HP Cloud Service Automation

Software Version 4.10

Reporting and Auditing

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Contents

Overview

This document describes the database views that you can use to run reports in HP Cloud Service Automation (HP CSA). Included is a database view that allows you to run a report showing contents of the HP CSA audit log. This document also provides an example of how to install, configure, and use third-party reporting software (from Jaspersoft Corporation) to run HP CSA reports.

Prerequisites

HP CSA supports databases from Oracle, Microsoft SQL, and PostgreSQL for reports. Before you can run reports, you must create a read-only database user (and a role, if using Oracle) specifically for reporting purposes, and then you must specify its username and password during the HP CSA installation or upgrade. For instructions, see the *HP Cloud Service Automation Installation Guide*.

Database Views for Standard Reports

HP CSA provides some commonly-needed information for a sequence-based model through the (non-materialized) database views for reporting. A read-only database user will have access to these views, which they can use to design reports.

Note: For audit reports, see the section entitled "Database View for Audit Reports."

The following table lists each view and some filters (list of values) that read-only users can use in a report designer.

Table 1. List of Database Views

Number	View name	Filters (list of values)	Description and comments
1	RPT_RSC_CAPACITY_V	RPT_LOV_PROVIDER_V RPT_LOV_PROV_POOL_V	Within each Pool, list Resource Type, Quantity Used, Quantity Remaining, and Units.
2	RPT_USER_SUBSCRIPTION_V	RPT_LOV_ORG_V RPT_LOV_ORG_USR_V RPT_LOV_CAT_OFFR_V	Group by Organization and by User consuming the subscription (filter by organization, user, and offering). Group information must be fetched from the view. The group here is the 'Owned By' group.
3	RPT_SUBSCR_RSC_V	RPT_LOV_PROVIDER_V RPT_LOV_PROV_POOL_V	Group by Provider and by the Resource Pools defined within it (with subscription details).
4	RPT_SUBSCR_OPTS_V	RPT_LOV_ORG_USR_V	Show the options and option prices for subscriptions.
5	RPT_RESOURCE_UTILIZATION_V	RPT_LOV_PROVIDER_V RPT_LOV_PROV_POOL_V	Provide information on resource utilization for subscriptions.
1	RPT_PAY_PER_USE_METER_V	*N/A*	List the maximum operating system instances (OSI) being used in HP CSA active subscription for each organization in the last 30 days.
2	RPT_LICENSE_OSI_USAGE_V	*N/A*	List the total OSI being using in HP CSA active subscription for the CSA instance.

RPT_RSC_CAPACITY_V View

This view provides a list of providers and pools and their available capacity and utilization.

Table 2. RPT_RSC_CAPACITY_V View

Field name (in the view)	Functional description
PROVIDER_ID	Identifier of the resource provider.
PROVIDER_NAME	Name of the resource provider.
PROVIDER_TYPE	Type of resource provider.
SERVICE_ACCESS_POINT	Access point URL for the provider.
RESOURCE_POOL_ID	Identifier of the resource pool.
RESOURCE_POOL_NAME	Name for the resource pool.
KNOWN_TO_PROVIDER_AS	Name of the resource pool used by the provider.
RESOURCE_TYPE	Type of resource (such as CPU or Storage).
AVAILABILITY	Category to indicate if the resource is available.
AVAILABLE_TO_CSA	Quantity of the resource that is available to HP CSA in the pool.
USED_BY_CSA	Quantity of the resource that has been used by HP CSA from this pool.

RPT_USER_SUBSCR_V View

This view provides detailed information for subscriptions (excluding the Option selection and Pricing information).

Table 3. RPT_USER_SUBSCR_V View

Field name (in the view)	Functional description
SUBSCRIPTION_ID	Identifier of the subscription.
SUBSCRIPTION_NAME	Name of the subscription as displayed.
SUBSCRIPTION_START_DATE	Start date of the subscription.
SUBSCRIPTION_END_DATE	End date of the subscription.
SUBSCRIPTION_OWNER_GROUP	Name of the group that owns this subscription (applicable only for subscriptions owned by a group).
SUBSCRIPTION_STATUS	Status of the subscription.
REQUESTED_BY_USER_ID	Identifier of the user requesting the subscription.
REQUESTED_BY_USER	Name of the user requesting the subscription.
REQUESTED_BY_USER_EMAIL	Email address of the user requesting the subscription.
ORGANIZATION_ID	Identifier of the organization to which this subscription belongs.
ORGANIZATION_NAME	Name of the organization to which this subscription belongs.
CATALOG_ID	Identifier of the catalog to which this subscription belongs.
CATALOG_NAME	Name of the catalog to which this subscription is published.
SERVICE_OFFERING_ID	Identifier of the service offering for which this subscription was submitted.

Field name (in the view)	Functional description
SERVICE_OFFERING_NAME	Name of the service offering for which this subscription was submitted.

RPT_SUBSCR_RSC_V View

This view provides information about the Resource Provider and Resource Pool used by a subscription.

Table 4. RPT_SUBSCR_RSC_V View

Field name (in the view)	Functional description
SUBSCRIPTION_ID	Identifier of the subscription.
RESOURCE_PROVIDER_ID	Identifier of the resource provider.
RESOURCE_PROVIDER_NAME	Name of the resource provider.
PROVIDER_ACCESS_POINT_URI	Access point URI of the resource provider.
RESOURCE_RPOVIDER_TYPE	Type of the resource provider.
RESOURCE_POOL_ID	Identifier of the resource pool.
RESOURCE_POOL_NAME	Name of the resource pool.

RPT_SUBSCR_OPTS_V View

This view provides the options and option prices for subscriptions.

Table 5. RPT_SUBSCR_OPTS_V View

Field name (in the view)	Functional description
SUBSCRIPTION_ID	Identifier of the service subscription.
OPTION_MODEL_ID	Identifier of the option model.
CURRENCY_DISPLAY_NAME	Display name of the currency used in the option model.
RECURRING_PERIOD_DISPLAY_NAME	Display name of the recurring period used in the option model.
L1_OPTION_SET_ID	Top-level option set ID.
L1_OPTION_SET_NAME	Top-level option set name.
L1_OPTION_SET_DISPLAY_NAME	Top-level option set display name.
L1_OPTION_ID	Top-level option ID.
L1_OPTION_NAME	Top-level option name.
L1_OPTION_DISPLAY_NAME	Top-level option display name.
L1_OPTION_SELECTED	'Y' if the top-level option is selected. 'N' if the top-level option is not selected.
L1_INITIAL_PRICE	Initial price of the top-level option.
L1_RECURRING_PRICE	Recurring price of the top-level option.
L2_OPTION_SET_ID	Child-level option set ID.
L2_OPTION_SET_NAME	Child-level option set name.
L2_OPTION_SET_DISPLAY_NAME	Child-level option set display name.

Field name (in the view)	Functional description
L2_OPTION_ID	Child-level option ID.
L2_OPTION_NAME	Child-level option name.
L2_OPTION_DISPLAY_NAME	Child-level option display name.
L2_OPTION_SELECTED	'Y' if the child-level option is selected. 'N' if the child-level option is not selected.
L2_INITIAL_PRICE	Initial price of the child-level option.
L2_RECURRING_PRICE	Recurring price of the child-level option.
L3_OPTION_SET_ID	Grandchild-level option set ID.
L3_OPTION_SET_NAME	Grandchild-level option set name.
L3_OPTION_SET_DISPLAY_NAME	Grandchild-level option set display name.
L3_OPTION_ID	Grandchild-level option ID.
L3_OPTION_NAME	Grandchild-level option name.
L3_OPTION_DISPLAY_NAME	Grandchild-level option display name.
L3_OPTION_SELECTED	'Y' if the grandchild-level option is selected. 'N' if the grandchild-level option is NOT selected.
L3_INITIAL_PRICE	Initial price of the grandchild-level option.
L3_RECURRING_PRICE	Recurring price of the grandchild-level option.

RPT_ROESOURCE_UTILIZATION_V View

This view provides the information on resource utilization for subscriptions.

Table 6. RPT_RESOURCE_UTILIZATION_V View

Field name (in the view)	Functional description
SUBSCRIPTION_ID	Identifier of the subscription.
SUBSCRIPTION_NAME	Name of the subscription.
COMPONENT_ID	Identifier for the service component.
COMPONENT_NAME	Name of the service component.
RESOURCE_POOL_ID	Identifier of the resource pool.
RESOURCE_POOL_NAME	Name of the resource pool.
PROVIDER_ID	Identifier of the provider.
PROVIDER_NAME	Name of the provider.
MEASURABLE_PROPERTY_NAME	Name given to the measurable property.
RESOURCE_TYPE	Type of resource for this measurable property.
RESOURCE_UNIT	Measuring unit of this resource in the measurable property.
UTILIZATION	Quantity of this resource that has been used by this subscription in this pool.

RPT_PAY_PER_USE_METER_V

This view provides a list of the maximum operating system instances (OSI) being used in HP CSA active subscriptions for each organization in the last 30 days.

Field name (in the view)	Functional description
START_DATE	Start date from which the OSI usage is determined. By default, this is 30 days prior to the current date.
END_DATE	End date to which the OSI usage is determined. By default, this is the current date.
ORGANIZATION	Name of the organization to which the OSI usage belongs.
DEPLOYED_OSI_COUNT	OSI count consumed by the organization.
MAXIMUM_OSI_LIMIT	Cumulative count of purchased OSI.

RPT_LICENSE_OSI_USAGE_V

This view provides a list of the total operating system instances (OSI) being used in HP CSA active subscriptions for the HP CSA instance.

Field name (in the view)	Functional description
START_DATE	Start date from which the OSI usage is determined. By default, this is 30 days prior to the current date.
END_DATE	End date to which the OSI usage is determined. By default, this is the current date.
DEPLOYED_OSI_COUNT	OSI count consumed by the organization.
MAXIMUM_OSI_LIMIT	Cumulative count of purchased OSI.

Database View for Audit Reports

HP CSA provides auditing capability by creating an audit event record in the HP CSA database for several important events that occur during the lifetime of a running instance of HP CSA. Each audit event has a Classification Code and Operation Type attribute, as indicated below. HP CSA captures audit log information for the following events:

- User Authentication to HP CSA and the Market Place Portal

  For every successful login and unsuccessful login attempt, an audit event record is created.

  Classification Code - Authentication
  Operation Type - Login

- User Authorization

  If an unauthorized user access is identified, an audit event record is created.

  Classification Code - Authorization
  Operation Type - Access

- CSA Service Start and Stop

  An audit event record is created every time the CSA service is started and stopped.

  Classification Code – Server Management
  Operation Type – Server Start, Server Stop

- Transactional Events Involving HP CSA Artifacts

  Whenever an HP CSA artifact is created, updated or deleted, an audit event record is created. HP CSA artifacts include Service Design, Service Offering, Organization, Catalog, Service Request, Subscription, Approval Process, Service Instance, etc.

  Classification Code – 'Create Update Delete'
  Operation Type – Create, Update, Delete

- Change in Service Offering Price

  An audit event record is created when pricing for a service offering changes.

  Classification Code – 'Create Update Delete'
  Operation Type – Create, Update, Delete

The audit information can be accessed using the following database view:

- RPT_AUDIT_EVENT_V

Like the other HP CSA reporting views, a read-only database user will have access to this view, which they can use to design audit reports in a report designer.

Note: See the section entitled "Audit Report Examples" for example queries for audit reports.

Note: Audit event data can be purged if desired by running the DB Purge tool. Refer to the HP CSA documentation for more information.

RPT_AUDIT_EVENT_V View

This view provides information from the HP CSA audit log.

Table 7. RPT_AUDIT_EVENT_V View

Field name (in the view)	Functional description
CREATED_ON	Timestamp when the audit event was created.
MODIFIED_BY_USERNAME	User name of the user who accessed the HP CSA system at login, creating, modifying or deleting the HP CSA artifacts.
USER_ORGANIZATION_NAME	Organization to which the user accessing the HP CSA system belongs.
ARTIFACT_ID	Unique ID of the artifact being created, updated, or deleted.
ARTIFACT_NAME	Name of the artifact at the time the audit event was generated.
ARTIFACT_TYPE	Type of artifact being created, updated, or deleted.
AUDIT_CLASSIFICATION	Audit Classification Code. See "Database View for Audit Reports" for possible values and how they are used.
AUDIT_OPERATION	Audit Operation Type. See "Database View for Audit Reports" for possible values and how they are used.
ORIGINATING_SERVER	Server name from where the logon attempt was made. This attribute is currently used only for the authentication event.
SERVER_TYPE	Currently used only for authentication event and set to 'IDM'.
DESCRIPTION	Description of the audit event.

Use Jaspersoft Software to Create and Deploy Reports

This section uses Jaspersoft software as an example of how to install, configure, and use third-party reporting tools to create and deploy HP CSA reports.

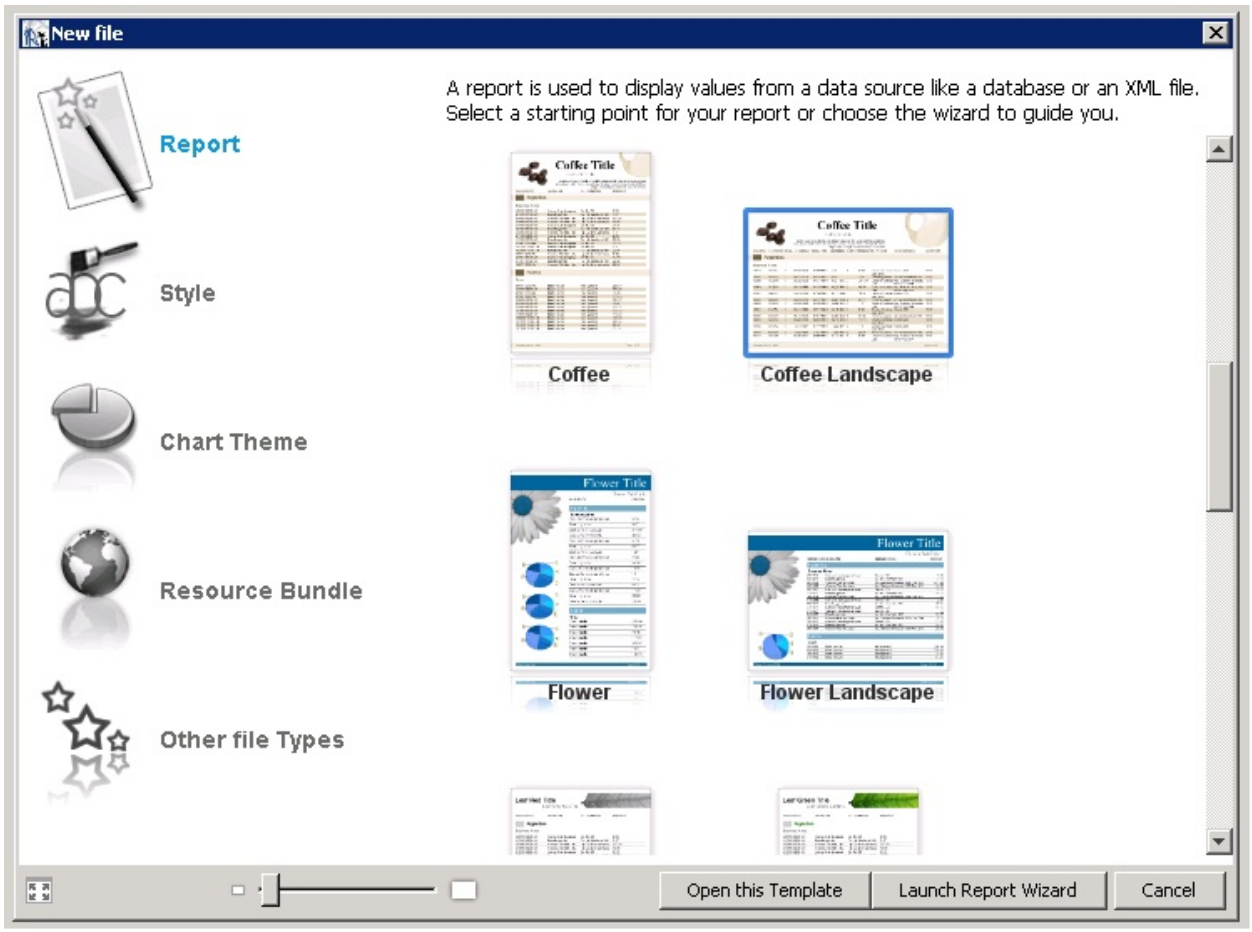
Install Jaspersoft iReport Designer and Create Reports

iReport Designer is the report development tool for JasperReports and JasperReports Server.

1. Install iReport Designer by following the instructions at

   http://sourceforge.net/projects/ireport/
2. Start iReport Designer.

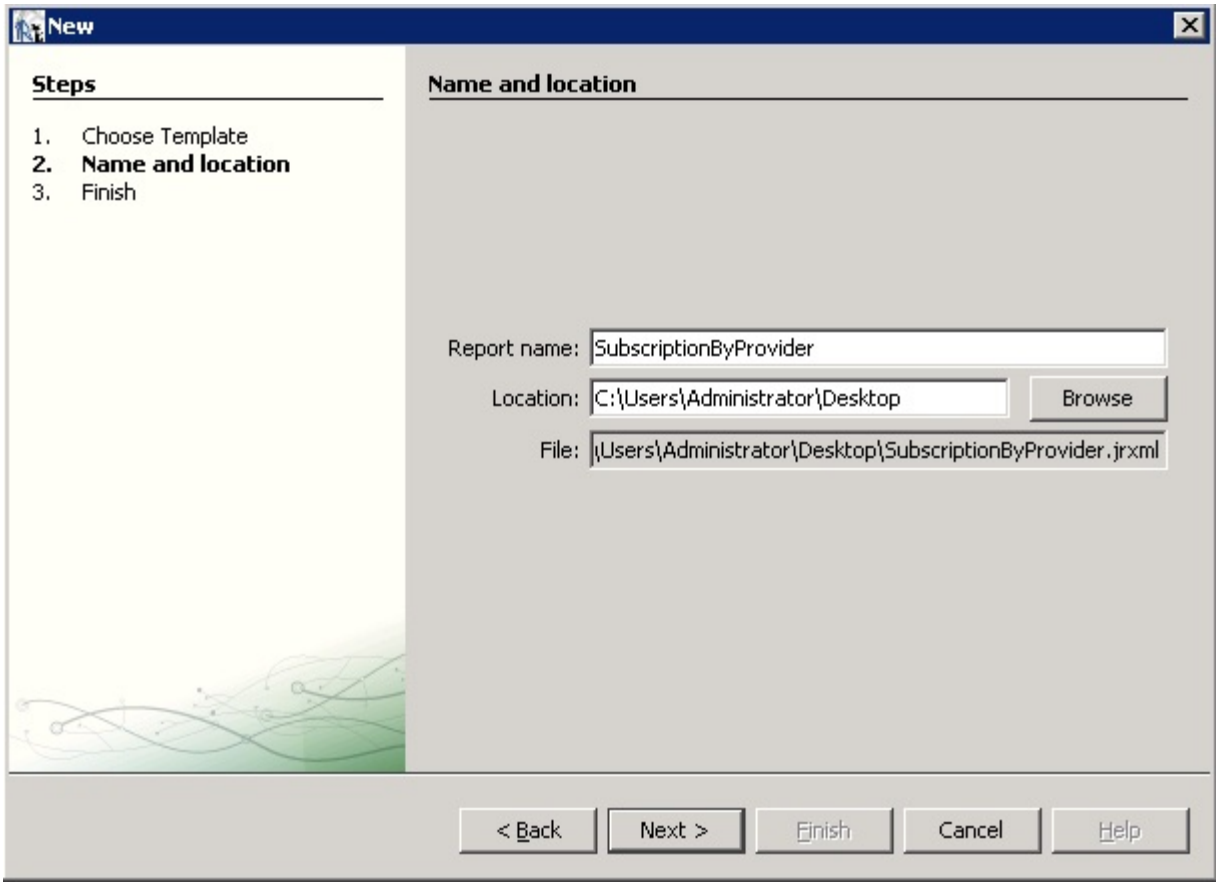
   The **New file** dialog box appears.



3. Click to select a report template.

4. Click **Open this Template**.

   The **Name and location** dialog box appears.

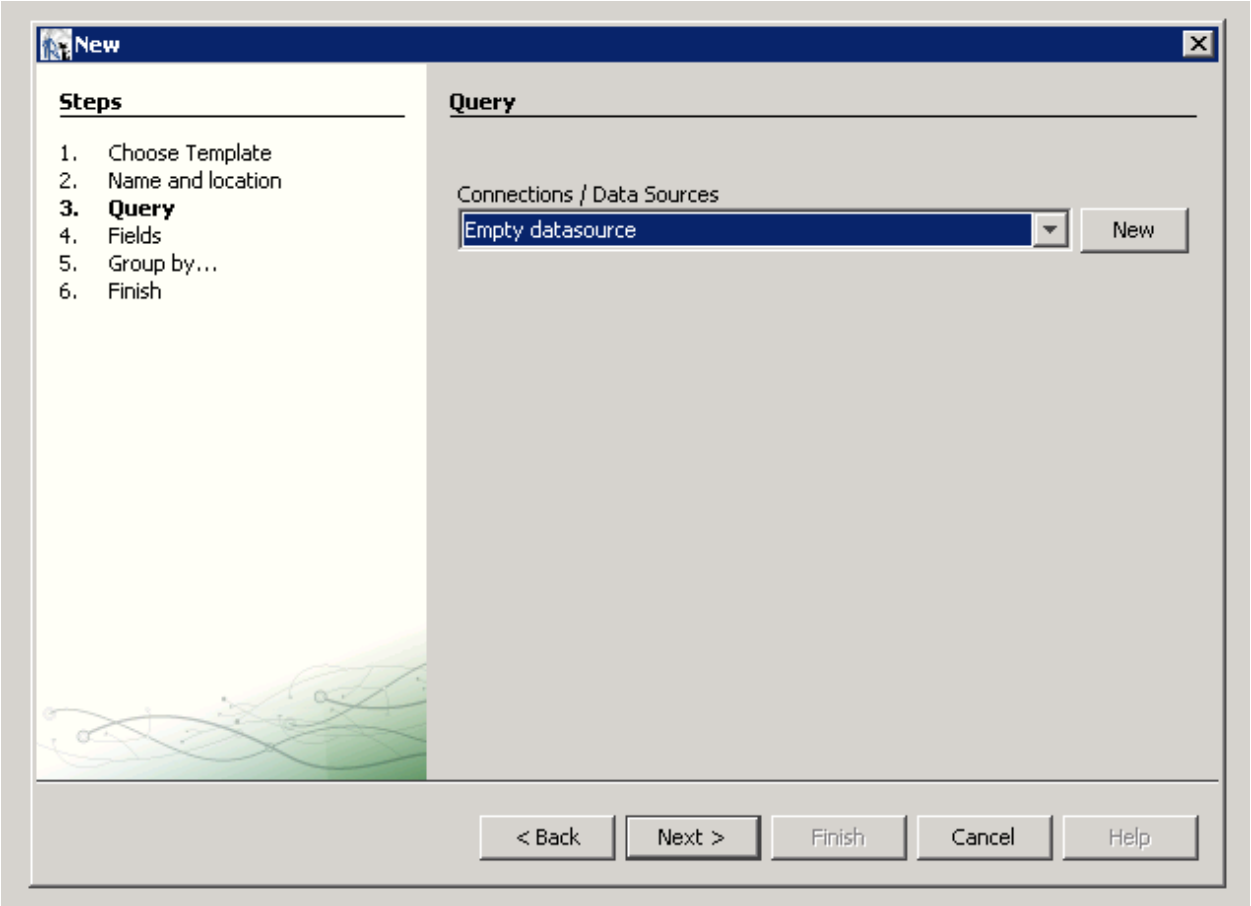


5. Enter the report name into the **Report name** field.

   The default location in the **Location** field is your desktop. You can click the **Browse** button to select another location to store the template. The .jrxml file is always saved to the same folder as the template.

6. Click **Next**.

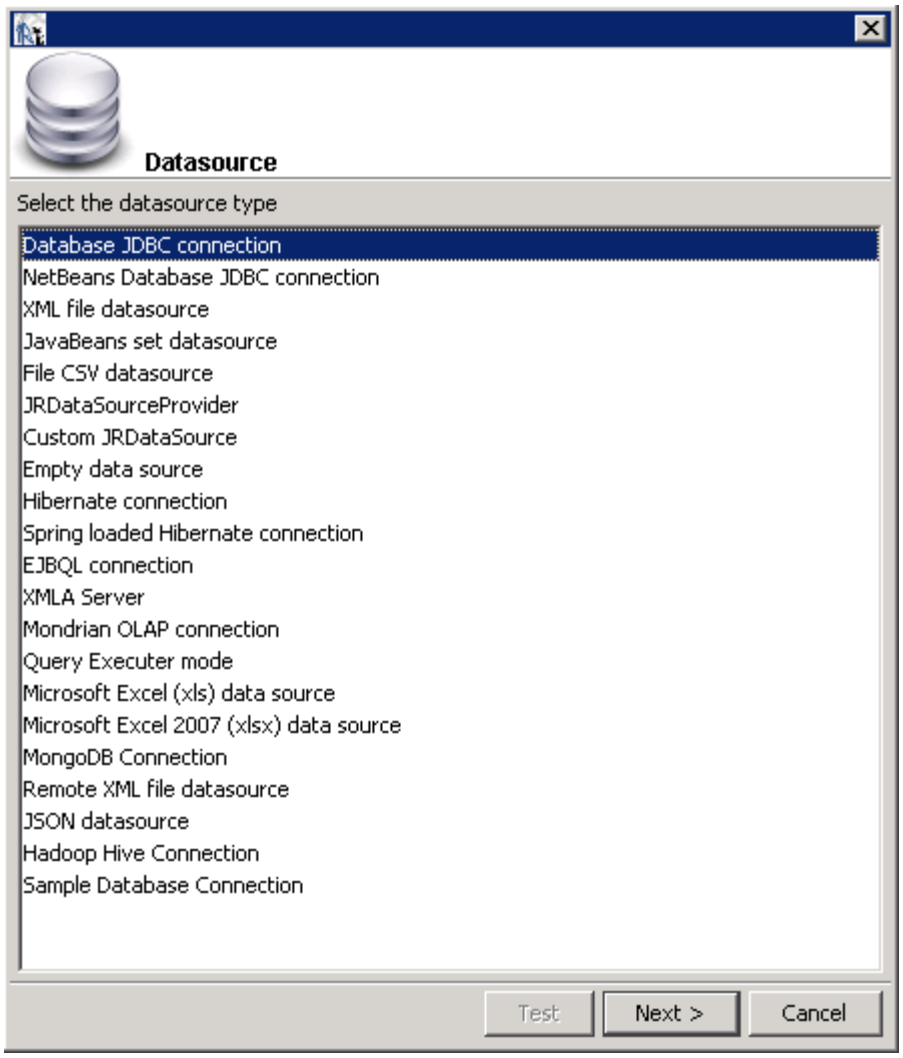
   The **Query** dialog box appears.



7. Do one of the following.

- Select an existing data source from the **Connections / Data Sources** pull-down menu.
- Click **New** to create a new connection/data source, if no connections/data sources are available.

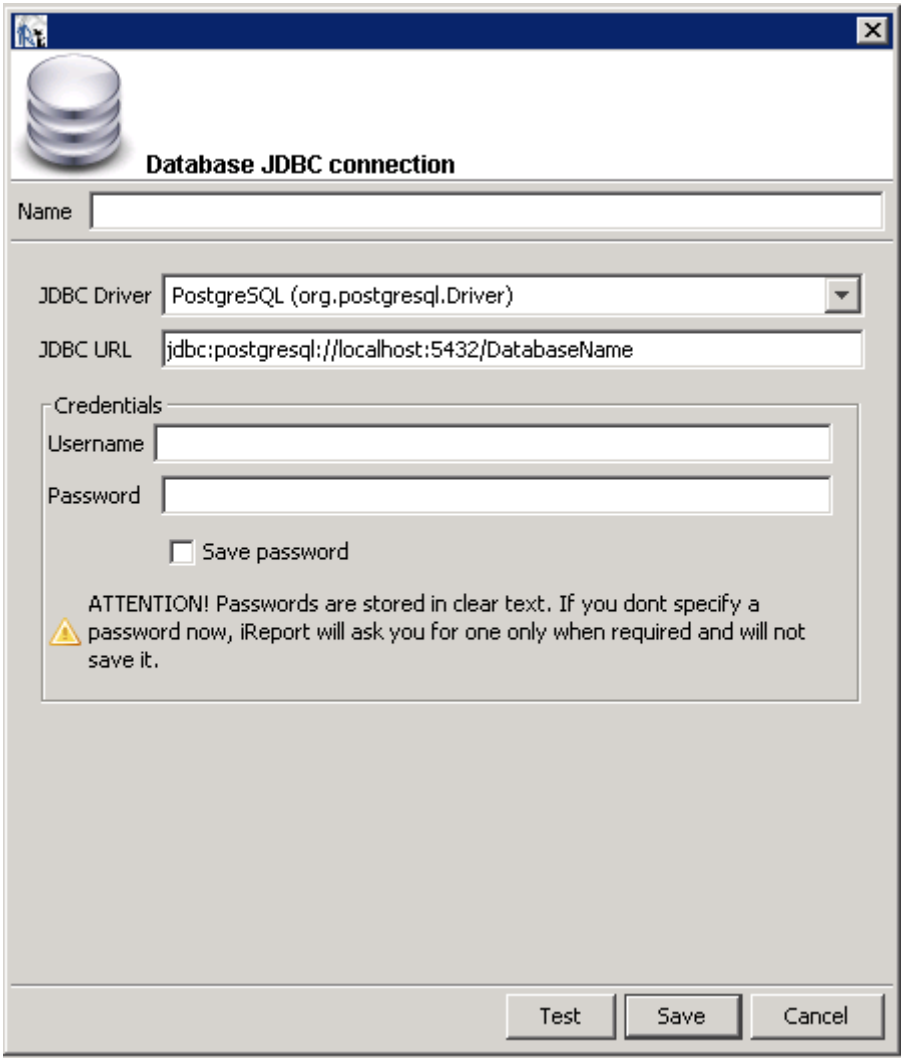
  If you clicked **New**, the **Datasource** dialog box appears.



8. Select the **Database JDBC connection** data source type.

9. Click **Next**.

   The **Database JDBC connection** dialog box appears.

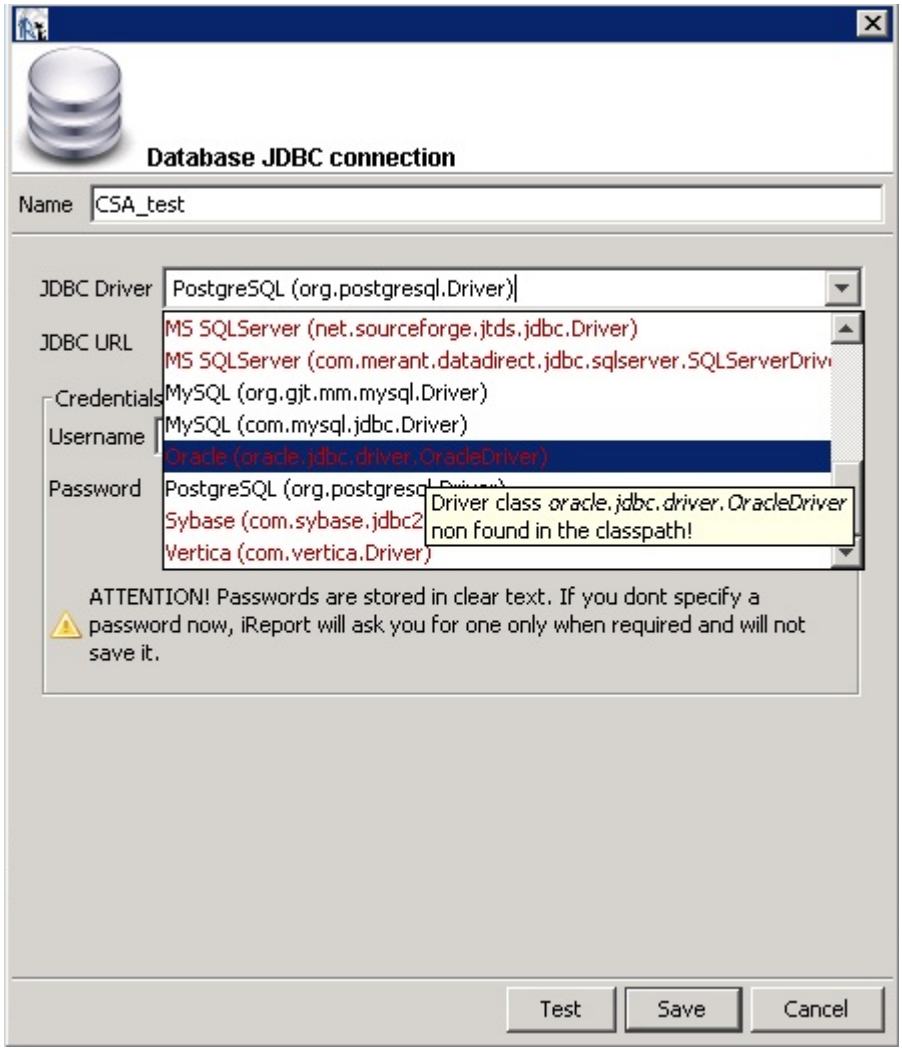


10. Fill in the dialog box as follows:

- **Name**
- **JDBC Driver**

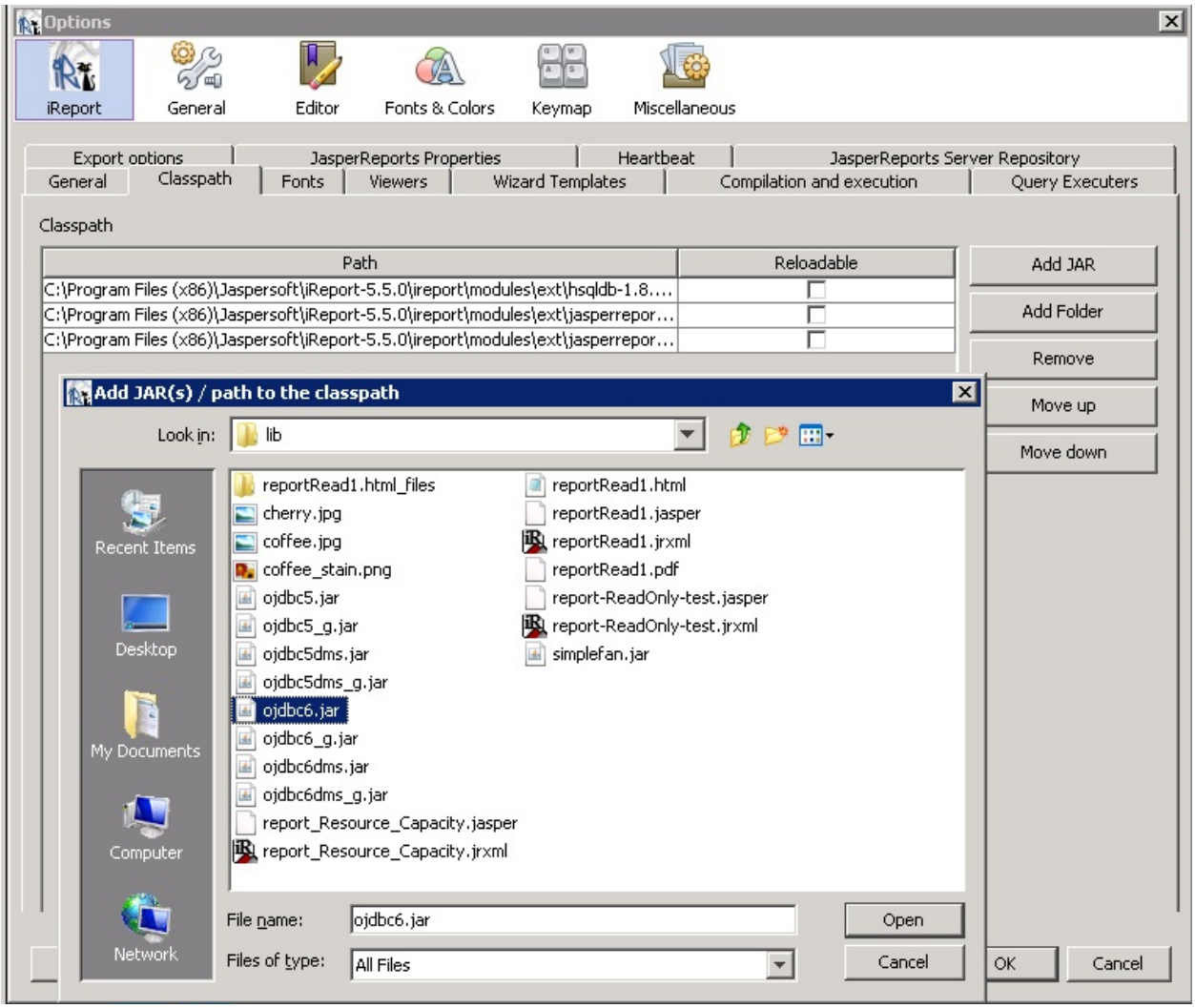
  Select the correct driver for your database.
- **JDBC URL**
- **Username**
- **Password**

If the driver for your database is not available, it appears in red, which means that it is not in the classpath.



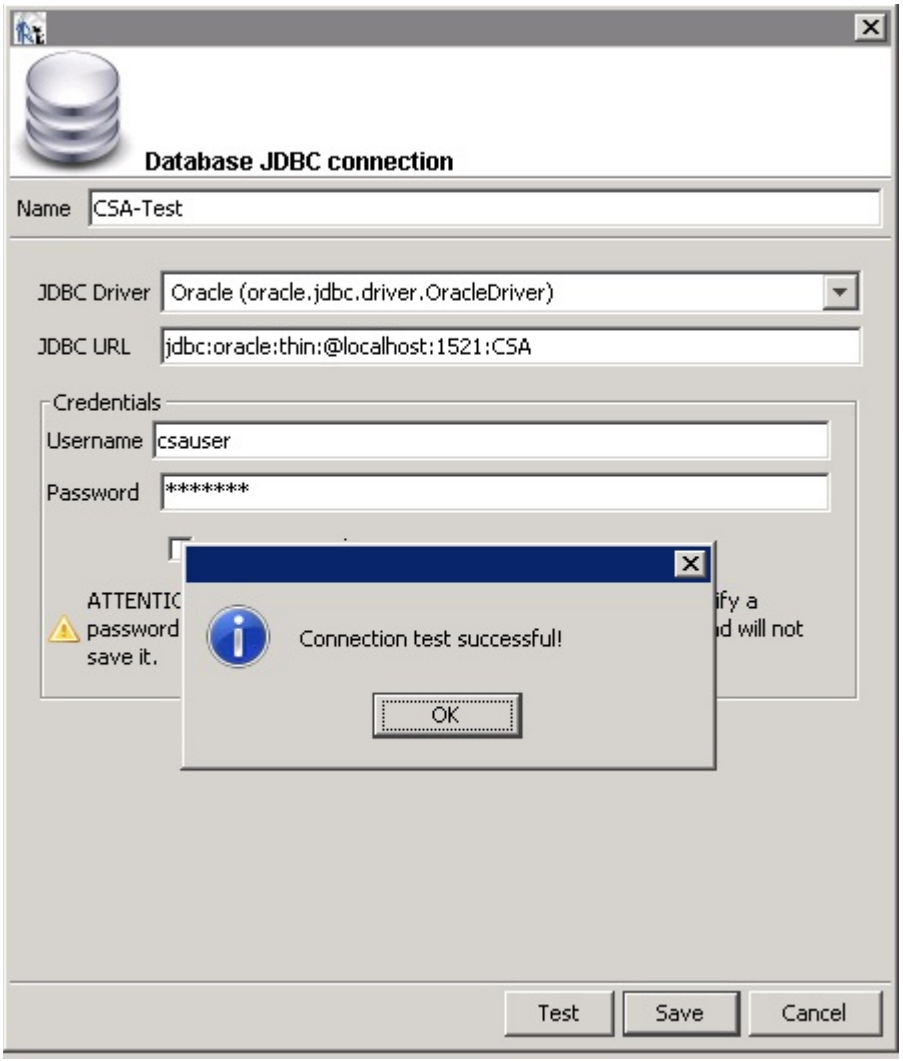
11. If the driver is not available, select **Tools** → **Options** → **Classpath** → **Add JAR** from the menu bar.

12. Add the driver to the classpath as in the following dialog box.



13. Click **Test** to validate your username and password with the database.

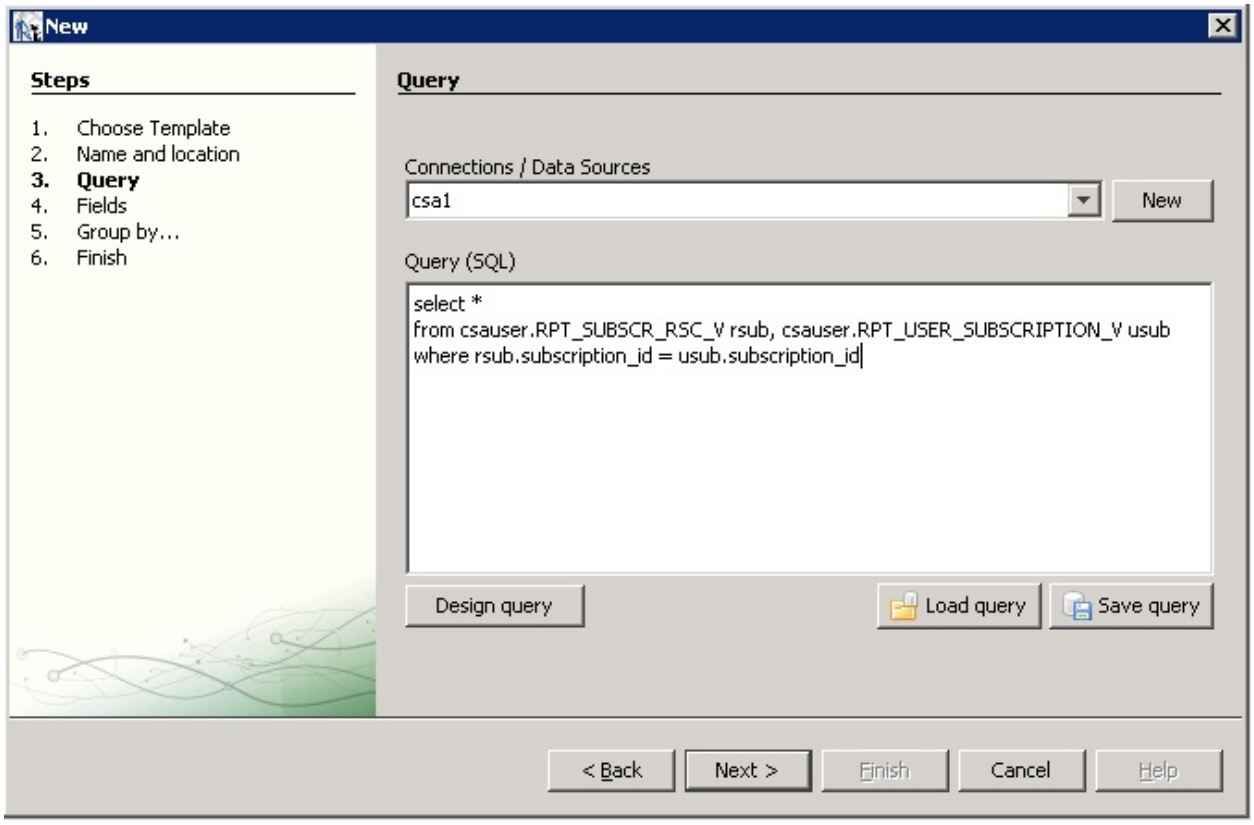
    A popup appears if the test is successful.



14. Click **OK**.

15. Click **Save**.

    The **Query** dialog box appears.

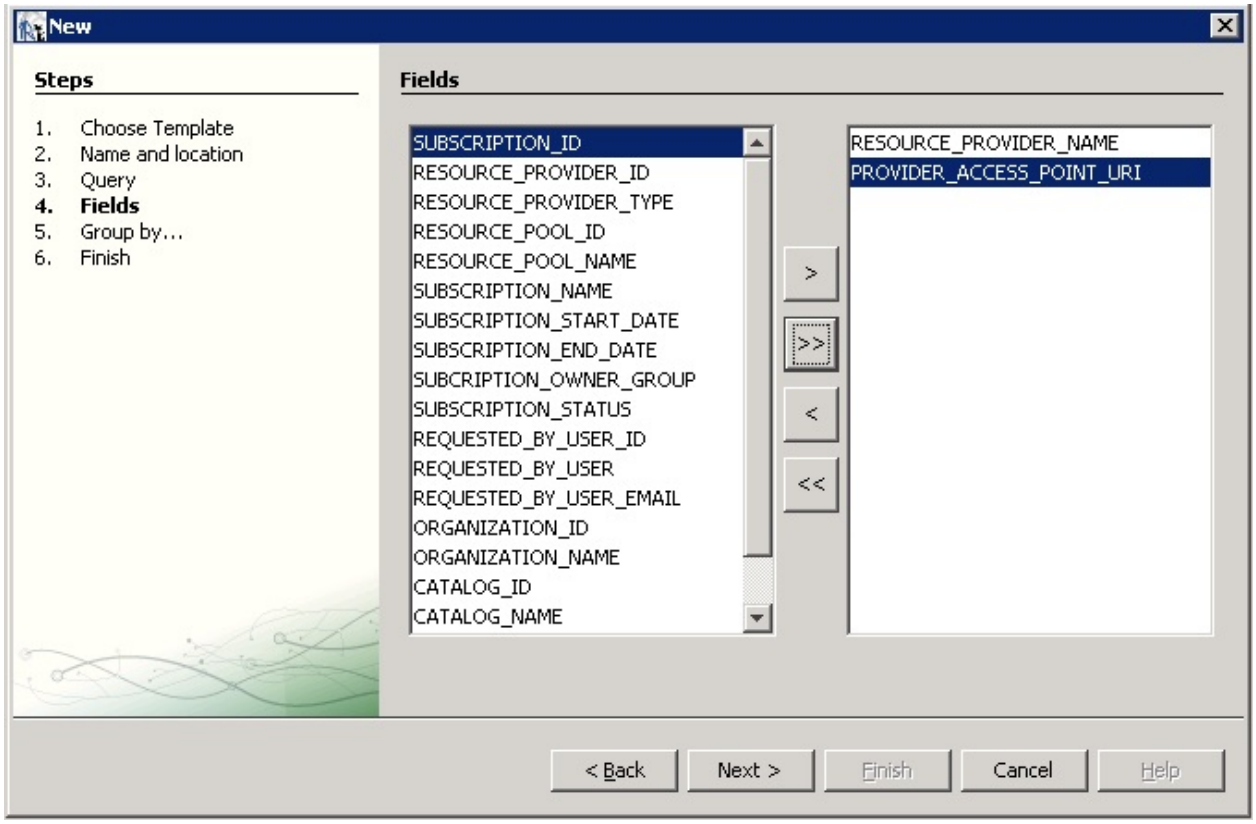


16. Click **Design query**.
17. Use the query editor to design a query and click **OK**.

Note: See the section entitled "Audit Report Examples" for example queries for audit reports.

18. Click **Next**.

    The **Fields** dialog box appears.

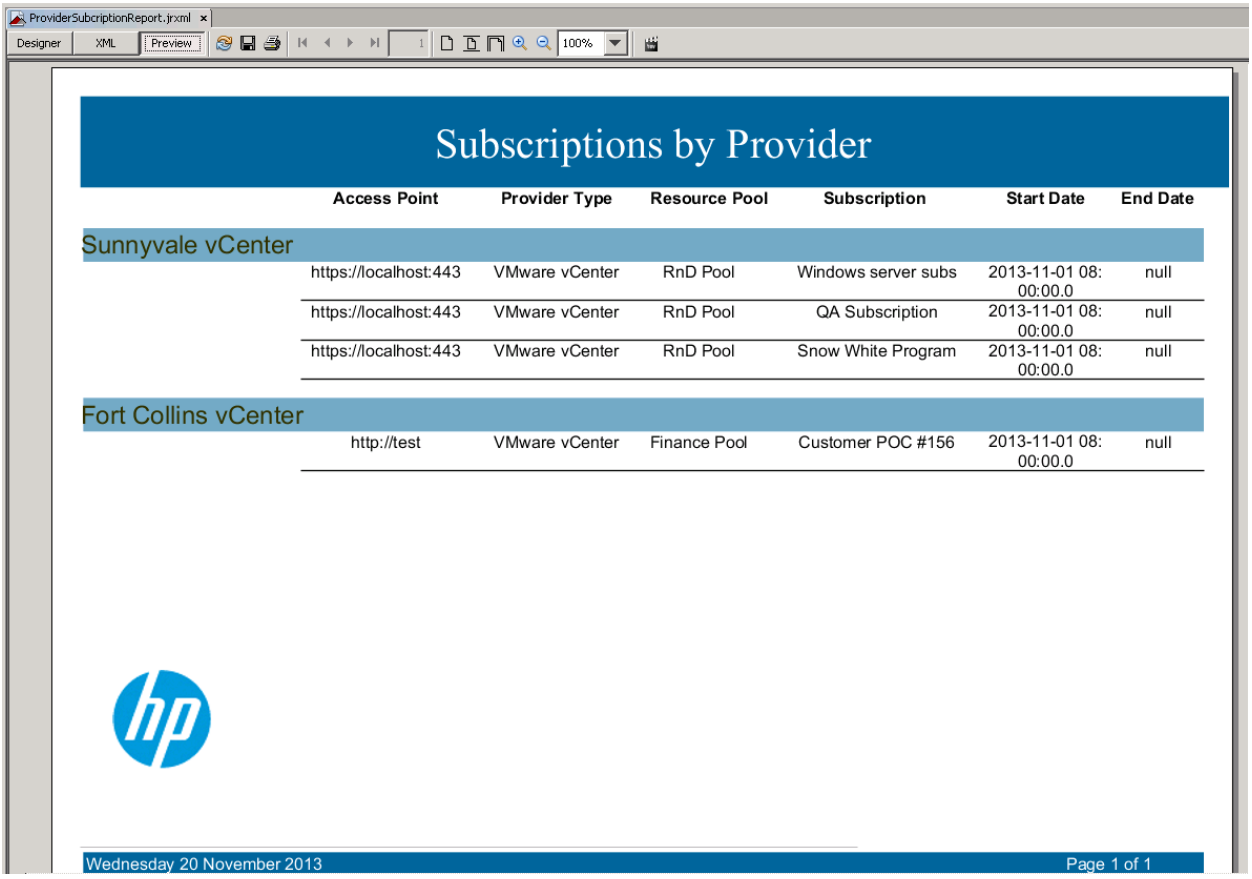


19. Use the arrow buttons to select the fields to appear in the report.
20. Click **Finish**.

    The template appears in the Designer format.
21. (Optional) Rearrange the order of the columns (fields) in the report and modify the formatting (such as right- or left-justified) for the title, field, and column names.

22. Preview the report by clicking the **Preview** tab.

    Following is a preview of a report.



Install and Configure JasperReports Server for Use with HP CSA

1. Install JasperReports Server by following the instructions at

   http://community-static.jaspersoft.com/sites/default/files/docs/jasperreports-server-install-guide.pdf

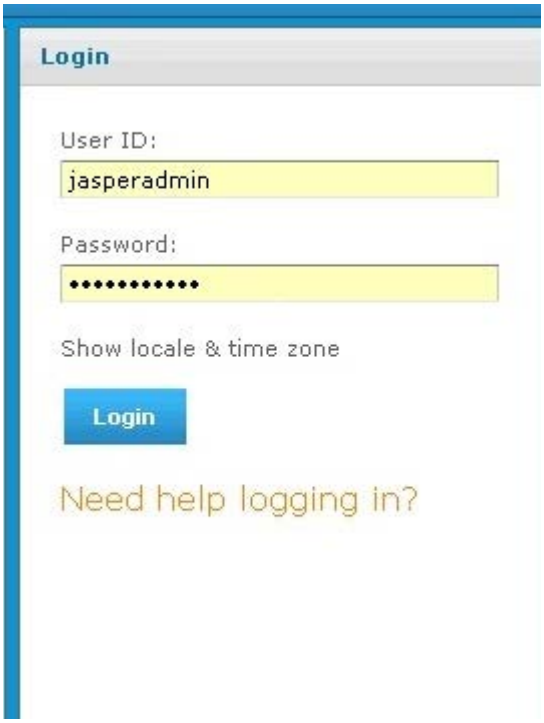
2. Go to the JasperReports Server login page at

   http://localhost:8082/jasperserver/login.html

3. Enter the following login credentials:

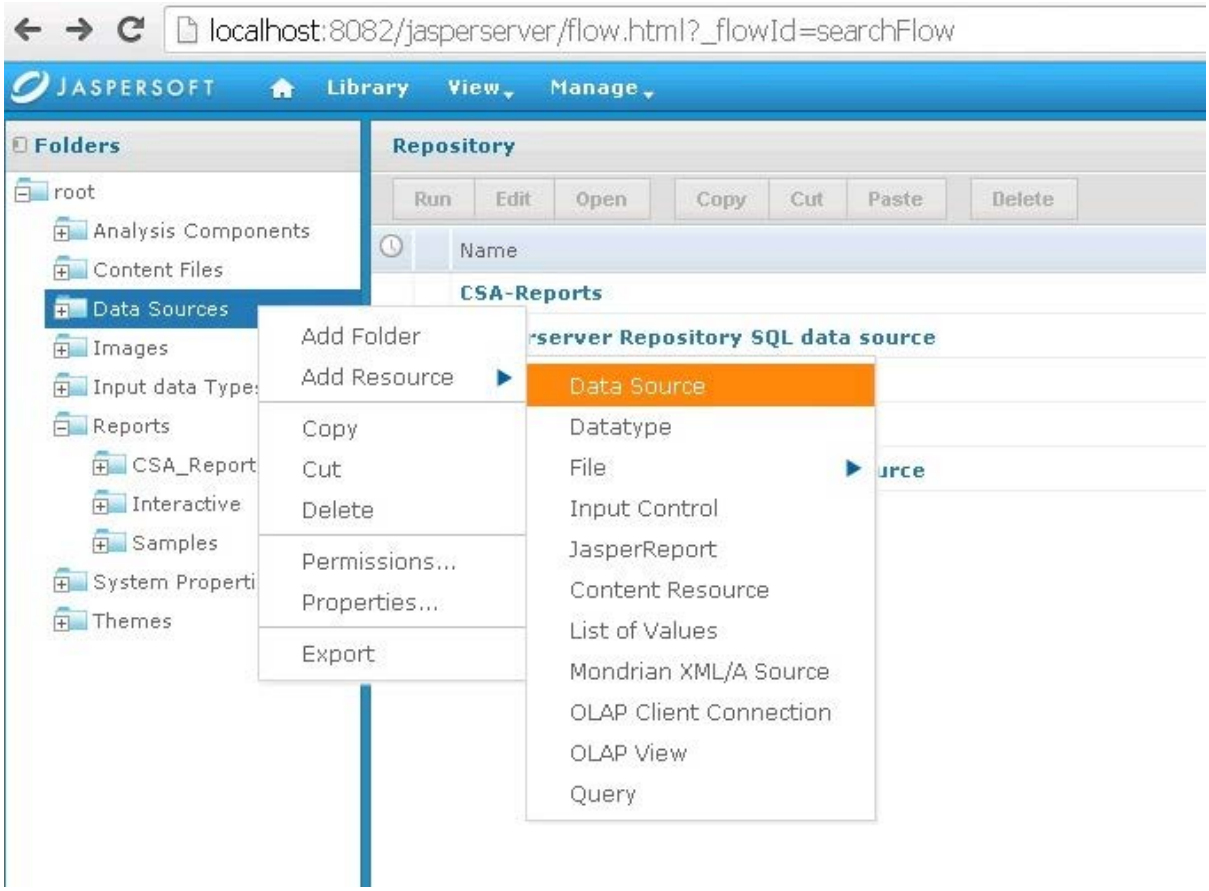
   User ID: `jasperadmin`

   Password: `jasperadmin`

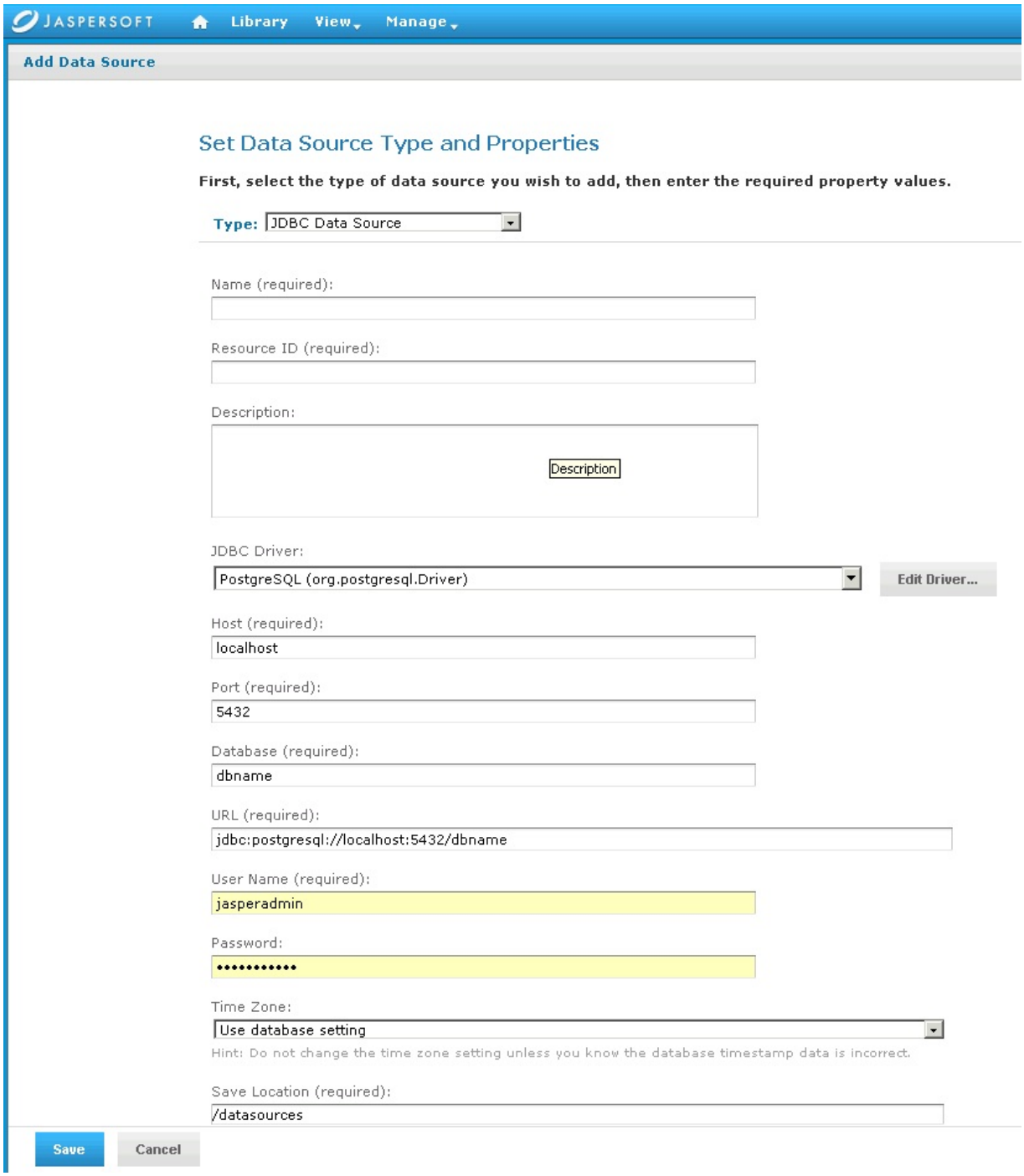


4. Click **View** → **Repository**.

5. Right-click the **root/Data Sources** folder and select **Add Resource** → **Data Source**.



The **Add Data Source** dialog box appears.



6. Enter information into the following fields:

- **Type** of data source

  Select **JDBC Data Source** (this is required for the databases supported by HP CSA).
- **Name** of your choice
- **Resource ID** of your choice

- (Optional) **Description**
- **JDBC Driver** of the installed database

  If the driver is not in the list, you can add the Java archive (JAR) file by using the **Edit Driver** option.
- **Host** where the database is installed

  Enter `localhost` if the database is on your local system.

  Enter the IP address of the system, if your database is installed on another system. (To find the hostname, log in to that system and enter the `hostname` command from a command prompt.)
- **Port** number
- **Database** name
- **URL**

  Using your hostname and database name, modify the URL as follows:

  `jdbc:postgresql://<host>:5432/<dbname>`

  By default, the URL is `jdbc:postgresql://localhost:5432/dbname`.
- **User Name**

  Enter the same username as for JasperReports Server.
- **Password**

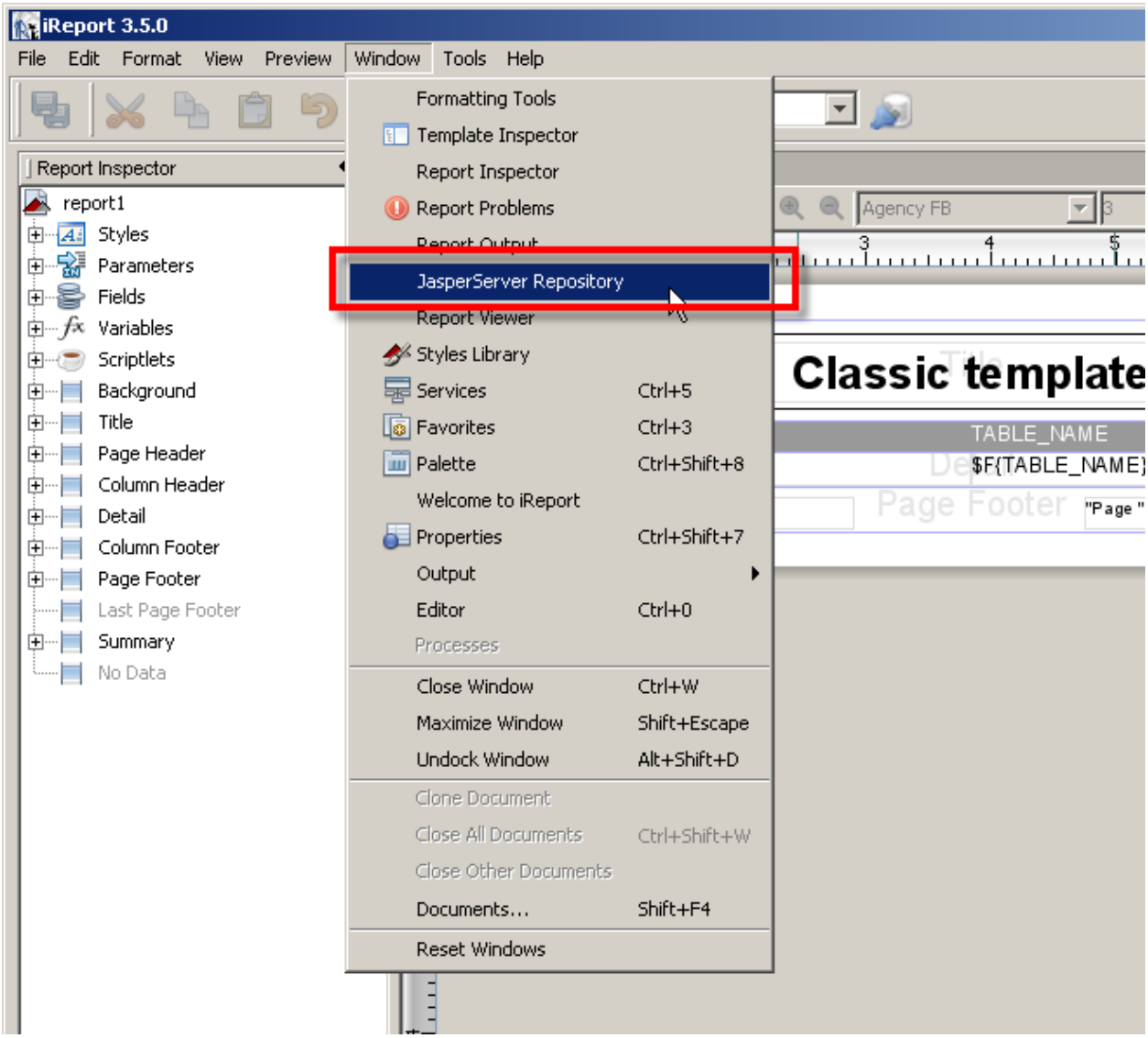
  Enter the same password as for JasperReports Server.

7. Click **Save** to save the data source.

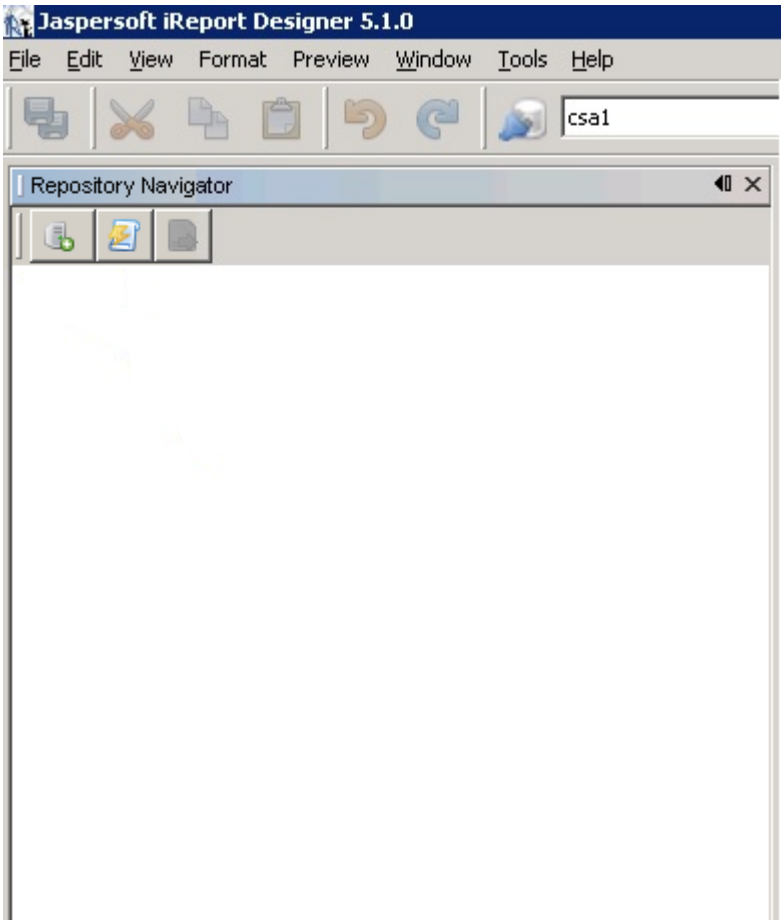
Deploy a Report in JasperReports Using the iReport Designer

In this procedure, you deploy a report to the server. First, you connect iReport to the repository.

1. Select **Window** → **JasperServer Repository**.

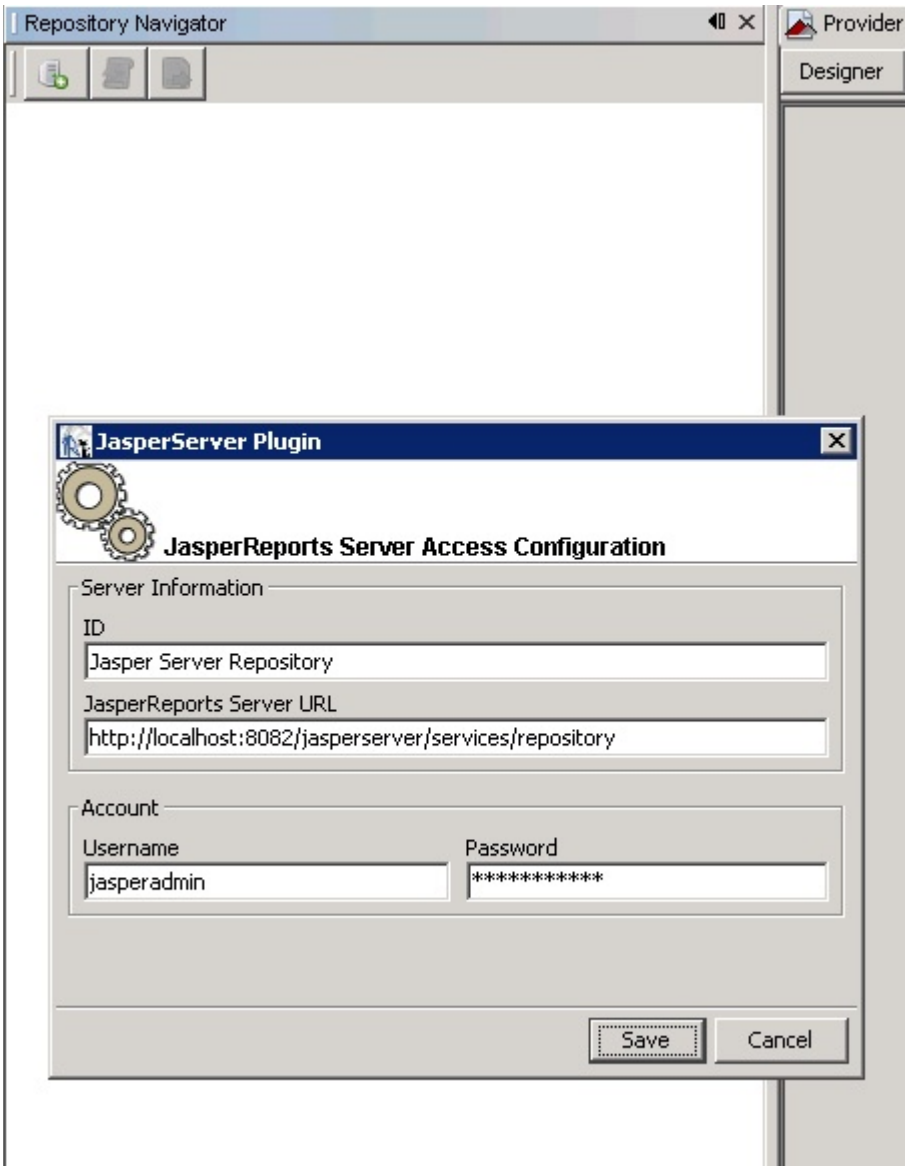


The **Repository Navigator** pane appears.



2. Click the  button to create a new server.

   The **JasperServer Plugin** dialog box appears.



3. Enter values into the following fields for your JasperReports Server:

- **ID** of the server

  You can enter any name of your choice. Enter a name that is meaningful.

- **JasperReports Server URL**

  The default value for **JasperReports Server URL** is

  http://localhost:8080/jasperserver/services/repository

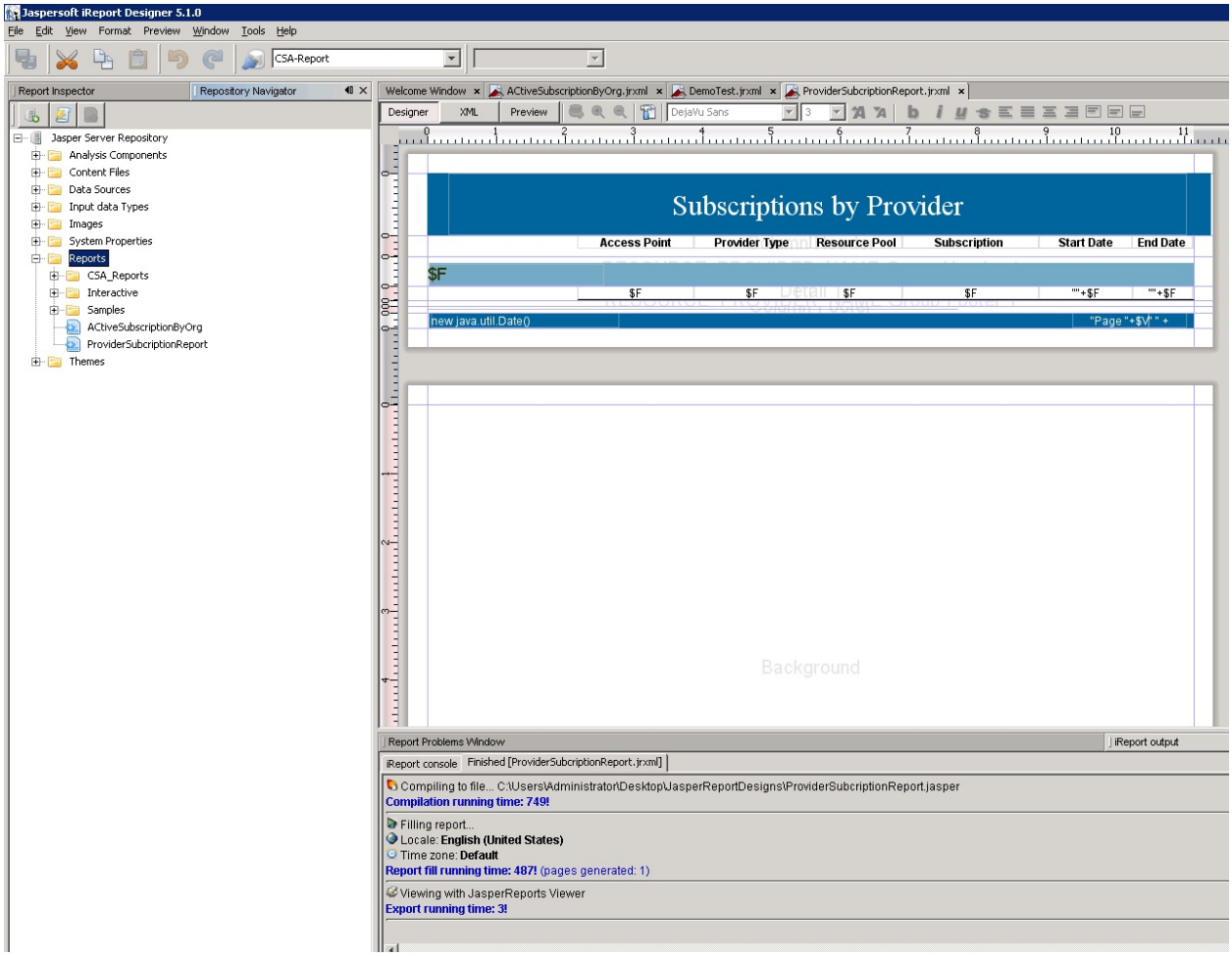
  If you are using the same URL for JasperReports, then keep the URL as is; otherwise, replace it.

- **Username**

- **Password**

4. Click **Save**.

   Jaspersoft iReport Designer retrieves the information from the server. The Repository Navigator appears as follows.



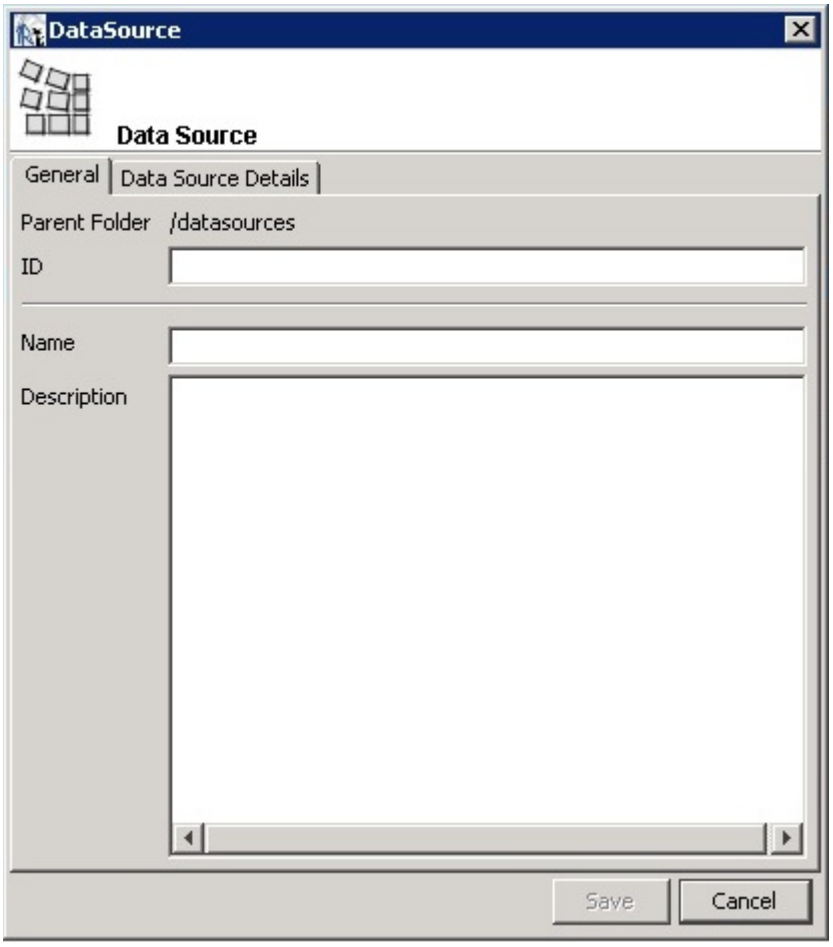
Define the Data Source for a Report

You must define the data source for a report. For previewing, the local data source is used, but to display the report from the server, you must define a data source on the server as well.

1. Select the **Data Sources** folder in the Repository Navigator pane.

2. Right-click **Add** → **Data Source**.

   The **Data Source** dialog box appears.



3. Enter values into the following fields for your data source:

- **ID**

  For example, `JRServer`.

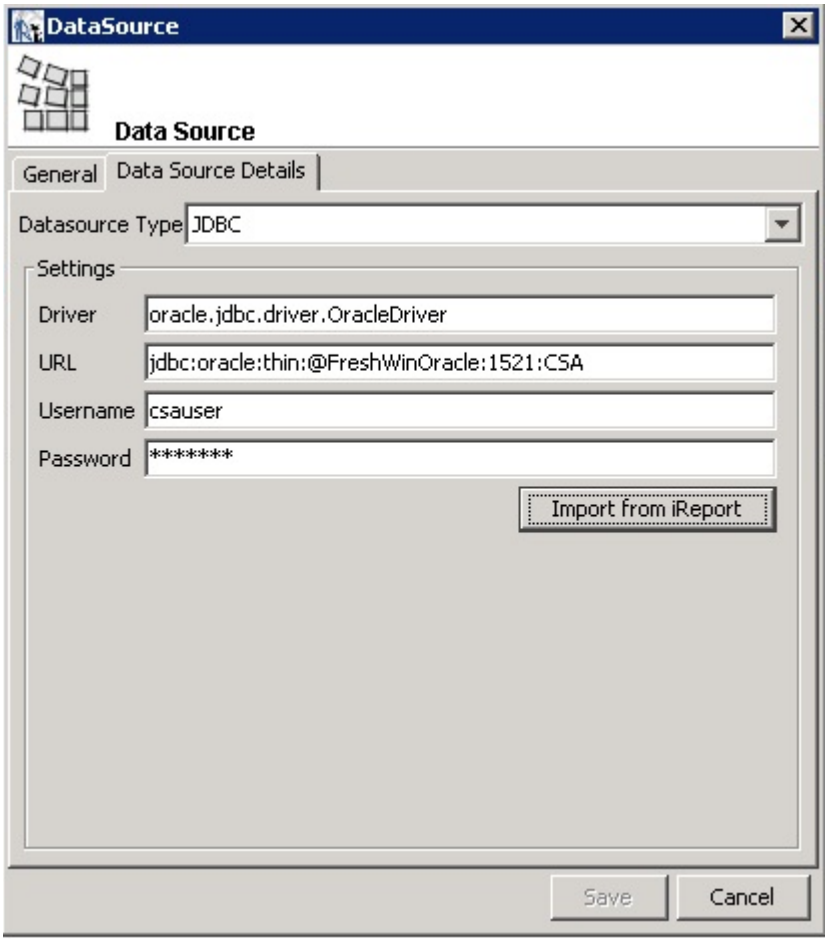
- **Name**

  For example, `SRServerDataSource`.

- (Optional) **Description**

4. Click the **Data Source Details** tab.

   If you select a JDBC data source, you can click the **Import from iReport** button to help provide these details. Select the local data source that you specified during report design.



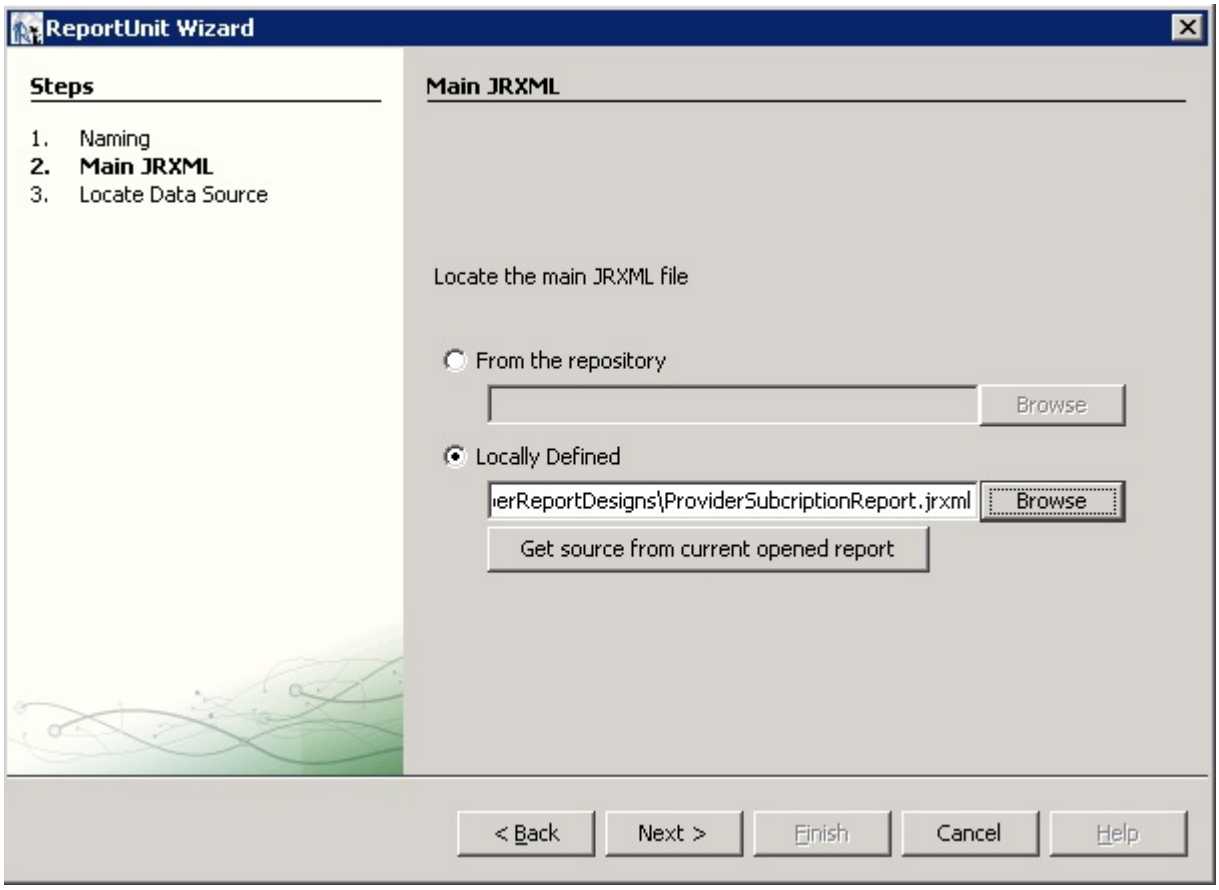
5. Click **Save**.

   The list of reports in the Repository Navigator pane corresponds to the list that appears on the webpage.

6. Create a folder named **CSA_Reports** under the **Reports** folder.
7. Right-click the **CSA_Reports** folder.
8. Select **Add** → **Report**.
9. Enter the name, label, and description for the report.
10. Click **Save**.

11. Click **Browse** to browse to and select a .jrxml file (for example, `ProviderSubscription.jrxml`) and select it.

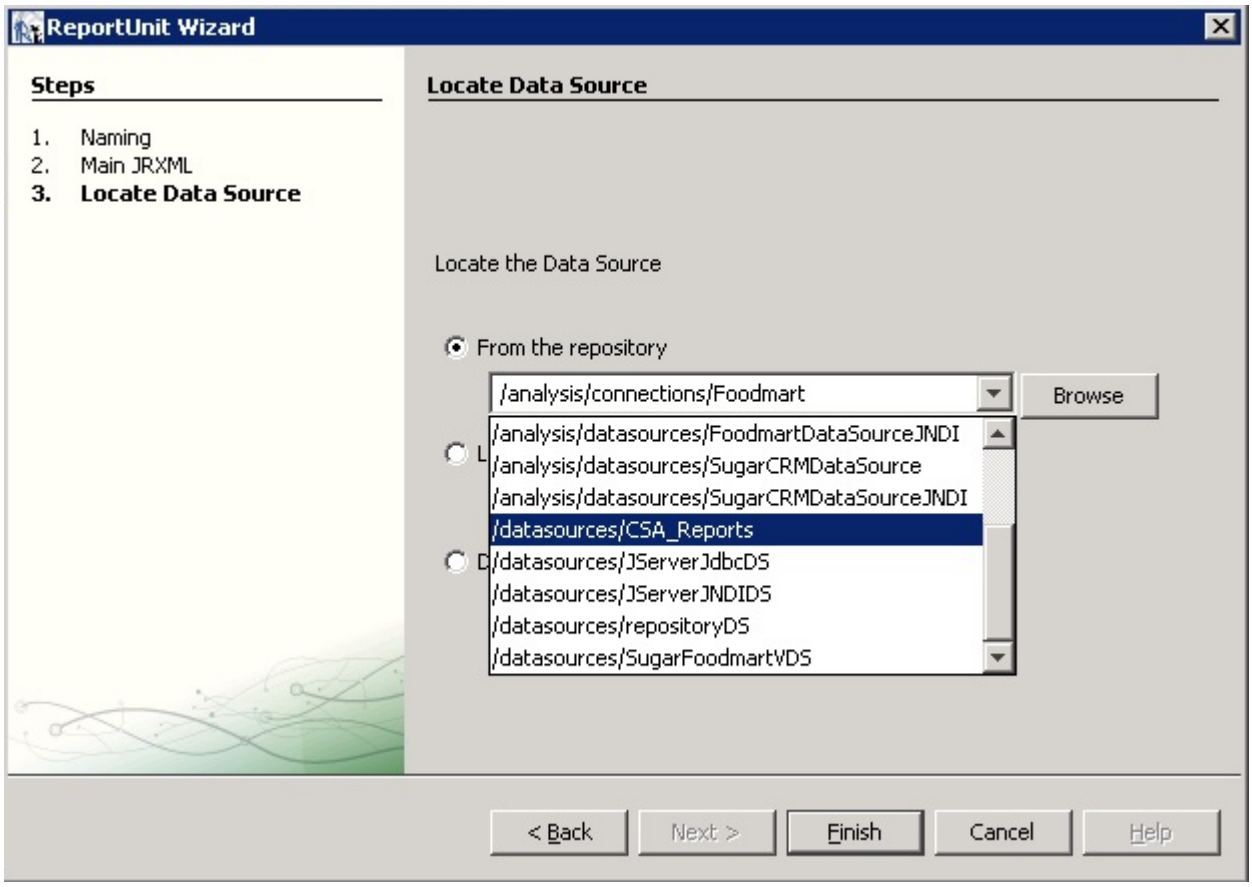
    This is the JasperReports report template file that was generated when you created the template.



12. Click **Next**.

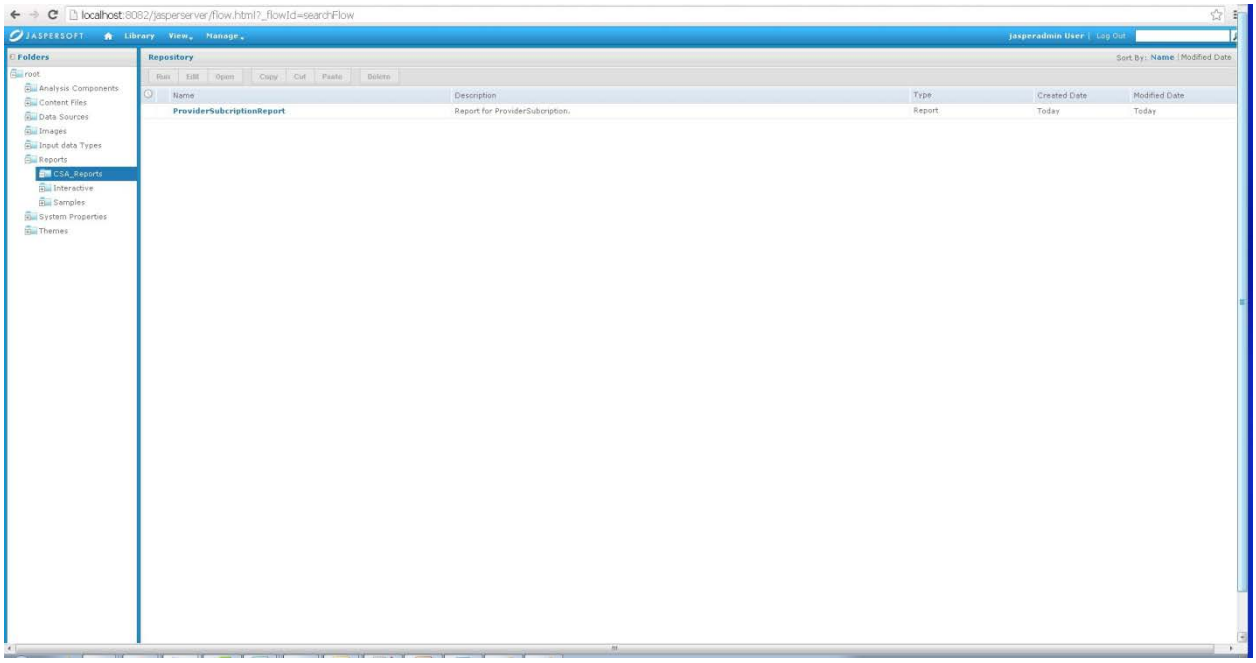
13. Select a data source from the available data sources.

    The following figure uses `/datasources/CSA_Reports` as an example data source.

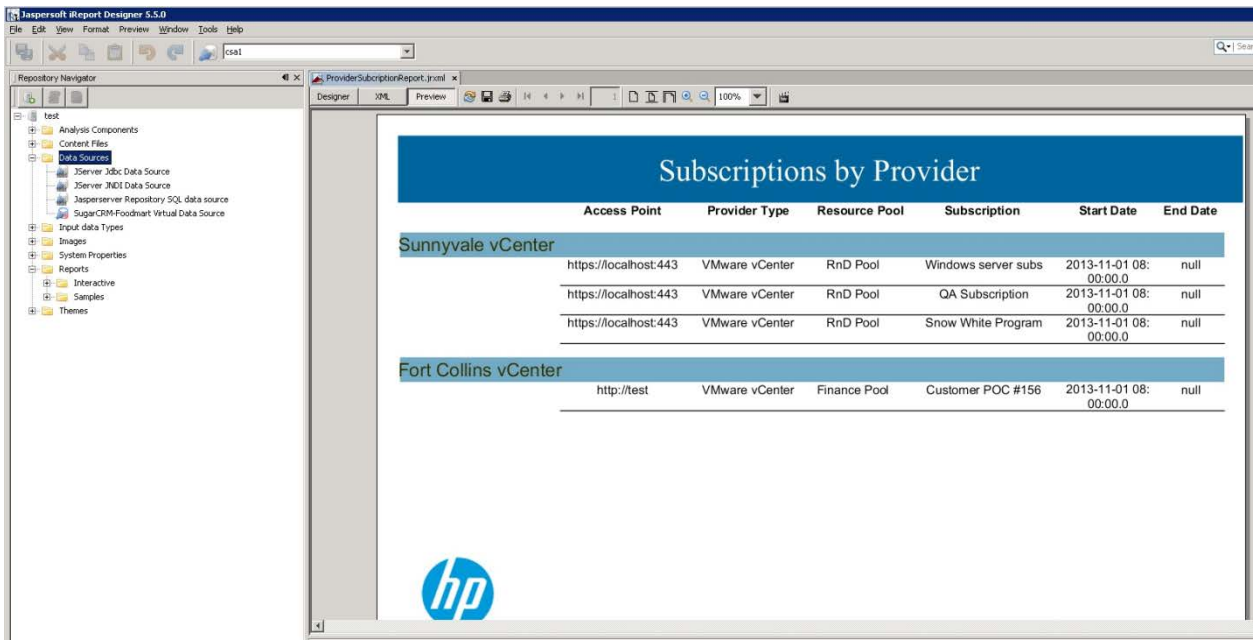


14. Click **Finish**.

    The report is now available from the website.



    You can now preview the report.



Audit Report Examples

This section includes some examples to see specific audit events by running queries on the RPT_AUDIT_EVENT_V database view.

Login events

The following query will return all successful and unsuccessful login attempts in order starting from the most recent:

```
select * from rpt_audit_event_v where audit_classification = ’Authentication’
order by created_on desc ;
```

Artifact creation, modification, and deletion

The following query will retrieve the audit event records for a design created with the name “Good Test Design,” which was subsequently renamed and then deleted:

```
select created_on, modified_by_username, user_organization_name,artifact_id,
artifact_type, artifact_name, audit_classification, audit_operation,description
from rpt_audit_event_v where artifact_id in (select artifact_id from
rpt_audit_event_v where artifact_type='Service Blueprint'and artifact_name='Good
Test Design') order by created_on asc;;
```

The above query will return a result that is similar to the following example:

created_on	modified_by_username	user_organization_name	artifact_id	artifact_type	Artifact_name	audit_classification	Audit_operation	description
02-MAY-14 02.17.58.258	gooduser	CSA-Provider	297e87c045968b3f0145becd045b01ea	Service Blueprint	Good Test Design	Create Update Delete	Create	Artifact CUD Successful
02-MAY-14 02.20.16.597	baduser	CSA-Provider	297e87c045968b3f0145becd045b01ea	Service Blueprint	Bad Test Design	Create Update Delete	Update	Artifact CUD Successful
02-MAY-14 02.20.46.360	baduser	CSA-Provider	297e87c045968b3f0145becd045b01ea	Service Blueprint	Bad Test Design	Create Update Delete	Delete	Artifact CUD Successful

Note: Audit event data can be purged if desired by running the DB Purge tool. Refer to the HP CSA documentation for more information.