Informatica

Informatica® PowerExchange for SAP NetWeaver

10.1.1 HotFix 1

User Guide

Informatica PowerExchange for SAP NetWeaver User Guide
10.1.1 HotFix 1
June 2017

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Preface

The *Informatica PowerExchange® for SAP Netweaver User Guide* provides information about reading data from SAP tables, reading data from SAP BW, and writing data to SAP BW. It is written for database administrators and developers who create mappings to read data from SAP or write data to SAP. This book assumes you have knowledge of SAP NetWeaver, SAP BW, Informatica Developer, and the database engines and systems in your environment.

Informatica Resources

Informatica Network

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Informatica Product Availability Matrixes

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Informatica Velocity

Informatica Velocity is a collection of tips and best practices developed by Informatica Professional Services. Developed from the real-world experience of hundreds of data management projects, Informatica Velocity represents the collective knowledge of our consultants who have worked with organizations from around the world to plan, develop, deploy, and maintain successful data management solutions.

If you are an Informatica Network member, you can access Informatica Velocity resources at http://velocity.informatica.com.

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Informatica Marketplace

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To find your local Informatica Global Customer Support telephone number, visit the Informatica website at the following link:
http://www.informatica.com/us/services-and-training/support-services/global-support-centers.

If you are an Informatica Network member, you can use Online Support at http://network.informatica.com.

Part I: Getting Started with PowerExchange for SAP NetWeaver

This part contains the following chapters:

- Introduction to PowerExchange for SAP NetWeaver, 12
- PowerExchange for SAP NetWeaver Configuration, 13
- SAP BW Service Configuration, 24
- SAP Connection, 30

CHAPTER 1

Introduction to PowerExchange for SAP NetWeaver

This chapter includes the following topics:

- PowerExchange for SAP NetWeaver Overview, 12
- Introduction to SAP NetWeaver, 12

PowerExchange for SAP NetWeaver Overview

PowerExchange for SAP NetWeaver provides connectivity between Informatica Developer and SAP NetWeaver.

You can use PowerExchange for SAP NetWeaver to perform the following tasks:

Read data from SAP tables

You can read data from SAP views, or transparent, cluster, and pool tables.

Read data from SAP BW

You can use an Open Hub Destination or InfoSpoke to read data from SAP BW.

Write data to SAP BW

You can use a 3.x data source or 7.x data source to write data to SAP BW.

Introduction to SAP NetWeaver

SAP NetWeaver is an application environment that integrates multiple SAP business applications and solutions, such as Customer Relationship Management (CRM), Advanced Planner and Optimizer (APO), and Bank Analyzer. SAP NetWeaver is the basis for SAP solutions.

Because the Developer tool works with the SAP NetWeaver application platform, you can integrate the Developer tool with any SAP industry solution or mySAP application that provides RFC integration methods.

CHAPTER 2

PowerExchange for SAP NetWeaver Configuration

This chapter includes the following topics:

- PowerExchange for SAP NetWeaver Configuration Overview, 13
- Prerequisites, 13
- SAP Java Connector 3.0, 14
- Transports Installation and Configuration, 15
- PowerExchange for SAP NetWeaver Uninstallation, 23

PowerExchange for SAP NetWeaver Configuration Overview

PowerExchange for SAP NetWeaver installs with the Informatica services and clients.

Before you use PowerExchange for SAP NetWeaver to read data from or write data to SAP, perform the following tasks:

1. Complete the prerequisite tasks.
2. Install the SAP Java Connector (JCo) 3.0 library files.
3. Install and configure the SAP transports.
4. To read data from or write data to SAP BW, configure an SAP BW Service in the Informatica domain.

Prerequisites

Before you configure PowerExchange for SAP NetWeaver, perform the following tasks:

1. Install the Informatica services.
2. Install the Informatica clients. When you install the Informatica clients, the Developer tool is installed.
3. Create a Data Integration Service and a Model Repository Service in the Informatica domain.

SAP Java Connector 3.0

The Developer tool requires the SAP Java Connector 3.0 (SAP JCo 3.0) library files to work with SAP connections and data objects.

Download the SAP JCo 3.0 files from the SAP Service Marketplace:

http://service.sap.com/connectors

If you have problems downloading the SAP JCo 3.0 files from the SAP web site, contact SAP Customer Support.

Download the SAP JCo 3.0 files to the machine that hosts the Developer tool. Extract the SAP JCo 3.0 files and copy the files to the following directories:

File	Directory
sapjco3.jar	<Informatica installation directory>\clients\DeveloperClient\plugins \com.infa.adapter.sap.jco_<version>\lib
sapjco3.dll	<Informatica installation directory>\clients\DeveloperClient\bin

Note: Because the Developer tool is installed on a 64-bit machine, you must use the 64-bit JCo libraries.

If you do not download and install the SAP JCo 3.0 files, the Developer tool displays the following error message when you create SAP connections and data objects:

```
SAPJCo library files might not be installed. Install the SAPJCo library files and try
again.
```

To successfully test an SAP connection in Informatica Administrator, download the SAP JCo 3.0 files to the machine that hosts the master gateway node. Extract the SAP JCo 3.0 files and copy the files to the following directories on the machine that hosts the master gateway node:

Operating System	File	Directory
AIX 64-bit, Linux64-X86, Linux Itanium 64-bit, Linux-X86	sapjco3.jar	<Informatica installation directory>/services/shared/jars/thirdparty
AIX 64-bit, Linux64-X86, Linux Itanium 64-bit, Linux-X86	libsapjco3.so	<Informatica installation directory>/services/shared/bin
Windows EM64T, Windows 32-bit	sapjco3.dll	<Informatica installation directory>/services/shared/bin
Windows EM64T, Windows 32-bit	sapjco3.jar	<Informatica installation directory>/services/shared/jars/thirdparty

Transports Installation and Configuration

The transport system is a set of ABAP programs installed on the SAP system. The ABAP programs import SAP metadata into the repository. The ABAP programs also enable run-time functionalities, such as passing mapping parameters and filters.

You use the transport system in the following situations:

Configuring PowerExchange for SAP NetWeaver

You need to transport customized objects that were provided by Informatica to the SAP system. These objects include tables, structures, programs, and functions. The Data Integration Service calls custom objects when it makes a request to the SAP system.

Deploying run-time transports and ABAP programs from development to production

When you use the deprecated SAP data object, you use ABAP to integrate with mySAP applications. You must deploy the run-time transports provided by Informatica and the ABAP programs installed by the Data Integration Service to extract data when you move from development to production.

The SAP system administrator must perform the following steps to integrate Data Services on the development, test, and production SAP systems:

1. Delete transport programs from previous versions.
2. Transport objects to the SAP system.
3. Run transport programs that generate unique IDs.
4. Create users in the SAP system for Data Services users.
5. Create profiles in the SAP system for Data Services users.
6. Create a package for the ABAP programs that the Data Integration Service installs on the SAP system. Create the package in the development environment only.

Transports for Developer Tool Functionality

When you use the Developer tool to integrate with SAP, the transports that you need to install depend on the type of data object that you use.

SAP Table Data Object

If you use the SAP Table data object to read data from SAP, you do not need to install any design-time transport.

You need to install only the run-time transports. Install the run-time transports in the following order:

1. TBL_READ_RUN_CMP transport
   For Unicode systems, you can access the transport files from the following directory:

   `<Informatica installer file>/saptrans/mySAP/UC`

   The data file name is `TBL_READ_RUN_CMP_R900448.EC5` and the cofile name is `TBL_READ_RUN_CMP_K900448.EC5`.

   For non-Unicode systems, you can access the transport files from the following directory:

   `<Informatica installer file>/saptrans/mySAP/NUC`

   The data file name is `TBL_READ_RUN_CMP_R904055.NE5` and the cofile name is `TBL_READ_RUN_CMP_K904055.NE5`.

2. TBL_READ_RUN transport
   The transport files are the same for both Unicode and non-Unicode systems.

   You can access the transport files from the following directory:

   `<Informatica installer file>/saptrans/mySAP/common`

   The data file name is `TBL_READ_RUN_V2_R900047.DU5` and the cofile name is `TBL_READ_RUN_V2_K900047.DU5`.

Deprecated SAP Data Object

If you use the deprecated SAP data object to read data from SAP, you must install both design-time and run-time transports.

Install the following design-time transports:

1. ZINFA_DESIGNTIME transport
2. TBL_DESIGN_PROGINFO transport

Install the following run-time transports:

1. ZINFABC_RUN transport
2. TRANS_VER_RUN transport

For information about the transport files that you need to install, see the *Informatica PowerExchange for SAP NetWeaver Transport Versions Installation Notice*.

Step 1. Delete Transport Programs

When you integrate Informatica on the SAP system for the first time, you do not have to delete the transport programs. When you integrate Informatica on the SAP system that was configured for a previous version of Informatica, you need to delete the old transport programs from the SAP system. Note the current configuration in the /INFATRAN/ZPRGSQ SAP ECC custom table before you delete the transport objects.

Modifying /INFATRAN/

To delete a transport object, register the namespace /INFATRAN/ and enter the repair license. Also, change the status of /INFATRAN/ in the SAP system to Modifiable.

1. Go to transaction SE03 and double-click **Display/Change Namespaces**.

   The SAP system displays the list of namespaces.
2. Right-click /INFATRAN/ and click Display.
3. Make the following changes to the namespace:

Field	Description
Namespace	Unique name to identify the transport programs.
Namespace Role	Represents a namespace that you import into the SAP system. You cannot develop this namespace. However, you can repair the namespace if you have a valid Repair License.

Field	Description
Repair License	Unique license key required to modify or repair transport objects. Enter the license key 10357544012122787918 to delete or modify a namespace.
Short Text	Description of the namespace.

4. Click Save.
5. Go to transaction SE03 and double-click **Set System Change Option**.

   The System Change Option screen appears.
6. Change the Global Setting to Modifiable and click Save.

Deleting Transport Objects

PowerExchange for SAP NetWeaver contains the following package:

- /INFATRAN/ZINFA_RUNTIME

Delete all packages. Before you delete a package, you must delete almost all the objects under it.

Important: If you use the deprecated SAP data object and upgrade from Informatica version 9.0.1 and later, do not delete the TBL_DESIGN_PROGINFO transport object that contains the table /INFATRAN/ZPRGIN. The table holds the details of all the ABAP programs installed from PowerExchange for SAP NetWeaver.

1. Go to transaction SE10 and verify whether there is any lock on the objects under the package that you want to delete.

   An object is locked when another user is modifying or transporting the object. You must check the list of modifiable requests for all users in transaction SE10 and verify if there is any request associated with an Informatica object.
2. Release all the modifiable requests associated with the Informatica object.
3. Go to transaction SE10 and create a workbench for deleting all objects.
4. Go to transaction SE80, select the package that you want to delete and click display.

   When you select a package, it displays all objects under it, such as function groups, programs, transactions, and dictionary objects. Dictionary objects include tables and structures.

   For example, select the package ZINFA_DESIGNTIME. When you select a package, it displays all objects under it, such as function groups, programs, transactions, and dictionary objects. Dictionary objects include tables and structures.

   Note: The ZINFA_DESIGNTIME package is needed only when you use the deprecated SAP data object.
5. Select a function group to view its function modules.
6. Right-click each function module and click Delete.
7. Right-click the function group and click Delete.

   When you delete a function group, you delete includes and other SAP standard dictionary objects.
8. Right-click each program and click Delete.
9. When prompted, select Includes and click OK.

   You must delete each program and includes.
10. Right-click each table and click Delete.

    If the tables contain data, delete the data before you delete the tables.
11. Click OK if prompted with the message that the table is used in the program.

12. Right-click each structure and click Delete.
13. Click OK if prompted with the message that structure is used in the program.
14. Go to transaction SE10 and select the transport request created for deleting objects.
15. Expand the request node and verify the list of objects.

    The list of objects in the request node and the list of objects that you delete from the package must match.
16. Go to transaction SE10, right-click the transport request for deleting the objects, and select Release Directly.

    Wait until the export of the change request is complete. Complete the export before you delete the package.
17. Go to transaction SE80, right-click the package, and click Delete.
18. When prompted, create a new local transport request to delete the package.
19. Go to transaction SE10 and delete the package.
20. Release the transport request that you created for the deleting package.

Step 2. Install Transport Objects

Informatica provides a group of design-time and run-time transports. Transports are customized objects necessary for SAP integration. These objects include tables, programs, structures, and functions that Informatica exports to data files. Place these transports on the SAP system. This process creates a package for each group of transports.

The transports you install depend on the version of the SAP system. The transports for an Unicode SAP system are available at the saptrans/mySAP/UC location in the installation package. These transports are created from SAP version ECC5.0 and ECC6.0.

The directory contains separate directories for the data files and cofiles that you need to place on the SAP system. The data files contain the transport objects. The cofiles contain the transport conditions. Each set of program files represents a function group that has a specific purpose.

Installing Transport Objects

The SAP system administrator can place the transports using Transport Management System (STMS). The installation package has separate directories for the data files and cofiles that you need to place on the SAP system. The data files contain the transport objects. The cofiles contain the transport conditions. Each set of program files represents a function group that has a specific purpose.

Place transports on the SAP system in the following order:

1. Place the ZINFABC run-time transport on the development system.
2. Place the run-time transports on the development system.
3. Place the design-time transports on the development system. The design-time transports you place on the development system depend on the PowerExchange for SAP features you want to use.
4. After you place the transports on the development system, deploy the run-time transports to the test and production systems.
5. To place the transports on SAP using the Transport Management System, go to transaction STMS.
6. Click **Overview** > **Imports**.
7. Open the target system queue.

8. Click **Extras** > **Other Requests** > **Add**.

   The Add Transport Request to Import Queue dialog box appears.

9. Add a transport request number.

   When you add a transport request number, delete the prefix. For example, when you add ZINFABC_RUN_R900101.R46, delete ZINFABC_RUN. Place the ZINFABC run-time transport first.

10. Click **Enter**.

11. From **Request**, select the transport request number you added, and click **Import**.

12. Repeat steps from 5 through 11 for each transport that you want to add.

TBL_DESIGN_PROGINFO

You need to install the TBL_DESIGN_PROGINFO transport object only if you use the deprecated SAP data object and a Unicode SAP system.

The TBL_DESIGN_PROGINFO transport object contains the package /INFATRAN/ZINFA_DESIGNPROGINFO and the table /INFATRAN/ZPRGIN. Ensure that when you install transports, you do not delete or override the package /INFATRAN/ZINFA_DESIGNPROGINFO. The /INFATRAN/ZPRGIN table holds the details of all the ABAP programs installed from the PowerExchange for SAP.

Step 3. Run Transport Programs

After you transport the integration objects, run the following programs:

/INFATRAN/YPMPARSQ

Part of package /INFATRAN/ZINFA_RUNTIME. This program generates unique parameter IDs. Run this program on the development, test, and production systems.

/INFATRAN/YPMPRGSQ

Part of package /INFATRAN/ZINFA_DESIGNTIME. Run this program on the development system only. Run this program to specify an ABAP program name prefix of up to 10 characters, provide a namespace that you have registered with SAP, and determine the starting sequence number. When you upgrade from a previous version, you run this program to use the same starting sequence number.

The ABAP program name prefix must start with the letter “Y” or “Z.” Use a unique prefix for each SAP system that you transport these objects to. For example, use YPC000001 as the prefix and current sequence for one SAP system and ZPM000001 for another SAP system.

When you run the /INFATRAN/YMPRGSQ program, you must select the option to use long names because both file mode sessions and stream mode sessions use long names. When you use long names, you generate a program name that is 30 characters in length, including the customer namespace.

When you run the /INFATRAN/YMPRGSQ program, you can also select the option to override the existing information in the /INFATRAN/ZPRGSQ custom table. For example, if you want to add a custom namespace, provide the related information and select the **Override existing information** option.

Run /INFATRAN/YPMPRGSQ again. When you run the program, set the initial sequence number to <last number before upgrade> + 1.

Deploying Run-time Packages to the Test and Production Systems

After you install the transports on the SAP development system, deploy the run-time packages to the test and production systems. Before deploying the run-time packages, use the SAP transaction SE10 to verify that no existing transport requests include the run-time packages.

1. In the SAP development system, go to transaction SE80.

   The **Object Navigator** window appears.
2. Display the ZINFABC_RUNTIME package.
3. Right-click the package name and select **Write Transport Request**.

   The **Transport Package** dialog box appears.
4. Click **All Objects**.

   The **Enter Transport Request** dialog box appears.
5. Click **Create Request**.

   The **Select Request Type** dialog box appears.
6. Click **Transport of Copies** and then click **Enter**.

   The **Create Request** dialog box appears.
7. Enter a short description and click **Save**.
8. Go to transaction SE10.

   The **Transport Organizer** window appears.
9. For Request Type, select **Transport** of Copies.
10. For Request Status, select **Modifiable**.
11. Click **Display**.

    The **Transport Organizer: Requests** window appears.
12. Double-click the transport request you created.

    The **Display Request** dialog box appears.
13. On the **Properties tab**, select the target SAP system to which you want to deploy the package and click **Enter**.
14. Select the transport request you created and click **Release Directly**.

    SAP deploys the package to the target system.
15. Repeat steps 1 through 14 to deploy the /INFATRAN/ZINFA_RUNTIME package.

Step 4. Create Users

Create an appropriate user for development, test, and production environments in SAP. The user you create enables dialog-free communication between SAP and Informatica.

Depending on the version of the SAP installation, create a Common Program Interface-Communications (CPI-C) user, System user, or a communication user with the appropriate authorization profile.

Tip: Ensure that the Informatica user that you create in SAP and the user that completes the task in SAP have the same permissions.

Step 5. Create Profiles

The SAP administrator needs to create a profile in the development, test, and production SAP system so that you can use the integration features. This profile name must include authorization for the objects and related activities. The profile on the test system should be the same as the profile on the production system.

The following table shows the authorization necessary for integration:

Authorization Object	Production/ Development	Integration Feature	Activity
S_DEVELOP	Development	Install and uninstall programs	All activities. Also need to set Development ObjectID to PROG.
S_TRANSPRT **Note:** You need authorization on the S_TRANSPRT object only when you use secure transports.	Development	Install and uninstall programs	CREATE and CHANGE. Required for workbench requests TTYPE = DTRA.
S_TABU_DIS	Production	Extract data	READ.
S_DATASET	Production	Staging data to a file	WRITE. **Note:** You also need the READ activity authorization when you use secure transports.

Authorization Object	Production/ Development	Integration Feature	Activity
S_BTCH_JOB	Production	Release background job	DELE, LIST, PLAN, SHOW. Set Job Operation to RELE.
S_RFC	Production Development	Authorize RFC privileges	All activities. Authorize RFC privileges for function group RFC objects of the following function groups: - ZPMV - ZERP - ZPMH - ZPMR - ZPMP - ZPMD - ZPMI - ZPMF - SYST - RFC1 - /INFATRAN/* Include the following function groups if you use secure transports: - SDIFRUNTIME - GSAC - SKEY - STR9 - SEU_COMPONENT - STRD - BTCH - SABC - KXUT - /1BCDWBEN/SEN4 - EDI1

Step 6. Create a Package

Create a package to integrate PowerExchange for SAP NetWeaver with mySAP applications using ABAP. When you create a mapping with an SAP source definition in the development system, you generate and install an ABAP program. By default, the ABAP programs that you generate from the mapping are installed in the $TMP package. For easy transport into a test or production system, the SAP administrator needs to create a package for the ABAP programs. You cannot transport items from the $TMP package.

1. Go to transaction SE80.

   The Object Navigator window appears.
2. From the list, select Package.
3. Enter a name for the new package and press Enter.

   SAP prompts you to create a new package.
4. Click OK.

5. Enter the following information and click the Save button.

Field	Description
Package	Name of the package.
Short text	Description of the package.
Software component	Name of the software component.
Appl. component	Name of the application component.

   SAP prompts you to select a workbench request.
6. Select a workbench request. Or, create a new workbench request.
7. Click Save.
8. Go to transaction SE10.

   You can view a list of workbench requests in transaction SE10.
9. Right-click the new workbench request and select Release.

PowerExchange for SAP NetWeaver Uninstallation

When you uninstall the Developer tool, you also uninstall PowerExchange for SAP NetWeaver. The uninstaller does not remove the RFC_INI environment variables.

After you uninstall PowerExchange for SAP NetWeaver, you must clean up the SAP system.

Cleaning Up the SAP System

Perform the following tasks to clean up the SAP system:

Delete transport objects from SAP

Use the SE10 and SE80 transactions to delete the transport objects that you installed to run PowerExchange for SAP NetWeaver.

CHAPTER 3

SAP BW Service Configuration

This chapter includes the following topics:

- SAP BW Service Overview, 24
- SAP BW Service Properties, 25
- infacmd SAP BW Service Properties, 25
- Creating the SAP BW Service, 28
- Enabling and Disabling the SAP BW Service, 28
- Editing the SAP BW Service Properties, 29
- Viewing Log Events, 29

SAP BW Service Overview

Create an SAP BW Service when you want to read data from or write data to SAP BW. Use Informatica Administrator to create and manage the SAP BW Service.

The SAP BW Service is an application service that performs the following tasks:

- Listens for RFC requests from SAP BW.
- Initiates workflows to extract from or load to SAP BW.
- Sends log events to the Log Manager.

Use the Administrator tool to complete the following SAP BW Service tasks:

- Create the SAP BW Service.
- Enable and disable the SAP BW Service.
- Configure the SAP BW Service properties.
- Configure the associated Data Integration Service.
- Configure the SAP BW Service processes.
- Configure permissions for the SAP BW Service.
- View messages that the SAP BW Service sends to the Log Manager.

SAP BW Service Properties

The following table describes the SAP BW Service properties for the Developer tool:

Property	Description
Program ID	Program ID for the logical system you create in SAP BW for the SAP BW Service. The Program ID in SAP BW must match this parameter, including case.
Gateway Host	Host name of the SAP gateway.
Gateway Server	Server name of the SAP gateway.
SAP Connection	SAP connection. Specify a connection to a specific SAP application server or an SAP load balancing connection.
Trace	Use this option to track the JCo calls that the SAP system makes. SAP stores the information about the JCo calls in a trace file. Specify one of the following values: - 0. Off - 1. Full Default is 0. You can access the trace files from the following directory on the machine where you installed the Informatica services: `<Informatica installation directory>/tomcat/bin`
Other Connection Parameters	Enter any other connection parameter that you want to use. Use the following format: `<parameter name>=<value>`
Retry Period	Number of seconds the SAP BW Service waits before trying to connect to the SAP BW system if a previous connection failed. The SAP BW Service tries to connect five times. Between connection attempts, it waits the number of seconds you specify. After five unsuccessful attempts, the SAP BW Service shuts down. Default is 5 seconds. **Note:** The **Retry Period** property is not available when you create the SAP BW Service. You can define it when you edit the SAP BW Service properties.

infacmd SAP BW Service Properties

You can create an SAP BW Service with the infacmd isp CreateService command. By default, the SAP BW Service is enabled when you create it.

The infacmd isp CreateService command uses the following syntax:

```
CreateService

<-DomainName|-dn> domain_name

<-UserName|-un> user_name

<-Password|-pd> password

<-ServiceName|-sn> service_name
```

```
<-NodeName|-nn> node_name

<-IntegrationService|-dis> data_integration_service_name

<-RepositoryUser|-mru> model_repository_user

<-RepositoryPassword|-mrp> model_repository_password

[<-ServiceOptions|-so> option_name=value ...]
```

The following table describes the infacmd isp CreateService options and arguments:

Option	Argument	Description
-DomainName -dn	domain_name	Required. Name of the Informatica domain. You can set the domain name with the -dn option or the environment variable INFA_DEFAULT_DOMAIN. If you set a domain name with both methods, the -dn option takes precedence.
-UserName -un	user_name	Required if the domain uses Native or LDAP authentication. User name to connect to the domain. You can set the user name with the -un option or the environment variable INFA_DEFAULT_DOMAIN_USER. If you set a user name with both methods, the -un option takes precedence. Optional if the domain uses Kerberos authentication. To run the command with single sign-on, do not set the user name. If you set the user name, the command runs without single sign-on.
-Password -pd	password	Required if you specify the user name. Password for the user name. The password is case sensitive. You can set a password with the -pd option or the environment variable INFA_DEFAULT_DOMAIN_PASSWORD. If you set a password with both methods, the password set with the -pd option takes precedence.
-ServiceName -sn	service_name	Required. Name of the SAP BW Service. The name is not case sensitive and must be unique within the domain. The characters must be compatible with the code page of the associated repository. The name cannot have leading or trailing spaces, include carriage returns or tabs, exceed 79 characters, or contain the following characters: `/ * ? < > " |`
-NodeName -nn	node_name	Required. Name of the node where you want the SAP BW Service process to run. If the Informatica environment is configured for high availability, this option specifies the name of the primary node.
-ModelRepositoryUser -mru	model_repository_user	Required. User name used to connect to the repository. To enter a name that contains a space or other non-alphanumeric character, enclose the name in quotation marks.

Option	Argument	Description
-ModelRepositoryPassword -mrp	model_repository_password	Required if secure communication is not enabled for the domain. Optional if secure communication is enabled for the domain. User password. You can set a password with the -rp option or the environment variable INFA_REPOSITORY_PASSWORD. If you set a password with both methods, the password set with the -rp option takes precedence.
-DataIntegrationService -dis	data_integration_service_name	Required. Name of the Data Integration Service to which the SAP BW Service connects. To enter a name that contains a space or other non-alphanumeric character, enclose the name in quotation marks.
-LicenseName -ln	license_name	Required if you create an enabled service. Name of the license you want to assign to the SAP BW Service.
-ServiceOptions -so	option_name=value	Optional. Service properties that define how the SAP BW Service runs.

SAP BW Service Options

Enter SAP BW Service options in the following format:

```
infacmd CreateService ... -so option_name=value option_name=value ...
```

To enter multiple options, separate them with a space. To enter a value that contains a space or other non-alphanumeric character, enclose the value in quotation marks.

The following table describes the SAP BW Service options:

Option	Description
GWHost	Host name of the SAP gateway.
GWServ	Server name of the SAP gateway.
SAPConnectionRef	SAP connection that you want to use. Specify a connection to a specific SAP application server or an SAP load balancing connection.
ProgramId	Program ID for the logical system that you create in SAP BW for the SAP BW Service. The Program ID in SAP BW must match this parameter, including case.
RetryPeriod	Number of seconds the SAP BW Service waits before trying to connect to the SAP BW system if a previous connection failed. The SAP BW Service tries to connect five times. Between connection attempts, it waits the number of seconds you specify. After five unsuccessful attempts, the SAP BW Service shuts down. Default is 5 seconds.

Creating the SAP BW Service

Create an SAP BW Service when you want to read data from or write data to SAP BW. Use Informatica Administrator to create the SAP BW Service.

1. Log in to the Administrator tool.
2. In the Domain Navigator, select the domain.
3. Click **Actions** > **New** > **SAP BW Service**.

   The **New SAP BW Service** window appears.
4. Configure the SAP BW Service properties.
5. Click **OK**.

   The SAP BW Service is created.

Enabling and Disabling the SAP BW Service

Use the Administrator tool to enable and disable the SAP BW Service. You might disable the SAP BW Service if you need to perform maintenance on the machine where the SAP BW Service runs. Enable the disabled SAP BW Service to make it available again.

Before you enable the SAP BW Service, you must define Informatica as a logical system in SAP BW.

When you enable the SAP BW Service, the service starts. If the service cannot start, the domain tries to restart the service based on the restart options configured in the domain properties.

If the service is enabled but fails to start after reaching the maximum number of attempts, the following message appears:

```
The SAP BW Service <service name> is enabled.
The service did not start. Please check the logs for more information.
```

You can review the logs to determine the reason for failure and fix the problem. After you fix the problem, disable and re-enable the SAP BW Service to start it.

When you enable the SAP BW Service, it tries to connect to the associated Integration Service. If the Integration Service is not enabled and the SAP BW Service cannot connect to it, the SAP BW Service still starts successfully. When the SAP BW Service receives a request from SAP BW to start a workflow, the service tries to connect to the associated Integration Service again. If it cannot connect, the SAP BW Service returns the following message to the SAP BW system:

```
The SAP BW Service could not find Integration Service <service name> in domain <domain
name>.
```

To resolve this problem, verify that the Integration Service is enabled, and that the domain name and Integration Service name that you entered under the third-party details of the InfoPackage are valid. Then, restart the process chain in the SAP BW system.

When you disable the SAP BW Service, select one of the following options:

- Complete. Disables the SAP BW Service after all service processes complete.
- Abort. Aborts all processes immediately and then disables the SAP BW Service. You might choose abort if a service process stops responding.

Enabling the SAP BW Service

1. In the Domain Navigator of the Administrator tool, select the SAP BW Service.
2. Click **Actions** > **Enable Service**.

Disabling the SAP BW Service

1. In the Domain Navigator of the Administrator tool, select the SAP BW Service.
2. Click **Actions** > **Disable Service**.

   The **Disable SAP BW Service** window appears.
3. Select the disable mode and click **OK**.

Editing the SAP BW Service Properties

Use the **Properties** tab in the Administrator tool to edit the properties for the SAP BW Service.

1. Log in to the Administrator tool.
2. In the Domain Navigator, select the SAP BW Service.
3. Click the **Properties** tab and then click **Edit** corresponding to the category of properties that you want to update.
4. Update the property values and restart the SAP BW Service for the changes to take effect.

Viewing Log Events

The SAP BW Service sends log events to the Log Manager. The SAP BW Service captures log events that track interactions between the Developer tool and SAP BW.

You can view SAP BW Service log events in the following locations:

- Administrator tool. On the **Logs** tab, enter search criteria to find log events that the SAP BW Service captures when you read data from or write data to SAP BW.
- SAP BW Monitor. In the **Monitor - Administrator Workbench** window, you can view log events that the SAP BW Service captures for an InfoPackage that is included in a process chain to write data into SAP BW. SAP BW pulls the messages from the SAP BW Service and displays them in the monitor. The SAP BW Service must be running to view the messages in the SAP BW Monitor.

To view log events about how the Data Integration Service processes an SAP BW workflow, view the workflow log.

CHAPTER 4

SAP Connection

This chapter includes the following topics:

- SAP Connection Overview, 30
- SAP Connection Properties, 30
- Creating an SAP Connection, 32

SAP Connection Overview

Use an SAP connection to access SAP tables in an SAP enterprise application or access SAP BW objects.

Create a connection to import metadata from an SAP table or an SAP BW object. You can then use the connection to create a data object, preview data, profile data, and run mappings. The Developer tool uses the connection when you import a data object. The Data Integration Service uses the connection when you preview data or run mappings.

Use the Developer tool, Administrator tool, or infacmd to create an SAP connection.

SAP Connection Properties

Use an SAP connection to access an SAP table or an SAP BW object. The SAP connection is an enterprise application connection. You can create and manage an SAP connection in the Administrator console or the Developer tool.

Note: The order of the connection properties might vary depending on the tool where you view them.

The following table describes the SAP connection properties:

Property	Description
Username	Required. User name for the SAP source system that you want to access.
Password	Required. Password for the user name.

Property	Description
Connection type	Required. Type of connection that you want to create. Select one of the following values: - Application. Create an application connection when you want to connect to a specific SAP application server. - Load balancing. Create a load balancing connection when you want to use SAP load balancing. Default is Application. Based on the connection type you select, the corresponding connection property fields become available in the **Connection Details** dialog box. The Developer tool greys out the connection property fields that are not applicable for a particular connection type.
Host name	Required when you create an SAP application connection. Host name or IP address of the SAP server that you want to connect to.
System number	Required when you create an SAP application connection. SAP system number.
Message host name	Required when you create an SAP load balancing connection. Host name of the SAP message server.
R3 name/SysID	Required when you create an SAP load balancing connection. Name of the SAP system.
Group	Required when you create an SAP load balancing connection. Group name of the SAP application server.
Client	Required. SAP client number.
Language	Optional. Language that you want to use for mappings and workflows. Must be compatible with the Developer tool code page. If you leave this option blank, the Developer tool uses the default language of the SAP system.
Trace	Optional. Use this option to track the JCo calls that the SAP system makes. SAP stores the information about the JCo calls in a trace file. Specify one of the following values: - 0. Off - 1. Full Default is 0. You can access the trace files from the following directories: - `<Informatica installation directory>/tomcat/bin` directory on the machine where you installed the Informatica services - `<Informatica installation directory>/clients/DeveloperClient` directory on the machine where you installed the Developer tool
Additional parameters	Optional. Enter any other connection parameter that you want to use. Use the following format: `<parameter name>=<value>`
Staging directory	Path in the SAP system where the stage file will be created.
Source directory	Path that contains the source file. The path must be accessible to the Data Integration Service.
Use FTP	Enables FTP access to SAP.

Property	Description
FTP user	Required when you use FTP. User name to connect to the FTP server.
FTP password	Required when you use FTP. Password for the FTP user.

FTP host	Required when you use FTP.
	Host name or IP address of the FTP server.
	Optionally, you can specify a port number from 1 through 65535, inclusive. Default for FTP is 21.
	Use one of the following syntax to specify the host name:
	`- hostname:port_number`
	`- IP address:port_number`
	When you specify a port number, enable that port number for FTP on the host machine.
	If you enable SFTP, specify a host name or port number for an SFTP server. Default for SFTP is 22.

Retry period	Number of seconds that the Data Integration Service attempts to reconnect to the FTP host if the connection fails. If the Data Integration Service cannot reconnect to the FTP host in the retry period, the mapping or workflow fails. Default is 0. A value of 0 indicates an infinite retry period.
Use SFTP	Enables SFTP access to SAP.
Public key file name	Required when you enable SFTP and the SFTP server uses public key authentication. Public key file path and file name.
Private key file name	Required when you enable SFTP and the SFTP server uses public key authentication. Private key file path and file name.
Private key file name password	Required when you enable SFTP, and the SFTP server uses public key authentication and the private key is encrypted. Password to decrypt the private key file.
Port range for HTTP	HTTP port range that the Data Integration Service must use to read data from the SAP server in streaming mode. Enter the minimum and maximum port numbers with a hyphen as the separator. The minimum and maximum port number can range between 10000 and 65535. You can also specify the port range according to your organization. Default is 10000-65535.

Creating an SAP Connection

Before you import SAP data objects, preview data, profile data, or run mappings and workflows, create an SAP connection.

1. Click **Window** > **Preferences**.
2. Select **Informatica** > **Connections**.
3. Expand the domain.

4. Select **Enterprise Application** > **SAP**, and then click **Add**.

   Note: The SAP connections that you created in versions earlier than 10.0 are deprecated. The deprecated connection category is named as **SAP (Deprecated)** under **Enterprise Application**. Informatica will drop support for the deprecated connections in a future release. You can run mappings with the deprecated connections and also create a new deprecated connection. However, Informatica recommends that you create a new SAP connection by using the **SAP** category under **Enterprise Application**. For information about creating an SAP deprecated connection, see the earlier versions of the PowerExchange for SAP NetWeaver User Guides.

5. Enter a connection name.
6. Optionally, enter a connection ID and description.
7. Select the domain where you want to create the connection.
8. Click **Next**.
9. Configure the connection properties.
10. Click **Test Connection** to verify that the connection to the SAP system is successful.
11. Click **Finish**.

Part II: SAP Table Data Extraction

This part contains the following chapters:

- Introduction to SAP Table Data Extraction, 35
- Building Informatica Objects for SAP Table Data Extraction, 38

CHAPTER 5

Introduction to SAP Table Data Extraction

This chapter includes the following topics:

- SAP Table Data Extraction Overview, 35
- Staging Mode, 35
- Streaming Mode, 37
- Compressed Data Transfer, 37

SAP Table Data Extraction Overview

You can use PowerExchange for SAP NetWeaver to read data from SAP tables and views. You can configure the Data Integration Service to read data from transparent, pool, and cluster tables.

You can use staging or streaming mode to extract data from the SAP tables.

Staging Mode

You can run SAP mappings in staging mode when the data set is large.

When you run a mapping in staging mode, the Developer tool creates a stage file on the SAP application server. The Data Integration Service reads SAP source data, loads it into a stage file, and continues to process the mapping. The Data Integration Service then deletes the stage file unless you configure the mapping to reuse the stage file.

Mappings that are run in staging mode do not require an online connection between the Data Integration Service and SAP while the Developer tool is reading data. For this reason, you can run mappings offline by using a background process. Configure background processing when the data volume is high and the reading time exceeds the limit for dialog processes.

Stage File Reuse

When you run a mapping in staging mode, the SAP application server creates a stage file for each data object operation in the mapping. By default, the Data Integration Service deletes the file after reading it. When you

run multiple mappings that use identically configured data object operations, you can save the stage files and reuse them for another mapping.

To reuse the stage files, configure the following advanced properties when you read data from SAP:

Persist Stage File

When you configure the Data Integration Service to persist the stage file, the Data Integration Service connects to the FTP location where you save the stage file and reads the existing file. Also, the Data Integration Service does not delete the stage file from the FTP location.

Reinitialize Stage File

When you configure the Data Integration Service to reinitialize the stage file, the Data Integration Service reads data from the SAP tables and replaces the existing stage file in the FTP location. Use this option when the source data has changed or when you want to refresh the stage file.

The following table describes the Data Integration Service actions for the stage file persistence and reinitialization options:

Persist the Stage file	Reinitialize the Stage file	Action
On	Off	The Data Integration Service creates a stage file in the FTP location if the file does not exist. If the stage file exists, the Data Integration Service validates and reuses the file. If the validation fails, the Data Integration Service recreates the file. The Data Integration reads the stage file and the file remains in the FTP location for reuse.
On	On	The Data Integration Service reads data from the SAP tables and overwrites the existing stage file with the data from SAP. Then, the Data Integration Service retains the stage file in the FTP location for reuse.
Off	Off	The Data Integration Service reads the stage file and deletes the file.

Modes of Access

You can access stage files for SAP mappings in the following ways:

- NFS Mount
- FTP or SFTP

NFS Mount

Use an NFS mount when the file path and name are different for the SAP system and the Data Integration Service.

Use an NFS mount in the following situations:

One host is Windows and the other is UNIX

Map a drive from the Data Integration Service to the machine where the stage files reside. The path names map differently between the two platforms.

The file system shared between the two hosts are mounted differently

Map a drive from the Data Integration Service to the machine where the stage files reside.

The user accessing the file must be the user that runs the Data Integration Service. If the SAP system is on Windows, the user must have standard read permissions on the directory where you stage the file.

FTP or SFTP

Use FTP or SFTP when the Data Integration Service accesses the file system through an FTP or SFTP connection. Use FTP or SFTP in the following situations:

The FTP or SFTP server is configured to view the entire file system

When the Data Integration Service accesses SAP through FTP or SFTP, the path to the file is identical.

The FTP or SFTP server is restricted to a certain directory or directories

The paths for the staging directory and source directory are different.

The user who accesses the stage file must be the FTP or SFTP user. If the SAP system is on Windows, the user must have standard read permissions on the directory where you stage the file.

If the Data Integration Service fails to access the stage file through FTP or SFTP, it logs the error message returned by SAP in the workflow log. Use transaction ST22 from the SAP client to get more information about the SAP error message.

Streaming Mode

PowerExchange for SAP NetWeaver uses HTTP to run mappings in streaming mode.

When you run a mapping in streaming mode, PowerExchange for SAP NetWeaver starts an HTTP session and requests data from SAP. SAP streams data over the HTTP protocol to the Data Integration Service.

Compressed Data Transfer

File compression helps in improving the mapping performance and processing the data more efficiently.

When you run a mapping in staging mode, SAP compresses the source data and loads the data to a stage file. The Data Integration Service then reads the compressed data from the stage file and writes it to the target. Compression helps in increasing the data transfer speed and decreasing the amount of disk storage that the stage file needs. Therefore, the mapping performance improves.

CHAPTER 6

Building Informatica Objects for SAP Table Data Extraction

This chapter includes the following topics:

- Informatica Objects for SAP Table Data Extraction Overview, 38
- Importing an SAP Table Data Object, 39
- SAP Table Data Object Properties, 40
- Creating an SAP Table Data Object Read Operation, 41
- SAP Table Data Object Read Operation Properties, 41
- Output Properties of an SAP Table Data Object Read Operation, 41
- SAP Table Data Extraction Mapping, 45
- Parameterization, 45
- Partitioning, 46

Informatica Objects for SAP Table Data Extraction Overview

An SAP Table data object is a physical data object that uses an SAP resource as a source or lookup. You can create an SAP Table data object based on a view or a transparent, pool, or cluster table.

To create an SAP Table data object, create an SAP connection in the Developer tool and import an SAP table from the SAP system. Create a data object read operation based on the SAP Table data object. You can define the read operation properties to specify how the Data Integration Service must read data from the SAP system. You can then add the read operation as a source or lookup to a mapping, mapplet, or profile.

After you create the data object read operation, you can run the mapping to read or look up data from the SAP system. You can create multiple data object operations for an SAP Table data object.

Importing an SAP Table Data Object

Import an SAP Table data object to specify the SAP table or view from which you want to read data. You can then create a data object read operation based on the data object, and add the read operation to a mapping, mapplet, or profile.

1. Select a project or folder in the **Object Explorer** view.
2. Click **New** > **Data Object**.
3. Select **SAP Table Data Object** and click **Next**.

   Note: The SAP data objects that you created in versions earlier than 10.0 are deprecated. The deprecated data object type is named as **SAP Data Object (Deprecated)**. Informatica will drop support for the deprecated data objects in a future release. You can run mappings with the existing data objects and also create a new deprecated data object. However, Informatica recommends that you create a new data object of type **SAP Table Data Object** to read data from SAP tables. For information about creating an SAP deprecated data object, see the earlier versions of the PowerExchange for SAP NetWeaver User Guides.

   The **New SAP Table Data Object** dialog box appears.

4. Click **Browse** next to the **Location** option and select the target project or folder.

5. Click **Browse** next to the **Connection** option and select an SAP connection from which you want to import the SAP table metadata, and then click **OK**.
6. To add a table to the SAP Table data object, click **Add** next to the **Resource** option.

   The **Add Resource** dialog box appears.
7. On the left pane, expand the connection, and click **Tables/Views**.

   A list of tables appears on the right pane.
8. Select a table or search for the table to add to the data object:
   - To import an SAP table from the list, select the table and click **OK**.
   - To search for a table based on a name, enter a name in the **Name** field. To search for a table based on a description, click **Go** > **Advanced**, and add a description. Select the table and click **OK**.

   When you search for a table by the name, you can include wildcard characters and separate multiple table names with a comma.

   The **New SAP Table Data Object** dialog box appears.
9. If required, add additional tables to the SAP Table data object.
10. Optionally, enter a name for the SAP Table data object.
11. Click **Finish**.

    The data object appears under Physical Data Objects in the project or folder in the **Object Explorer** view.

You can also add tables to an SAP Table data object after you create it.

SAP Table Data Object Properties

After you create an SAP Table data object, you can edit the data object properties in the **Overview** view. The Overview properties include general properties that apply to the SAP Table data object. They also include object properties that apply to the SAP table that you import.

General Properties

You can configure the following general properties for an SAP Table data object:

- Name. Name of the SAP Table data object.
- Description. Description of the SAP Table data object.
- Connection. Name of the SAP connection. Click **Browse** to select a different SAP connection or parameterize the connection.

Object Properties

You can configure the following general properties, column properties, and advanced properties for the SAP table you add in the table data object:

- Name. Name of the SAP table.
- Description. Description of the SAP table.
- Native Name. Name of the SAP table including the entity in which the table exists. You can parameterize the native name.
- Path Information. Path to the SAP table.
- Column Properties. Column properties include name, native name, data type, precision, and description of the columns in the SAP table. You can also define the primary key.

- Keys. Enter a primary key name and select the key columns.

Creating an SAP Table Data Object Read Operation

Create an SAP Table data object read operation based on an SAP Table data object. You can then add the read operation as a source or lookup in a mapping.

1. Select the SAP Table data object in the Object Explorer view.
2. Right-click the SAP Table data object and select **New** > **Data Object Operation**.

   The **Data Object Operation** dialog box appears.
3. Enter a name for the data object read operation.
4. Select the operation type as **tableRead** from the **Capabilities**.

   Note: The **tableWrite** operation type is reserved for future use.
5. Click **Add**.

   The **Select Resources** dialog box appears.
6. Select the SAP table for which you want to create the data object read operation, and then click **OK**.
7. Click **Finish**.

   The Developer tool creates the read operation for the selected SAP Table data object.

SAP Table Data Object Read Operation Properties

The Data Integration Service reads data from the SAP table based on the data object read operation properties that you specify.

When you create a data object read operation, the Developer tool creates a Source transformation and an Output transformation. The Source transformation is named after the SAP table and represents the data that the Data Integration Service reads from the SAP table. Select the Source transformation to view data such as the name and description of the SAP resource.

The Output transformation represents the data that the Data Integration Service passes into the mapping pipeline. Select the Output transformation to edit the ports, sources, query, run-time, and advanced properties.

Output Properties of an SAP Table Data Object Read Operation

The Output transformation defines the run-time properties that the Data Integration Service uses to read data from the SAP table.

You can configure the Output transformation to perform the following tasks:

- Edit the ports properties.

- Define a join condition.
- Define a filter condition.
- Define a sort condition.
- Change or parameterize the SAP connection.
- Set the partition type.

Ports Properties

The port properties list the name, data type, precision, scale, and description for all the ports that the data object read operation contains.

You can configure the following ports properties in the data object read operation:

Property	Description
Name	Name of the port.
Type	Data type of the port.
Precision	Maximum number of digits for numeric data types or maximum number of characters for string data types. The precision includes the scale for numeric values.
Scale	Maximum number of digits after the decimal point for numeric values.
Description	Description of the port.

Query Properties

You can use the **Query** tab to configure the following properties in the data object read operation:

- Join condition
- Filter condition
- Sorting

Join

When you have two or more tables in a data object read operation, you can specify a join condition to join data from multiple tables.

You can configure an inner join or a left join.

The following table describes the properties that you can specify when you configure a join condition:

Property	Description
Joiner Condition	The type of join that you want to configure. Select one of the following options: - Inner join - Left join
Platform Expression	The expression that you use to join tables.

Property	Description
Left Field	The SAP column on which you want to apply the join condition.
Operator	Simple operators that you can use to join tables. You can select one of the following operators: `=, >, >=, <, <=, !=`
Right Field	The value you specify to join the SAP tables.

The following restrictions apply when you use an SAP Table data object to read data from SAP tables:

- You cannot join more than one SAP cluster or pool table.
- You cannot use a left join with a filter condition to join two or more transparent SAP tables.
- You cannot use a left join to join a transparent table and a cluster or pool table.

Filter

Use a filter to reduce the number of rows that the Data Integration Service reads from the SAP source table. When you enter a source filter, the Developer tool adds a WHERE clause to the default query.

You can configure the following types of filter conditions:

Native Expression

Use the following syntax to enter a native expression filter condition:

- Syntax for single filter condition

  ```
  TABLE1~FIELD1 = 'value'
  ```

- Syntax for multiple filter conditions

  ```
  TABLE1~FIELD1 = 'value' OR/AND TABLE1~FIELD1 = ‘value2’
  ```

- Syntax for multiple table conditions

  ```
  TABLE1~FIELD1 = 'value' AND TABLE2~FIELD2 = ‘value2’
  ```

Note: By default, when you double-click a column name, the expression editor displays the filter condition in the following format:

```
TABLENAME.FIELDNAME
```

Before you define a value for the filter condition, you must change the format as follows:

```
TABLENAME~FIELDNAME
```

Platform Expression

You can use the platform filter expression to select specific tables from SAP sources based on the filter condition that you specify.

The following table describes the properties that you can specify when you use the platform expression filter:

Property	Description
Expression Type	The type of filter expression that you want to use to filter tables.
Left Field	The SAP column on which you want to apply the filter condition.

Property	Description
Operator	Simple operators you can use to filter tables. You can select one of the following operators: `=, >, >=, <, <=, !=`
Right Field	The value you specify to filter the SAP tables.

Sorting

Use sorted ports to sort column data in an SAP data object. When you use sorted ports, the Developer tool adds an ORDER BY clause to the SQL query. The SAP system performs the query and passes the resulting data to the Data Integration Service.

When you use the SAP data object as a read operation in a mapping or mapplet, you can send sorted data from the read operation to the downstream transformations.

Note: In an SAP Table data object, you cannot use sorted ports to sort rows on SAP cluster and pool tables.

Run-time Properties

You can use the **Run-time** tab to change or parameterize the SAP connection, and configure partitioning.

The run-time properties display the name of the connection that the Data Integration Service uses to read data from the SAP table. You can select a different connection or parameterize the connection.

You can also configure key range partitioning to optimize the mapping performance. When you configure key range partitioning, the Data Integration Service distributes rows of data based on a port or set of ports that you define as the partition key. You define a range of values for each port. The Data Integration Service uses the key and ranges to send rows to the appropriate partition.

Advanced Properties

The advanced properties determine how the Data Integration Service reads data from the SAP tables.

You can configure the following advanced properties for an SAP Table data object read operation:

Data transfer mode

You can transfer data in staging or streaming mode.

When you run a mapping in staging mode, the Developer tool creates a stage file on the SAP application server. The Data Integration Service reads source data and loads it into the stage file.

When you run a mapping in streaming mode, PowerExchange for SAP NetWeaver starts an HTTP session and requests data from SAP. SAP streams data over the HTTP protocol to the Data Integration Service.

Number of rows to fetch

You can enter the maximum number of rows that you want to fetch from the SAP table. The Data Integration Service then fetches data based on the number of rows you enter.

Number of rows to skip

You can enter the number of rows that you want to skip in an SAP table. The Data Integration Service then skips those rows that you entered and fetches the remaining rows.

For example, you can set this property to 10 to skip the first 10 rows in an SAP resource and read from the eleventh row.

Run in background

You can choose to run a mapping in the background when the data volume is high and the Data Integration Service takes a very long time to read data from the SAP tables.

Stage file name

Name of the stage file. You can assign parameters to the stage file name.

Reinitialize the stage file

When you select the **Reinitialize the stage file** option, the Data Integration Service reads data and replaces the existing files. You can reinitialize the stage file when the source data has changed and you want to refresh the source data.

If you reinitialize the stage file without persisting it, the Data Integration Service reinitializes the stage file and deletes the stage file after reading it.

If you reinitialize and persist the stage file simultaneously, the Data Integration Service does not delete the stage file after reading the file.

Persist the stage file

When you select the **Persist the stage file** option, the Data Integration Service connects to the stage file directory where you saved the stage file and reads the file.

If you disable the **Persist the stage file** option, the Data Integration Service deletes the stage file from the stage file directory after reading it.

SAP Table Data Extraction Mapping

After you create an SAP Table data object read operation, you can create a mapping. You can add the data object read operation as a source or lookup in the mapping. You can then add transformations and a target in the mapping.

Validate and run the mapping. You can also add the mapping to a Mapping task in a workflow and run the workflow.

Parameterization

You can use parameters to change the connection and SAP Table data object read operation properties at run time.

You can parameterize the following data object read operation properties:

- Data transfer mode
- Number of rows to fetch
- Number of rows to skip
- Stage file name
- Filter condition

Partitioning

When you read data from SAP, you can configure partitioning to optimize the mapping performance at run time. The partition type controls how the Data Integration Service distributes data among partitions at partition points.

You can define the partition type as key range partitioning. When you configure key range partitioning, the Data Integration Service distributes rows of data based on a port or set of ports that you define as the partition key. You can define a range of values for each port. The Data Integration Service uses the key and ranges to send rows to the appropriate partition.

Part III: SAP BW OHS Data Extraction

This part contains the following chapters:

- Introduction to SAP BW OHS Data Extraction, 48
- Building SAP Objects for BW OHS Data Extraction, 50
- Building Informatica Objects for BW OHS Data Extraction, 53
- Extracting Data from SAP BW OHS, 59

CHAPTER 7

Introduction to SAP BW OHS Data Extraction

This chapter includes the following topics:

- SAP BW OHS Data Extraction Overview, 48
- SAP BW OHS Data Extraction Process Flow, 48
- Raw Data Transfer, 49

SAP BW OHS Data Extraction Overview

You can use PowerExchange for SAP NetWeaver to read data from SAP BW through an Open Hub Destination (OHD) or InfoSpoke.

An open hub destination is an SAP object that you use to distribute data from the SAP BW system to other SAP and non-SAP applications, and third-party tools. You can create an open hub destination based on BW objects such as InfoCubes, DataStore objects, InfoObjects, and InfoSets.

An InfoSpoke provides the same functionality as an open hub destination. It defines the open hub data source from which you want to extract the data, the extraction mode, and the open hub destination to which you want to write the data. Effective in SAP BW version 7.0, SAP does not support InfoSpokes and recommends using open hub destinations instead. For this reason, Informatica also recommends using open hub destinations instead of InfoSpokes.

To extract data from SAP BW, you must complete configuration tasks on both the SAP and Informatica systems. You must trigger the data extraction from SAP.

SAP BW OHS Data Extraction Process Flow

To read data from SAP BW, you must complete configuration tasks on both the SAP and Informatica systems.

1. Create an open hub destination in SAP to read data from SAP BW.
2. Create a transformation in SAP to map the source and target fields. The source is the SAP object from which you want to read data. The target is the open hub destination to which you want to extract the data.

3. Create a Data Transfer Process (DTP) in SAP to extract the data from SAP BW and write it to an SAP transparent table.
4. In Informatica Developer, create an SAP connection and use the connection to import an SAP BW OHS Extract data object. You can create an SAP BW OHS Extract data object based on an open hub destination or InfoSpoke.
5. Create a data object read operation based on the SAP BW OHS Extract data object.
6. Define the read operation properties to determine how the Data Integration Service must read data from SAP BW.
7. Create a mapping with the read operation as the source.
8. Create a workflow based on the mapping.
9. Create an application based on the workflow and deploy the application to the Data Integration Service.
10. Create and start an SAP BW Service.
11. Configure the Informatica system details under the third-party details in SAP. Enter the workflow name, application name, project name, and folder name. You can also use the Informatica command line program to define the third-party details in SAP.
12. Initiate the data extraction from SAP. You can either start the data extraction immediately or schedule to run it a later time.
    To schedule the data extraction, create and start a process chain in SAP to read data from the open hub destination and store it in a BW table. The open hub destination then sends a notification to the SAP BW Service stating that the extraction is complete.

    The SAP BW Service triggers the application and workflow that you defined under the third-party details in SAP.

    The Data Integration Service then extracts the data from SAP BW. You can view log events to track the interactions between Informatica and SAP BW.

Raw Data Transfer

You can configure the Data Integration Service to read data from SAP BW through the raw data transfer API. The mapping performance increases when you read data through the raw data transfer API.

To read data through the raw data transfer API, you must install SAP BW version 7.3 Support Package 5 or later.

CHAPTER 8

Building SAP Objects for BW OHS Data Extraction

This chapter includes the following topics:

- SAP Objects for BW OHS Data Extraction Overview, 50
- Creating an Open Hub Destination, 51
- Creating a Transformation, 51
- Creating a Data Transfer Process, 52

SAP Objects for BW OHS Data Extraction Overview

You must create objects in the SAP system to read data from SAP BW.

Create the following objects in the SAP system:

Open Hub Destination

Create an Open Hub Destination (OHD) in SAP to read data from BW. You can create an OHD based on InfoCubes, DataStore objects, InfoObjects, and InfoSets.

Transformation

Create a transformation in SAP to map the source fields to the target fields. The source is the SAP object from which you want to read data. The target is the open hub destination to which you want to extract the data.

Data Transfer Process

Create a Data Transfer Process (DTP) in SAP to extract the data from SAP BW and write it to an SAP transparent table.

Creating an Open Hub Destination

Create an open hub destination in SAP to extract data from SAP BW. You can configure SAP BW objects such as InfoCubes, DataStore Objects, InfoObjects, and InfoSets as open hub destination data sources.

1. On the **SAP User Menu** screen, enter RSA1 in the **Transaction** field.

   The **Administrator Workbench** opens.
2. On the left pane, click **Open Hub Destination**.
3. On the right pane, right-click an InfoArea and select **Create Open Hub Destination**.

   The **Create Open Hub Destination** dialog box appears.
4. On the **General** tab, select the data source from which you want to extract data.
5. Enter a name and description for the open hub destination.
6. Select the object type from which you want to extract the data to the open hub destination.
7. Select the object from which you want to extract data and then click **Enter**.

   The open hub destination is added to the InfoArea.
8. On the **Destination** tab, select the destination as **Third-Party Tool**.
9. Enter an RFC destination.
10. Save and activate the open hub destination.

Creating a Transformation

Create a transformation in SAP to map the source fields to the target fields. The source is the SAP object from which you want to read data. The target is the open hub destination to which you want to extract the data.

1. On the **SAP User Menu** screen, enter RSA1 in the **Transaction** field.

   The **Administrator Workbench** opens.
2. On the left pane, right-click the source for which you want to create the transformation and select **Create Transformation**.

   The **Create Transformation** dialog box opens.
3. Under the **Target of the Transformation** section, select the target object type.
4. Enter the name of the target object.
5. Under the **Source of the Transformation** section, select the source object type.
6. Enter the name of the source object and the source system.
7. Click **Enter**.

   The SAP system proposes a transformation that maps the source fields to the target fields. You can either use the proposed transformation or edit it based on your requirements.
8. Save and activate the transformation.

Creating a Data Transfer Process

Create a Data Transfer Process (DTP) to transfer data from source objects to target objects in SAP BW.

1. Open the **Administrator Workbench**.
2. Right-click the open hub destination and select **Create Data Transfer Process**.

   The **Creation of Data Transfer Process** dialog box appears.
3. Enter a name for the DTP in the **Data Transfer Proc** field.
4. Select the object type and the name of the source that you specified for the open hub destination.
5. Save and activate the DTP.

CHAPTER 9

Building Informatica Objects for BW OHS Data Extraction

This chapter includes the following topics:

- Informatica Objects for BW OHS Data Extraction Overview, 53
- Importing an SAP BW OHS Extract Data Object, 54
- SAP BW OHS Extract Data Object Properties, 55
- Creating an SAP BW OHS Extract Data Object Read Operation, 55
- SAP BW OHS Extract Data Object Read Operation Properties, 56
- Output Properties of an SAP BW OHS Extract Data Object Read Operation, 56
- Parameterization, 57
- Partitioning, 57
- SAP BW OHS Mapping, Workflow, and Application Configuration, 58

Informatica Objects for BW OHS Data Extraction Overview

To read data from SAP BW, you must create an SAP BW OHS Extract data object. An SAP BW OHS Extract data object is a physical data object that uses an SAP BW object as the source.

To create an SAP BW OHS Extract data object, import metadata from an open hub destination or InfoSpoke into the Developer tool. Create a data object read operation based on the data object. Then, configure the read operation properties to determine how the Data Integration Service must read data from SAP BW.

After you configure a read operation, you can create a mapping to read data from SAP BW. Add the read operation as a source in the mapping. You can then add transformations and a target in the mapping.

Create a workflow based on the mapping. Then, create an application based on the workflow and deploy the application to the Data Integration Service.

Importing an SAP BW OHS Extract Data Object

Import an SAP BW OHS Extract data object to specify the SAP BW object from which you want to read data. You can read data from an open hub destination or InfoSpoke. You can then create a data object read operation based on the data object.

1. Select a project or folder in the **Object Explorer** view.
2. Click **File** > **New** > **Data Object**.
3. Select **SAP BW OHS Extract Data Object** and click **Next**.

   The **New SAP BW OHS Extract Data Object** dialog box appears.
4. Enter a name for the data object.
5. Click **Browse** next to the **Location** option and select the target project or folder.
6. Click **Browse** next to the **Connection** option and select the SAP connection from which you want to import the metadata of the open hub destination or InfoSpoke.
7. To add a resource, click **Add** next to the **Selected Resources** option.

   The **Add Resource** dialog box appears.
8. On the left pane, expand the connection name.
   - To import an open hub destination, select the **Open Hub Destination** option on the left pane. A list of open hub destination resources appear on the right pane. Select the resource that you want to import.
   - To import an InfoSpoke, expand the **InfoSpoke** option and select the object type on the left pane. A list of resources of the selected object type appear on the right pane. Select the resource that you want to import.

   You can also search for a resource by entering the resource name in the **Name** field.

9. Click **OK**.
10. Click **Finish**.

    The data object appears under Physical Data Objects in the project or folder in the **Object Explorer** view.

SAP BW OHS Extract Data Object Properties

The **Overview** view of the SAP BW OHS Extract data object displays general information about the data object and the properties of the SAP BW resource that you import.

General Properties

You can configure the following general properties for an SAP BW OHS Extract data object:

- Name. Name of the SAP BW OHS Extract data object.
- Description. Description of the SAP BW OHS Extract data object.
- Connection. Name of the SAP connection. Click **Browse** to select a different SAP connection. You can also parameterize the connection.

Object Properties

You can configure the following general properties and column properties for the SAP BW resource that you add in the data object:

- Name. Business name of the SAP BW resource.
- Description. Description of the SAP BW resource.
- Native Name. Name of the SAP BW resource. You can also parameterize the native name.
- Path Information. Path to the SAP BW resource.
- Column Properties. Name, native name, data type, precision, scale, and description of the columns in the SAP BW resource.

Creating an SAP BW OHS Extract Data Object Read Operation

Create an SAP BW OHS Extract data object read operation from an SAP BW OHS Extract data object. You can then add the read operation as a source in a mapping.

1. Select the SAP BW OHS Extract data object in the **Object Explorer** view.
2. Right-click the data object and select **New** > **Data Object Operation**.

   The **Data Object Operation** dialog box appears.
3. Enter a name for the data object read operation.
4. Click **Add**.

   The **Select Resources** dialog box appears displaying the data object.
5. Select the data object and click **OK**.

6. Click **Finish**.

   The Developer tool creates the read operation for the selected SAP BW OHS Extract data object.

SAP BW OHS Extract Data Object Read Operation Properties

The Data Integration Service reads data from the SAP BW resource based on the data object read operation properties that you specify.

When you create a data object read operation, the Developer tool creates a Source transformation and an Output transformation. The Source transformation is named after the SAP BW resource and represents the data that the Data Integration Service reads from the resource. Select the Source transformation to view data such as the name and description of the SAP BW resource.

The Output transformation represents the data that the Data Integration Service passes into the mapping pipeline. Select the Output transformation to edit the ports, run-time, and advanced properties.

Output Properties of an SAP BW OHS Extract Data Object Read Operation

The Output transformation defines the run-time properties that the Data Integration Service uses to read data from the SAP BW resource.

You can configure the Output transformation to perform the following tasks:

- Edit the port properties.
- Change or parameterize the SAP connection.
- Configure partitioning.
- Define the advanced properties that the Data Integration Service must use to read data.

Ports Properties

The ports properties list the name, data type, precision, scale, and description for all the ports that the data object read operation contains.

You can configure the following ports properties in the data object read operation:

Property	Description
Name	Name of the port.
Type	Data type of the port.
Precision	Maximum number of digits for numeric data types or maximum number of characters for string data types. The precision includes the scale for numeric data types.

Property	Description
Scale	Maximum number of digits after the decimal point for numeric values.
Description	Description of the port.

Run-time Properties

The run-time properties display the name of the connection that the Data Integration Service uses to read data from the SAP BW resource. You can select a different connection or parameterize the connection.

You can also use the **Run-time** tab to configure partitioning. You can configure dynamic partitioning or fixed partitioning.

Advanced Properties

The advanced properties determine how the Data Integration Service reads data from the SAP BW resource.

You can configure the following advanced properties in the data object read operation:

Raw Data Transfer

Select this option to enable raw data transfer and increase the mapping performance. When you enable raw data transfer, the Data Integration Service reads data from the SAP BW resource through a data transfer API.

To read data in the raw format, you must install SAP BW version 7.3 Support Package 5 or later.

Log Lock Retry Count

Number of attempts to acquire a lock to write to the log.

Default is 10000 and the maximum value is 2147483645.

If you do not enable raw data transfer, set the value to 300.

Parameterization

You can parameterize the SAP connection and the log lock retry count property to override the mapping properties at run time.

Partitioning

When you read data from SAP BW, you can configure partitioning to optimize the mapping performance. The partition type determines how the Data Integration Service distributes data among partitions at partition points.

You can configure the following types of partitioning:

Dynamic partitioning

When you configure dynamic partitioning, the Data Integration Service determines the number of partitions that it must create at run time. It scales the number of partitions based on factors such as the maximum parallelism value defined for the Data Integration Service and the mapping, and the number of CPUs available on the nodes where the mappings run.

For more information about configuring the maximum parallelism value, see the *Informatica Application Services Guide* and the *Informatica Developer Mapping Guide*.

Fixed partitioning

When you configure fixed partitioning, you must specify the number of partitions that the Data Integration Service must create at run time.

SAP BW OHS Mapping, Workflow, and Application Configuration

After you create a mapping with an SAP BW OHS Extract data object, you must create a workflow. Then, create an application and deploy the workflow as an application to the Data Integration Service.

You must then enter initiate the data extraction from SAP. To initiate the data extraction, open the InfoPackage in the SAP system, and enter the following details under the **3rd Party Selections** tab:

- Workflow name
- Application name
- Folder name

CHAPTER 10

Extracting Data from SAP BW OHS

This chapter includes the following topics:

- Data Extraction from SAP BW OHS Overview, 59
- Configuring and Starting a Process Chain from SAP BW, 59
- BW OHS Data Extraction Status, 66

Data Extraction from SAP BW OHS Overview

After you complete configuration tasks in the SAP BW and Informatica systems, you must initiate the data extraction from SAP.

Configure and start a process chain in SAP to extract data from the SAP BW system. You can either start the data extraction immediately or schedule to run it at a later time.

You can view the data extraction status from both SAP and Informatica.

Configuring and Starting a Process Chain from SAP BW

To configure and start a process chain in SAP BW, perform the following tasks:

1. Create a process chain and insert the start process.
2. Insert the ZPMSENDSTATUS ABAP program.
3. Insert an InfoSpoke process.
4. Start the process chain.

Creating the Process Chain and Inserting the Start Process

When you create the process chain and insert the start process, you also schedule the process chain.

1. From the Administrator Workbench in SAP BW, click **SAP Menu** > **Administration** > **RSPC - Process Chains**.

   The **Process Chain Maintenance Planning View** window appears.
2. Click **Create**.

   The **New Process Chain** dialog box appears.
3. Enter a unique name for the process chain and enter a description.
4. Click **Enter**.

   The **Insert Start Process** dialog box appears.
5. Click **Create**.

   The **Start Process** dialog box appears.
6. Enter a unique name for the start process variant and enter a description.
7. Click **Enter**.

   The **Maintain Start Process** window appears.
8. Click **Change Selections** to schedule the process chain.

   The **Start Time** window appears.
9. To schedule the process chain to run immediately after you execute it, click **Immediate**.
10. Click **Save**.
11. In the **Maintain Start Process** window, click **Cancel**.
12. In the **Insert Start Process** dialog box, click **Enter**.

    The start process appears in the **Process Chain Maintenance Planning View** window.

Inserting the ZPMSENDSTATUS ABAP Program

Before you insert the ZPMSENDSTATUS ABAP program into a process chain, import the program into SAP BW.

1. In the **Process Chain Maintenance Planning View** window in SAP BW, click **Process Types**.
2. From the **Process Types** menu, click **General Services** > **ABAP Program**.

   The **Insert ABAP Program** dialog box appears.
3. Click **Create**.

   The **ABAP Program** dialog box appears.
4. Enter a unique name for the ABAP program process variant and enter a description.
5. Click **Enter**.

   The Process Maintenance: ABAP Program window appears.
6. In the **Program Name** field, click the **Browse** button to select the ZPMSENDSTATUS ABAP program.
7. Click **Change** next to the **Program Variant** field.

   The **ABAP: Variants - Initial Screen** window appears.
8. Click **Create**.
9. In the **ABAP: Variants** dialog box, enter a name for the ABAP variant and click **Create**.

   The **Maintain Variant** window appears.

10. In the **Maintain Variant** window, enter the **Maintain Variant** fields.

    The following table describes the **Maintain Variant** fields:

Field	Description
DEST	Select the name of the RFC destination.
INFPARAM	Enter the name of the workflow that you created to extract SAP BW data. Enter the name in one of the following formats: - <Workflow name> - <Folder name>: <Workflow name> - <Folder name>: <Workflow name>: <Application name>
CONTEXT	Enter OHS API.
INFOPAK	Leave this field blank.
OHDEST	Value you specified for the Destination field when you created the InfoSpoke.

11. Click **Save and Exit** in the **Maintain Variant** window.
12. Click **Save and Exit** in the **ABAP Variants** window.
13. Click **Save and Exit** in the **Process Maintenance: ABAP Program** window.
14. Click **Enter** in the **Insert ABAP Program** dialog box.

    The ABAP program appears in the **Process Chain Maintenance Planning View** window.
15. Link the Start process to the ZPMSENDSTATUS ABAP program.
16. Enter the selection criteria to specify the process chains that you want to monitor and click **Execute**.

    The **Job Overview** window appears.
17. Select the BI_PROCESS_ABAP job and click **Job Log**.

    The **Job Log Entries** window appears. It includes an entry about the status of the workflow that the process chain was configured to start.

Inserting a Data Transfer Process

Insert a Data Transfer Process (DTP) for the open hub destination that you created in SAP BW.

1. In the **Process Chain Maintenance Planning View** window, click **Process Types**.
2. From the **Process Types** menu, click **Load Process and Post-Processing** > **Data Transfer Process**.

   The **Insert Data Transfer Process** dialog box appears.
3. In the **Data Transfer Process** field, click the **Browse** button to select the DTP that you created.
4. Click **Enter**.

   The DTP appears in the **Process Chain Maintenance Planning View** window.
5. Link the ZPMSENDSTATUS ABAP program to the DTP.

   The process chain flow is set as follows: **Start** > **ABAP Program (zpmsendstatus)** > **Data Transfer Process**
6. Click **Checking View** and then click **Activate**.
7. Click **Execute** and assign the process chain to a specific SAP BW server.

If you scheduled the process chain to run immediately, the process chain starts running on the assigned SAP BW server.

8. Optionally, to view the status of the process chain, click **Job Overview**.

Inserting an InfoSpoke Process

Insert a process for the InfoSpoke you created in SAP BW.

1. In the **Process Chain Maintenance Planning View** window, click **Process Types**.
2. From the **Process Types** menu, click **Load Process and Post-Processing** > **Data Export Into External Systems**.

   The **Insert Data Export into External Systems** dialog box appears.
3. In the **Process Variants** field, click the **Browse** button to select the InfoSpoke that you created.
4. Click **Enter**.

   The InfoSpoke process appears in the **Process Chain Maintenance Planning View** window.
5. Link the ZPMSENDSTATUS ABAP program to the InfoSpoke process.

   The process chain flow is set as follows: **Start** > **ABAP Program (zpmsendstatus)** > **InfoSpoke**.
6. Click **Checking View** and then click **Activate**.
7. Click **Execute** and assign the process chain to a specific SAP BW server.

   If you scheduled the process chain to run immediately, the process chain starts running on the assigned SAP BW server.
8. Optionally, to view the status of the process chain, click **Job Overview**.

Configuring and Starting the Process Chain from Informatica

You can use the command line program to configure and start the process chain.

Use the following commands:

Operating System	Command	Description
Linux	*infacmd.sh sap setOpenHubServiceParameters*	Run this command to set the third-party parameters for the Open Hub Destination or InfoSpoke that is part of the process chain.
Linux	*infacmd.sh sap startProcessChain*	Run this command to start the process chain and optionally set the third-party parameters for the Open Hub Destination or InfoSpoke that is part of the process chain.
Windows	*infacmd.bat sap setOpenHubServiceParameters*	Run this command to set the third-party parameters for the Open Hub Destination or InfoSpoke that is part of the process chain.
Windows	*infacmd.bat sap startProcessChain*	Run this command to start the process chain and optionally set the third-party parameters for the Open Hub Destination or InfoSpoke that is part of the process chain.

If you configure the third-party parameters with the ZPMSENDSTATUS ABAP program, you cannot configure the parameters with the *infacmd.sh sap setOpenHubServiceParameters* or *infacmd.bat sap setOpenHubServiceParameters* command. *infacmd.sh sap startProcessChain* or *infacmd.bat sap*

startProcessChain uses the parameters that are configured in the ZPMSENDSTATUS ABAP program to start the process chain.

If you configure the third-party parameters with the *infacmd.sh sap setOpenHubServiceParameters* or *infacmd.bat sap setOpenHubServiceParameters* command, you do not need to enter the parameters again when you run the *infacmd.sh sap startProcessChain* or *infacmd.bat sap startProcessChain*command.

Tip: To view help for *infacmd.sh sap*, enter *infacmd.sh sap* help setOpenHubServiceParameters or *infacmd.sh sap* help startProcessChain.

To view help for *infacmd.bat sap*, enter *infacmd.bat sap* help setOpenHubServiceParameters or *infacmd.bat sap* help startProcessChain.

Before you run a command, use the *pmpasswd* command to encrypt the password to connect to the SAP system.

The setOpenHubServiceParameters command uses the following syntax:

```
setOpenHubServiceParameters
<-UserName|-un> user_name
<-Password|-pd> password
<-SystemNumber|-sy> system_number
<-HostName|-hn> host_name
<-ClientNumber|-cl> ClientNumber
[<-Language|-lg> Language]
[<-Trace|-tr> Trace]
<-OpenHubDest|-od> OpenHubDest
<-ThirdPartyDest|-td> ThirdPartyDest
[<-ProcessChainName|-pc> ProcessChainName]
[<-FolderName|-fn> FolderName]
<-WorkflowName|-wn> WorkflowName
<-ProjectName|-pn> ProjectName
<-ApplicationName|-an> ApplicationName
[<-DataIntegrationServiceName|-is> DataIntegrationServiceName]
[<-DomainName|-dn> DomainName]
<-Context|-cn> Context
```

The startProcessChain command uses the following syntax:

```
startProcessChain
<-UserName|-un> user_name
<-Password|-pd> password
<-SystemNumber|-sy> system_number
<-HostName|-hn> host_name
<-ClientNumber|-cl> ClientNumber
[<-Language|-lg> Language]
[<-Trace|-tr> Trace]
[<-OpenHubDest|-od> OpenHubDest]
[<-ThirdPartyDest|-td> ThirdPartyDest]
<-ProcessChainName|-pc> ProcessChainName
[<-FolderName|-fn> FolderName]
[<-WorkflowName|-wn> WorkflowName]
[<-ProjectName|-pn> ProjectName]
[<-ApplicationName|-an> ApplicationName]
[<-DataIntegrationServiceName|-is> DataIntegrationServiceName]
[<-DomainName|-dn> DomainName]
[<-Context|-cn> Context]
```

The following table describes the options and arguments for the *infacmd.sh sap setOpenHubServiceParameters* and *infacmd.sh sap startProcessChain* commands:

Options	Argument	Description
-UserName -un	user_name	Required. User name for the SAP source system connection.
-Password -pd	password	Required. Encrypted password. Run *pmpasswd* to encrypt the password.
-SystemNumber -sy	system_number	Required. SAP system number.
-HostName -hn	host_name	Required. SAP host name.
-ClientNumber -cl	ClientNumber	Required. SAP client number.
-Language -lg	Language	Optional. Language in which you want to receive messages from the SAP BW system. Use a language code that is valid for the SAP BW system that you are connecting to. If you leave this blank, the Developer tool uses the default language of the SAP system to connect to SAP BW.
-Trace -tr	Trace	Optional. Tracks the JCo calls that the SAP system makes. SAP stores the information about the JCo calls in a trace file.
-OpenHubDest -od	OpenHubDest	Required for the setOpenHubServiceParameters command. Optional for the startProcessChain command. Open hub destination or InfoSpoke destination in the SAP system.
-ThirdPartyDest -td	ThirdPartyDest	Required for the setOpenHubServiceParameters command. Optional for the startProcessChain command. Third-party destination in the SAP system.
-ProcessChainName -pc	ProcessChainName	Required for the startProcessChain command. Optional for the setOpenHubServiceParameters command. Name of the process chain that you want to start.
-FolderName -fn	FolderName	Optional. Name of the folder that contains the workflow that you want to run.

Options	Argument	Description
-WorkflowName -wn	WorkflowName	Required for the setOpenHubServiceParameters command. Optional for the startProcessChain command. Name of the workflow that you want to run to extract data from SAP BW.
-ProjectName -pn	ProjectName	Required for the setOpenHubServiceParameters command. Optional for the startProcessChain command. Name of the project that contains the workflow that you want to run.
-ApplicationName -an	ApplicationName	Required for the setOpenHubServiceParameters command. Optional for the startProcessChain command. Name of the application that contains the workflow to extract data from SAP BW.
-DataIntegrationServiceName -is	DataIntegrationServiceName	Optional. Name of the Data Integration Service that you created to run the workflow.
-DomainName -dn	DomainName	Optional. Name of the Informatica domain.
-Context -cn	Context	Required for the setOpenHubServiceParameters command. Optional for the startProcessChain command. Set the value to BWOHS to read data from SAP BW through an Open Hub Destination or InfoSpoke.

Changing the Data Extraction Status

When an SAP BW OHS mapping fails, you must change the status of the failed mapping in SAP BW before you can start another workflow. Set the status of the failed request ID to G.

1. Go to transaction SE37.

   The **Function Builder: Initial Screen** appears.

2. In the **Function Module** field, enter `RSB_API_OHS_REQUEST_SETSTATUS` and click **Test/Execute**.

   The **Test Function Module: Initial Screen** appears.

3. Enter the import parameters and click **Execute**.

The following table describes the import parameters:

Import Parameter	Description
Request ID	Request ID of the failed session. You can identify the Request ID of the failed session from the workflow log or BW monitor.
Status	G, which represents a successful data extraction session.
Message	Description of the change you make.

BW OHS Data Extraction Status

You can view the status of data extraction from the Administrator tool and from the BW monitor in the SAP system.

Viewing Data Extraction Status from SAP

You can view the data extraction status from the SAP BW monitor in SAP BW. It shows green if the data extraction was successful and red if the data extraction failed.

The SAP BW monitor also shows the following information about the data extraction:

- Number of packets sent
- Number of rows in each packet
- Time taken for sending the packet
- Start time and end time

If the data extraction fails, you can start the InfoSpoke again to start the data extraction process. You can start the InfoSpoke again only after the Data Integration Service completes extracting data from the database table and sends the status to the SAP BW monitor.

Viewing Data Extraction Status from Informatica

When you extract data from SAP BW, you can view the SAP BW Service log events in the Administrator tool. On the **Logs** tab, you can enter search criteria to find the SAP BW Service log events.

The SAP BW Service captures log events that track interactions between Informatica and SAP BW. It captures its own log events. It also captures log events when it receives the following information from the SAP BW system and the Data Integration Service:

- A request from the SAP BW system to start an Informatica workflow.
- A message from the Data Integration Service that it has successfully started a workflow to extract data from SAP BW.
- A message from the Data Integration Service indicating whether the workflow failed or succeeded.

To view log events about how the Data Integration Service processes an SAP BW workflow, view the workflow log.

Part IV: SAP BW Data Load

This part contains the following chapters:

- Introduction to SAP BW Data Load, 68
- Building SAP Objects for BW Data Load, 70
- Building Informatica Objects for BW Data Load, 80
- Loading Data to SAP BW, 86

CHAPTER 11

Introduction to SAP BW Data Load

This chapter includes the following topics:

- SAP BW Data Load Overview, 68
- SAP BW Data Load Process Flow, 68

SAP BW Data Load Overview

You can use PowerExchange for SAP NetWeaver to write data to SAP BW through a 3.x data source or 7.x data source. Based on the version of the SAP BW system that you want to write data to, you can create an InfoSource or DataSource.

To write data to SAP BW, you must complete configuration tasks on both the SAP and Informatica systems. You must trigger the data load from SAP.

SAP BW Data Load Process Flow

To write data to SAP BW, you must complete configuration tasks on both the SAP and Informatica systems.

1. In the SAP system, create an InfoSource or DataSource based on the version of the SAP BW system that you want to write data to.
2. Assign the InfoSource or DataSource to an external logical system, that is, the Informatica system.
3. Activate the InfoSource or DataSource.
4. In Informatica Developer, create an SAP connection and use the connection to import an SAP BW Load data object. You can create an SAP BW Load data object based on an InfoSource or DataSource.
5. Create a data object write operation based on the SAP BW Load data object.
6. Define the write operation properties to determine how the Data Integration Service must write data to SAP BW.
7. Create a mapping with the write operation as the target.
8. Create a workflow based on the mapping.
9. Create an application based on the workflow and deploy the application to the Data Integration Service.
10. Create and start an SAP BW Service.
11. Configure an InfoPackage in SAP to write data to the InfoSource or DataSource.

12. Configure the Informatica system details under the third-party details in SAP. Enter the workflow name, application name, project name, and folder name. You can also use the command line utilities to define the third-party details in SAP.
13. Initiate the data load from SAP. You can either start the load immediately from SAP or schedule to run it a later time.

    To schedule the data load, configure a process chain in SAP.

    Note: When you write data to SAP BW version 7.3 by using 7.x DataSources, the InfoPackage loads the data to the PSA. To load the data from the PSA to an SAP target, you must create a Data Transfer Process (DTP), and configure a process chain that links the InfoPackage and DTP.

CHAPTER 12

Building SAP Objects for BW Data Load

This chapter includes the following topics:

- SAP Objects for BW Data Load Overview, 70
- InfoSources, 71
- DataSources, 71
- SAP BW Hierarchy, 71
- Transfer Methods for Writing Data to SAP BW, 73
- Creating an InfoSource or DataSource, 74
- Assigning an External Logical System, 79
- Activating the InfoSource or DataSource, 79

SAP Objects for BW Data Load Overview

To load data into SAP BW, you need to create components in the SAP BW system. The components that you need to create depend on the version of the SAP BW system that you want to write data to.

In SAP BW versions earlier than 7.3, you can create an InfoSource, assign it to the Informatica logical system that you created in SAP BW, and activate the InfoSource. When you create and activate the InfoSource, you specify the InfoSource type and the transfer method that the workflow uses to write data to the InfoSource.

In an SAP BW version 7.3 system, you can create a 7.x DataSource with the source system as the Informatica logical system that you created in SAP BW. You can activate the 7.x DataSource and use it to load data to the Persistent Storage Area (PSA).

In an SAP BW version 7.3 system, you can also create a 7.x InfoSource and associate it with a 7.x DataSource through transformations. You can then use the 7.x DataSource to load data to an InfoProvider.

Note: You can also load data into SAP BW version 3.5 or earlier.

InfoSources

You can use an InfoSource to write data to the SAP BW system. An InfoSource is a collection of data in the SAP BW system that logically belongs together and is summarized into a single unit.

You can load data into two types of InfoSources:

InfoSource for transaction data

Use an InfoSource for transaction data to load data that changes often and is dependent on master data. For example, you can assign transaction data about sales development to a vendor's master data and use the transaction data to determine the total sales of a vendor.

InfoSource for master data

Use an InfoSource for master data to load data that is frequently used and remains constant over a long period of time. For example, the master data of a vendor might contain the name, address, and bank account information for the vendor. Create an InfoSource for master data when you want to load data into an SAP BW hierarchy.

DataSources

DataSources contain a logical grouping of fields that describe the metadata of the source. Use DataSources to extract data from a source system and transfer the data to the BW system.

You can use a 7.x DataSource to load data to the PSA. Configure a Data Transfer Process (DTP) to load data to the PSA. To transfer the data from the PSA to an SAP target, configure a process chain that links the InfoPackage and DTP.

You can create the following types of 7.x DataSources:

- DataSource for transaction data
- DataSource for master data text
- DataSource for master data attributes
- DataSource for hierarchies

SAP BW Hierarchy

An SAP BW hierarchy is a tree-like structure that defines classes of information. Each level of the hierarchy represents a different class. A hierarchy displays an SAP BW characteristic, which is a reference object with dimensions.

The hierarchy is structured and grouped according to individual evaluation criteria based on the characteristic. The structure at each level of the hierarchy is called a node.

Node Types

A hierarchy has the following types of nodes:

Root node

The root node is the highest node in the structure and is the origin of all other nodes. The root node represents the hierarchy.

Child node

A child node is a node that is subordinate to another node.

Leaf node

Leaf nodes are the lowest level in the hierarchy. Leaf nodes do not have any successor nodes.

You can create a workflow to load data into an SAP BW hierarchy. To load data into a hierarchy, create an InfoSource or DataSource for master data in the target SAP BW system. Then, import the hierarchy as a data object into the Developer tool. When you import the definition of a hierarchy, the Developer tool creates a transfer structure with fields that make up the structure of the SAP BW hierarchy.

Hierarchy Structure

You can configure the structure of a hierarchy in the InfoSource or DataSource properties. The following settings define the structure of an SAP BW hierarchy:

Sorted hierarchy

A sorted hierarchy defines the sequence of nodes for each level of a hierarchy. When you specify a sorted hierarchy, each child node is ordered in relation to its sibling nodes.

Interval hierarchy

An interval hierarchy specifies a range of characteristic values. You can use one interval to represent multiple leaf nodes. You define an interval in SAP BW by setting a range of values.

Time-dependent hierarchy

A time-dependent hierarchy specifies a range of dates. You can define either the entire hierarchy or the hierarchy structure as time dependent. When the entire hierarchy is time dependent, it is valid only in a defined range of dates. When the hierarchy structure is time dependent, the nodes in the hierarchy change for specified periods of time while the name and version of the hierarchy remain static. You define a date range in SAP BW by setting a range of dates.

Version-dependent hierarchy

Version-dependent hierarchies have the same name, but different versions.

When you import an InfoSource or DataSource with a hierarchy, the Developer tool creates only the fields in the transfer structure definition that are required to replicate the structure of the SAP BW hierarchy.

The following table shows the fields that the Developer tool can create in the data object when you import the metadata for a hierarchy definition from SAP BW:

Field Name	Hierarchy Type	Description
NODEID	All hierarchies	Local and unique identifier for the hierarchy node.
INFOOBJECT	All hierarchies	InfoObject that is referenced by the hierarchy node.
NODENAME	All hierarchies	Name of the hierarchy node.
LINK	All hierarchies	Specifies a field as a link node.
PARENTID	All hierarchies	NODEID of the parent node of the hierarchy node.

Field Name	Hierarchy Type	Description
CHILDID	Sorted hierarchy	NODEID of the first child node of the hierarchy node.
NEXTID	Sorted hierarchy	NODEID of the sibling node following the hierarchy node.
DATEFROM	Time-dependent hierarchy	Start date in a range of dates.
DATETO	Time-dependent hierarchy	End date in a range of dates.
LEAFFROM	Interval hierarchy	Lower limit for an interval node.
LEAFTO	Interval hierarchy	Upper limit for an interval node.
LANGU	All hierarchies	Language.
TXTSH	All hierarchies	Short text.
TXTMD	All hierarchies	Medium text.
TXTLG	All hierarchies	Long text.

If you import different versions of a hierarchy into a data object, the hierarchy name includes the version. If you import a hierarchy with time-dependent values, the hierarchy name contains the date range specified for the hierarchy.

When you run a workflow, the Data Integration Service loads the hierarchy into the transfer structure fields.

Transfer Methods for Writing Data to SAP BW

In the SAP BW Administrator, you can specify the transfer method that you want to use to load data into SAP BW.

You can use the following transfer methods to load data into SAP BW:

- IDoc transfer method
- PSA transfer method

IDoc Transfer Method

Use the IDoc transfer method to synchronously move data from transfer structures to InfoCubes. When you use the IDoc transfer method, the Data Integration Service loads the data into a transfer structure for SAP BW. With the IDoc transfer method, you can process a data load while the InfoPackage runs.

PSA Transfer Method

Use the PSA transfer method when you want to load data into the Persistent Storage Area (PSA) before you write the data to an Operational Data Store (ODS) or InfoCube. When you use the PSA transfer method in SAP BW, the Data Integration Service loads the data to SAP BW. SAP BW stores the data in a PSA, and then updates or transforms the data.

When you use a 7.x DataSource to load data to SAP BW version 7.3, the transfer option is set to load data to the PSA because the InfoPackage loads data only to the PSA.

When you use 3.x data sources to load data to SAP BW, you can use one of the following PSA transfer options:

PSA and then into Data Targets

Select this option when you want to store data in the PSA before you load the data to data targets such as an ODS, InfoCube, or InfoSource.

PSA and Data Targets in Parallel

Select this option when you want to load data to the PSA and the data targets at the same time to achieve high performance.

Only PSA

Select this option when you want to load data only to the PSA. You can also select the **Update Subsequently in Data Targets** option to load the data to data targets after you load the data to the PSA.

Data Targets Only

Select this option when you want to load data only to data targets such as an ODS, InfoCube, or InfoSource.

For optimal performance, configure the transfer option to load data to the PSA. After the source system loads the PSA, you can update the InfoCubes in SAP BW.

Creating an InfoSource or DataSource

Create an InfoSource or DataSource based on the version of the SAP BW system that you want to write data to.

InfoSources are equivalent to target tables in the SAP BW operational data store. The logical system that you create for Informatica in SAP BW populates the InfoSource with data.

DataSources are equivalent to target tables in the PSA layer. DataSources define the metadata of the source system. Use a DataSource to transfer data to the SAP BW system.

Creating a 7.x InfoSource in SAP BW 7.3

While loading data to SAP BW 7.3, you can create a 7.x InfoSource when you want to connect multiple 7.x DataSources to a target and all the DataSources have the same business rules. You use the 7.x DataSources as the source when you create a transformation in SAP BW to load data to an InfoProvider.

1. In the Data Warehousing Workbench, click **InfoSources**.
2. Right-click the InfoSources folder, and select **Create application component**.
3. Enter the application component parameters and click **Enter**.

The following table describes the application component parameters:

Parameter	Description
Application Comp	Organizes logical systems.
Long Description	Description of the application component.

The application component appears in the Data Warehousing Workbench.

4. Right-click the application component and select **Create InfoSource**.

   The **Create InfoSource** dialog box appears.

5. Enter the InfoSource parameters and click **Enter**.

   The following table describes the InfoSource parameters:

Parameter	Description
InfoSource	Name of the InfoSource.
Long description	Description of the InfoSource.
Copy from	Leave this section blank.

Creating an InfoSource

Use an InfoSource as a target when you create a transformation in SAP BW to load data to an InfoProvider.

1. In the Data Warehousing Workbench, click **InfoSources**.
2. Right-click the InfoSources folder, and select **Create application component**.
3. Enter the application component parameters and click **Enter**.

   The following table describes the application component parameters:

Parameter	Description
Application Comp	Organizes logical systems.
Long Description	Description of the application component.

The application component appears in the Data Warehousing Workbench.

4. Right-click the application component and select **Create InfoSource**.
5. In the **Create InfoSource** dialog box, select the InfoSource type.

   Select **Direct update of Master Data** to create an InfoSource with a hierarchy.

6. Click **Enter**.

   The InfoSource appears in the Data Warehousing Workbench.

Creating a 3.x InfoSource

You can create a 3.x InfoSource when you want to use an InfoPackage and load data to the PSA. SAP BW creates a data source when you activate the 3.x InfoSource. You use the 3.x data source as the source when you create a transformation in SAP BW to load data to an InfoProvider or OHS.

1. In the Data Warehousing Workbench, click **InfoSources**.
2. Right-click the InfoSources folder, and select **Create application component**.
3. Enter the application component parameters and click **Enter**.

   The following table describes the application component parameters:

Parameter	Description
Application Comp	Organizes logical systems.
Long Description	Description of the application component.

   The application component appears in the Data Warehousing Workbench.

4. Right-click the application component and select **Additional Functions** > **Create InfoSource 3.x**.

   The **Create InfoSource** dialog box appears.
5. Select **Flexible Update in Any Data Target (Except Hierarchies)**, enter the InfoSource parameter information, and click **Enter**.

   The following table describes the InfoSource parameters:

Parameter	Description
InfoSource	Name of the InfoSource.
Long description	Description of the InfoSource.
Template-InfoSource	Leave this option blank.

   The InfoSource appears in the Data Warehousing Workbench.

Creating an InfoSource in SAP BW 3.5 or Earlier

1. In the Administrator Workbench, click **InfoSources**.
2. Right-click the InfoSources folder, and select **Create application component**.
3. Enter the following information and click **Enter**:

   The following table describes the application connection parameters:

Parameter	Description
Application Comp	Organizes logical systems.
Long Description	Description of the application component.

The application component appears in the Workbench.

4. Right-click the application component and select **Create InfoSource**.
5. In the **Create InfoSource** dialog box, select the InfoSource type.

   Select **Direct update of Master Data** to create an InfoSource with a hierarchy.
6. Click **Enter**.

   The InfoSource appears in the Administrator Workbench.

Creating a 7.x DataSource in SAP BW 7.3

You can create a 7.x DataSource when you want to use an InfoPackage and load data to the PSA. You can then configure a DTP to transfer the data from the PSA to an SAP target.

1. Define Informatica as a logical system in the SAP BW 7.3 system.
2. Create an SAP BW Service by using the Administrator tool and enable the service.
3. In the Data Warehousing Workbench, click **DataSources**.
4. Right-click the DataSources folder, and select **Create application component**.
5. Enter the application connection parameters and click **Enter**:

   The following table describes the application connection parameters:

Parameter	Description
Application Comp	Organizes logical systems.
Long Description	Description of the application component.

   The application component appears in the Data Warehousing Workbench.

6. Right-click the application component and select **Create DataSource**.

   The **Create DataSource** dialog box appears.
7. Enter the DataSource parameters and click **Enter**.

   The following table describes the DataSource parameters:

Parameter	Description
DataSource	Name of the DataSource.
Source system	Name of the source system that populates the DataSource with data.
Data Type DataSource	Type of the DataSource that you want to create. You can create the following types of DataSources: - DataSource for transaction data - DataSource for master data text - DataSource for master data attributes - DataSource for hierarchies

   The DataSource appears in the Data Warehousing Workbench.

8. Click the **Fields** tab and add InfoObjects to the DataSource.

   The InfoObjects you use in the DataSource display as ports in the data object.

9. Select the data format options for the InfoObjects.

   The following table describes the data format options:

Parameter	Description
Internal Format	Indicates if the data from the source is in a secure internal format. When you select this option, SAP does not verify or convert the format. Therefore, if the source does not return data in an internal format, there could be data inconsistencies or errors in the loading process.
External Format	Indicates if the data from the source is in an external format. When you select this option, SAP converts the data into an internal format before it passes the data to the transformation.
Check for Internal Format	Indicates if the SAP system must verify whether the data from the source system is in an internal format. Select this option if the data from the source is in an internal format, but it must be verified before being passed to the transformation. Select this option to ensure data conformity.

10. After creating metadata, click **Enter** to return to the Data Warehousing Workbench.

Configuring Hierarchy Structure

After you create an InfoSource, you can include an InfoObject with a hierarchy in the InfoSource. After you associate the InfoObject containing a hierarchy with an InfoSource, you can configure the hierarchy structure in the InfoSource properties.

To create an InfoSource with a hierarchy in SAP BW, specify that the InfoObject you want to include in the InfoSource will be used in a hierarchy. On the **Hierarchy** tab of the **InfoObject details** window, ensure that you select the **with hierarchies** option. You assign this InfoObject to the InfoSource when you create the InfoSource. To configure and use an SAP BW hierarchy, create an InfoSource for master data.

After you create the InfoSource, select the InfoSource properties to configure the hierarchy structure.

1. Double-click the InfoSource.
2. Select **Transfer_Structure/Transfer_Rules**.
3. Enter values for the **Source System** and the **DataSource** options.

   Ensure that the value for the DataSource option is a hierarchy.

4. Click **Hier. Structure** to enter the name for the hierarchy.

   You can select additional properties to configure the structure of the hierarchy.

5. Save the InfoSource.

Assigning an External Logical System

After you create an InfoSource, you must associate it with the external logical system that you created for Informatica in SAP BW. You must also add metadata to the InfoSource.

1. Perform one of the following tasks based on the version of the SAP BW system that you want to write data to:
   - In the Data Warehousing Workbench for SAP BW 7.0, right-click the 3.x InfoSource and select **Assign DataSource**.
   - In the Administrator Workbench for SAP BW 3.5 or Data Warehousing Workbench for SAP BW 7.0, right-click the InfoSource and select **Assign DataSource**.
2. Select the external logical system that you created for Informatica and click **Enter**.
3. Add InfoObjects to the InfoSource.

   The InfoObjects that you use in the InfoSource display as ports in the data object.
4. After creating metadata, click **Enter** to return to the Administrator Workbench or Data Warehousing Workbench.

Activating the InfoSource or DataSource

After you create an InfoSource or a DataSource and assign it to an external logical system, you must activate the InfoSource or DataSource to load data to SAP BW.

The InfoSource contains the metadata that is used as the basis for the transfer and communication structure. When you activate the InfoSource, you also maintain the transfer rules and communication structure. Transfer rules must be active for Informatica to load data into the transfer structure.

The Data Integration Service loads data to the PSA based on the DataSource. To activate a DataSource, select the DataSource and click the **Activate** button. When you activate the DataSource, SAP generates a PSA table in the entry layer of BW. You can then load the data into the PSA and create a DTP to load the data from the PSA to an SAP target.

1. In the Administrator Workbench for SAP BW 3.5 or Data Warehousing Workbench for SAP BW 7.0, right-click the InfoSource and select **Change**.
2. Select the InfoObjects and move them into the communication structure.
3. Click the **Activate** button.
4. Click the **Transfer rules** tab.
5. Select the transfer method and click **Activate**:

   The following table describes the transfer methods:

Method	Description
IDoc	Use IDoc to synchronously move data from the transfer structure to an InfoCube.
PSA	Required for SAP BW 7.0. Use PSA to load data into the PSA.

Note: If you want to populate an InfoCube in SAP BW 3.5, you must define it in the Administrator Workbench. Define the update rules to update the InfoCube from the transfer structure.

CHAPTER 13

Building Informatica Objects for BW Data Load

This chapter includes the following topics:

- Informatica Objects for BW Data Load Overview, 80
- Importing an SAP BW Load Data Object, 81
- SAP BW Load Data Object Properties, 82
- Creating an SAP BW Load Data Object Write Operation, 82
- SAP BW Load Data Object Write Operation Properties, 83
- Input Properties of an SAP BW Load Data Object Write Operation, 83
- Parameterization, 84
- Partitioning, 84
- SAP BW Load Mapping, Workflow, and Application Configuration, 85

Informatica Objects for BW Data Load Overview

To write data to SAP BW, you must create an SAP BW Load data object. An SAP BW Load data object is a physical data object that uses an SAP BW object as the target.

To create an SAP BW Load data object, import metadata from a 3.x data source or 7.x data source into the Developer tool. Create a data object write operation based on the data object. Then, configure the write operation properties to determine how the Data Integration Service must write data to SAP BW.

After you configure a write operation, you can create a mapping to write data to SAP BW. Add the write operation as a target in the mapping. You can then add a source and transformations in the mapping.

Create a workflow based on the mapping. Then, create an application based on the workflow and deploy the application to the Data Integration Service.

Importing an SAP BW Load Data Object

Import an SAP BW Load data object to specify the SAP BW object to which you want to write data. You can write data to 3.x data sources or 7.x data sources. You can then create a data object write operation based on the data object.

1. Select a project or folder in the **Object Explorer** view.
2. Click **File** > **New** > **Data Object**.
3. Select **SAP BW Load Data Object** and click **Next**.

   The **New SAP BW Load Data Object** dialog box appears.
4. Enter a name for the data object.
5. Click **Browse** next to the **Location** option and select the target project or folder.
6. Click **Browse** next to the **Connection** option and select the SAP connection from which you want to import the metadata of the 3.x data source or 7.x data source.
7. To add a resource, click **Add** next to the **Selected Resources** option.

   The **Add Resource** dialog box appears.
8. On the left pane, expand the connection name.
   - To import a 3.x data source, expand the **3.x Datasources** option on the left pane, and then expand the object type. Select the source system from which you want to import the data source. A list of 3.x data sources appear on the right pane. Select the data source that you want to import.
   - To import a 7.x data source, expand the **7.x Datasources** option on the left pane and select the object type. A list of 7.x data sources appear on the right pane. Select the data source that you want to import.

9. Click **OK**.
10. Click **Finish**.

    The data object appears under Physical Data Objects in the project or folder in the **Object Explorer** view.

SAP BW Load Data Object Properties

The **Overview** view of the SAP BW Load data object displays general information about the data object and the properties of the SAP BW resource that you import.

General Properties

You can configure the following general properties for an SAP BW Load data object:

- Name. Name of the SAP BW Load data object.
- Description. Description of the SAP BW Load data object.
- Connection. Name of the SAP connection. Click **Browse** to select a different SAP connection. You can also parameterize the connection.

Object Properties

You can configure the following general properties and column properties for the SAP BW resource that you add in the data object:

- Name. Business name of the SAP BW resource.
- Description. Description of the SAP BW resource.
- Native Name. Name of the SAP BW resource. You can also parameterize the native name.
- Path Information. Path to the SAP BW resource.
- Column Properties. Name, native name, data type, precision, scale, and description of the columns in the SAP BW resource.

Creating an SAP BW Load Data Object Write Operation

Create an SAP BW Load data object write operation from an SAP BW Load data object. You can then add the write operation as a target in a mapping.

1. Select the SAP BW Load data object in the **Object Explorer** view.
2. Right-click the data object and select **New** > **Data Object Operation**.

   The **Data Object Operation** dialog box appears.
3. Enter a name for the data object write operation.
4. Click **Add**.

   The **Select Resources** dialog box appears displaying the data object.
5. Select the data object and click **OK**.

6. Click **Finish**.

   The Developer tool creates the write operation for the selected SAP BW Load data object.

SAP BW Load Data Object Write Operation Properties

The Data Integration Service writes data to the SAP BW resource based on the data object write operation properties that you specify.

When you create a data object write operation, the Developer tool creates a Target transformation and an Input transformation. The Target transformation is named after the SAP BW resource and represents the data that the Data Integration Service writes to the resource. Select the Target transformation to view data such as the name and description of the SAP BW resource.

The Input transformation represents the data that the Data Integration Service passes into the mapping pipeline. Select the Input transformation to edit the ports, run-time, and advanced properties.

Input Properties of an SAP BW Load Data Object Write Operation

The Input transformation defines the run-time properties that the Data Integration Service uses to write data to the SAP BW resource.

You can configure the Input transformation to perform the following tasks:

- Edit the port properties.
- Change or parameterize the SAP connection.
- Configure partitioning.
- Define the advanced properties that the Data Integration Service must use to write data.

Ports Properties

The ports properties list the name, data type, precision, scale, and description for all the ports that the data object write operation contains.

You can configure the following ports properties in the data object write operation:

Property	Description
Name	Name of the port.
Type	Data type of the port.
Precision	Maximum number of digits for numeric data types or maximum number of characters for string data types. The precision includes the scale for numeric data types.

Property	Description
Scale	Maximum number of digits after the decimal point for numeric values.
Description	Description of the port.

Run-Time Properties

The run-time properties display the name of the connection that the Data Integration Service uses to write data to the SAP BW resource. You can select a different connection or parameterize the connection.

You can also use the **Run-time** tab to configure partitioning. You can configure dynamic partitioning.

Advanced Properties

In the advanced properties, you can configure the packet size that the Data Integration Service must use when it writes data to the SAP BW resource. The packet size defines the number of rows per packet.

When the Data Integration Service writes data, it stores data in memory until the bytes buffer size equals the value of the packet size. The Data Integration Service then writes the data to SAP BW as a packet.

Parameterization

You can parameterize the SAP connection and the packet size for the SAP BW Load data object to override the mapping properties at run time.

Partitioning

When you write data to SAP BW, you can configure dynamic partitioning to optimize the mapping performance.

When you configure dynamic partitioning, the Data Integration Service determines the number of partitions that it must create at run time. It scales the number of partitions based on factors such as the maximum parallelism value defined for the Data Integration Service and the mapping, and the number of CPUs available on the nodes where the mappings run.

For more information about configuring the maximum parallelism value, see the *Informatica Application Services Guide* and the *Informatica Developer Mapping Guide*.

SAP BW Load Mapping, Workflow, and Application Configuration

After you create a mapping with an SAP BW Load data object, you must create a workflow. Then, create an application and deploy the workflow as an application to the Data Integration Service.

You must then enter initiate the data load from SAP. To initiate the data load, open the InfoPackage in the SAP system, and enter the following details under the **3rd Party Selections** tab:

- Workflow name
- Application name
- Folder name

CHAPTER 14

Loading Data to SAP BW

This chapter includes the following topics:

- SAP BW Data Load Overview, 86
- Configuring an InfoPackage, 86
- Configuring a Data Transfer Process, 87
- Configuring a Process Chain to Load Data, 88
- BW Data Load Status, 91

SAP BW Data Load Overview

After you complete configuration tasks in the SAP BW and Informatica systems, you must initiate the data load from SAP BW. You can either start the data load immediately or schedule to run it at a later time.

You can view the data load status from both SAP and Informatica.

Configuring an InfoPackage

An InfoPackage is the SAP BW mechanism for scheduling and running ETL jobs. The InfoPackage defines the source system, and the target InfoSource or DataSource. You can also enter a data selection entry in the InfoPackage to select data from the source system.

Creating and Scheduling an InfoPackage

Create and schedule an InfoPackage in SAP BW 7.0 and 7.3 with the Data Warehousing Workbench. Create and schedule an InfoPackage in SAP BW 3.5 or earlier with the Administrator Workbench.

1. In the Administrator Workbench or Data Warehousing Workbench, click the **InfoSources** or **DataSources** tab.
2. Locate the InfoSource or DataSource.
3. Perform one of the following tasks based on whether you use an InfoSource or a DataSource:
   - Under the InfoSource, right-click the source system.
   - Right-click the DataSource.
4. Select **Create InfoPackage** and enter a description for the InfoPackage.

5. Click **Save**.

   The **Scheduler (Maintain InfoPackage)** window appears.
6. Click the **3rd Party Selections** tab.
7. Click **Refresh**.
8. Enter the domain, service, and workflow details.

   The following table describes the domain, service, and workflow details:

Property	Description
Domain Name for DI Service	Name of the Informatica domain for the Data Integration Service that runs the workflow.
Data Integration Service Name	Name of the Data Integration Service that runs the workflow.
Name of Folder Containing Workflow	Name of the folder that contains the workflow.
Workflow Name	Name of the workflow that you created to write data to SAP BW.

9. In the **Processing** tab, select a data transfer option.

   Note: For 7.x DataSources, the **Only PSA** data transfer option is selected by default because the InfoPackage loads the data only to the PSA.
10. Schedule the InfoPackage. Perform one of the following steps based on the version of the BW system to which you want to load data:
    - In SAP BW 3.5 or earlier, click the **Scheduling Info** tab.
    - In SAP BW 7.0 and 7.3, click the **Schedule** tab. In SAP BW 7.0, click **Start to run the InfoPackage immediately**. In SAP BW 7.3, click **Start Data Load Immediately**. In SAP 7.0 and 7.3, you can also click **Jobs** to schedule the InfoPackage to run at a specific time.

Configuring a Data Transfer Process

When you use 7.x DataSources, the InfoPackage loads data to the PSA. To load the data from the PSA to an SAP target, you must configure a Data Transfer Process (DTP).

1. In the Administrator Workbench or Data Warehousing Workbench, click the **DataSources** tab.
2. Locate the 7.x DataSource that you used to load the data in the PSA.
3. Right-click the 7.x DataSource and select **Create Data Transfer Process**.

   The **Create Data Transfer Process** dialog box appears. The source of the DTP is set to the 7.x DataSource that you used for loading the data in the PSA.
4. Define the target of the DTP. Select the object type and enter the name of the SAP target to which you want to load the data from the PSA.

5. Save and activate the DTP. The SAP system generates a default transformation between the source and target of the DTP.

   Note: You can also right-click the SAP target to which you want to load the data and then create a DTP. The target of the DTP is set to the target that you selected for loading the data. You must then define the source of the DTP as the 7.x DataSource that you used to load the data in the PSA.

Configuring a Process Chain to Load Data

To load data into SAP BW, configure a process chain that links the following components:

- InfoPackage process
- Data Transfer Process
- Additional loading processes
- ZPMSENDSTATUS ABAP program

Note: You need to insert a Data Transfer Process in the process chain only when you load to SAP BW version 7.3 by using 7.x DataSources.

The InfoPackage and loading processes process the data. The ABAP program sends status messages to the SAP BW Service. The SAP BW Service sends these messages to the Log Manager.

After inserting the ABAP program into the process chain, create a variant for the program. A variant is an SAP BW structure that contains parameter values that SAP BW passes during program execution.

When you load data to SAP BW 7.3 by using a 7.x DataSource, the transfer option is configured to load data to the PSA because the InfoPackage loads data only to the PSA.

When you load data by using 3.x data sources, use one of the following PSA transfer options:

PSA and then into Data Targets

Select this option when you want to store data in the PSA before you load the data to data targets such as an ODS, InfoCube, or InfoSource.

PSA and Data Targets in Parallel

Select this option when you want to load data to the PSA and data targets at the same time to achieve high performance.

Only PSA

Select this option when you want to load data only to the PSA. You can also select the **Update Subsequently in Data Targets** option to load the data to data targets after you load the data to the PSA.

Data Targets Only

Select this option when you want to load data only to data targets such as ODS, InfoCube, or InfoSource.

For optimal performance, configure the transfer option to load data to the PSA. After the source system loads the PSA, you can update the InfoCubes in SAP BW.

The process chain might contain a single InfoPackage that loads data to the PSA only or to a data target only. Insert the ZPMSENDSTATUS ABAP program after the InfoPackage to send the status to the SAP BW Service.

The process chain can also contain an InfoPackage that loads data to the PSA and additional processes that load the data to data targets. Insert the ZPMSENDSTATUS ABAP program after each loading process to ensure that the SAP BW Service receives status information at each point in the process chain.

To configure a process chain and load data into SAP BW, perform the following steps:

1. Create the process chain and insert the start process.
2. Insert an InfoPackage process.

   Note: When you insert an InfoPackage process for a 7.x DataSource, the DTP associated with the 7.x DataSource is also inserted.
3. Insert the ZPMSENDSTATUS ABAP program.

Creating the Process Chain and Inserting the Start Process

When you create the process chain and insert the start process, you also schedule the process chain.

1. From the Administrator Workbench or Data Warehousing Workbench, click **SAP Menu** > **Administration** > **RSPC - Process Chains**.

   The **Process Chain Maintenance Planning View** window appears.
2. Click **Create**.

   The **New Process Chain** dialog box appears.
3. Enter a unique name for the process chain and enter a description.
4. Click **Enter**.

   The **Insert Start Process** dialog box appears.
5. Click **Create**.

   The **Start Process** dialog box appears.
6. Enter a unique name for the start process variant and enter a description.
7. Click **Enter**.

   The **Maintain Start Process** window appears.
8. Click **Change Selections** to schedule the process chain.

   The **Start Time** window appears.
9. To schedule the process chain to run immediately after you execute it, click **Immediate**.
10. Click **Save**.
11. In the **Maintain Start Process** window, click **Cancel**.
12. In the **Insert Start Process** dialog box, click **Enter**.

    The start process appears in the **Process Chain Maintenance Planning View** window.

Inserting an InfoPackage Process

Insert a process for the InfoPackage that you created in SAP BW.

1. In the **Process Chain Maintenance Planning View** window, click **Process Types**.
2. From the **Process Types** menu, click **Load Process and Post-Processing** > **Execute InfoPackage**.

   The **Insert Execute InfoPackage** dialog box appears.
3. In the **Process Variants** field, click the **Browse** button to select the InfoPackage that you created.
4. Click **Enter**.

   The InfoPackage process appears in the **Process Chain Maintenance Planning View** window.

   Note: When you insert an InfoPackage process for a 7.x DataSource, the DTP associated with the 7.x DataSource is also inserted.

5. Click the start process description and drag it to link the start process to the InfoPackage process.

Inserting the ZPMSENDSTATUS ABAP Program

Before you insert the ZPMSENDSTATUS ABAP program into a process chain, you must import the program into SAP BW.

1. In the **Process Chain Maintenance Planning View** window, click **Process Types**.
2. From the **Process Types** menu, click **General Services** > **ABAP Program**.

   The **Insert ABAP Program** dialog box appears.
3. Click **Create**.

   The **ABAP Program** dialog box appears.
4. Enter a unique name for the ABAP program process variant and enter a description.
5. Click **Enter**.

   The **Process Maintenance: ABAP Program** window appears.
6. In the **Program Name** field, click the **Browse** button to select the ZPMSENDSTATUS ABAP program.
7. Click **Change** next to the **Program Variant** field.

   The **ABAP: Variants - Initial Screen** window appears.
8. Click **Create**.
9. In the **ABAP: Variants** dialog box, enter a name for the ABAP variant and click **Create**.

   The **Maintain Variant** window appears.
10. In the **DEST** field, select the name of the RFC destination.
11. In the **INFPARAM** field, enter one of the following options:
    - PSA. Enter this option if the previous process loaded to the PSA.
    - Data Target. Enter this option if the previous process loaded to a data target.
12. In the **CONTEXT** field, enter BW LOAD.
13. In the **INFOPAK** field, enter the technical name of the InfoPackage.

    For example, ZPAK_439OS93K56GKQT7HQT5TFV1Z6.
14. Click **Save and Exit** in the **Maintain Variant** window.
15. Click **Save and Exit** in the **ABAP Variants** window.
16. Click **Save and Exit** in the **Process Maintenance: ABAP Program** window.
17. Click **Enter** in the **Insert ABAP Program** dialog box.

    The ABAP program appears in the **Process Chain Maintenance Planning View** window.
18. Click the InfoPackage process description and drag it to link the InfoPackage process to the ABAP program.

    When prompted, click **Successful condition**.

    Note: When you use a 7.x DataSource to load to the PSA, you must link the InfoPackage process to the Data Transfer Process and then link the Data Transfer Process to the ABAP program.
19. Optionally, insert additional loading processes into the process chain.
20. Insert the ZPMSENDSTATUS program after each loading process.
21. In the **Process Chain Maintenance Planning View** window, click **Checking View** and then click **Activate**.
22. Click **Execute** and assign the process chain to a specific SAP BW server.

If you scheduled the process chain to run immediately, the process chain starts running on the assigned SAP BW server.

23. Optionally, to view the status of the process chain, click **Job Overview**.

    The **Simple Job Selection** window appears.

24. Enter selection criteria to specify the process chains that you want to monitor and click **Execute**.

    The **Job Overview** window appears.

25. Select the BI_PROCESS_ABAP job and click **Job Log**.

    The **Job Log Entries** window appears. It includes an entry about the status of the workflow that the process chain was configured to start.

BW Data Load Status

You can view the status of the data load from the Administrator tool and from the BW monitor in the SAP system.

The SAP BW Service captures log events that track interactions between Informatica and SAP BW. It also captures log events when it receives the following information from the SAP BW system and the Data Integration Service:

- A request from the SAP BW system to start a workflow.
- A message from the Data Integration Service that it has successfully started a workflow to load data into SAP BW.
- A message from the Data Integration Service indicating whether the workflow failed or succeeded.
- Status information from the ZPMSENDSTATUS ABAP program in the process chain that loads data to SAP BW.

When you load data into SAP BW, you can view the SAP BW Service log events in the following locations:

- Administrator tool. On the **Logs** tab, enter search criteria to find the SAP BW Service log events.
- SAP BW Monitor. In the **Monitor - Administrator Workbench** window, you can view the log events that the SAP BW Service captures for an InfoPackage included in a process chain that loads data into SAP BW.

To view log events about how the Data Integration Service processes an SAP BW workflow, view the workflow log.

Set the environment variable PMTOOL_DATEFORMAT to customize the date format that the SAP BW Service returns for log events. When you set the environment variable, the SAP BW Service validates the string before it writes a date to the log. If the date is not valid, the SAP BW Service uses the following default date display :

```
DY MON DD HH24:MI:SS YYYY
```

Viewing SAP BW Service Log Events in the SAP BW Monitor

You can use the SAP BW Monitor to view log events that the SAP BW Service captures for an InfoPackage included in a process chain that loads data into SAP BW. SAP BW pulls the messages from the SAP BW Service and displays them in the monitor. To view the messages, ensure that the SAP BW Service is running.

1. From the **Administrator Workbench** or **Data Warehousing Workbench**, click **Monitor**.

   The **Monitor - Administrator Workbench** window appears.

2. Select an InfoPackage.
3. Click **Goto** > **Logs** > **Non-SAP System Extraction Log**.

   The **Third Party System Log** dialog box appears displaying the log events that the SAP BW Service captured for the InfoPackage.

Viewing InfoPackage Status

The SAP BW Monitor displays the InfoPackage status. The status in the SAP BW monitor is green, yellow, or red depending on the status of the workflow . Green indicates that the data loaded successfully. Yellow indicates that the data loaded with warnings. Red indicates that the data failed to load.

The SAP BW Monitor indicates status in the following cases:

- The Data Integration Service did not load any rows to SAP BW because the source system did not contain any data. However, the workflow completed successfully. The SAP BW Monitor indicates a status of green, yellow, or red, depending on the **Traffic Light Color for Empty Requests** settings in the InfoPackage. Default is yellow.
- The Data Integration Service failed and did not load any row to SAP BW. The SAP BW Monitor indicates a status of red.
- The Data Integration Service failed after loading some data into SAP BW. The SAP BW Monitor indicates a status of red.
- If a workflow enabled for recovery fails, the SAP BW Monitor indicates a status of yellow. The status changes to green after the data loads successfully during the recovery run.

Part V: SAP Pushdown Optimization

This part contains the following chapter:

- SAP Pushdown Optimization, 94

CHAPTER 15

SAP Pushdown Optimization

This chapter includes the following topics:

- SAP Pushdown Optimization Overview, 94
- Pushdown Optimization Expressions, 94
- SAP Data Type Exceptions, 95

SAP Pushdown Optimization Overview

When the Data Integration Service applies filter pushdown optimization, it pushes the Filter transformation logic to the SAP source. The amount of Filter transformation logic that the Data Integration Service can push to the source depends on the location of the Filter transformation in the mapping, the source type, and the Filter transformation logic.

The Data Integration Service translates the transformation expression into a query by determining equivalent operators and functions in the application. If there is no equivalent operator or function, the Data Integration Service processes the transformation logic.

Pushdown Optimization Expressions

The Data Integration Service can push Filter transformation logic to SAP sources for expressions that contain a column name, an operator, and a literal string. When the Data Integration Service pushes transformation logic to SAP, it converts the literal string in the expressions to an SAP data type.

Filter transformation expressions can include multiple conditions separated by AND or OR. If the conditions apply to multiple SAP tables and the SAP data object uses the Open SQL ABAP join syntax, the Data Integration Service can push transformation logic to SAP. Configure the Select syntax mode in the read operation of the SAP data object.

Pushdown Optimization Functions

The Data Integration Service can push down transformation logic that contains the TO_DATE function when TO_DATE converts a DATS, TIMS, or ACCP data type character string to one of the following date formats:

- MM/DD/YYYY
- YYYY/MM/DD

- YYYY-MM-DD HH24:MI:SS
- YYYY/MM/DD HH24:MI:SS
- MM/DD/YYYY HH24:MI:SS

The Data Integration Service processes the transformation logic if you apply the TO_DATE function to a data type other than DATS, TIMS, or ACCP or if TO_DATE converts a character string to a format that the Data Integration Services cannot push to SAP.

The Data Integration Service processes transformation logic that contains other Informatica functions.

Pushdown Optimization Operators

The Data Integration Service can push down the following operators to SAP:

```
< > => = <= <> !=  ^=  AND OR
```

SAP Data Type Exceptions

The Data Integration Service processes the Filter transformation logic when the source cannot process the transformation logic and the transformation expression includes the following data types:

- RAW
- LRAW
- LCHR

APPENDIX A

Data Type Reference

This appendix includes the following topics:

- SAP Data Types, 96
- PowerExchange for SAP NetWeaver and SAP Data Types, 97
- Unsupported SAP Data Types, 99

SAP Data Types

The following table lists the data types that are available in the SAP NetWeaver and SAP BW systems:

SAP Data Type	Type	Range and Description
ACCP	Date	Posting period of 6 positions, the format is YYYYMM. In input and output, a point is inserted between year and month, so the template of this data type has the form '____.__'.
CHAR	Text	Character string with maximum length of 255. If longer fields are required, use LCHR.
CLNT	Text	Client fields. Always has 3 positions.
CUKY	Text	Currency key of 5 positions containing the possible currencies referenced by CURR fields.
CURR	Numeric	Currency field with a maximum length of 31 positions. Equivalent to a DEC amount field. A CURR field must reference a CUKY field. For P type, only 14 digits are allowed after the decimal point.
DATS	Date	8-position date field. The format is YYYYMMDD.
DEC	Numeric	Maximum length of 31 positions. Counter or amount field with a decimal point, sign, and commas separating thousands. For P type, only 14 digits are allowed after the decimal point.
FLTP	Numeric	Floating point number of 16 positions including decimal places.
INT1	Numeric	1-byte integer between 0 and 255. 3 positions. Not supported for PowerExchange for SAP NetWeaver BW

SAP Data Type	Type	Range and Description
INT2	Numeric	2-byte integer between -32,767 to 32,767, only used for length fields; positioned immediately in front of LCHR and LRAW. With INSERT or UPDATE on the long field, the database interface enters the length used in the length field and the length is set at 5 positions.
INT4	Numeric	4-byte integer between -2,147,483,647 and 2,147,483,647. The length is set at 10 positions.
LANG	Text	Language key, field format for special functions of 1 position.
LCHR	Text	Long character string with a minimum length of 256 characters. Must be at the end of transparent table and must be preceded by a length field INT2.
LRAW	Binary	Limited support. Long byte string with a minimum of 256 positions. Must be at the end of transparent table and must be preceded by a length field of type INT2.
NUMC	Text	Long character field of arbitrary length with a maximum length of 255 positions. You can enter only numbers.
QUAN	Text	Quantity field with a maximum length of 31 positions. Points to a unit field with the UNIT format. For P type, only 14 digits are allowed after the decimal point.
RAW	Binary	Uninterrupted sequence of bytes with a maximum length of 255 positions. If longer fields are required, use LRAW.
TIMS	Date	Time field (HHMMSS) of 6 positions, the display format is HH.MM.SS.
UNIT	Text	Units key of 2 or 3 positions, field containing the allowed quantity units referenced by QUAN fields.

PowerExchange for SAP NetWeaver and SAP Data Types

PowerExchange for SAP NetWeaver uses the following data types in mappings:

- Native data types. Native data types are data types specific to the source and target databases or flat files. They appear in non-SAP ECC source definitions and target definitions in the mapping.
- SAP data types. SAP data types appear in the SAP definitions in the mapping. SAP performs any necessary conversion between the SAP data types and the native data types of the underlying source database tables.
- Transformation data types. Transformation data types are generic data types that Data Integration Service uses during the transformation process. They appear in all the transformations in the mapping.

The Data Integration Service converts SAP data types to transformation data types. The Data Integration Service passes all transformation data types to the target, and the target converts them to the native data types.

The following table compares SAP data types and the transformation data types:

SAP Data Type	Transformation Data Type	Range for Transformation Data Type
ACCP	Date/time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D.
CHAR	String	1 to 104,857,600 characters Fixed-length or varying-length string.
CLNT	String	1 to 104,857,600 characters Fixed-length or varying-length string.
CUKY	String	1 to 104,857,600 characters Fixed-length or varying-length string.
CURR	Decimal	Precision 1 to 28 digits, scale 0 to 28
DATS	Date/time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. Precision to the nanosecond.
DEC	Decimal	Precision 1 to 28 digits, scale 0 to 28
FLTP	Double	Precision 15, scale 0
INT1	Small Integer	Precision 5, scale 0
INT2	Small Integer	Precision 5, scale 0
INT4	Integer	Precision 10, scale 0
LANG	String	1 to 104,857,600 characters Fixed-length or varying-length string.
LCHR	String	1 to 104,857,600 characters Fixed-length or varying-length string.
LRAW	Binary	Limited support in PowerExchange for SAP NetWeaver
NUMC	Decimal or Double	Precision 1 to 28 digits, scale 0 to 28
QUAN	Decimal	Precision 1 to 28 digits, scale 0 to 28
RAW	Binary	Uninterrupted sequence of bytes with a maximum length of 255 positions.
TIMS	Date/time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. Precision to the nanosecond.
UNIT	String	1 to 104,857,600 characters Fixed-length or varying-length string.

Unsupported SAP Data Types

PowerExchange for SAP NetWeaver does not support the following data types:

- PREC
- RAWSTRING
- SSTRING
- STRG
- VARC

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