

# Enabling Access to the VMware vCenter Server Appliance (vCSA) Postgres Database

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## Introduction to Enabling Access to the vCSA Postgres Database

### Background

SAS® IT Resource Management provides access to external vCenter databases through the SAS/ACCESS® to Oracle and SAS/ACCESS® to Microsoft SQL Server engines. These engines access the vCenter database in Read-Only mode and copy the tables and views that are needed by SAS IT Resource Management. Customers typically configure SAS IT Resource Management to access their operational vCenter external databases directly though some create mirrored copies of the vCenter database.

**Note:** Even for very large vCenter databases, SAS Read-Only access can copy the necessary tables in only few minutes.

Starting with vSphere 5.0U1, vCSA provides an option to use vPostgres (a VMware-flavored PostgreSQL) as its embedded database implemented as a closed system. For that reason, VMware publishes no guidance on how the vCenter Postgres database can be accessed directly or mirrored. In exploring the vCSA embedded PostgreSQL database however, the SAS IT Resource Management team discovered a method that, though not sanctioned by VMware, enables the adapter to connect to the vCSA vPostgres server.

## How to Enable Remote Access to the PostgreSQL Server and Collect Raw Data for Input to SAS IT Resource Management

### Enabling Remote Access to the PostgreSQL Server

To connect to the database remotely, perform the following steps, each of which is explained in more detail later in the document:

1. Modify the Postgres configuration to allow remote access.
2. Modify VMware's firewall to allow incoming Postgres connections.
3. Create the read-only Postgres user.

4. Check the database connection.

**CAUTION:**

**These procedures are not supported by VMware.**

However, the instructions were successfully tested using VMware 6.5 and 6.0. They also work using VCSA 5.5.

## Modify the Postgres Configuration to Allow Remote Access

1. To enable your IP address to connect to the PostgreSQL server, enter this command:

```
vim /storage/db/vpostgres/pg_hba.conf
```

Then, add the following code to the bottom of that file:

```
host all 1.2.3.4/24 md5
```

In this code, replace `1.2.3.4/24` with the actual IP address or range of addresses (for example, `192.168.1.0/24`). Alternatively, replace `1.2.3.4/24` with the server instance or ITRM server from which you want to access the database and run the SAS IT Resource Management adapter.

2. To ensure that the `listen_addresses` directive is properly configured, enter this command:

```
vim /storage/db/vpostgres/postgresql.conf
```

**Note:** If this directive is not present, then add the following code to the file:

```
listen_addresses = '*'
```

3. To restart Postgres to apply changes, enter this command:

```
/etc/init.d/vmware-vpostgres restart
```

If the Postgres service does not restart properly, you can access the database connection errors by using the PGAdmin tool. For information about possible error messages, navigate to “Connection errors” at this location:

<https://www.pgadmin.org/docs/pgadmin3/1.22/connect-error.html>.

To start (not restart) Postgres services, use following commands:

```
/opt/vmware/vpostgres/9.4/bin  
sudo -u vpostgres ./pg_ctl -D /storage/db/vpostgres status  
sudo -u vpostgres ./pg_ctl -D /storage/db/vpostgres stop -m fast  
sudo -u vpostgres ./pg_ctl -D /storage/db/vpostgres start
```

## Modify VMware's Firewall to Allow Incoming Postgres Connections

4. Enter this command:

```
vim /etc/vmware/appliance/firewall/vmware-vpostgres
```

Then make sure that this file contains the following code:

```
{
  "firewall": {
    "enable": true,
    "rules": [
      {
        "direction": "inbound",
        "protocol": "tcp",
        "porttype": "dst",
        "port": "5432",
        "portoffset": 0
      }
    ]
  },
  "internal-ports": {
    "rules": [
      {
        "name": "server_port",
        "port": 5432
      }
    ]
  }
}
```

5. To reload the firewall, enter this command:

```
/usr/lib/applmgmt/networking/bin/firewall-reload
```

## Create the Read-Only Postgres User

6. Log on to Postgres as the superuser account.

- For the 6.0 database version, enter this command:  
`/opt/vmware/vpostgres/9.3/bin/psql VCDB -U postgres`
- For the 6.5 database version, enter this command:  
`/opt/vmware/vpostgres/9.4/bin/psql VCDB -U postgres`

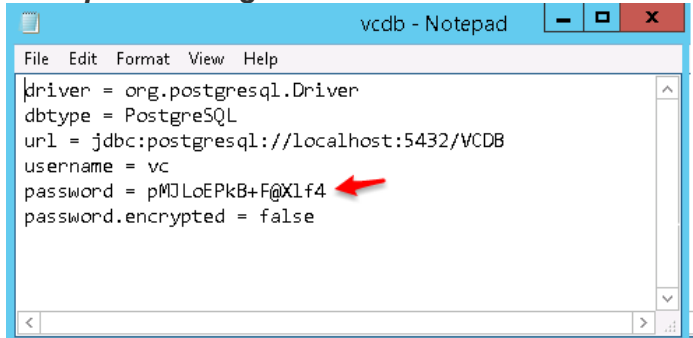
7. Create the role and grant the minimum necessary privileges by using the following SQL statements:

```
create role "vcenterVA_RO1" login password 'my_password';
GRANT CONNECT ON DATABASE "VCDB" TO "vcenterVA_RO1";
GRANT USAGE ON SCHEMA vc TO "vcenterVA_RO1";
GRANT SELECT ON ALL TABLES IN SCHEMA vc TO "vcenterVA_RO1";
```

- As an alternative to the previous step, you can use the randomly generated password for your database user. To do so, navigate to `/etc/vmware-vpx/vcdb.properties`.

In this file, you can find the database user name `vc` and its password.

### Example Showing the User Name and Password



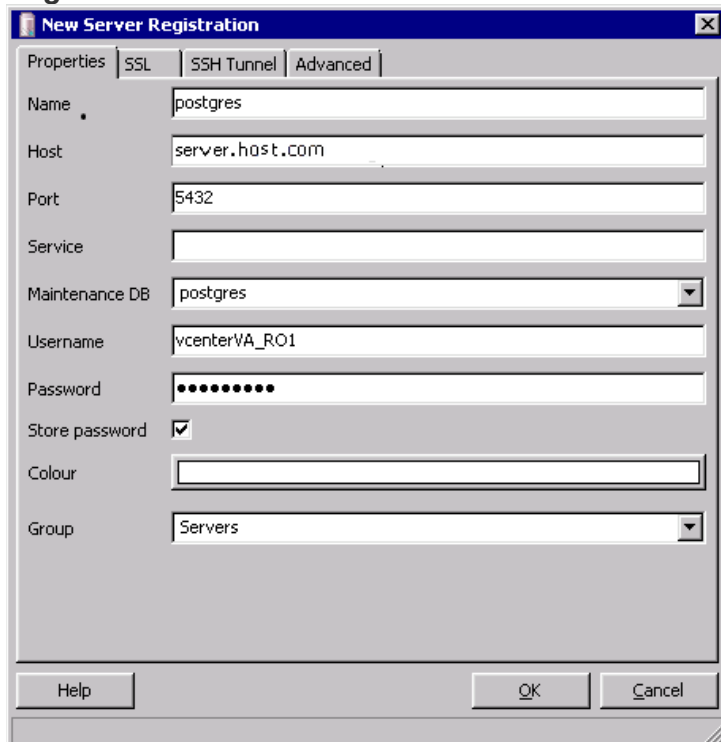
```
driver = org.postgresql.Driver
dbtype = PostgreSQL
url = jdbc:postgresql://localhost:5432/VCDB
username = vc
password = pMJLoEPkB+F@X1f4
password.encrypted = false
```

### Check the database connection.

After the previous steps are completed successfully, use the PGAdmin tool to check the database connection. To do so, perform the following steps:

- Open PGAdmin and register the new server to establish a new connection to the database.
- Specify values in the **Name** and **Host** fields. (Enter the user name and password that you used when creating the Postgres user in the previous list of steps.)
- Deselect the **Store Password** check box.

### Register the New Server



Field	Value
Name	postgres
Host	server.host.com
Port	5432
Service	
Maintenance DB	postgres
Username	vcenterVA_RO1
Password	.....
Store password	<input checked="" type="checkbox"/>
Colour	
Group	Servers

**Note:** Attempting to connect from an external machine or an IP address cannot work without modification to postgresql.conf and pg\_hba.conf. For information about making the required modifications, see the "[Modify VMware's Firewall to Allow Incoming Postgres Connections](#)" section. For information about possible error messages, navigate to "Connection errors" at this location: <https://www.pgadmin.org/docs/pgadmin3/1.22/connect-error.html>.

## Collecting Raw Data for Input to SAS IT Resource Management

**Note:** You can access the vCenter Server Appliance Postgres database for use by SAS IT Resource Management in the same way that it accesses these vCenter external databases. For more information, see [VMware vCenter - Accessing Data](#).

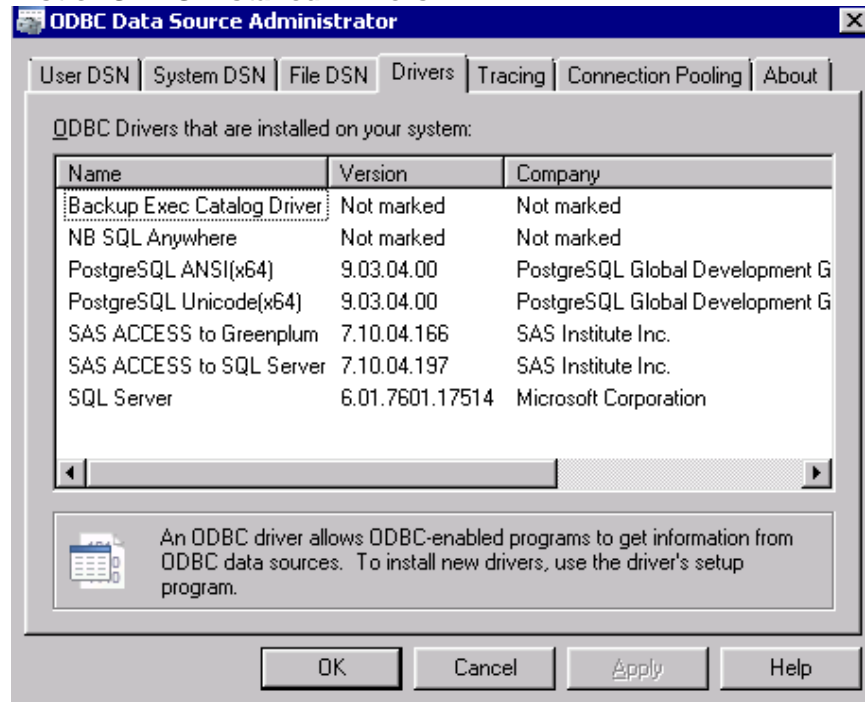
To configure access to VMware raw data in PostgreSQL Server database, perform the following steps: you must obtain information about the database. Then, you can configure ODBC on the SAS server and create the SAS library for the VMware raw data.

1. Configure ODBC on the SAS server.
2. Create the VMware Rawdata SAS Library.
3. Create a New External Database Server.
4. Specify a New Authentication Domain.

## Configure ODBC on the SAS Server

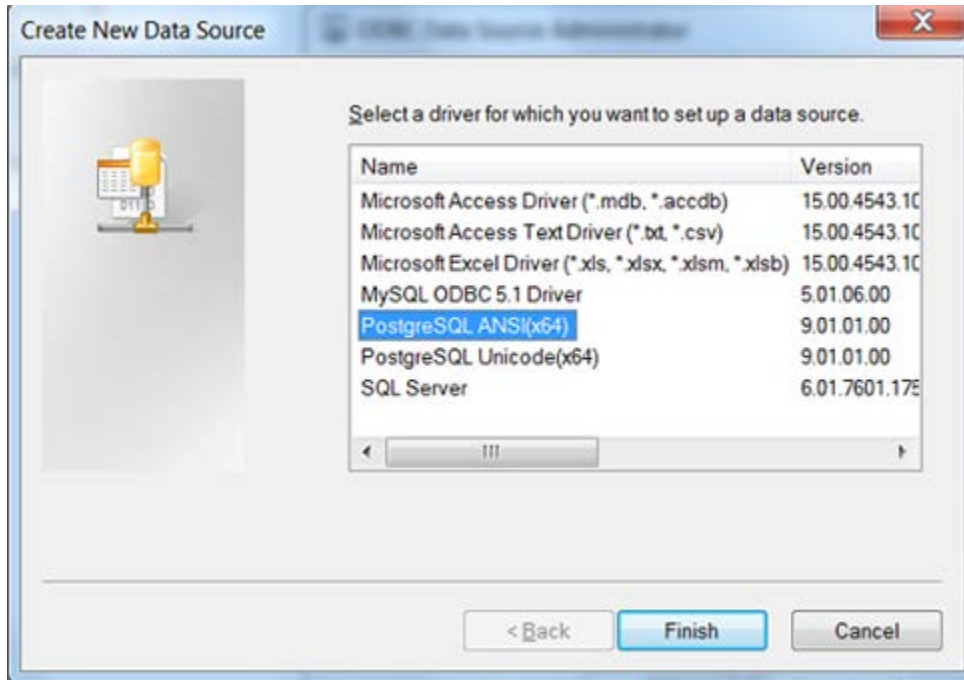
1. Navigate to the **Drivers** tab of the ODBC Data Source Administrator. Verify that the PostgreSQL Server ODBC driver, PostgreSQL ANSI(x64), is available.

### List of ODBC Installed Drivers



2. Configure the data source.
  - a) On the **System DSN** tab, click **Add** to open the **Create new Data Source** window. Select **PostgreSQL Server**.

### Create the New Data Source



**Note:** The Unicode version of the driver does not work with the SAS IT Resource Management adapter.

- b) Click **Finish** to create the new data source. The setup screen for the new data source appears.
- c) As shown, below, enter the appropriate information in the following fields:
  - **Database**
  - **Server**
  - **User Name**
  - **Password**
- d) Click **Test** to verify your entries. Correct any entries that are incorrect.

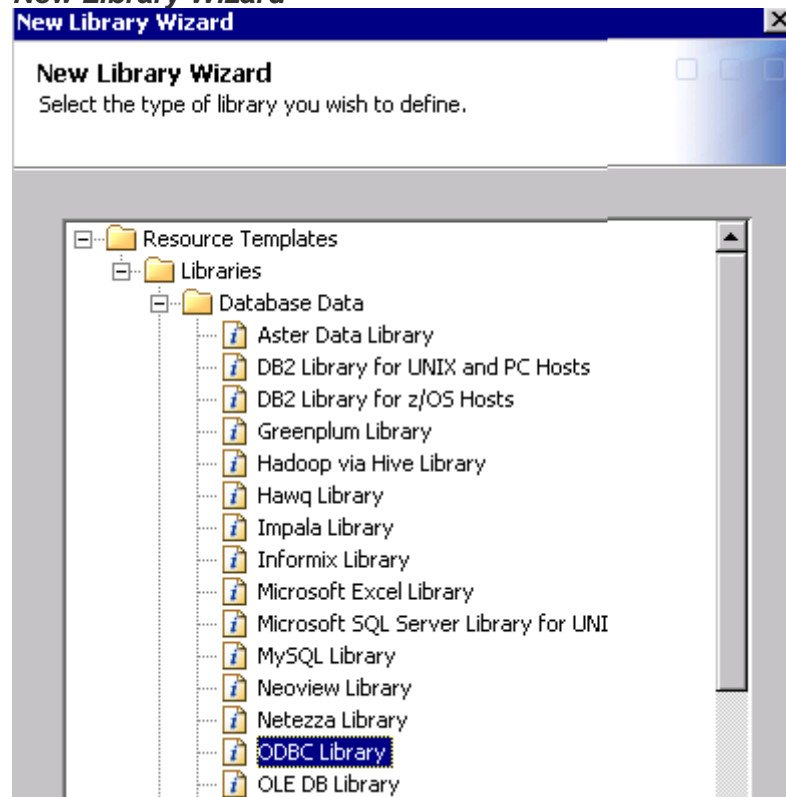
When the “Connection successful” message appears in the information box, proceed to create the VMware raw data SAS library.

## Create the VMware Rawdata SAS Library

To create the VMware raw data library, you must first create an ODBC library.

3. Log on as the unrestricted user to SAS Management Console connected to your SAS server. Invoke the **New Library Wizard** to create a new ODBC Library.

## New Library Wizard

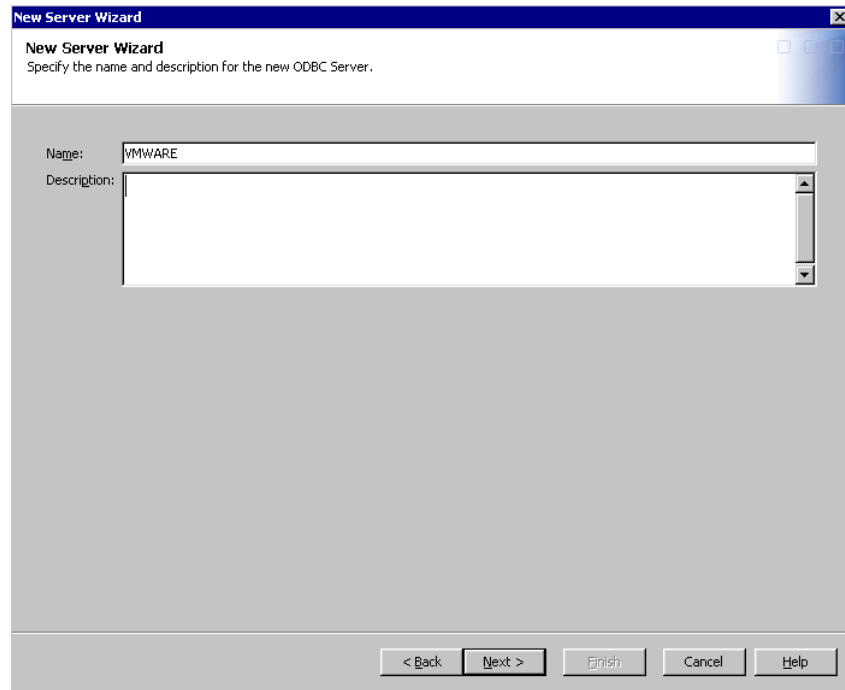


4. Provide the following information. (Click **Next** to navigate through the wizard.)
  - Enter a name for the database server (for example, *VMware*).
  - Enter the library name as *VMware*.
  - Select the SAS Application server.
  - Enter *vmware* in the **libref** field.
5. Click **Advanced Options**. Click **Other Options** to add any database-specific options. Then, click **OK**.
6. On the next screen, click **New** to create a new database server.

## Create a New External Database Server

7. On the **New Server Wizard** page, enter a name for the database server (for example, *VMware*).

## New Server Wizard



New Server Wizard  
Specify the name and description for the new ODBC Server.

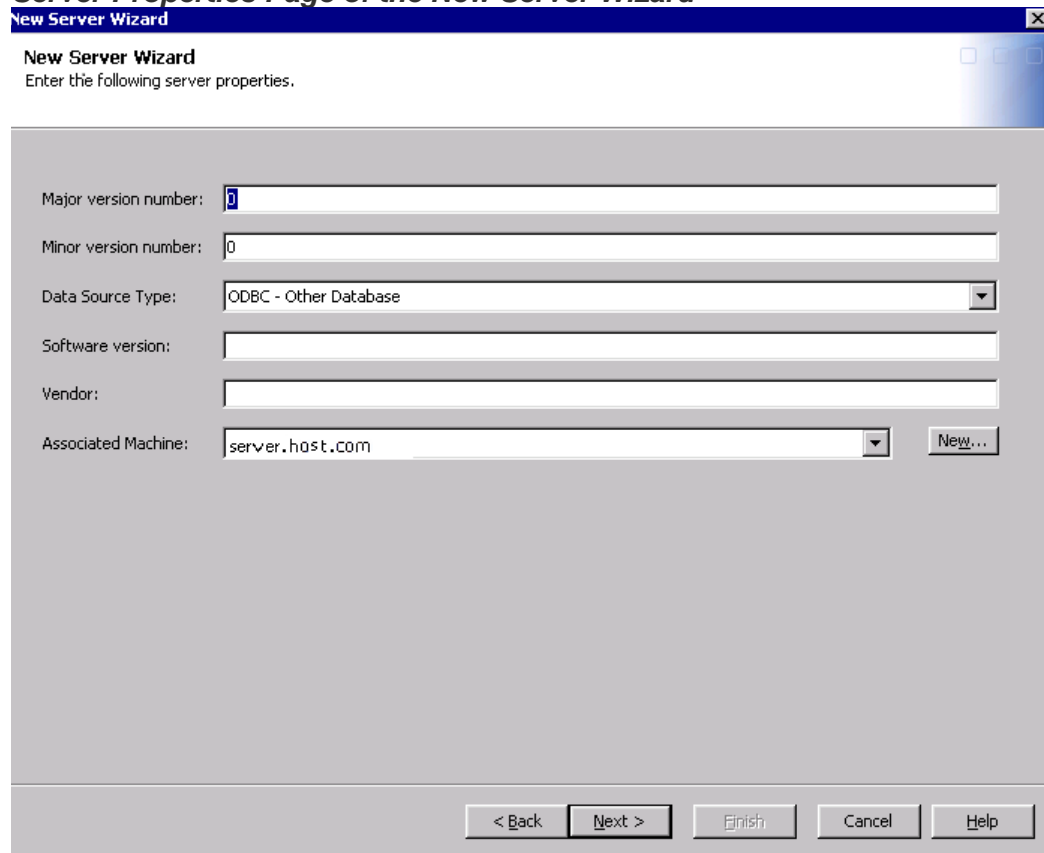
Name:

Description:

< Back   Next >   Finish   Cancel   Help

8. On the next page, enter the server properties as shown in the following display:

## Server Properties Page of the New Server Wizard



New Server Wizard  
Enter the following server properties.

Major version number:

Minor version number:

Data Source Type:

Software version:

Vendor:

Associated Machine:

< Back   Next >   Finish   Cancel   Help



9. On the next page, specify the ODBC data source. (This name should be one that you specified when configuring the ODBC library.)

### Connection Properties Page of the New Server Wizard

The screenshot shows the 'New Server Wizard' dialog box with the title bar 'New Server Wizard'. The main window has a title bar 'New Server Wizard' and a subtitle 'Enter the connection properties.' Below this, there are two sections: 'ODBC Data Source Information' and 'Authentication Information'. In the 'ODBC Data Source Information' section, there is a radio button selected for 'Datsrc:' with the text 'VMWARE' in the adjacent text box. Below it is a radio button for 'Connection String:' with an empty text box. In the 'Authentication Information' section, there is a label 'Enter the authentication information needed to connect to this server'. Below this, there is a label 'Authentication type:' with a dropdown menu showing 'User/Password'. Below that is a label 'Authentication domain:' with a dropdown menu showing 'DefaultAuth' and a 'New...' button to its right. At the bottom of the dialog box, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

10. Click **New** to specify the name of the authentication domain. Click **OK**.

### New Authentication Domain

The screenshot shows the 'New Authentication Domain' dialog box with the title bar 'New Authentication Domain'. The main window has a title bar 'New Authentication Domain' and a subtitle 'Name:'. Below this, there is a text box containing 'vmware'. Below that is a text box for 'Description:'. Below the 'Description:' text box, there are two checkboxes: 'Outbound only' and 'Trusted only', both of which are unchecked. At the bottom of the dialog box, there are three buttons: 'OK', 'Cancel', and 'Help'.

11. On the next page, review the settings that you entered. Click **Finish** to create the new Database Server.

## Specify the Server and Connection Information

The screenshot shows the 'New Library Wizard' dialog box with the following fields:

- Server Details:**
  - Database Server:    - Database Schema Name:
- Connection Details:**
  - Connection:    - Default Login:

12. On the next page, review the settings and revise as necessary. Click **Finish** to create the new library.

## Specify a New Authentication Domain

13. Select **User Manager** and choose the user for whom you want to add the new authentication domain.

**Note:** The new authentication domain can be added for a group, if needed.

14. Select the **Account** tab and click **New** to display the **Edit Login Properties** window.

As shown below, enter the **User ID** and **Password** credentials along with the **Authentication Domain**.

## Edit Login Properties

The screenshot shows the 'Edit Login Properties' dialog box with the following fields:

- General** | Groups and Roles | Accounts | Authorization
- Logins defined for sinsuo

Authentication Domain	User ID	Password
DefaultAuth	row\sssss	*****
vmware	vcenterVA_RO1	*****

- 
- Enter Login information. Enter User IDs for Microsoft Windows in the format of domain\userid. See help for details.
- User ID:
- Password:
- Confirm Password:
- Authentication Domain:
-

15. Click **OK** to complete the specification of the authentication domain. The library VMware is now available. It can be used to specify the **Rawdata** field when you set up a VMware IT Data Mart.