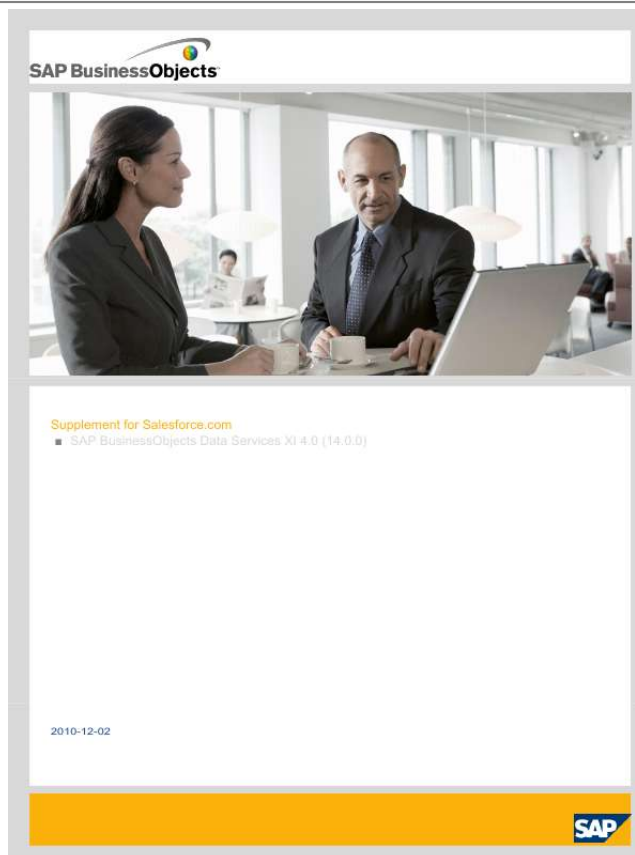




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User manual BUSINESS OBJECTS DATA SERVICES XI 4.0
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Manual abstract:

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7 Index 3 2010-12-02 Contents 4 2010-12-02 Introduction Introduction This user guide tells you how to use the SAP BusinessObjects Data Services Adapter for Salesforce.com interface to integrate Salesforce.com with Data Services. The Data Services Adapter for Salesforce.com interface allows you to create a datastore that connects to the Salesforce.com web service and retrieves data using Data Services data flows. 1.1 Audience and assumptions This user guide

assumes the following: · You understand how to use the most current version of SAP BusinessObjects Data Services to design and run batch and real-time data flows and administer Data Services processes. (Administer adapters from the Administrator.) You have a working knowledge of Salesforce.

com.. You know what an adapter is and the role it plays in business systems integration. You are familiar with how to use SQL query statements. You understand Changed Data Capture concepts. You are familiar with object-oriented modeling and can work with an object-oriented XML configuration file. Because you will integrate Data Services, the Data Services Adapter for Salesforce.com, and Salesforce.com, familiarity with systems administration and systems integration issues is recommended. 5 2010-12-02 Introduction 6 2010-12-02 Overview and installation Overview and installation 2.

1 Installing the Adapter for Salesforce.com The SAP BusinessObjects Data Services Adapter for Salesforce.com is automatically installed when you install Data Services version 12.0.0 or later.

The adapter is associated with several files including: Adapter jar files Adapter configuration templates Salesforce.com Software System extensions User's Guide for Adapter for Salesforce.com (this document) 2.1.1 Requirements The Job Server you associate with adapters must be configured to manage adapters.

For general Job Server installation and configuration information, see the SAP BusinessObjects Data Services Installation Guide. Note: For information about Salesforce.com, visit the Salesforce.com Web page. Related Topics · Deployment overview 2.2 Adapter overview The SAP BusinessObjects Data Services Adapter for Salesforce.com allows you to access Salesforce.com data from within the native Data Services extraction, transformation and loading (ETL) environment. The adapter interface allows you to quickly and easily take advantage of Salesforce.com by: 7 2010-12-02 Overview and installation · · Supporting a fully automated process for Salesforce.

com configuration Allowing you to browse Salesforce.com schema metadata in the same manner as all sources and targets from within the Designer interface

2.2.1 To use the Adapter for Salesforce.com from SAP BusinessObjects Data Services 1. Install SAP BusinessObjects Data Services version 12.0.0 or later (for more information, see the Getting Started Guide). Installing the software automatically installs the Salesforce.com adapter.

2. Configure the Job Server local to your installation of the software for adapter management. See the Getting Started Guide for Job Server configuration details. 3. Configure the SAP BusinessObjects Data Services Adapter for Salesforce.

com interface. Configure one or more adapter instances. You can configure and use multiple instances simultaneously. 4. Through the Designer, use the adapter inside data flows.

You can: · Create the adapter's datastore · Import the adapter's metadata · Use imported metadata as sources in your data flows · Run jobs and verify results 8 2010-12-02 Deploying the Adapter Deploying the Adapter This section explains the actions required to deploy the SAP BusinessObjects Data Services Adapter for Salesforce.com interface. Tasks are sequenced in logical order of performance. However, you may need to modify the sequence based on your environment. 3.1 Deployment overview All SAP BusinessObjects Data Services adapters communicate with Data Services through a designated Adapter Manager Job Server. An adapter must be installed on the same computer as this Job Server before you can integrate the adapter with the software using the Administrator and Designer. After the adapter is installed: 1. Use the Server Manager utility to configure adapter connections with the Adapter Manager Job Server. For details, see the "Configuring Job Servers" section in the SAP BusinessObjects Data Services Administrator Guide as well as the "Adapter considerations" section in the SAP BusinessObjects Data Services Management Console Guide.

2. From the Administrator: · Configure an adapter instance. · Start and stop the adapter instance. 3. From the Designer: · Create the datastore in the object library. The datastore and adapter make it possible for you to import metadata from Salesforce.com into the software. · Browse and import metadata through the datastore. Use metadata accessed through the adapter to create batch and/or real-time jobs. For details, see the "Adapter datastores" section of the SAP BusinessObjects Data Services Designer Guide.

· Design flows that move Salesforce.com data through the applications you design using the software. · Run applications to finalize the integration process (includes troubleshooting and parameter adjustments).



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3.2 Configure the adapter 9 2010-12-02 Deploying the Adapter Integrate SAP BusinessObjects Data Services with Salesforce. com by combining an instance of the Adapter for Salesforce.com with a data flow created in the Designer. To use an adapter instance, you must first configure it as described in this section. You can configure one or more adapter instances. 3.

2.1 Configure an adapter instance Use the Administrator to add an Adapter for Salesforce.com to the SAP BusinessObjects Data Services system and to edit existing adapter configurations. Until you add the adapter in the Administrator, you cannot run jobs using information from that adapter. Note: Before you add an adapter in the Administrator, you must first establish Administrator connection to your adapter-enabled repository. For general information on connecting repositories to the Administrator, refer to the Administrator Management section of the Management Console Guide. 3.2.1.1 To add an adapter instance in the Administrator 1.

Select a Job Server name under the Adapter Instances node in the navigation tree. Or, select Adapter Instances > Job Server. 2. Select the Configuration tab. 3. On the Adapter Instance Configuration page, click Add to see a list of adapters managed by that Job Server. 4. Select the Adapter for Salesforce.com from the list, then click Apply. 5.

Complete the Adapter Instance start-up configuration form. 10 2010-12-02 Deploying the Adapter Option Description Adapter Instance Name Access Server Host (Required) Enter a unique name to identify this instance of the adapter. Leave blank (or you can provide the correct Access Server Host information). Note: If you enter incorrect information in this text box, configuration will fail with an error message. Access Server Port Leave blank (or you can provide the correct Access Server Port information).

Note: If you enter incorrect information in this text box, configuration will fail with an error message. Character Set Adapter Retry Count Adapter Retry Interval Classpath Autostart Trace mode Converts text characters to and from bytes. Applies if the adapter instance fails or crashes. Enter 0 for no retries and a negative number for indefinite retries. Wait in milliseconds between adapter retry attempts.

Indicates the -classpath Java parameter value when the adapter starts. When set to True, the adapter interface automatically starts when the Administrator starts. Set this flag to control the number of trace messages the adapter writes. There are two settings: False Adapter interface writes minimal information messages. The adapter writes trace messages in the default format ("yyyy-mm-dd hh:mi:ss" for datetime and "yyyy-mm-dd" for date) in your WHERE clause. 13 2010-12-02 Deploying the Adapter Note: Salesforce.com does not support the "like" operator on an ID type field. The software maps this type to varchar. The software's optimizer is unable to recognize a Salesforce.com ID field and cannot push down SQL statements containing the "like" operator in the ID field.

e. Enable CDC Select yes to configure as a CDC datastore (no is default). Note: To avoid data processing problems, it is recommended that after you create the datastore you do not modify the Enable CDC value. Instead, create a new datastore and configure with the other Enable CDC value. f. Set Default Based64Binary field length to establish the default length for a Salesforce.com Base64Binary field. 7. Click OK to save values and finish creating the datastore. If you did not provide the correct user name and password, or if you entered an invalid parameter, you will see an error message stating that the "Adapter connection failed."

" 3.4 Working with Salesforce.com metadata The Salesforce.com adapter supports only tables (not function calls, documents, and so on). 3.

4.1 Browse and import metadata For general information on how to browse and import metadata using a SAP BusinessObjects Data Services datastore, see the Datastores section of the Designer Guide. 3.4.1.

1 To browse and import adapter metadata 1. Double-click your adapter datastore icon, or double-click the Tables icon underneath the adapter datastore icon. Alternatively, you can right-click the datastore icon and select Open. The Adapter Metadata Browser window opens with a list of table objects (and their descriptions) from Salesforce.com that are available for viewing. 2. Click to open nodes and browse the available metadata. Two or three folders appear under each table node. These folders include: Referenced by, References, and Columns. 14 2010-12-02 Deploying the Adapter · The Referenced by and References folders show relationships between the expanded table and itself as well as other tables.

(For example, if a Contact belongs to an Account, it will have an AccountId column pointing to its parent account. So, Account is "referenced by" Contact and Contact "references" Account.) The Columns folder lists the table columns and their descriptions. · 3. Right-click any node to find out if that metadata can be imported into SAP BusinessObjects Data Services. If Import appears as a right-click menu option, select it to import the metadata object. Option Imports Table node Referenced By node References node That table All tables directly under that node All tables directly under that node 4. You can also import metadata by name. a. Go to the Datastores tab of the object library.

b. Right-click the adapter datastore and choose Import By Name. c. In the "Import By Name" window, enter the full, exact table name in the Value column. 3. 4.2 The DI_PICKLIST_VALUES table The Salesforce.com adapter includes a SAP BusinessObjects Data Services proprietary table you can import like any other Salesforce.com table. This table contains all Salesforce.com picklists (a set of enumerated values from which to select). To use the DI_PICKLIST_VALUES table as a source in data flows, import the DI_PICKLIST_VALUES just like you would any other table, then drag-and-drop it as a source in your data flow. @@@@To open an imported table, double-click its icon. @@@@The generated columns are used for CDC data retrieval.

@@DI_OPERATION_TYPE: The operation type (varchar). @@@@Import CDC table metadata into your local repository. 2. @@@@CDC table options include: Option Name Description (Required) A name that Data Services uses to keep track of your location in a continuously growing Salesforce.com CDC table. Salesforce.

com CDC uses the subscription name to mark the last row read so that the next job starts reading the CDC table from that position. CDC subscription name You can use multiple subscription names to identify different users who read from the same imported Salesforce.com CDC table. Salesforce.com CDC uses the subscription name to save the position of each user. Type a new name to create a new subscription. A subscription name must be unique within a datastore, owner, and table name.



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For example, you can use the same subscription name without conflict with different tables that have the same name in the same datastore if they have different owner names. The software requires that you enter a value for this option. Enables the software to restrict CDC reads using check-points. After a check-point is in place, the next time the CDC job runs, it reads only the rows inserted into the CDC table since the last check-point. By default, check-points are not enabled. Some databases allow two images to be associated with an UPDATE row: a before-image and an after-image. If your source can log before-images and you want to read them during change-data capture jobs, enable this option. By default, the software retrieves only after-images. Enable check-point Get before-image for each update row a. Specify a value for the CDC subscription name. b. If you select Enable check-point, the software remembers the timestamp of last load and automatically applies that timestamp as the start time for the next load. By using the Enable check-point option, you do not need to define a WHERE clause in the Query transform.

c. Do not select Get before-image for each update row (for use only if your source can log before-images and you want to read them during change-data capture jobs) as Salesforce.com provides no before-images. Adapter source options include: Option Name Description Column delimiter Specify a one-character delimiter for data columns by entering the forwardslash (/) followed by a three-digit ASCII code to indicate an invisible character. 18 2010-12-02 Deploying the Adapter Option Name Description Row delimiter Escape character CDC table source default start date Fetch deleted records Specify a one-character delimiter for data rows by entering the forwardslash (/) followed by a three-digit ASCII code to indicate an invisible character. Must be one character. This option works with the CDC Enable check-point option. Salesforce.com requires the software to supply a start date and end date as part of a changed data request. Set this value to Yes to also fetch the deleted records from the table.

The default value is No. 4. Add a Map_CDC_Operation transform after the Query transform. 5. Drill into the Map_CDC_Operation transform and configure the CDC columns in the transform editor. Note that the software automatically pre-populates the Sequencing column and the Row operation columns fields with DI_SEQUENCE_NUMBER and DI_OPERATION_TYPE, respectively. The software fills DI_SEQUENCE_NUMBER using sequential numbers starting at 0 every time the CDC operation starts. Returned rows are always sorted by this column. The DI_OPERATION_TYPE indicates the type of operation performed on the object: INSERT, UPDATE or DELETE (I, U or D). The adapter does not return before-image records (B).

The SFDC_TIMESTAMP value will always indicate the time at which the operation was performed, (when the object was inserted, deleted, or last updated). The other column values may or may not be set by the software, depending on the operation type. For a DELETE operation, only the ID will be set. For UPDATE and INSERT, the columns are set to represent the state of the object after the operation. 6.

Connect the Map_CDC_Operation transform to your target table (where the INSERT, UPDATE and DELETE commands will be executed). The following table shows the CDC operation mapping of data from Salesforce.com to the software: Salesforce.com data since last CDC operation Records returned to Data Services INSERT UPDATE DELETE INSERT & UPDATE INSERT & DELETE INSERT UPDATE DELETE INSERT & UPDATE DELETE 19 2010-12-02 Deploying the Adapter Salesforce.com data since last CDC operation Records returned to Data Services UPDATE & DELETE INSERT & UPDATE & DELETE DELETE DELETE If an object was inserted and updated after the reference time, two CDC records are returned to the software, one for each operation.

However, both records will contain the same information, reflecting the state of the object after the UPDATE. So, in this type of situation, there is no way of knowing the object state after the INSERT operation. Related Topics · Designer Guide: Techniques for Capturing Changed Data, Using mainframe check-points · Designer Guide: Techniques for Capturing Changed Data, Using before images from mainframe sources 3.5.1.2 Using check-points If you can replicate an object, Salesforce.com allows applications to retrieve the changed data for that object. Salesforce.com saves changed data for a limited amount of time (for details, see your Salesforce.com technical documentation).

Salesforce.com monitors neither the retrieving application nor the data retrieved. When you enable check-points, a CDC job in Data Services uses the subscription name to read the most recent set of appended rows and to mark the end of the read (using the SF_Timestamp of the last record). If you disable check-points, the CDC job always reads all the rows in the CDC data source which increases processing time. To use check-points, on the Source Table Editor enter the CDC Subscription name and select the Enable check-point option. If you enable check-points and run a CDC job in recovery mode, the recovered job begins to review the CDC data source at the last check-point. Note: To avoid data corruption problems, do not reuse data flows that use CDC datastores because each time a source table extracts data it uses the same subscription name. This means that identical jobs, depending upon when they run, can get different results and leave check-points in different locations in the file. 3.5.

1.3 Using the CDC table source default start date 20 2010-12-02 Deploying the Adapter The CDC table source default start date is dependent on several factors. This date can be a value you specify, a check-point value, or a date related to the Salesforce.com retention period. When you do not specify a value for the start date: · SAP BusinessObjects Data Services uses the beginning of the Salesforce.com retention period as the start date if a check-point is not available (during initial execution). The software uses the check-point as the start date if a check-point is available and occurs within the Salesforce.com retention period. If the check-point occurs before the retention period, the software uses the beginning of retention period as the start date. However, if a table is created within the Salesforce.com retention period and a check-point is not available, the execution returns an error message. Drill into the source object and enter a value for the CDC table source default start date. @@@@ You cannot compare or search these columns. 3.6 Run applications After you design your application(s), you must run them to finalize SAP BusinessObjects Data Services-Salesforce.com integration. These are the basic startup tasks: · In the Administrator, start each application to be used in the integration.



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Real-time: Start services and applications that use this service. Batch: Start/schedule the job. · In the Administrator, monitor progress for each job.

You can monitor pending requests, processed requests, failed requests, and status. 21 2010-12-02 Deploying the Adapter Note: The Administrator does not automatically refresh views. To refresh views, go to the View menu and select Refresh. · · In the Administrator, monitor progress for each (real-time) service. On the Salesforce.com Server, monitor messaging progress for the configured queues. If problems occur: · · · For error message descriptions and suggested troubleshooting actions, see the Understanding error messages section. To understand the source of a problem, use error and log tracing. To enable debug tracing for the adapter instance, use the Administrator. Related Topics · Understanding error messages 3.

7 Understanding error messages During the course of designing and deploying your jobs, you may encounter error messages. Find error messages and their descriptions (including suggested actions) listed in the following table: Error Message Description Login operation has failed. SForce.com message is {0} Invalid user name/password or user account is blocked for another reason, which is explained by the Salesforce.com message.

ACTION: Confirm password or contact Salesforce.com for more information. The table used in the query is no longer available or visible to the user.

ACTION: Browse Salesforce.com metadata and look for the table.

One or more fields used in the query are no longer available. Unknown object type. SForce.com message is {0} Invalid field. SForce.com message is {0}

ACTION: Browse Salesforce.com metadata to determine if there is a difference between the imported table and the actual metadata. If necessary, rebuild your data flow. Your data flow is not supported by Salesforce.com.

ACTION: Rebuild according to the restrictions described in this document. Unsupported SQL statement: {0} 22 2010-12-02 Deploying the Adapter Error

Message Description Malformed query: {0}. SForce.com message is {1} The submitted query is unsupported by Salesforce.com. Most likely you have encountered a bug translating between data flows and Salesforce.com queries. ACTION: Contact product support. The URL or batchSize session parameter is invalid. Either the URL is malformed or batchSize is not a positive integer.

ACTION: Check the integrity of the URL and confirm that the batchSize is a positive integer. The data flow built over a CDC table is invalid. Invalid session parameter: name = {0}, value = {1} Invalid CDC query: {0} ACTION: Check for (and fix) any missing WHERE clause condition for SFDC_TIMESTAMP.

The adapter could not connect to Salesforce.com.

ACTION: Confirm that the web service end point is correct and accessible through your network. A protocol error occurred. ACTION: Contact product support. An unknown, unexpected error occurred. ACTION: Contact product support.

There was a service connection error when talking to SForce.com: {0} There was a communication error when talking to SForce.com: {0} There was an unexpected error. SForce.com message is {0} 23 2010-12-02 Deploying the Adapter 24 2010-12-02 Index A Abort adapter instances 12 adapter datastores, creating 12 adapter instance start 10 stop 10 Adapter Instance Configuration 10 adapter instances abort 12 start 12 stop 12 adapter metadata browsing 14 importing 14 Adapter Metadata Browser window 14 Data Services Server Manager utility 9 datastore, for adapter 12 default formats 12 deploying the adapter 9 designing data flow applications 17 DI_PICKLIST_VALUES table 15 L loading data to Salesforce.com 7 N nodes 14 for CDC tables 17 for normal tables 17 normal sources, reading from 7 E edit existing adapter configurations 10 F flows, designing 17 P picklists 15 B browse and import adapter metadata 14 G generated columns 17 R read changed data from Salesforce.com 17 requirements for installation 7 I C CDC datastore tables 17 CDC datastore, configuring 12 CDC sources reading from 7 CDC subscription name 7 CDC table options 17 Columns folder 17 configuration forms start-up 10 configuring a CDC datastore 12 configuring the adapter 10 Import CDC table metadata 17 import metadata by name 14 imported metadata deleting 15 opening 15 Installing the adapter 7 Integrating Data Services with Salesforce.com 10 S Shutdown adapter instances 12 sources CDC 7 normal 7 Start adapter instances 12 Status tab 12 J Job Server 7 adapter manager 9 T time zones, adjusting 16 D data flow application, designing 17 25 2010-12-02 Index 26 2010-12-02 .



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