extracting Financial Data 373

8.1 Finance in SAP ERP Systems 373
8.1.1 Finance in SAP 374
8.1.2 FI Classical DataSource Extraction from an SAP ERP System 376
8.1.3 Delta Management in Classical FI DataSources 380
8.2 Finance Extraction with New General Ledger Based on SAP ERP System 383
8.2.1 Extraction Using 0FI_GL_10 384
8.2.2 Extracting Using 0FI_GL_14 387
8.3 Extracting Asset Accounting and Controlling Data from SAP ERP and SAP S/4HANA 393
8.3.1 Asset Accounting 393
8.3.2 Controlling Application–Based Extraction 394

8.4 Extracting Finance Data from SAP S/4HANA to SAP BW/4HANA 396
8.4.1 Introduction to Table ACDOCA in SAP S/4HANA 396
8.4.2 DataSource for Table ACDOCA Extraction 399
8.5 Summary 418

9 Extracting SAP ERP Human Capital Management Data 419

9.1 Introduction to Human Capital Management in SAP BW/4HANA 419
9.2 Human Resources DataSources Overview 422
9.2.1 Human Resources Personnel Administration DataSources 422
9.2.2 Master Data in Human Resources 423
9.2.3 Payroll Data Extraction 424
9.2.4 Planned Time Data Extraction 425
9.3 Summary 426

10 Generic Extraction from SAP S/4HANA 427

10.1 Introduction to Generic DataSources 427
10.1.1 Business Requirements 428
10.1.2 Create the Database View 428
10.1.3 Create the Generic DataSource Based on the View 431
10.1.4 Checking DataSource Metadata 433
10.2 Extract Data into SAP BW/4HANA Using Generic DataSources 438
10.2.1 Replicate the DataSource 438
10.2.2 Data Modeling for Generic DataSources in SAP BW/4HANA 440
10.2.3 Checking the ODQ 444
10.3 Summary 445

11 Extracting SAP BW 7.x Data into SAP BW/4HANA 447

11.1 SAP BW 7.x Extraction in SAP BW/4HANA 447
11.2 SAP BW 7.x Objects for Data Loading 449

11.3 Consuming SAP BW 7.5 Objects in SAP BW/4HANA 451
11.3.1 Replicating SAP BW Objects 451
11.3.2 Creating an SAP BW/4HANA DataSource Using ODP 461
11.4 Summary 468

12 Extracting Data Using CDS Views 469

12.1 Understanding ABAP Dictionary 469
12.2 CDS Introduction 471
12.3 Create Basic CDS Views 473
12.3.1 Create Package 473
12.3.2 Create CDS View with Data Definition 475
12.3.3 Using Joins in CDS Views 482
12.3.4 CDS Views with Associations 485
12.4 Consume CDS Views in SAP BW/4HANA 487
12.4.1 SAP BW CDS Extraction Architecture 487
12.4.2 CDS Views Creation in SAP S/4HANA 488
12.4.3 Creating CDS Views Based on DataSources in SAP BW/4HANA 489
12.4.4 Creating aDSOs Based on CDS View DataSources 494
12.4.5 CDS Views with Delta Extraction 500
12.4.6 Extract the Delta CDS in SAP BW 503
12.5 Finding Standard CDS Views for SAP Applications 509
12.5.1 Finding the CDS Views for Applications Using SAP Table 509
12.5.2 Finding CDS Views in ABAP Development Tools 512
12.6 Summary 513

13 Extraction Using Open ODS Views 515

13.1 Creating Open ODS Views 516
13.1.1 Open ODS Views Based on SAP BW DataSources 516
13.1.2 Open ODS View Based on CDS 525
13.1.3 Open ODS View Based on SAP HANA Database Table 528
13.2 Summary 535

14 Extracting Data Using SAP HANA Calculation Views 537

14.1 Understanding the SAP HANA Admin Perspective 537
14.2 Creating SAP HANA Calculation Views 540
14.2.1 Creating a Package 541
14.2.2 SAP HANA Calculation Views 542
14.3 Prerequisites for Consuming SAP HANA Calculation Views 553
14.4 Consuming SAP HANA Calculation Views 555
14.4.1 Consuming SAP HANA Calculation Views in SAP BW/4HANA as aDSOs 555
14.4.2 Consuming SAP BW/4HANA Calculation Views Using SAP HANA Composite Providers 563
14.5 Creating Data Models Using SAP HANA Calculation Views 568
14.5.1 Creating a New Calculation View 568
14.5.2 Aggregation Behavior 577
14.5.3 Using the Input Parameter 579
14.5.4 Extracting the SAP HANA Calculation View in SAP BW/4HANA 584
14.6 Summary 586

15 Implementing Mixed Modeling in SAP BW/4HANA 587

15.1 Introduction to SAP HANA Smart Data Access 587
15.1.1 Creating Remote Sources 588
15.1.2 SAP HANA Smart Data Integration 592
15.1.3 SAP Landscape Transformation Replication Server to SAP BW/4HANA 593
15.2 Sample Mixed Modeling Flow 595
15.3 Summary 596

The Author 597
Index 599

Index

2LIS 146

A

ABAP development tools 482
CDS views 512
ABAP Dictionary 469, 473
ABAP Managed Database Procedure (AMDP) 24
ABAP report 470, 471
Accounts payable 375
Accounts receivable 374
Activation request 213
Active data table 94
Active table 214
Active table entry 211
Additive extractor 415
Address data 420
Admin console 529, 537, 540
Advanced DataStore object (aDSO) 24, 25, 141, 378, 399, 441, 454, 464, 555, 585
activate 443, 499
activation request 457
active table 247, 459, 466
backend table 97
create 91, 191, 558
create based on CDS 494
data flow 441
data preview 236, 247
delta handling 99
details tab 323
filtered data records 238
generate 523
IMO 386, 394
inbound table 585
initial screen 91
keys 93
maintenance screen 92
manage keys 464
reporting preview 237
status 232
table content 443
table naming 94
technical rules 96
total records 499, 505
transformation 441
transformation mapping 455
view 457
Advanced DataStore object (aDSO) (Cont.)
ZADFIGL10 385
Aggregation 84
Aggregation node 546, 563, 577
aggregate fields 547
joins 573
Aggregation type 577, 578
overwrite 399
ALV grid 436
Annotation 472, 501
delta 502
modify 488
Application component 61
Application table 593
Architect data mart 25
Architecture 36
Asset accounting 375, 393
Association 485
Attribute only 70, 84
Authorization-relevant 70
Auto layout 547, 574

B

Background user 110
password 110
profile 110, 112
SAP S/4HANA 110
Balance 413
Bill of material (BOM) 268
Blocked stock 314
Business content extractor 343
Business partner 284

C

Calculation view 37, 140, 537, 590, 592, 595
add objects 543
add provider 565
aggregation behavior 577
auto layout 547, 574
consume as aDSO 555
consume using composite provider 563
consumption 555
create 540, 542, 568
create connection 546
data extraction 584
data model creation 568

Calculation view (Cont.)
data preview ... 551, 575
default client ... 549
editor ... 542, 569
generated SQL ... 576
input parameter ... 579
insert table ... 543
prerequisites ... 553
privileges ... 549
raw data ... 552, 576
semantics ... 548, 574, 579
summation ... 578
table projection ... 544
total records ... 560
type ... 542
view list ... 561
Case sensitive ... 70
Catalog ... 529, 539, 590
Change data capture ... 513
Change document header ... 154
Change log table ... 95, 211, 214
Characteristic ... 67
Chart of accounts ... 374
Classical DSO ... 449
Client ... 108, 312
Code-to-data approach ... 470
Communication structure ... 150
Company code ... 312
Composite provider ... 25, 394, 563, 592
add calculation view ... 565
create assignments ... 565
output ... 566
reporting ... 567
source to target mapping ... 566
Composite request ... 498
Concurrent employment ... 424
Connection type ... 122, 125, 129
Consistency check ... 121
Content folder ... 539, 542
Controlling ... 373, 394
Core data services (CDS) view ... 37, 127, 469, 471, 525
add filters on dataset ... 479
annotations ... 472, 477, 488
associations ... 485
consume ... 526
consume in SAP BW/4HANA ... 487
consumption ... 471
copy ... 500
create ... 473, 475
create DataSource ... 489
create in SAP S/4HANA ... 488
Core data services (CDS) view (Cont.)
data definition ... 475, 510
define view ... 477
delta annotations ... 502
delta extraction ... 500
delta extraction in SAP BW ... 503
deployment ... 472
display view ... 481
editor ... 476
extraction architecture ... 487
fields ... 510, 534
find in ABAP development tools ... 512
find using table ... 509
generated view ... 484
joins ... 482
replicate ... 526
replicate into DataSource ... 493
search ... 509
total count ... 479
Corporate memory ... 25
Credit ... 375
Cross-Application Time Sheet (CATS) ... 425
CSV ... 61, 64, 318
Cumulative values ... 314
Current stock balance ... 316
Customer ... 285
Customer closed item ... 375
Customer open item ... 375
Customer service ... 278

D

Data acquisition ... 42
call type ... 42
Database system ... 538
Database trigger ... 593
Database view ... 428
activate ... 430
add view field ... 429
content display ... 430
selection field ... 430
Data definition ... 475
find ... 510
view ... 511
Data entry view ... 408
Data extraction ... 35, 41, 424, 425
asset accounting ... 393
controlling ... 394
financial data ... 373
from SAP S/4HANA to SAP BW/4HANA ... 206
SAP BW 7.x ... 447, 449

Data extraction (Cont.)
using calculation views ... 537
using CDS views ... 469
using open ODS views ... 515
Dataflow ... 389, 525
Dataflow object ... 347, 349
Data model ... 440
create using calculation views ... 568
Data modeling ... 57
Data preview ... 478, 499, 522, 527, 534, 551, 560, 563, 567, 575, 581
Data Provisioning Agent ... 592
Data Provisioning Server ... 592
Data replication ... 35
DataSource ... 38, 40, 133, 136, 145
2LIS_03_BX ... 358
accounts payable ... 376
accounts receivable ... 376
activate ... 290
activation ... 64, 164
activation report ... 189
adapter settings ... 454
asset accounting ... 393
based on CDS views ... 489
business requriements ... 428
calculation views ... 584
CDS view ... 526
check header ... 439
check metadata ... 433
choose ... 517
choose type ... 556
controlling ... 395
create ... 61, 461, 555
create based on view ... 431
data modeling ... 440
delta management ... 380
delta methods ... 382
enhancement ... 138
export ... 447
expose user-generated ... 41
extract data using generic source ... 438
extraction ... 41, 492, 557
extraction method ... 433
extraction properties ... 435
extraction tab ... 320
extract purchasing data ... 255
features ... 163
fields ... 435, 464, 493, 557
filter ... 300
finance ... 376
for open ODS view ... 516
general ledger ... 376
DataSource (Cont.)
generic ... 427
HR personnel administration ... 422
human resources ... 422
InfoProviders ... 449
introduction to generic source ... 427
master data ... 288
naming convention ... 146
payroll ... 424
replicate ... 183, 377, 438, 452, 516
replicate CDS view ... 493
replication job ... 439
SAP ERP ... 376
table ACDOCA ... 399
tables ... 150
transformation mapping ... 455
type ... 491
validate replication ... 440
view status ... 452
Data staging ... 110
Data-to-code approach ... 470
Data transfer process (DTP) ... 24, 42, 304, 378, 391, 402, 415, 433, 455, 495, 559, 585
activate ... 78
create ... 76, 201
delta ... 369, 410, 417
delta mode ... 504
execute ... 206
extracted records ... 361
extraction mode ... 203
filters ... 402
inbound table ... 378, 411, 455, 496, 504, 508
load ... 215
maintenance screen ... 77
manage request ... 404
monitor ... 230, 403, 560
Data Warehousing Workbench ... 67
DB Connect ... 35
Debit ... 375
Delta document ... 506
Delta extraction ... 221, 500
test ... 500
transaction ODQMON ... 239
Delta initialization ... 407, 505
Delta management ... 390
Delta queue
reports ... 157
Delta Queue Monitor ... 45
data validation ... 308
display record ... 51
extraction request vs composite request ... 49

Delta Queue Monitor (Cont.)
failed request ... 50
information ... 46
job ... 49
ODQ cleanup ... 51
options ... 48
queue ... 306
request details ... 48
requests view ... 47
request view ... 306
search ... 307
status change process ... 50
subscription ... 306
subscriptions view ... 46
units ... 307
units view ... 50
Delta record ... 43
Delta run ... 381
Delta timestamp ... 380, 381
Delta update ... 152
Destination ... 119, 123
Dictionary ... 70
Direct delta ... 152, 158
Direct delta update mode ... 158
Domain-specific language (DSL) ... 471
Drilldown ... 437

E

Eclipse ... 26, 67, 124, 350
EDW propagation ... 25
Employee data ... 420
Expression ... 582
External view ... 89
Extraction ... 110
Extraction methods ... 148
Extraction queue ... 156, 157
Extraction view table ... 334
Extractor ... 38, 133, 144, 147
business content ... 134
finance ... 137
generic ... 138
human resources ... 137
logistics ... 135
nonleading ledgers ... 383
overview ... 133
Extractor checker ... 52
Extract structure ... 293

F

Features ... 35
FI extraction
delta management ... 380
from SAP ERP ... 376
new general ledger ... 383
SAP S/4HANA to SAP BW/4HANA ... 396
Finance ... 373
change document ... 408
delta management ... 380
Finance extraction ... 373
Financial accounting ... 373
Flat file ... 319
create ... 60
extraction ... 60
Framework annotation ... 473
Full upload ... 152, 206
Function module ... 292

G

General ledger ... 374, 387
new ... 383
General ledger accounting ... 374
Generated SQL ... 576
Goods issue ... 313
Goods receipt ... 313
Greenfield implementation ... 251

H

High cardinality ... 70
High precision ... 84

I

IMO object ... 386
InfoArea ... 350
install ... 345
Inbound request ... 334
Inbound table ... 94, 209, 210, 213, 231, 328, 337, 362
Index ... 397
Inflow ... 316
InfoArea ... 453
create ... 57, 190
InfoCube ... 84, 449
dataflow ... 449
display data ... 450
replication ... 452

InfoObject
activate ... 68
activated ... 299
advanced properties ... 85
attributes ... 71
create ... 66
create transformation ... 74
DDIC object ... 298
enhanced master data ... 86
grouping ... 297
key figure ... 83
logistics ... 296
master data ... 71, 296
master data-based sources ... 300
properties ... 69
status ... 298
InfoProvider ... 37, 140, 447, 449, 519
InfoType ... 419
Inner join ... 482, 572
Input parameter ... 579
create ... 579
expression ... 582
variables ... 580
Insert statement ... 529
Internal movement ... 313
Inventory dataflow ... 343
Inventory data loading ... 358
Inventory management ... 136, 312
extraction logic ... 314
extraction steps ... 318
logistics cockpit ... 342
Invoice verification ... 275

J

Job control maintenance ... 222
Join ... 428
Join condition ... 572
Join node ... 570
Join type ... 572

K

Key field ... 262
Key figure ... 67
create ... 83
details ... 317
maintenance screen ... 84

L

Language-dependent ... 71
Layered Scalable Architecture++ (LSA++) ... 25, 138, 344
Leading ledger ... 383, 384
LIS communication structures ... 149
Logging table ... 593
Logical system ... 108, 123
create ... 108
define ... 109
Logical unit of work (LUW) ... 155, 159
Logistics
data extraction ... 169
extractor ... 152
extra data ... 143
full upload ... 217
functional modules ... 251
sales item ... 248
Logistics cockpit ... 147, 162, 166, 170, 258, 269, 276, 351
Logistics data extraction ... 144, 182
architecture ... 144
set up ... 280
Logistics delta extraction ... 221
Logistics Information Systems (LIS) ... 144

M

Master data ... 283, 423
activation ... 289
data preview ... 308
DataSource ... 288
install InfoObject ... 296
load data ... 303
LO-based extraction ... 288
material ... 286
SAP S/4HANA ... 283
search ... 289
source ... 290
tables ... 88
view table check ... 308
Material ... 286
Material master ... 295
Material movement ... 314, 365
Materials management ... 313
Microsoft Excel ... 60, 318, 330
Mixed modeling ... 587, 595
Modeling perspective ... 117
Monitoring ... 45
M table ... 81

N

Native SQL 470
Navigation attribute 72
Noncumulative 84
  key figures 316
  values 315
Nonleading ledger 383
Nonserialized V3 update 152, 153

O

OData 37
OData service 471
ODBC protocol 587
ODP context 120
ODP framework 36, 39, 107
ODP provider 41
ODS view extraction 590
Online transactional processing (OLTP) 283
Open ODS view 24, 515
  based on CDS 525, 527
  based on SAP BW DataSources 516
  based on SAP HANA database table 528
  confirmation page 518, 534
  consume table 531
  create 516, 517
  create query 519
  generate dataflow 523
  reporting preview 523
  semantics 519, 534
  source type 517
Open SQL 470
Operational analytics 35
Operational data provider (ODP) 461
  ABAP CDS 493
  choose 556
  SAP BW 7.x 462
Operational DataStore layer 25
Operational delta queue (ODQ) 35, 42, 444
Outer join 485
Outflow 316
Output fields 573, 574

P

Package 473, 541, 542, 556
  activate 474
  assignment 433
  create 473
Payroll 419, 424
Persistent staging area (PSA) 525
Personnel administration 419, 422
Personnel time management 419, 425
Plant 312
Plant maintenance extraction 276, 277
Primary key 194
Privileges 549
Production planning
  DataSources 270
  DataSource setup table 271
Projection 543
  table 544
Projection node 563, 568
  add objects 569
  joins 570
Pull 44
Pull extractor 45
Purchase order (PO) 252
Purchase organization 313
Purchasing data
  extract into SAP BW/4HANA 252
  load 262
  preview 266
Purchasing extractor 253
Purchasing item 265
Push 43
Push extractor 45

Q

Quality inspection stock 314
Quality management extraction 272
Queue 378, 405, 459, 466, 496, 505
Queued delta 152, 155
  benefits 155
  collective run 156

R

Raw data 552, 576
Record type 328, 336
Reference point 316, 330
Reference point table 333–335, 338, 342
Remote function call (RFC) 107
Remote function call (RFC) destination 113, 122, 124, 447
  CB4CLNT100 113
  create 114
  S4SCLNT100 113
Remote source 540, 588, 595
Replication 186
Replication test 260
Report
  RMBWV302 158
  RMBWV303 158
  RMBWV304 158
  RMBWV308 158
  RMBWV311 158
  RMBWV312 158
  RMBWV313 158
  RODPS_REPL_TEST 53, 180, 260, 291, 356, 377, 423
  RSDS_DATASOURCE_ACTIVATE_ALL 189
  Z_SAP_BW_NOTE_ANALYZER 345
Requests 241
Requests view 406, 411, 417, 460, 498, 505, 561
Routing 269
Runtime Properties tab 203, 204

S

Safety interval 381
Sales and distribution 136, 164, 284, 375
Sales document header 195
Sales document item 205
  data loading 215
  load data 244
  number 195
Sales order 225, 286, 295
SAP BusinessObjects Business Intelligence 39, 133, 269, 280
  install content 140
  object 141
SAP Business Warehouse (SAP BW) 36, 473
  CDS extraction 487
  create query 102
  data extraction 447
  data replication 593
  objects for data loading 449
  query objects 104
  replicate objects 451
  sender system 448
  target system 561
  web cockpit 230, 404, 455
SAP BW/4HANA 21, 396
  add system 33, 537
  business content 344
  calculation views 553
  CDS replication 503
  CDS views 525
  consume CDS views 487
  consume SAP BW objects 451
  consumption of views 554
  create DataSource 461
SAP BW/4HANA (Cont.)
  data extraction from SAP BW 447
  data replication 594
  delta request 410
  design principles 22
  FI extraction 385
  high performance 24
  mixed modeling 587, 595
  modeling tools 31, 67, 183, 186, 195, 234
  object 23
  openness 22
  open ODS views 515
  path to 2.0 26
  queues 466
  releases 21
  replicate ODP DataSource 182
  replication 451
  SAP HANA smart data integration 592
  simplicity 22
  target system 448
  validate data load 559
  view consumption 555, 563
  virtual tables 590
SAP BW/4HANA web cockpit 207, 210
SAPCAR file 28
SAP Data Services 37
SAP ERP 40, 133
  asset accounting 393
  controlling 394
  finance 376, 383
SAP ERP Human Capital Management 137, 419, 420
SAP HANA 89, 124, 144, 470, 587
  add system 538
  administration console 537, 540
  calculation view 89
  calculation views 540, 555
  composite provider 99
  create table 528
  database 537
  database schema 129, 589
  dictionary 539
  information view 37
  view consumption 554
  views 396
SAP HANA composite provider
  activate 102
  materials management 340
  purchasing data preview 266
SAP HANA smart data access 587
SAP HANA smart data access)
  create remote sources 588

SAP HANA smart data integration
data provisioning ... 592
SAP HANA Studio ... 26, 538, 540
install ... 27, 29
installation commands ... 28
installation wizard ... 29
install new software ... 31
SAP Landscape Transformation Replication Server ... 37, 593
SAP NetWeaver embedded analytics ... 37
SAP S/4HANA ... 40, 110, 133, 154, 159
create CDS views ... 488
data extraction ... 537
data staging ... 280
delta record ... 506
finance extraction ... 396
logistics data extraction ... 169
logistics delta extraction ... 221
master data ... 283
master DataSource ... 288
post delta ... 224
SAP SuccessFactors ... 137
Schema ... 130, 589
catalog ... 539, 590
choose ... 531
create table ... 528
grant access ... 531
Security folder ... 540
Service Application Interface (SAPI) ... 35, 39
Setup table
clear ... 172
fill in ... 171, 353
inventory data loading ... 351
naming convention ... 171
naming conventions ... 147
performance optimization ... 174
purchasing DataSources ... 258
reports ... 175
SAP settings ... 352
test extraction ... 180
Transaction SBIW ... 357
Sheet definition ... 521
Shop floor ... 268
Simulation ... 291
Source system ... 61, 107, 447, 553
activate ... 126
CDS view context ... 127
confirmation ... 117
connection type ... 117
connectivity ... 448
create ... 58, 115
create for SAP ERP ... 117
Source system (Cont.)
create for SAP S/4HANA ... 117
name and description ... 117
overview ... 107
SAP BW 7.x ... 461
SYS_BIC schema ... 132
type ... 115
with SAP BW/4HANA context ... 121
with SAP HANA context ... 124
Source table keys ... 264
SQL view ... 470, 471, 477, 478, 481, 490
Staging aDSO ... 368
Storage location ... 312
Storage table data ... 407
Streaming process chain ... 147
Subscriptions view ... 379, 391, 406, 460, 497, 505, 561
Surrogate ID (SID) table ... 80
System ID ... 108

T

Table ... 44, 528
/B1H/AD_MMIM011 ... 362
/B1H/AD_MMIM012 ... 362
/B1H/AD_MMIM013 ... 362
/B1H/AD_MMIM014 ... 363
/B1H/AD_MMIM05 ... 363
/BIC/MZRKCUSTID ... 81
/BIC/X ZRKCUSTID ... 82
AFKO ... 270
AFPO ... 270
BESG ... 343
consume with open ODS view ... 531
create ... 528
EKKO ... 257, 260
EKPA ... 257, 260
EKPO ... 260, 264
insert data ... 529
IXTRCTNENBLDVW ... 509
KNA1 ... 293
MARD ... 343
ODQDATA ... 243
ODQDATA_C ... 220
ODQDATA_F ... 445
open content ... 530
QMEL ... 276
QMFE ... 276
QMMA ... 276
RODELTAM ... 164
ROOSATTR ... 170
ROOSFIELD ... 293, 434

Table (Cont.)
ROOSOURCE ... 147, 150, 163, 166, 253, 255
RSDIOBJ ... 299
RSDS ... 187, 204, 302, 439
RSTRAN ... 76
TMCEXACT ... 150
TMCEXCFS ... 149, 150
TMCEXCFZ ... 150
TMCEXUPD ... 161
VBAK ... 226, 229, 428
VBAK/VBAP ... 156, 162
VBAP ... 245, 428
VBDATA ... 154
VBELN ... 234
Table ACDOCA ... 396
changed entries ... 410
database properties ... 397
data extraction ... 399
index ... 397
Technical rules tab ... 199
Text ... 71
Time-dependent ... 71
Timestamp capture ... 412
Timestamp logic ... 381
Transaction
BF11 ... 353
BP ... 284
CAT2 ... 425
FAGLBW03 ... 383
FBO2 ... 408
FBL3N ... 388
LBWE ... 135, 162, 166, 170, 251, 253, 260, 268, 270, 272, 280, 351, 353
LBWG ... 270, 351
LBWQ ... 156, 158, 228
LTRC ... 594
MCNB ... 353
MM01 ... 268
MM03 ... 286
ODQMON ... 39, 45, 53, 155, 158, 217, 219, 220, 227, 229, 239, 244, 245, 248, 280, 304, 306, 356, 378, 390, 405, 411, 415, 417, 444, 459, 466, 496, 500, 505, 509, 561, 594
OLI1BW ... 354
OLI3BW ... 258
OLI4BW ... 271
OLI6BW ... 275
OLIIBW ... 277
OLIQBW ... 273
OLISBW ... 279, 280
OLIZBW ... 356
PA20 ... 420
Transaction (Cont.)
RSO2 ... 139
RS2HANA_VIEW ... 90
RSA1 ... 116, 120, 140, 297, 343, 346
RSA2 ... 148, 150, 292, 384, 388, 435
RSA3 ... 52, 176, 177, 179, 180, 206, 208, 259, 260, 263, 280, 291, 354–356, 361, 367, 377, 403
RSA4 ... 293
RSA5 ... 166, 169, 254, 270, 280, 288, 290, 295, 351, 376, 394, 422
RSA6 ... 436
RSA7 ... 35, 152, 155, 442
RSA9 ... 164
RSDMD_SETTINGS ... 88
RSMNG ... 232, 457
RSO2 ... 431, 516
RSRTS_ODP_DIS ... 37
SALE ... 108
SBIW ... 173, 258, 271, 273, 275, 277, 278, 280, 352, 357, 358
SCC4 ... 112
SE11 ... 172, 256, 397, 407, 428, 470, 471, 473, 477, 481, 509
SE16 ... 73, 81, 161, 172, 179, 209, 229, 238, 286, 290, 333, 335, 338, 340, 499
SE37 ... 381
SE38 ... 158, 180, 260, 345
SFW5 ... 383
SM37 ... 302
SM59 ... 114
SPRO ... 554
SQVI ... 260
VAO1 ... 162, 224, 228, 284
VAO2 ... 162
VAO3 ... 226, 244
Transactional data ... 283
Transactional RFC (tRFC) ... 39
Transformation
activate ... 200
create ... 74, 197
InfoSource and aDSO ... 368
Transport request ... 433, 476
number ... 474
Tree functionality ... 119
Turnover ... 413

U

Units view ... 392, 407, 412, 460, 466, 498, 505, 562
Universal Journal ... 396

Unrestricted stock 314
Update historical movement 336
Update tab 203
Usable as InfoProvider 85
User interface (UI) 24

V

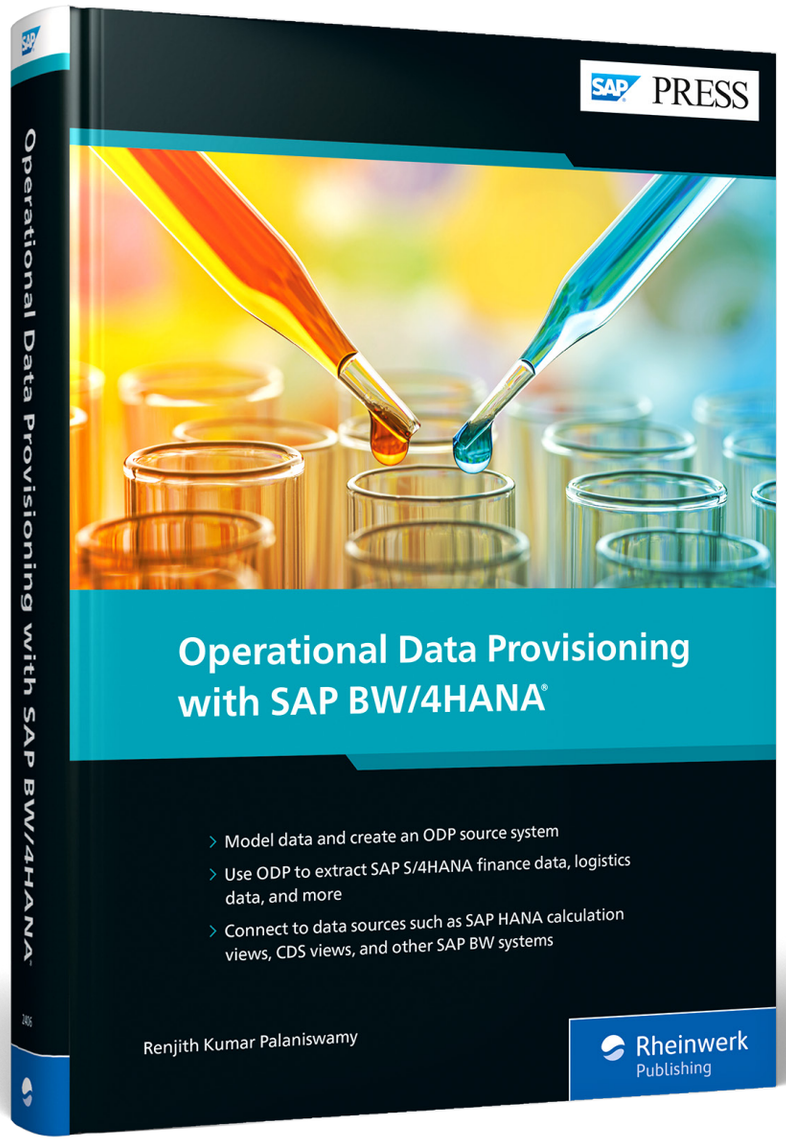
V1 ..... 154, 155, 159
V2 159
V3 ..... 156, 159
Validity period 315
Validity table 333, 334, 338
Valuated stock 314
Vendor closed item 375
Vendor open item 375
Virtual data mart 25
Virtualization 523, 534
Virtual table 587, 595
access 590
create 590

W

Work center 268

X

XLS 61
XML 345



Renjith Kumar Palaniswamy

Operational Data Provisioning with SAP BW/4HANA

608 pages | 08/2023 | $89.95 | ISBN 978-1-4932-2406-7

www.sap-press.com/5676

Renjith Kumar Palaniswamy is an SAP BW/4HANA architect with over 15 years of extensive experience working with SAP BW/4HANA, SAP HANA, and SAP S/4HANA. Renjith currently serves as an SAP BW/4HANA services architect at SAP America, Inc., within the esteemed SAP Cloud Success Services Center of Expertise (SAP CoE). There, he specializes in extracting data from SAP S/4HANA for business intelligence analytical reporting. His expertise encompasses critical components such as SAP S/4HANA-based extraction and data staging, native SAP BW/4HANA data modeling, mixed SAP BW/4HANA modeling, native SAP S/4HANA modeling, and SAP BW/4HANA greenfield implementations and remote conversions.

Throughout his tenure at SAP America, Renjith has excelled as an SAP BW/4HANA architect and services consultant, collaborating with renowned Fortune 100 companies across North America. With a primary focus on SAP BW/4HANA data modeling utilizing mixed modeling techniques and data staging from SAP S/4HANA, Renjith has been pivotal in multiple SAP Business Warehouse (SAP BW) on SAP HANA migration projects and complex SAP BW/4HANA conversions across North America. Notably, he played a crucial role in overseeing the world's first and largest SAP BW migration powered by SAP HANA for a prominent retail company in North America. His expertise extends to native SAP HANA modeling and SAP BW/4HANA data staging implementations, as well as native and mixed SAP BW/4HANA modeling projects. Renjith has successfully led and played a crucial role in numerous large-scale SAP BW/4HANA implementation and conversion projects across multiple industry sectors, delivering valuable insights and solutions for organizational analytical strategy positioning.

Prior to joining SAP America, Inc., Renjith made significant contributions to SAP BW product support, serving as the global topic contact for the business content and extractors (BCT) component at SAP Labs India. His notable achievements include moderating the BCT space in SAP Community, authoring various SAP Notes, and publishing articles in international journals related to data warehousing. Renjith's expertise has guided and facilitated SAP BW-based initiatives for major companies worldwide, spanning across the Americas and Asia Pacific.

We hope you have enjoyed this reading sample. You may recommend or pass it on to others, but only in its entirety, including all pages. This reading sample and all its parts are protected by copyright law. All usage and exploitation rights are reserved by the author and the publisher.