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# ZENworks
## Database Management Reference

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# About This Guide

The information in this guide is organized as follows:

## Audience

This guide is intended for ZENworks administrators.

## Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the *comment on this topic* link at the bottom of each page of the online documentation.

## Additional Documentation

ZENworks is supported by other documentation (in both PDF and HTML formats) that you can use to learn about and implement the product. For additional documentation, see the ZENworks documentation website (http://www.novell.com/documentation/zenworks/).

# Contents

# Embedded Database Maintenance

# 1 Retrieving and Storing the Credentials of the Embedded PostgreSQL Database

If you have installed ZENworks with the embedded PostgreSQL database that is bundled with ZENworks, we recommend that you store the credentials of the database for future use.

1 Retrieve the credentials of the embedded database by entering one of the following commands at the server prompt:

```
zman database-get-credentials
```

or

```
zman dgc
```

The credentials are displayed on the console.

For more information about zman, view the zman man page (`man zman`) on the server or see zman(1) in the ZENworks Command Line Utilities Reference.

2 Copy the credentials and save them in a file.

To retrieve and store the credentials of Remote PostgreSQL, Oracle, or Microsoft SQL Server databases, refer to their documentation.

# 2 Changing the Ports Used by the Embedded PostgreSQL Database

PostgreSQL uses port 5432 by default. However, ZENworks uses 54327 port for PostgreSQL. You can change the port on which the database runs.

1  Before executing the following steps, stop the ZENworks Services on all Primary servers by running the following configure action:

```
microfocus-zenworks-configure -c Start
```

After running the command, under Action, select Stop.

2  In the `postgresql.conf` file, specify the new port number on which the server listens to.

The `postgresql.conf` file is located in `%ZENSERVER_HOME%\database\pgsql\data` on Windows and in `/var/opt/microfocus/pgsql/data` on Linux.

3  In the `zdm.xml` and `zenaudit.xml` files on all the Primary Servers, specify the new port number in the following entry:

```
<entry key="Port">54327</entry>
```

By default, the entry lists the default port number, 54327.

The `zdm.xml` and `zenaudit.xml` files are located in `%ZENSERVER_HOME%\conf\datamodel` on Windows and in `/etc/opt/microfocus/zenworks/datamodel` on Linux.

4  Start the ZENworks Services on all Primary servers by running the following configure action:

```
microfocus-zenworks-configure -c Start
```

5  Run `microfocus-zenworks-configure -c GenerateOSPProperties`

# 3 Configuring PostgreSQL

Each Primary Server on PostgreSQL can consume up to 500 database connections. If you want to add more than one Primary Server, you should change the property values in the postgresql.conf file.

For the embedded database, the postgresql.conf file is available at the following location:

- **On Windows:** `%ZENSERVER_HOME%\database\pgsql\data`
- **On Linux:** `/var/opt/microfocus/pgsql/data`

Use the following formula to calculate the property values.

max_connections = Number of primary severs * 500

max_prepared_transactions = Number of primary severs * 500

After changing the property values in `postgresql.conf`, restart the ZENworks and PostgreSQL service.

To restart the PostgreSQL service:

- **On Windows:** To start the service, perform the following:
    1. Press Windows + R keys.
    2. Type `services.msc.`
    3. Search for the **Micro Focus ZENworks Embedded Datastore - PostgreSQL** service.
    4. Right-click the option and then select Restart.
- **On Linux:** To start the service, run the `systemctl restart zenpostgresql.service` command.

# 4 Migrating the OEM PostgreSQL Database to an External PostgreSQL Database

If you are using the OEM PostgreSQL database in ZENworks 2017 Update x, then ensure that you migrate to an external PostgreSQL database before upgrading your zone to ZENworks 2020.

Using the database migration script, you can migrate the database. The script file can be downloaded from the following locations:

Download the OEM PostgreSQL to External PostgreSQL Migration script

Depending on the platform, you can download the script file, and then perform the following steps to migrate to an external PostgreSQL database:

- "On Linux" on page 17
- "On Windows" on page 18

## On Linux

1. Take a backup of the database.
2. Stop all services in ZENworks Primary Server.
3. On the database server, download and extract the `migrate_postgres.sh.zip` file.
4. Download and install the PostgreSQL version supported by ZENworks.

   If you are planning to upgrade to ZENworks 24.2, ensure that you install PostgreSQL .
5. Change the permission for the script by running the `chmod 755 migrate_script.sh` command.
6. The script log will be saved in the `/tmp/migrate_postgres.log` location.
7. Run the following script:

   `./migrate_postgres.sh -p <PostgreSQL_Installed_Directory> --database <zenworks_db_name> --password <superuser password>`

   Example: `./migrate_postgres.sh -p /usr/pgsql-11/ --database zenworks_database --password novell`

---

NOTE: ◆To see all the available options, run the script without any argument. (Example: ./ migrate_postgres.sh)

- After migrating to the external PostgreSQL, ensure that you manually clean the OEM PostgreSQL installation.

---

# On Windows

1. Stop all services in ZENworks Primary Server.

2. On the database server, download and extract the `migrate_postgres.bat.zip` file.

3. Download and install the PostgreSQL version supported by ZENworks.

   If you are planning to upgrade to ZENworks 24.2, ensure that you install PostgreSQL .

4. Open the command prompt as an administrator.

   The PostgreSQL upgrade log will be generated in the current directory.

   Hence, it is recommended to change the directory to `%USERPROFILE%` so that PostgreSQL has permission to write logs.

5. Copy the batch file in the current directory.

6. The output will be saved at the `%TEMP%\migrate_postgres.log` location.

7. Run the following command to migrate the database. Specify the database superuser password when prompted:

   `migrate_postgres.bat -p "<postgresql_install_location"`

   Example: **migrate_postgres.bat -p** `C:\Program Files\PostgreSQL\11`

---

**NOTE:** ◆ To see all the available options, run the script without any argument `(Example: ./ migrate_postgres.bat)`.

◆ After migrating to the external PostgreSQL, ensure that you manually clean the OEM PostgreSQL installation.

---

# 5 Moving the Data from an Embedded PostgreSQL Database to an External PostgreSQL Database

ZENworks allows you move the data from an embedded PostgreSQL to an external PostgreSQL database:

- "Preparing to Move the Data" on page 19
- "Important Commands and Locations" on page 19
- "Moving the Data from an Embedded PostgreSQL to an External PostgreSQL" on page 20

## Preparing to Move the Data

Before moving the data from an embedded PostgreSQL database to an external PostgreSQL database, perform the following:

- Ensure that ZENworks is installed with an embedded PostgreSQL database on a Windows or Linux device.
- Install the external PostgreSQL database. For more information on how to install an external PostgreSQL database, see Installing PostgreSQL in the Database Migration from Sybase to PostgreSQL.

## Important Commands and Locations

This section provides some of the command and locations that will be used quite frequently while moving the data. Ensure that you keep the following information handy while initiating the data migration:

- The ZENworks database and Audit database names on the embedded PostgreSQL database are available in `zdm.xml` and `zenaudit.xml` files. These files are available in the following location:

  Check the **Database** key to get the database name.

  **On Windows:** `%ZENSERVER_HOME%\conf\datamodel\`

  **On Linux:** `/etc/opt/microfocus/zenworks/datamodel/`

  Example:

  *<entry key="Database">zenworks</entry>*

  *<entry key="Database">zenworksaudit</entry>*

- The database details can be retrieved by running the following commands:
    - `zman dgc`: Retrieves the database credentials used to connect to the embedded database.
    - `zman dgca`: Retrieves the database credentials used to connect to the audit embedded database.
    - `zman dgcs`: Retrieves the database credentials of super user that is used to connect to the embedded database.
    - `zman dgcam`: Retrieves the database credentials of the Antimalware database.

- **IMPORTANT:** The user that should be used in the following steps (unless explicitly mentioned) should be any user (administrator) who has privileges to control and monitor ZENworks services.

# Moving the Data from an Embedded PostgreSQL to an External PostgreSQL

Moving the data from an embedded PostgreSQL server to an external PostgreSQL server is a two step process:

## Step 1: Backup the Database on the Embedded Primary Server

1. Before executing the following steps, ensure that you have reviewed the information documented in the section Important Commands and Locations.

2. Stop the ZENworks Services on all the Primary Servers by running the following configure action:

   `microfocus-zenworks-configure -c Start`

   After running the command, under Action, select Stop.

3. On the Primary Server on which the Embedded Database is installed, Start the **Micro Focus ZENworks Embedded Datastore** service using the following steps:

   **On Windows:** Press the **Win + R** keys on the keyboard to open the Run window. Type *services. msc* and then hit Enter.

   Start the *Micro Focus ZENworks Embedded Datastore – PostgreSQL* service.

   **On Linux:** Run the following command to start the Micro Focus ZENworks Embedded Datastore – PostgreSQL service.
    - **On SLES 12 and later:** `systemctl start zenpostgresql.service`

4. Login to the Primary Server that has the database role.

5. Initiate the backup by setting the following variables:

   **NOTE:** This step is required for Windows only.

    - PGPORT: <existing source DB port configured>

By default, ZENworks uses 54327

- PGDATA: <embedded_database_location>
- PGUSER: <existing super user for ZENworks postgres DB> The default user for ZENworks is zenpostgres.
- PGDATABASE: <existing database name> ZENworks default is postgres
- PGPASSWORD: <password for the above super user PGUSER>

*Example 5-1*  *Example for Windows Primary Server*

Set the following environment variables:

- Set the PATH for PostgreSQL installation.
- Set the PATH for PostgreSQL bin folder.

Open the command prompt and set the following variables based on the existing configuration.

- SET PGPORT=54327
- SET `PGDATA=%ZENSERVER_HOME%\database\pgsql\data`
- SET PGUSER=<super user retrieved from zman dgcs>
- SET PGDATABASE=postgres
- SET PGPASSWORD=<password retrieved from zman dgcs>;

*Example 5-2*  *Example for Linux Primary Server:*

Open the terminal and set the following variables based on the existing configuration.

- export LD_LIBRARY_PATH=`/opt/microfocus/zenworks/share/pgsql/lib;`
- export PATH=$PATH:`/opt/microfocus/zenworks/share/pgsql/bin;`

  **On SLES 15:** export LD_LIBRARY_PATH=`/opt/microfocus/zenworks/share/pgsql/lib:/opt/microfocus/zenworks/share/pgsql/stackbuilder/lib; export LD_LIBRARY_PATH`

  On SLES 15, the *no version information available* error message can be ignored.

- export PGPORT=54327;
- export PGDATA=`/var/opt/microfocus/pgsql/data;`
- export PGUSER=<super user retrieved from zman dgcs>;
- export PGDATABASE=postgres;
- export PGPASSWORD=<password retrieved from zman dgcs>;

6. Run the following commands to back up both the databases (ZENworks and Audit):

- **On Windows:**
  - cd `"%ZENSERVER_HOME%\share\postgres\bin\"`
  - `pg_dumpall.exe > "<path to sql file>"`

    Example: `pg_dumpall.exe > c:\postgres_dump.sql`

- **On Linux:**
  - cd `/opt/microfocus/zenworks/share/pgsql/bin/`
  - `./pg_dumpall > "<path to sql file>"`

Example: `./pg_dumpall > /tmp/postgres_dump.sql`

- ◆ docker exec -e PGUSER=<super user retrieved from zman dgcs> -e PGDATABASE=postgres -e PGPASSWORD=<password retrieved from zman dgcs> zenpostgres pg_dumpall > /tmp/dump.sql

  Example: docker exec -e PGUSER=zenpostgres -e PGDATABASE=postgres -e PGPASSWORD=Zw0#43cf4525d0f5df6395bbbec9c zenpostgres pg_dumpall > /tmp/dump.sql

  ---

  **NOTE:** You can ignore the no version information available error message.

  ---

7. On the Primary Server on which the Embedded Database is installed (source database), Stop the **Micro Focus ZENworks Embedded Datastore** service using the following steps:

   **On Windows:** Press the **Win + R** keys on the keyboard to open the Run window. Type *services.msc* and then hit Enter.

   Stop the *Micro Focus ZENworks Embedded Datastore – PostgreSQL* service.

   **On Linux:** Run the following command to start the Micro Focus ZENworks Embedded Datastore – PostgreSQL service.

   - ◆ **On SLES 12:** `systemctl stop zenpostgresql.service`
   - ◆ **On other SLES versions:** `/etc/init.d/zenpostgresql stop`

## Step 2: Restore the Database on an External Server

Perform the following steps on an external server on which you want to move the PostgreSQL database. After installing PostgreSQL on an external server, ensure that the PostgreSQL database service is running.

To restore the database on an external database server, perform the following steps:

1. Set the following environment variables:

   - ◆ PGPORT: <target DB port>
   - ◆ PGUSER: <target super user for postgres DB>
   - ◆ PGDATABASE: <target initial connection database name> default is postgres
   - ◆ PGPASSWORD: <password for the above super user i.e. PGUSER>

   ***Example 5-3*** *Example for Windows Primary Server*

   Set the following environment variables:
   - ◆ Set the path for PostgreSQL installation.
   - ◆ Set the path for PostgreSQL bin folder.

   Open the command prompt and set the following variables based on the existing configuration.
   - ◆ SET PGPORT=54327
   - ◆ SET PGUSER=<PostgreSQL super user>
   - ◆ SET PGDATABASE=postgres
   - ◆ SET PGPASSWORD=<Postgres super user password>

***Example 5-4***  *Example for Linux Primary Server:*

Open the terminal and set the following variables based on the existing configuration.

- export LD_LIBRARY_PATH=`<postgres installation path>/lib;`
- export PATH=$PATH:`<postgres installation path>/bin;`
- export PGPORT=`<Port on which PostgreSQL is configured>;`
- export PGUSER=`<Postgres super user>;`
- export PGDATABASE=postgres;
- export PGPASSWORD=`<PostgreSQL super user password>;`

2. Login as PostgreSQL super user and manually create the database using the following query for the databases that should be restored:

```
create database <DB name> with template=template0 encoding='UTF8';
```

For example:

- **ZENworks Database:** `create database zenworks with template=template0 encoding='UTF8';`
- **Audit Database:** `create database zenworksaudit with template=template0 encoding='UTF8';`

3. Copy the `postgres_dump.sql` file that was created in Step 1: Backup the Database on the Embedded Primary Server to the target device.

4. Restore the database from the backup taken in Step 1: Backup the Database on the Embedded Primary Server, by running the following commands:

- **On Windows:** In the Command prompt, run the following commands:

  - `cd <postgres installation path>\bin`
  - `psql.exe -v ON_ERROR_STOP=0 -f c:\postgres_dump.sql -o c:\postgres_dump_log.txt -L c:\postgres_dump_log.log > c:\postgres_dump_log.err 2>&1`

- **On Linux:** In the Terminal, run the following commands as PostgreSQL user:

  - `cd <postgres installation path>/bin`
  - `./psql -v ON_ERROR_STOP=0 -f /tmp/postgres_dump.sql -o /tmp/postgres_dump _log.txt -L /tmp/postgres_dump_log.log > /tmp/postgres_dump_log.err 2>&1`

5. After Restoring the database, log into the ZENworks database, and run the below query to delete the database role for the device that has the embedded PostgreSQL database installed by running the following query on the external database server:

```
delete from zZenServerRoles where Roles = 'Database';
commit;
```

6. Update the following changes in `zdm.xml` and `zenaudit.xml` for all the Primary Servers in the zone:

- Delete the `<entry key="Embedded">true</entry>.`
- Update the value of the Port key with the port on which the external PostgreSQL database is configured.

  `<entry key="Port"><PORT-of-target-DB-device></entry>`

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7. Update the server key value in the `zdm.xml` and `zenaudit.xml` files as shown below:

   - In the target database server, add the loopback IP address.

     `<entry key="Server"><target_database_server-IP></entry>`

   - In all the other Primary Server, add the IP of the target database server.

     `<entry key="Server"><target_database_server-IP></entry>`

8. In the new database server, run the following configure actions: `microfocus-zenworks-configure -c GenerateOSPProperties`

9. Run `microfocus-zenworks-configure -c`

`GenerateContentDatasourceConfigureAction` on all the content servers.

10. After updating the changes, restart all the ZENworks services by running the `microfocus-zenworks-configure -c Start` configure action.

11. Ensure that the **Micro Focus ZENworks Embedded Datastore** service is disabled and not running on the Primary Server that hosted the Embedded PostgreSQL database.

12. The ZENworks Server now points to new database.

    Ensure that you can successfully log into ZCC. After logging into ZCC, go to the Diagnostics page and in the ZENworks Databases panel, verify the Host IP addresses and also verify that the Audit database is connected.

# 6 Moving an Embedded PostgreSQL Database from One Primary Server to another Primary Server

ZENworks enables you to move the embedded database from one Primary Server to another Primary Server or Appliance. Perform the steps provided in the following section to move the database from one Primary Server to another Primary Server.

## Important Commands and Locations

This section provides some of the command and locations that will be used quite frequently while moving the data. Ensure that you keep the following information handy while initiating the data migration:

- The ZENworks database and Audit database names on the embedded PostgreSQL database are available in `zdm.xml` and `zenaudit.xml` files. These files are available in the following location:

  Check the **Database** key to get the database name.

  **On Windows:**

  `%ZENSERVER_HOME%\conf\datamodel\`

  **On Linux / Appliance:**

  `/etc/opt/microfocus/zenworks/datamodel`

  Example:

  *<entry key="Database">zenworks</entry>*

  *<entry key="Database">zenworksaudit</entry>*

- The database details can be retrieved by running the following commands:
  - `zman dgc`: Retrieves the database credentials used to connect to the embedded database.
  - `zman dgca`: Retrieves the database credentials used to connect to the audit embedded database.
  - `zman dgcs`: Retrieves the database credentials of super user that is used to connect to the embedded database.
  - `zman dgcam`: Retrieves the database credentials of the Antimalware database.

> ◆ **IMPORTANT:** The user that should be used in the following steps (unless explicitly mentioned) should be any user (administrator) who has privileges to control and monitor ZENworks services.

◆ To connect to the database, see Connecting to the Embedded PostgreSQL Database.

# Moving an Embedded PostgreSQL Database from One Primary Server to another Primary Server

Moving the data is a two step process:

◆ "Step 1: Backup the Database" on page 26

◆ "Step 2: Restoring the Database" on page 28

> **IMPORTANT:** While moving the database, we refer the source database server as PSDB1 and the destination database server as PSDB2.

## Step 1: Backup the Database

◆ "Backup the Database on the Embedded Windows Primary Server (PSDB1)" on page 26

◆ "Backup the Database on the Embedded Linux Primary Server (PSDB1)" on page 27

### Backup the Database on the Embedded Windows Primary Server (PSDB1)

1. Before executing the following steps, ensure that you have reviewed the information documented in the section Important Commands and Locations.

   Ensure that you have noted the database username, password of the source Primary Server by running the `zman dgcs` command.

2. Log in to the Primary Server that has the database role.

   To check the Primary Server that has the database role, log in to **ZCC** and select **Diagnostics**.

3. Stop the ZENworks Services on all the Primary Servers by running the following configure action:

   `microfocus-zenworks-configure -c Start`

   After running the configure action, under Action, select Stop.

4. On the Primary Server on which the Embedded Database is installed (PSDB1), start the Micro Focus ZENworks Embedded Datastore service by performing the following:

   ◆ On Windows: Press the Win + R keys on the keyboard to open the Run window. Enter `services.msc` and then press the Enter key.

   ◆ Start the `Micro Focus ZENworks Embedded Datastore - PostgreSQL service`.

5. On the Primary Server on which the Embedded Database is installed (PSDB1), initiate the backup by setting the following variables:

   ◆ PGPORT: <existing source DB port configured>

     By default, ZENworks uses 54327

- PGDATA: <embedded_database_location>
- PGUSER: <existing super user for ZENworks postgres DB> The default user for ZENworks is zenpostgres.
- PGDATABASE: <existing database name> ZENworks default is postgres
- PGPASSWORD: <password for the above super user PGUSER>

***Example 6-1*** *Example for Windows Primary Server*

Open the command prompt and set the following variables based on the existing configuration:

- SET PGPORT=54327
- SET PGDATA=`%ZENSERVER_HOME%\database\pgsql\data`
- SET PGUSER=<super user retrieved from zman dgcs>
- SET PGDATABASE=postgres
- SET PGPASSWORD=<password retrieved from zman dgcs>;

6. Run the following commands to back up the databases (ZENworks and Audit):

- cd `"%ZENSERVER_HOME%\share\postgres\bin\"`
- `pg_dumpall.exe > "<path to sql file>"`

   Example: `pg_dumpall.exe > c:\postgres_dump.sql`

7. On the Primary Server on which the Embedded Database is installed, start the ZENworks Services by running the following configure action:

   `microfocus-zenworks-configure -c Start`

   After running the configure action, under Action, select Start.

8. Copy the `postgres_dump.sql` file to the target Primary Server in the `c:\tmp` location.

## Backup the Database on the Embedded Linux Primary Server (PSDB1)

1. Before executing the following steps, ensure that you have reviewed the information documented in the section Important Commands and Locations.

   Ensure that you have noted the database username, password of the source Primary Server by running the `zman dgcs` command. Also, copy the target Primary Server's GUID details, which is required while restoring the database.

2. Stop the ZENworks Services on all the Primary Servers by running the following configure action:

   `microfocus-zenworks-configure -c Start`

   After running the command, under Action, select Stop.

3. Log in to the Primary Server that has the database role.

4. On the Primary Server on which the Embedded Database is installed (PSDB1), start the Micro Focus ZENworks Embedded Datastore service using the following command on SLES 12 and later:

   `systemctl start zenpostgresql.service`

5. Run the following commands to back up the databases (ZENworks and Audit):

```
docker exec -e PGUSER=<super user retrieved from zman dgcs> -e
PGDATABASE=postgres -e PGPASSWORD=<password retrieved from zman dgcs>
zenpostgres pg_dumpall > /tmp/dump.sql
```

Example: `docker exec -e PGUSER=zenpostgres -e PGDATABASE=postgres -e`
`PGPASSWORD=Zw0#3dde8547adb388306de141850 zenpostgres pg_dumpall > /tmp/`
`dump.sql`

**NOTE:** You can ignore the no version information available error message.

6. Start the Micro Focus ZENworks Embedded Datastore service using the following command:

   ◆ **On SLES 12 and later**: `systemctl start zenpostgresql.service`

**NOTE:** Keep the `/tmp/dump.sql` in a safe place as it has the database backup.

## Step 2: Restoring the Database

Depending on the target database platform, refer to the following section to restore the database:

### Restore the Database on a Windows Primary Server (PSDB2)

If you are planning to restore the database on a Windows Primary Server, then perform the following steps:

1. Stop the ZENworks services on all Primary Servers by running the following command:

   `microfocus-zenworks-configure -c Start`

2. Install PostgreSQL by running the following command:

   `msiexec /i <postgresql_MSI_FILE>`
   `TARGETDIR="%ZENSERVER_HOME%\install\downloads\msi" ALLUSERS=2`

   Example

   `msiexec /i "%ZENSERVER_HOME%\install\downloads\msi\microfocus-zenworks-`
   `postgres-12.4.x86_64.msi" TARGETDIR="%ZENSERVER_HOME%\share" ALLUSERS=2`

3. After installing the PostgreSQL, create the folder
   `%ZENSERVER_HOME%\database\pgsql\data`, and ensure that you give write permission to the folder:

   To provide write permissions, perform the following steps:
   a. In Windows Explorer, right-click a file or folder and select Properties.
   b. In the Properties window, click the Security tab.
   c. In Group or user names, select a user, and then click Edit.
   d. In the Permissions window, select the logged in user.
   e. Select Allow for the Write permission and then click OK or Apply.

4. Open the command prompt, and then set the following environment variables:

   ◆ PGDATA: <embedded_database_location>

**NOTE:** This is the data directory created in the previous step.

- PGPORT: \<existing source DB port configured> ZENworks default is 54327
- PGDATABASE: \<existing database name> ZENworks default is postgres

Example:

- SET PGDATA=%ZENSERVER_HOME%\database\pgsql\data
- SET PGPORT=54327
- SET PGDATABASE=postgres

5. To initialize the Postgres database, open the console and go to `%ZENSERVER_HOME%\share\postgres\bin`, and then run the following command:

```
pg_ctl.exe initdb
```

**NOTE:** If the following error is displayed, then install the `vc_redist.x64.exe` and try again.
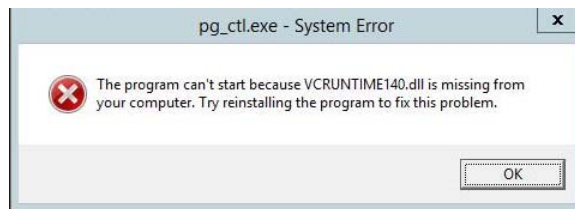


The `vc_redist.x64.exe` file is available in the ZENworks installation ISO. You can mount the ISO to any drive. Example: the `J:\` drive. The `.exe` file is available under `<zenworks_mount_directory> J:\Common\include`

6. To start the database server, run the following command:

```
pg_ctl.exe start
```

After executing the command, the last line should say `database system is ready to accept connections`.

7. Run the following command to restore the database:

```
psql.exe -v ON_ERROR_STOP=0 -f c:\tmp\postgres_dump.sql -o
c:\tmp\postgres_log.txt -L c:\tmp\postgres_log.log template1
```

The `c:\postgres_dump.sql` file is created the backup step 6 of the .

**NOTE:** Execution of the above command may take time depending on the amount of data in the database.

8. In the `postgresql.conf` file under `%ZENSERVER_HOME%\database\pgsql\data`, uncomment the `listen_addresses` and `port` entry keys, and update the values as shown below:

```
listen_addresses = '*'
```
```
port= 54327
```
```
max_connections = Number of primary severs * 500
```

9. To stop the database process, run the `pg_ctl.exe stop` command.

10. Edit the `pg_hba.conf` file, as shown below:

The `pg_hba.conf` file is available in the following location:

```
%ZENSERVER_HOME%\database\pgsql\data
```

```
# TYPE DATABASE   USER    ADDRESS          METHOD
# IPv4 local connections:
host    all             all              127.0.0.1/32            md5
# IPv6 local connections:
host    all             all              ::1/128                 md5
# Allow replication connections from localhost, by a user with the
# replication privilege.
local   replication     all                                      md5
host    replication     all              127.0.0.1/32            md5
host    replication     all              ::1/128                 md5
host    all     all     0.0.0.0/0    md5
host    all     all     ::0/0    md5
```

11. In the local primary server (PSDB2), change the server key in `zdm.xml` and `zenaudit.xml`, available in `%ZENSERVER_HOME%\conf\datamodel` folder with the local host address Jdbc_Url:

    - `<entry key="Server">Jdbc_Url</entry>`
    - `<entry key="Embedded">true</entry>`

12. If you have configured Antimalware in the zone, modify the `database.server.address` property in `%ZENSERVER_HOME%\conf\antimalware\amedatasource.properties` file to have the server IP as 127.0.0.1

13. Create the database service by running the following command:

    ```
    "%ZENSERVER_HOME%\share\postgres\bin\pg_ctl.exe" register -N "Micro
    Focus ZENworks Embedded Datastore - PostgreSQL" -U LocalSystem -D
    "%ZENSERVER_HOME%\database\pgsql\data" -S auto
    ```

14. Set the description of the service by running the following command:

    ```
    sc description "Micro Focus ZENworks Embedded Datastore - PostgreSQL"
    "Embedded datastore used for storing ZENworks objects and resources."
    ```

15. Start the Micro Focus ZENworks Embedded Datastore service using the following steps:

    - On Windows: Press the Win + R keys on the keyboard to open the Run window. Enter `services.msc` and then press the Enter key.
    - Start the `Micro Focus ZENworks Embedded Datastore – PostgreSQL service.`

16. Run the following configure actions to update OSP/Content Configurations:

    ```
    microfocus-zenworks-configure -c
    GenerateContentDatasourceConfigureAction
    ```

    ```
    microfocus-zenworks-configure -c GenerateOSPProperties
    ```

    ```
    microfocus-zenworks-configure -c RegenerateOSPAuthCfgXml
    ```

17. (Conditional) If Antimalware is configured, run the following commands:

    ```
    microfocus-zenworks-configure -c ZENServicesFirewallConfigureAction -
    Dservice=antimalware -Doperation=ADD
    ```

    ```
    microfocus-zenworks-configure -c AntimalwareServiceConfigureAction -
    Dam.service.action=start
    ```

18. Start the ZENworks services by running the following command:

```
microfocus-zenworks-configure -c Start
```

19. Assign the database role to the destination database server (PSDB2) by running the following configure action:

```
microfocus-zenworks-configure -c MigrateServerRoleConfigureAction -
DsourceGuid=<GUID of PSDB1> -DdestGuid=<GUID of PSDB2> -Drole=Database
```

20. To Configure Automatic Maintenance, perform the following:

    ◆ Create a folder `pgsql %ZENSERVER_HOME%\conf\pgsql`, if it does not exist, on PSDB2, and copy `%ZENSERVER_HOME%\conf\pgsql\pgsql-maintenance.xml` from the

    PSDB1 to the pgsql folder on PSDB2.

    ◆ Run the following configure action:

    ```
    microfocus-zenworks-configure -c
    AutomaticPostgresMaintenanceConfigureAction
    ```

21. (Conditional) If you have enabled Kafka, then run `zman server-role-kafka-recreate-connectors -f true` command to recreate the Kafka connectors.

    For more information, see Server Commands in the ZENworks Command Line Utilities guide.

22. If you have the firewall enabled on the server, ensure that port 54327 is open.

    **NOTE:** With this, we complete the Restoring of the Database to the Target Primary Server (PSBD2). Continue further to update other Primary Servers in the zone.

23. Do the following on all the other primary servers in the zone:

    a. Change the server key in `zdm.xml` and `zenaudit.xml`, available in `%ZENSERVER_HOME%\conf\datamodel` folder with the IP address of PSDB2:

    ```
    <entry key="Server">IP OF PSDB2</entry>
    ```

    b. If you have configured Antimalware in the zone, modify the `database.server.address` property in `%ZENSERVER_HOME%\conf\antimalware\amedatasource.properties` file to have the server IP as IP OF PSDB2

    c. To update OSP/Content Configurations, run the following configure actions:

    ```
    microfocus-zenworks-configure -c
    GenerateContentDatasourceConfigureAction
    ```

    ```
    microfocus-zenworks-configure -c GenerateOSPProperties
    ```

    ```
    microfocus-zenworks-configure -c RegenerateOSPAuthCfgXml
    ```

    d. (Conditional) If Antimalware is configured, run the following:

    ```
    microfocus-zenworks-configure -c ZENServicesFirewallConfigureAction
    -Dservice=antimalware -Doperation=ADD
    ```

    ```
    microfocus-zenworks-configure -c AntimalwareServiceConfigureAction
    -Dam.service.action=start
    ```

    e. Run the following commands:

    ```
    sc stop "Micro Focus ZENworks Embedded Datastore - PostgreSQL"
    ```

    ```
    sc delete "Micro Focus ZENworks Embedded Datastore - PostgreSQL"
    ```

    **NOTE:** This step is applicable only on PSDB1.

f. Start all the ZENworks services by running the following command:

```
microfocus-zenworks-configure -c Start
```

## Restore the Database on a Linux Primary Server or Appliance Server (PSDB2)

On a Linux Primary Server or an Appliance Server, perform the following steps:

1 Before executing the following steps, ensure that you have reviewed the information documented in the section Important Commands and Locations.

   Ensure that you have noted the database username, password of the source Primary Server by running the zman dgcs command.

2 Stop all the ZENworks services on all Primary Servers by running the following configure action:

```
microfocus-zenworks-configure -c Start
```

3 Load zenpostgres docker by running the following commands:

   ◆ `docker load -i /opt/microfocus/zenworks/docker-images/ zenpostgres.tar.gz`

   ◆ `docker run --name tmp_postgres -d zenpostgres`

   ◆ `docker cp /tmp/dump.sql tmp_postgres:/var/opt/microfocus/pgsql/`

   NOTE: The /tmp/dump.sql file is created in the backup step 5 of the "Backup the Database on the Embedded Linux Primary Server (PSDB1)" on page 27

4 Get into the temporary postgres container by running the following command:

```
docker exec -it tmp_postgres bash
```

5 To check whether the database server is ready to accept connections, run the following commands:

   ◆ `cd /var/opt/microfocus/pgsql/data`

   ◆ `cat postmaster.log`

   After executing the commands, the last line should say "Database system is ready to accept connections". If you did not see this message, wait for some time, and then execute the "cat postmaster.log" command again.

6 Perform the following steps to prepare the default database, for restore.

   Run the `psql -W postgres` command. When prompted for a password, enter *novell* as the password.

   6a To change the default password, run the following SQL query:

   ```
   ALTER USER zenpostgres with PASSWORD '<Password>';
   ```

   Replace the `<Password>` in the above SQL query with the password you noted down in step 1 of the "Backup the Database on the Embedded Linux Primary Server (PSDB1)" on page 27.

   Example: `ALTER USER zenpostgres with PASSWORD 'Zw0#3dde8547adb388306de141850';`

   6b Drop the following default databases and users:

```
drop database zenworks;

drop database zenworksaudit;

drop user zenadmin;

drop user zenauditadmin;

drop database zenamdatabase;

drop user zenamadmin;
```

> **NOTE:** Ignore errors related to missing database or users if any.

7  Exit the Postgres interactive terminal by executing the `exit` command.

8  To restore the database, run the following commands:

   ◆ `export PGPASSWORD= <password retrieved from zman dgcs>`

   ◆ `psql -w postgres -v ON_ERROR_STOP=0 -f /var/opt/microfocus/pgsql/dump.sql -o /var/opt/microfocus/pgsql/dump.log -L /var/opt/microfocus/pgsql/dump.log >/var/opt/microfocus/pgsql/dump.err 2>&1`

   > **NOTE:** Execution of the above command may take time depending on the amount of data in the database.

9  Once the restore is completed successfully, exit the docker container by running the `exit` command.

10 To copy the database folder from the container to the host, run the following commands:

   ◆ `rm -rf /var/opt/microfocus/pgsql`

   ◆ `docker cp tmp_postgres:/var/opt/microfocus/pgsql/ /var/opt/microfocus/`

   ◆ `rm -f /var/opt/microfocus/pgsql/data/postmaster.pid /var/opt/microfocus/pgsql/data/postmaster.log`

11 To clean up the temporary container, run the following commands:

   ◆ `docker kill tmp_postgres`

   ◆ `docker container rm tmp_postgres`

12 To change the ownership of the data directory, run the following command:

   `chown -R 1026:1026 /var/opt/microfocus/pgsql/data`

13 In the `postgresql.conf` file, under `/var/opt/microfocus/pgsql/data/`, uncomment the `listen_addresses` and `port` entry keys, and update the values as shown below:

   `listen_addresses = '*'`

   `Port= 54327`

   `max_connections = Number of primary severs * 500`

14 Edit the `pg_hba.conf` file as shown below:

   The `pg_hba.conf` file is available in the following location:

```
/var/opt/microfocus/pgsql/data
```

- In the `pg_hba.conf` file, update the content as shown below:

```
# TYPE DATABASE  USER    ADDRESS       METHOD
# "local" is for Unix domain socket connections only
local   all              all              md5
# IPv4 local connections:
host    all              all       127.0.0.1/32        md5
# IPv6 local connections:
host    all              all           ::1/128         md5
# Allow replication connections from localhost, by a user with the
# replication privilege.
local   replication      all              md5
host    replication      all       127.0.0.1/32        md5
host    replication      all           ::1/128         md5
host    all      all     0.0.0.0/0    md5
```

15  In the local primary server, change the server key in `zdm.xml` and `zenaudit.xml`, available in `/etc/opt/microfocus/zenworks/datamodel` folder with the local host address Jdbc_Url:

- `<entry key="Server">Jdbc_Url</entry>`
- `<entry key="Embedded">true</entry>`

16  If you have configured antimalware in the zone, modify the `database.server.address` property in /`etc/opt/microfocus/zenworks/antimalware/ amedatasource.properties` file to have the server IP as 127.0.0.1

17  To create the Postgres service, create the file in `/usr/lib/systemd/system/ zenpostgresql.service` with the following contents:

```
[Unit]

Description=PostgreSQL Daemon for ZENworks Databases

After=syslog.target network.target docker.service

[Service]

Type=simple

ExecStart=/opt/microfocus/zenworks/lib/systemd/system/zenpostgresql-
systemd

Restart=on-failure

RestartSec=20

StartLimitBurst=5

StartLimitInterval=120

[Install]

WantedBy=multi-user.target
```

18  To reset the file/folder permissions, run the following command:

```
permissions.sh
```

19  Start the `zenpostgres` service by running the following commands:

```
systemctl enable zenpostgresql.service
systemctl start zenpostgresql.service
```

**20** Run the following configure actions to update OSP/Content Configurations:

```
microfocus-zenworks-configure -c GenerateOSPProperties
```

```
microfocus-zenworks-configure -c RegenerateOSPAuthCfgXml
```

```
microfocus-zenworks-configure -c
GenerateContentDatasourceConfigureAction
```

**21** (Conditional) If Antimalware is configured, run the following commands:

```
microfocus-zenworks-configure -c ZENServicesFirewallConfigureAction -
Dservice=antimalware -Doperation=ADD
```

```
microfocus-zenworks-configure -c AntimalwareServiceConfigureAction -
Dam.service.action=start
```

**22** On the Primary Server (PSDB2), start the ZENworks services by running the following command:

```
microfocus-zenworks-configure -c Start
```

**23** Assign the database role to the destination database server (PSDB2) by running the following configure action:

```
microfocus-zenworks-configure -c MigrateServerRoleConfigureAction -
DsourceGuid=<GUID of PSDB1> -DdestGuid=<GUID of PSDB2> -Drole=Database
```

**24** To setup Automatic Maintenance, run the following configure action:

```
microfocus-zenworks-configure -c
AutomaticPostgresMaintenanceConfigureAction
```

**25** (Conditional) If you have enabled Kafka, then run `zman server-role-kafka-recreate-connectors -f true` command to recreate the Kafka connectors.

For more information, see Server Commands in the ZENworks Command Line Utilities guide.

**26** If you have the firewall enabled on the server, ensure that port 54327 is open.

---

**NOTE:** With this, we complete the Restoring of the Database to the Target Primary Server (PSBD2). Continue further to update other Primary Servers in the zone.

---

**27** Do the following on all the other primary servers in the zone:

**27a** Change the server key in `zdm.xml` and `zenaudit.xml`, available in `/etc/opt/microfocus/zenworks/datamodel` folder with the IP address of PSDB2:

```
<entry key="Server">IP OF PSDB2</entry>
```

**27b** If you have configured Antimalware in the zone, modify the `database.server.address` property in `/etc/opt/microfocus/zenworks/antimalware/amedatasource.properties` file to have the server IP as IP of PSDB2.

**27c** To update OSP/Content Configurations, run the following configure actions:

```
microfocus-zenworks-configure -c GenerateOSPProperties
```

```
microfocus-zenworks-configure -c RegenerateOSPAuthCfgXml
```

```
microfocus-zenworks-configure -c
GenerateContentDatasourceConfigureAction
```

**27d** (Conditional) If Antimalware is configured, run the following:

```
microfocus-zenworks-configure -c ZENServicesFirewallConfigureAction
-Dservice=antimalware -Doperation=ADD
```

```
microfocus-zenworks-configure -c AntimalwareServiceConfigureAction
-Dam.service.action=start
```

**27e** Run the following commands:

- ◆ `systemctl stop zenpostgresql.service`
- ◆ `systemctl disable zenpostgresql.service`

**NOTE:** This step is applicable only on PSDB1.

**27f** Start all the zenworks services by running the following command:

```
microfocus-zenworks-configure -c Start
```

# 7 Backing up an Embedded PostgreSQL Database on One Primary Server and Restoring it on another Primary Server

ZENworks enables you to backup the embedded database from one Primary Server and restore it in another Primary Server. This procedure can be followed if you want to replace the existing Primary Server with a new server or if you want to move from a Linux or a Windows server to an Appliance server.

- "Important Commands and Locations" on page 37
- "Backing up the Database on the Embedded Primary Server" on page 38
- "Restoring the Database on another Server" on page 39

## Important Commands and Locations

This section provides some of the command and locations that will be used quite frequently while moving the data. Ensure that you keep the following information handy while initiating the data migration:

- The ZENworks database and Audit database names on the embedded PostgreSQL database are available in `zdm.xml` and `zenaudit.xml` files. These files are available in the following location:

  Check the **Database** key to get the database name.

  **On Windows:** `%ZENSERVER_HOME%\conf\datamodel\`

  **On Linux:** `/etc/opt/microfocus/zenworks/datamodel/`

  Example:

  *<entry key="Database">zenworks</entry>*

  *<entry key="Database">zenworksaudit</entry>*

- The database details can be retrieved by running the following commands:
  - `zman dgc`: Retrieves the database credentials used to connect to the embedded database.
  - `zman dgca`: Retrieves the database credentials used to connect to the audit embedded database.
  - `zman dgcs`: Retrieves the database credentials of super user that is used to connect to the embedded database.
  - `zman dgcam`: Retrieves the database credentials of the Antimalware database.

# Backing up the Database on the Embedded Primary Server

1. Run the following commands and note down the ZENworks database credentials of the source machine:

   — zman dgcs

   — zman dgc

   — zman dgca

   — zman dgcam

2. Stop the ZENworks Services on all the Primary Servers by running the following configure action:

   `microfocus-zenworks-configure -c Start`

   After running the command, under **Action**, select **Stop**.

3. On the Primary Server on which the Embedded Database is installed, start the **Micro Focus ZENworks Embedded Datastore** service using the following steps:

   **On Windows:** Press the **Win + R** keys on the keyboard to open the Run window. Type *services. msc* and then hit Enter.

   Start the *Micro Focus ZENworks Embedded Datastore – PostgreSQL* service.

   **On Linux:** Run the following command to start the Micro Focus ZENworks Embedded Datastore – PostgreSQL service.

   ◆ **On SLES 12 and later:** `systemctl start zenpostgresql.service`

4. Login to the Primary Server that has the database role.

5. Initiate the backup by setting the following variables:

   ---

   **NOTE:** This step is required for Windows only.

   ---

   ◆ PGPORT: <existing source DB port configured>

     By default, ZENworks uses 54327

   ◆ PGDATA: <embedded_database_location>

   ◆ PGUSER: <existing super user for ZENworks postgres DB> The default user for ZENworks is zenpostgres.

   ◆ PGDATABASE: <existing database name> ZENworks default is postgres

   ◆ PGPASSWORD: <password for the above super user PGUSER>

   ***Example 7-1*** *Example for Windows Primary Server*

   Open the command prompt and set the following variables based on the existing configuration.

   ◆ SET PGPORT=54327

   ◆ SET PGDATA= `%ZENSERVER_HOME%\database\pgsql\data`

   ◆ SET PGUSER=<super user retrieved from zman dgcs>

   ◆ SET PGDATABASE=postgres

   ◆ SET PGPASSWORD=<password retrieved from zman dgcs>;

*Example 7-2*  *Example for Linux Primary Server:*

Open the terminal and set the following variables based on the existing configuration.

- export LD_LIBRARY_PATH=`/opt/microfocus/zenworks/share/pgsql/lib$LD_LIBRARY_PATH;`
- export PATH:`$PATH:/opt/microfocus/zenworks/share/pgsql/bin;`
- export PGPORT=54327;
- export PGDATA=`/var/opt/microfocus/pgsql/data;`
- export PGUSER=<super user retrieved from zman dgcs>;
- export PGDATABASE=postgres;
- export PGPASSWORD=<password retrieved from zman dgcs>;

6. Run the following commands to back up both the databases (ZENworks and Audit):

- **On Windows:**
  - cd `"%ZENSERVER_HOME%\share\postgres\bin\"`
  - `pg_dumpall.exe > "<path to sql file>"`

    Example: `pg_dumpall.exe > c:\postgres_dump.sql`

# Restoring the Database on another Server

1. Stop the ZENworks Services on the Primary Servers where the database is to be restored, by running the following configure action:

   `microfocus-zenworks-configure -c Start`

   After running the command, under Daemons, deselect **Micro Focus ZENworks Embedded PostgreSQL**, under **Action**, select **Stop**.

2. **On the Windows Primary Server**:

   a. Open the command prompt and set the following variables based on the existing configuration:
   - SET PGPORT=54327
   - SET PGUSER=<PostgreSQL super user>
   - SET PGDATABASE=postgres
   - SET PGPASSWORD=<Postgres super user password>

   b. cd `"%ZENSERVER_HOME%\share\postgres\bin\"`

3. **On the Linux server:**

   a. Enter zenpostgres container prompt by running below command:

   `docker exec -it -e PGUSER=<super user retrieved from zman dgcs> -e PGDATABASE=postgres -e PGPASSWORD=<password retrieved from zman dgcs> zenpostgres bash`

   b. cd `/opt/microfocus/zenworks/share/pgsql/bin`

4. Start PSQL connection by running ./psql.

5. Close the database dangling connections by running the following command:

```
SELECT pg_terminate_backend(pid) FROM pg_stat_activity WHERE pid =
pg_backend_pid();
```

6. Drop the following databases and users:

   - DROP DATABASE ZENWORKS;
   - DROP DATABASE ZENWORKSAUDIT;
   - DROP USER ZENAUDITADMIN;
   - DROP USER ZENADMIN;

7. Create the database using the following query for the databases that should be restored:

   `create database <DB name> with template=template0 encoding='UTF8';`

   For example:

   - **ZENworks Database:** `create database zenworks with template=template0 encoding='UTF8';`
   - **Audit Database:** `create database zenworksaudit with template=template0 encoding='UTF8';`

8. Run following command to change the password for user 'zenpostgres':

   `ALTER ROLE zenpostgres WITH PASSWORD '<password retrieved from zman dgcs of the source db machine>';`

9. Exit PSQL.

10. Set the following variables again:

    - PGPORT: <existing source DB port configured>

      By default, ZENworks uses 54327

    - PGDATA: <embedded_database_location>
    - PGUSER: <existing super user for ZENworks postgres DB> The default user for ZENworks is zenpostgres.
    - PGDATABASE: <existing database name> ZENworks default is postgres
    - PGPASSWORD: <password for the above super user PGUSER>

    ***Example 7-3*** *Example for Windows Primary Server*

    Open the command prompt and set the following variables based on the existing configuration.

    - SET PGPORT=54327
    - SET PGDATA= `%ZENSERVER_HOME%\database\pgsql\data`
    - SET PGUSER=<super user retrieved from zman dgcs of the source database device>
    - SET PGDATABASE=postgres
    - SET PGPASSWORD=<password retrieved from zman dgcs of the source database device>;

    ***Example 7-4*** *Example for Linux Primary Server:*

    Open the terminal and set the following variables based on the existing configuration.

    - export LD_LIBRARY_PATH=`/opt/microfocus/zenworks/share/pgsql/lib$LD_LIBRARY_PATH;`

- export PATH=$PATH:`/opt/microfocus/zenworks/share/pgsql/bin;`
- export PGPORT=54327;
- export PGDATA=`/var/opt/microfocus/pgsql/data;`
- export PGUSER=<super user retrieved from zman dgcs of the source database device>;
- export PGDATABASE=postgres;
- export PGPASSWORD=<password retrieved from zman dgcs of the source database device>;

11. Restore the database by running the following commands:

- **On Windows:** In the Command prompt, run the following commands:

  - ```
    psql.exe -v ON_ERROR_STOP=0 -f c:\postgres_dump.sql -o
    c:\postgres_dump_log.txt -L c:\postgres_dump_log.log >
    c:\postgres_dump_log.err 2>&1
    ```

    - **-f <filename>**: Uses the filename as the source of SQL commands
    - **-l <filename>:** Writes all query output into the file, in addition to the normal output destination
    - **-o <filename>**: Logs all query output into the file

    All the errors will be redirected to <error_log_location>.

    ```
    psql.exe -v ON_ERROR_STOP=0 -f c:\tmp\postgres_dump.sql -o
    c:\tmp\postgres_log.txt -L c:\tmp\postgres_log.log
    >c:\postgres\postgres_log.err 2>&1
    ```

- **On Linux:**

  In the Terminal, run the following commands as PostgreSQL user:

  - Run the following command to restore the database:

    ```
    ./psql -w postgres -v ON_ERROR_STOP=0 -f /var/opt/microfocus/
    pgsql/data/<dump_file> -o /var/opt/microfocus/pgsql/data/
    <log_file> -L /var/opt/microfocus/pgsql/data/<log_file> > /var/
    opt/microfocus/pgsql/data/<error_log_location> 2>&1
    ```

    - **-f <filename>:** Uses the file filename as the source of SQL commands.
    - **-L <filename>:** Writes all query output into the file, in addition to the normal output destination.
    - **-o <filename>:** Logs all query output into the file.

      All the errors will be redirected to `<error_log_location>`.

      **NOTE:** Only `/var/opt/microfocus/pgsql/data` is accessible by zenpostgres. Hence, keep dump and logs in the same path.

      **NOTE:**
      - The database schema already exists in the zenpostgres image. Hence, ERROR about existing schema and invalid locale should be ignored.
      - You can ignore the no version information available error message.

- `./psql -v ON_ERROR_STOP=0 -f <dump_location> -o <log_location> -L <log_location> > <error_log_location> 2>&1`
  - **-f <filename>**: Uses the file filename as the source of SQL commands. Ensure that the PostgreSQL user has access to the dump being imported.
  - **-L <filename>:** Writes all query output into the file, in addition to the normal output destination
  - **-o <filename>**: Logs all query output into the file

All the errors will be redirected to <error_log_location>.

```
./psql -v ON_ERROR_STOP=0 -f /tmp/postgres_dump.sql -o /tmp/
postgres_log.txt -L /tmp/postgres_log.log > /tmp/
postgres_log.err 2>&1
```

# 8 Backing Up and Restoring the PostgreSQL Database

## Important Commands and Locations

This section provides some of the command and locations that will be used quite frequently while backing-up the data. Ensure that you keep the following information handy while initiating the data migration:

- The ZENworks database and Audit database names on the embedded PostgreSQL database are available in `zdm.xml` and `zenaudit.xml` files. These files are available in the following location:

  Check the **Database** key to get the database name.

  **On Windows:** `%ZENSERVER_HOME%\conf\datamodel\`

  **On Linux:** `/etc/opt/novell/zenworks/datamodel/`

  Example:

  *<entry key="Database">zenworks</entry>*

  *<entry key="Database">zenworksaudit</entry>*

- The database details can be retrieved by running the following commands:

  - `zman dgc`: Retrieves the database credentials used to connect to the embedded database.
  - `zman dgca`: Retrieves the database credentials used to connect to the audit embedded database.
  - `zman dgcs`: Retrieves the database credentials of super user that is used to connect to the embedded database.

## Backing Up the PostgreSQL Database

By default, ZENworks automatically backs up the PostgreSQL database every week. By using the AutomaticPostgresMaintenanceConfigureAction, you can schedule the automatic backup of the database. By default, the database backup schedule is set to Sunday midnight. However, you can use the pgsqlDBbackupConf.xml file to customize the backup schedule.

**NOTE:** ◆The AutomaticPostgresMaintenanceConfigureAction takes backup only the Embedded PostgreSQL database.

   ◆ Ensure that you take the backup of the database at a regular intervals.

   ◆ It is recommended that you do not disable the backup. This might ensure that you have a backup of the database in case of a disaster.

   ◆ VACUUM reclaims storage occupied by dead tuples. In normal PostgreSQL operation, tuples that are deleted or obsoleted by an update are not physically removed from their table; they remain present until a VACUUM is done. Therefore it is necessary to VACUUM periodically, especially on frequently-updated tables.

   ◆ Database backup directory for Linux should be under /var/opt/microfocus/zenworks

   ◆ The custom JDBC URL cannot be used for automatic database maintenance.

After successfully running the configure action, the backup (PGDUMP) is saved in the following location:

   ◆ **On Windows:** `%ZENWORKS_HOME%\work\pgsql`

   ◆ **On Linux:** `/var/opt/novell/zenworks/`

Based on requirements, you can customize the pgsqlDBbackupConf.xml file and then run the novell-zenworks-configure -c AutomaticPostgresMaintenanceConfigureAction command.

The pgsqlDBbackupConf.xml file is located in the following location:

   ◆ **On Windows:** `%ZENSERVER_HOME%\conf\pgsql`

   ◆ **On Linux:** `/etc/opt/microfocus/zenworks/pgsql`

**NOTE:** By default, only ZENworks database is backed up. If required, you can enable the backup of audit database by setting the AuditEnabled parameter to true in the pgsqlDBbackupConf.xml file.

The ZENworks and Audit databases will be created under ZCMDB_pg_dump and AuditDB_pg_dump folders respectively.

Following is an example of the pgsqlDBbackupConf.xml file:

```
<Schedule>
        <DailySchedule>
            <DaysOfWeek>
                <Sunday>true</Sunday>
                <Monday>false</Monday>
                <Tuesday>false</Tuesday>
                <Wednesday>false</Wednesday>
                <Thursday>false</Thursday>
                <Friday>false</Friday>
                <Saturday>false</Saturday>
            </DaysOfWeek>
            <StartTime Hour="23" Minute="55" Second="0"/>
        </DailySchedule>
    </Schedule>
    <ns2:BackupDir>C:\Program Files (x86)\Novell\ZENworks\work</
ns2:BackupDir>
    <ns2:AuditEnabled>false</ns2:AuditEnabled>
    <ns2:ZenEnabled>true</ns2:ZenEnabled>
</ns2:BackupConfig>
```

---

**IMPORTANT:** In case you have your own mechanism of taking backup of the databases, and do not want ZENworks to take a backup, you can run the following command:

```
microfocus-zenworks-configure -c
AutomaticPostgresMaintenanceConfigureAction -
Dpgsql.delete.maintenance.queue=yes
```

---

# Using the zman command to Take a Backup of the Database

To back up an embedded database, run the zman db <backup_directory> command on the server that has the database role.

---

**NOTE:** Ensure that the backup directory is already created.

---

Example: zman db c:\pg_dbbackup

In this example, pg_dbbackup should be created in the C drive.

# Using the pg_dump Command to Take a Backup of the Database

You can use the PostgreSQL pg_dump command to do a full online backup of both Embedded and External database.

Before executing the PostgreSQL pg_dump command, ensure that you update the LD_LIBRARY_PATH variable as shown below:

export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/novell/zenworks/share/pgsql/lib

For more information, see pg_dump (https://www.postgresql.org/docs/11/backup-dump.html).

# Restoring the PostgreSQL Database

Restoring an archived database is performed by using the pg_restore command. Using the pg_restore command, you can restore the backup taken by both pg_dump and AutomaticPostgresMaintenanceConfigureAction.

To restore a backup, use the following command:

```
pg_restore [connection-option...] [option...] [filename]
```

For more information on options, see pg_restore (https://www.postgresql.org/docs/11/app-pgrestore.html).

## Restoring the Database Backup Taken Using the ZMAN Command

To restore a backup that was taken using the zman command (zman db), perform the following:

### On Linux

1. (conditional) If Vertica is enabled in your zone, then stop the following services in ZENworks Appliance, using following command:
   - `systemctl stop zenworks-connect.service`
   - `systemctl stop zenworks-kafka.service`

2. Close the database dangling connections by running the following commands:

   ```
   SELECT pg_terminate_backend(pid) FROM pg_stat_activity WHERE pid =
   pg_backend_pid();
   ```

3. Change the user by running the `su zenpostgres` command.

4. Set the super user password for pg_restore and dropdb using the following command:

   ```
   $ PGPASSWORD=<<set superuser password>>; export PGPASSWORD
   ```

5. Set the library path and BIN path as shown below:
   - `LD_LIBRARY_PATH=/opt/novell/zenworks/share/pgsql/lib; export LD_LIBRARY_PATH`
   - `PATH=$PATH:/opt/novell/zenworks/share/pgsql/bin; export PATH`

6. Drop the existing database, the database name can be zenworks or audit database.

7. Restore the database by running the following command:

   ```
   docker exec -it zenpostgres pg_restore $ pg_restore --host=localhost --
   port=54327 --username=<<superuser_name>>  --format=directory --
   dbname=<<database_name>> -C <<full path to zenDB_pg_dump>>
   ```

**NOTE:** Ensure that the dump directory is accessible from zenpostgres or postgres user.

## On Windows

1. (conditional) If Vertica is enabled in your zone, then stop the following services in ZENworks Appliance:
   - zenworks-connect.service
   - zenworks-kafka.service

2. Close the database dangling connections by running the following commands from PSQL:
   - SELECT pg_terminate_backend(pid)
   - FROM pg_stat_activity
   - WHERE pid = pg_backend_pid

3. Set the super user password for the pg_restore and dropdb commands:

   `set PGPASSWORD=<<set superuser password>>`

4. Change the command line to the PostgreSQL bin folder path as shown below:

   `cd /vastorage/opt/novell/zenworks/share/pgsql/bin/`

5. Drop the existing database by running the following command. The database name can be zenworks or audit database.

   `dropdb --host=localhost --port=54327 --username=<<superuser_name>> <<database_name>>`

6. Restore the database by running the following command:

   `pg_restore --host=localhost --port=54327 --username=<<superuser_name>> --format=directory --dbname=<<database_name>> -C <<full path to zenDB_pg_dump>>`

---

**NOTE:** Ensure that the dump directory is accessible from zenpostgres or postgres user.

---

# 9 Connecting to the Embedded PostgreSQL Database

To connect to the embedded PostgreSQL database, based on the existing configurations, set the following environment variables:

---

**NOTE:** 1.The parameter values are available in the `zdm.xml` file.

The `zdm.xml` file is available in the following location:

- **On Windows** %ZENWORKS_HOME%\conf\datamodel
- **On Linux / Appliance** /etc/opt/novell/zenworks/datamodel

2. Use the zman dgc commands to get the user name and password. For more information, see ZENworks Command Line Utilities Reference.

---

## On Linux / Appliance

Open the terminal and execute the following commands:

- su zenpostgres
- `LD_LIBRARY_PATH=/opt/microfocus/zenworks/share/pgsql/lib; export LD_LIBRARY_PATH`
- PATH=$PATH:/opt/microfocus/zenworks/share/pgsql/bin; export PATH

Type **quit** to exit from the prompt.

## On Windows

Open command prompt and execute the following commands:

- set PGPASSWORD=<password>
- set PGUSER=<user_name>
- set PGDATABASE=<database_name>
- set PGPORT=<port_number>
- cd C:\Program Files (x86)\microfocus\ZENworks\share\postgres\bin
- psql

Type **quit** to exit from the prompt

# 10 Cleaning Database and Generating Internal Statistics

PostgreSQL required a strong maintenance mechanism to deal with these DEAD tuples and statistics. VACUUM is the maintenance process which takes care of DEAD tuples along with it analyzes the contents of a tables and collects statistics about the distribution of values in each column of every table.

Perform the following steps to clean the PostgreSQL database:

1. Login to the Primary Server that has the database role.

2. Run the following command to VACUUM on all databases:

   ◆ `docker exec -it -e PGPORT=<postgresql port> -e PGUSER=<super user retrieved from zman dgcs> -e PGDATABASE=postgres -e PGPASSWORD=<password retrieved from zman dgcs> zenpostgres vacuumdb --analyze --full --skip-locked --verbose --all`

   By default, ZENworks uses 54327 as the PostgreSQL port.

---

**NOTE:**

◆ Currently, the automatic PostgreSQL backup/vacuum process does not include the Antimalware database. In zones where Antimalware is enabled, you should execute the following command to ensure that the Antimalware database is enabled for backup:

`docker exec -it -e PGPORT=<postgresql port> -e PGUSER=<super user retrieved from zman dgcs> -e PGDATABASE=postgres -e PGPASSWORD=<password retrieved from zman dgcs> zenpostgres vacuumdb --analyze --full --skip-locked --verbose --all`

By default, ZENworks uses 54327 as the PostgreSQL port.

◆ It is recommends to run these steps every week during the low activity on the database (non-business hours).

For more information, see https://www.postgresql.org/docs/current/app-vacuumdb.html

---

# II External Database Maintenance

# 11 Migrating the Data from the MS SQL Database to an Oracle Database

ZENworks allows you migrate the data from the MS SQL database to an Oracle database installed on a device that does not have ZENworks installed.

Review the following to migrate the database:

## Preparing to Move the Data

Before migrating the data from the MS SQL database to Oracle database, do the following:

- Run the ZENworks Diagnostic Center (ZDC) and check for schema differences.

  If the ZENworks database tables are not present under the default database schema DBO, then to avoid any issues, contact Micro Focus Customer Center before upgrading your zone.

  To find out the database scheme, run the following query in the Microsoft SQL database:
  ```
  SELECT distinct(SCHEMA_NAME(schema_id)) as OWNER FROM sys.objects WHERE
  type='U'
  ```

  **IMPORTANT:** If the unique constraint is not created on the serial number column of the zDevice table, database migration from the Microsoft SQL database to the Oracle database might fail.

- Ensure that the license state of ZENworks is Active. The product must be installed and running either in the licensed version or the evaluation version.

- Ensure that the Oracle database is installed on a device that does not have ZENworks installed.

- Ensure that the "USERS"/USER-CREATED tablespace has sufficient space to create and store the ZENworks database schema. The tablespace requires a minimum of 100 MB to create ZENworks database schema without any data in it and an appropriate additional space depending upon the size of the database to be migrated. For more information on tablespaces, refer to the section "Prerequisites for Oracle" in *ZENworks Server Installation*.

- Ensure that the NLS_CHARACTERSET parameter is set to AL32UTF8 and the NLS_NCHAR_CHARACTERSET parameter to AL16UTF16 by running the following query at the database prompt:

  ```
  select parameter, value from nls_database_parameters where parameter
  like '%CHARACTERSET%';
  ```

- Ensure that the **sharename**, **filename**, and **path columns** do not contain blank strings in the NC_VRBSOFTWARE table.

- (Conditional) If you want to migrate the database by creating a new user schema, ensure that the following additional requirements are met:
  - You must be aware of the database administrator credentials.

    **NOTE:** Ensure that the database administrator has the following privileges:
      - GRANT ALL on DBMS_REDEFINITION with GRANT option;
      - GRANT ALL on DBMS_DDL with GRANT option;

  - A tablespace must already exist for associating to the Oracle access user
- You can choose to migrate the database by using an existing user schema that resides on a server in your network in the following scenario:
  - The database administrator create two user schemas with the necessary rights and you get the credentials for both user schemas from the database administrator. In this case, the database administrator credentials are not required to migrate the database.

  If you want to migrate the database by using an existing user schema, ensure that the following additional requirements are met:
  - Ensure that the user schemas must have the following rights to create the database.

    ```
    CREATE SESSION
    CREATE_TABLE
    CREATE_VIEW
    CREATE_PROCEDURE
    CREATE_SEQUENCE
    CREATE_TRIGGER
    DBMS_REDEFINITION
    DBMS_DDL
    DBMS_LOCK
    ```
  - Ensure that the quota for the user schemas is set to Unlimited for the tablespaces to be used.
- Manually stop the ZENworks services running on all the ZENworks Servers in the Management Zone.
  - **On Windows:**
    1. Execute the following command at the server prompt:

       ```
       novell-zenworks-configure -c Start
       ```
    2. Enter the number next to the Stop action.
  - **On Linux:**
    1. Execute the following command at the server prompt:

       ```
       /opt/novell/zenworks/bin/novell-zenworks-configure -c Start
       ```
    2. Enter the number next to the Stop action.

- Ensure that your external MS SQL database service is running.

- (Optional) The status of database migration is logged into the `novell-zenworks-configure.log` file. By default, only the messages of the type Info and Severe are logged. If you want other message types (such as Finer, Finest, and Warning) to also be logged into the file, do the following in the `novell-zenworks-configure.properties` file:

  1. Set the value of `Logger.logLevel` to the appropriate message type.

     For example, if you want messages of the type Finest to be logged:

     ```
     #Logger.logLevel    = FINEST
     ```

  2. Uncomment the line by removing the "#" as follows:

     ```
     Logger.logLevel    = FINEST
     ```

  The `novell-zenworks-configure.properties` file is located in `%ZENWORKS_HOME%\conf\` on Windows and in `/etc/opt/novell/zenworks/` on Linux.

---

**IMPORTANT:** For better performance depending on the database size and available resource, you can increase the `batchsize` in the `db-migration-mssql-to-oracle.properties` file. It is located in `%ZENWORKS_HOME%\novell\zenworks\conf\` on Windows and in `/etc/opt/novell/zenworks/conf/` on Linux.

---

# Migrating the Data from the MS SQL Database to an Oracle Database

## Migrating the Data from the MS SQL Database to an Oracle Database

1 Ensure that all the tasks listed in "Preparing to Move the Data" on page 55 are completed.

2 Run the database migration utility.

3 Enter the target database type as Oracle.

4 Enter the IP address or host name of the Oracle database server.

5 Enter the port used by the Oracle database server.

6 Enter the fully qualified net service name for the Oracle database.

7 You can choose to create a new user schema or use an existing user schema.

  If you choose to create a new schema, continue with Step 8.

  If you choose to use an existing user schema, skip to Step 9.

8 Enter the database server administrator's user name and password.

9 Enter the schema name when prompted for the database user name.

10 Enter the database schema password when prompted for the database user's password.

**NOTE:** The migration utility prompts for inputs as mentioned in Step 4 to Step 9 to migrate audit database as well.

The database migration starts.

11  When the database migration is complete, you can check the `novell-zenworks-configure.log` file to see if the migration was successful. The log file is located in `%ZENWORKS_HOME%\log\` on Windows and in `/var/opt/novell/log/zenworks/` on Linux.

12  After the database is successfully migrated, continue with the following steps:

    **12a**  Perform post-migration tasks. .

    **12b**  Re-configure the ZENworks Reporting Server to point to the Oracle database, because it will still be pointing to the MS SQL database.

## Resuming the Database Migration

If the migration of the database is stopped for any reason, the ZENworks migration utility allows you to resume the migration if the `dbmigration.xml` file has been created. The file is located in the `ZENworks_installtion_path\bin` directory on Windows, and in the `/opt/ novell/ zenworks/bin` directory on Linux.

1  Run the database migration utility. .

2  Enter the target database type as Oracle.

3  Enter the IP address or host name of the Oracle database server.

    You must specify the IP address or host name of the Oracle database server used while migrating the database. For example, if you had specified the IP address of the database server while migrating the database, then you must specify the same IP address while resuming the database migration. You cannot specify the host name of the database server.

4  Enter the port used by the Oracle database server.

5  Enter the fully qualified net service name for the Oracle database.

6  Choose to use an existing schema.

7  Enter the schema name when prompted for the database user name specified before stopping the database migration.

8  Enter the database schema password when prompted for the database user's password specified before stopping the database migration.

**NOTE:** The migration utility prompts for inputs as mentioned in Step 3 to Step 8 to migrate audit database as well.

9  Choose to resume the database migration.

    The database migration starts.

10  After the database is successfully migrated, continue with "Post-Migration Tasks" on page 59.

# Post-Migration Tasks

If there is only one server in the Management Zone, all ZENworks services are automatically started after the data is successfully migrated to an Oracle database.

If there are multiple servers in the Management Zone:

1 From the device where you ran the migration utility, copy the following files and paste them in the appropriate directory, on all other Primary Servers:

```
zdm.xml
dmaccounts.properties
dmmappings.properties
zenaudit.xml
zenaudit_dmaccounts.properties
```

Ensure that these files have appropriate rights. The files are located in the following path:

* **Windows:** *ZENworks_installation_path*\conf\datamodel

* **Linux:** /etc/opt/novell/zenworks/datamodel

Ensure that you run `permissions.sh` script located at `/opt/novell/zenworks/bin` on the Linux server after copying the above listed files.

2 Start all the ZENworks services on all the ZENworks Servers in the Management Zone.

* **On Windows:**

1. Execute the following command at the server prompt:

```
novell-zenworks-configure -c Start
```

2. Enter the number next to the `Stop` action.

* **On Linux:**

1. Execute the following command at the server prompt:

```
/opt/novell/zenworks/bin/novell-zenworks-configure -c Start
```

2. Enter the number next to the `Stop` action.

If your zone has ZENworks Reporting, then you must run the ZENworks Reporting Configuration Tool to point to the newly migrated Oracle database.

---

**IMPORTANT:** Before migrating the database, if you had configured the Vertica database in your zone, then after migration, ensure that you re-create the Kafka connectors in the zone, to resume the syncing of data from the new database to Vertica. To re-create the connectors, you need to run the command `zman server-role-kafka-recreate-connectors -f` on one of the servers in which Kafka is installed. While executing this command, ensure that the source database is up and running. After the Kafka connectors are created successfully, you can then disable the source database. For more information, see the ZENworks Vertica Guide.

---

# 12 Configuring the ZENworks Server to Point to the New MS SQL Database Containing Data Moved from Another MS SQL Database

If you move the data from one MS SQL database to another MS SQL database, the Windows or Linux ZENworks Server must be configured to point to the new MS SQL database.

The following sections provide detailed information:

## Preparing to Move the Data

Before configuring the server to point the new MS SQL database, do the following:

- Run the ZENworks Diagnostic Center (ZDC) and check for schema differences.

  If the ZENworks database tables are not present under the default database schema DBO, then to avoid any issues, contact Micro Focus Customer Center before upgrading your zone.

  To find out the database scheme, run the following query in the Microsoft SQL database: `SELECT distinct(SCHEMA_NAME(schema_id)) as OWNER FROM sys.objects WHERE type='U'`

- Ensure that the ZENworks Server is configured to an MS SQL database. Assume that the device that currently host the MS SQL database is called MSDB1.

- Ensure that you have another Windows device with an MS SQL database installed. Assume that this device is called MSDB2. For more information on how to install an MS SQL database, for Windows, see "Windows Installation Workflow" for Linux, see "Linux Installation Workflow" in the *ZENworks Server Installation*.

- Stop all the ZENworks services on all the ZENworks Servers in the Management Zone.

  - **On Windows:**

    1. Execute the following command at the server prompt:

       `novell-zenworks-configure -c Start`

    2. Enter the number next to the `Stop` action.

  - **On Linux:**

    1. Execute the following command at the server prompt:

```
/opt/novell/zenworks/bin/novell-zenworks-configure -c Start
```

2. Enter the number next to the `Stop` action.

   ◆ Move the data from MSDB1 to MSDB2. For more information about moving the data, see the MS SQL database documentation.

# Configuring the ZENworks Server to Point to the New MS SQL Database

To configure the ZENworks Server to point to the new database (MSDB2), perform the following tasks on the ZENworks Server:

**1** Take back up, and edit the `zdm.xml` and `zenaudit.xml` files (located in `ZENworks_installation_path\conf\datamodel` on Windows and in `/etc/opt/novell/zenworks/datamodel` on Linux) to do the following:

   ◆ Ensure that the value of the `Port` entry key is the port number on which the MS SQL database is running.

   ◆ Set the value of the `Server` entry key to the IP address of the MSDB2 device.

   ◆ Set the value of the `Database` entry key to path of the database directory of the MSDB2 device.

   ◆ If user name or password of the database is changed, then you must change the user name and password in the following locations:

      1. `dmaccounts.properties` and `zenaudit_dmaccounts.properties` files. (located in `ZENworks_installation_path\conf\datamodel` on Windows and in `/etc/opt/novell/zenworks/datamodel` on Linux). It is recommended that do not use the SA user for ZENworks database access.

         `username=password`

         The password will be encrypted automatically when you restart the ZENworks services.

      2. `dmmappings.properties` located in `/etc/opt/novell/zenworks/datamodel` on Linux and `ZENworks_installation_path\conf\datamodel` on Windows.

         If you have changed the ZEN user name, then update `readonly` and `superuser` fields. If you have changed audit user, then change the `audit` field.

**2** (Conditional) If you have enabled Kafka, then Run `zman server-role-kafka-recreate-connectors -f true` command to recreate the Kafka connectors.

   For more information, See Server Commands in the ZENworks Command Line Utilities.

**3** Restart the ZENworks services.

   ◆ **On Windows:**

      1. From the Windows desktop **Start** menu, click **Settings** > **Control Panel**.

      2. Double-click **Administrative Tools** > **Services**.

      3. Start the following services: **Novell ZENworks Server**, **Novell ZENworks services Monitor**, and **Novell ZENworks Agent Service**.

   ◆ **On Linux:** At the console prompt, enter the following commands:

      ◆ `/etc/init.d/novell-zenmntr restart`

- ◆ `/etc/init.d/novell-zenserver restart`
- ◆ `/etc/init.d/novell-zenloader restart`

**4** Start the ZENworks services on all other ZENworks Servers in the Management Zone.

**On Windows:**

1. Execute the following command at the server prompt:

   `novell-zenworks-configure -c Start`

2. Enter the number next to the `Start` action.

**On Linux:**

1. Execute the following command at the server prompt:

   `/opt/novell/zenworks/bin/novell-zenworks-configure -c Start`

2. Enter the number next to the `Start` action.

# 13 Configuring the ZENworks Server to Point to the New Oracle Database Containing Data Moved from Another Oracle Database

If you move the data from one Oracle database to another Oracle database, the Windows or Linux ZENworks Server must be configured to point to the new Oracle database.

The following sections provide detailed information:

- "Preparing to Move the Data" on page 65
- "Configuring the ZENworks Server to Point to the New Oracle Database" on page 66

## Preparing to Move the Data

Before configuring the server to point the new Oracle database, do the following:

- Ensure that the ZENworks Server is configured to an Oracle database. The database can be installed on the ZENworks Server or on a different device. Assume that the device that currently host the Oracle database is called ORDB1.
- Ensure that you have another Windows device with an Oracle database installed with the same database credentials as the ORDB1. Assume that this device is called ORDB2. For more information on how to install an Oracle database, for Windows, see "Windows Installation Workflow" for Linux, see "Linux Installation Workflow" in the *ZENworks Server Installation*.
- Move the data from ORDB1 to ORDB2. For more information about moving the data, see the Oracle database documentation.
- Stop the ZENworks services on the ZENworks Servers in the Management Zone.
  - **On Windows:**
    1. Execute the following command at the server prompt:

       ```
       novell-zenworks-configure -c Start
       ```
    2. Enter the number next to the Stop action.
  - **On Linux:**
    1. Execute the following command at the server prompt:

       ```
       /opt/novell/zenworks/bin/novell-zenworks-configure -c Start
       ```
    2. Enter the number next to the Stop action.

# Configuring the ZENworks Server to Point to the New Oracle Database

To configure the ZENworks Primary Server to point to the new Oracle database (ORDB2), perform the following tasks on the ZENworks Primary Server:

1 Take back up, and edit the `zdm.xml` and edit `zenaudit.xml` files (located in *ZENworks_installation_path*\conf\datamodel on Windows and in `/etc/opt/novell/zenworks/datamodel` on Linux), and to do the following:

 ◆ Ensure that the value of the `Port` entry key is the port number on which the Oracle database is running.

 ◆ Set the value of the `Server` entry key to the IP address of the ORDB2 device.

 ◆ Set the value of the `Database` entry key to net service name of the Oracle database installed on the ORDB2 device.

2 Run `microfocus-zenworks-configure -c GenerateContentDatasourceConfigureAction` on all the ZENworks servers.

3 Start the ZENworks services on all the ZENworks Servers in the Management Zone.

 ◆ **On Windows:**

 1. Execute the following command at the server prompt:

 `novell-zenworks-configure -c Start`

 2. Enter the number next to the `Start` action.

 ◆ **On Linux:**

 1. Execute the following command at the server prompt:

 `/opt/novell/zenworks/bin/novell-zenworks-configure -c Start`

 2. Enter the number next to the `Start` action.

ZENworks Server should now point to the new database.

# 14 Configuring PostgreSQL

Each Primary Server on PostgreSQL can consume up to 500 database connections. If you want to add more than one Primary Server, you should change the property values in the postgresql.conf file.

For the external database, the postgresql.conf file is available at the following location:

- **On Windows:** `<install_directory>\PostgreSQL\<version>\data`
- **On Linux:** `/var/lib/pgsql/<version>/data`

Use the following formula to calculate the property values.

max_connections = Number of primary severs * 500

max_prepared_transactions = Number of primary severs * 500

After changing the property values in `postgresql.conf`, restart the ZENworks and PostgreSQL service.

To start the PostgreSQL service:

- **On Windows:** To start the service, perform the following:
    1. Press Windows + R keys.
    2. Type `services.msc.`
    3. Search for the PostgreSQL service based on the installed version.
    4. Click Start the service.
- **On Linux:** To start the service, run the `systemctl start postgresql.service` command.

For more information, see PostgreSQL Tuning and Maintenance in the ZENworks Best Practices Guide.

# 15 Creating External PostgreSQL Database Schema

To create external or Remote OEM PostgreSQL schema, perform the following:

1 Insert or mount the ZENworks installation ISO on the server where you want to install the Remote OEM or External PostgreSQL database.

2 Open the command prompt and run the following command:

    1. **On Windows:** `setup.exe -c`

    2. **On Linux:** `setup.sh -c`

3 In the Select the database to be configured page, select ZENworks Database, Audit Database or both, and then click Next.

4 In the Select Database type page, select Remote OEM or External PostgreSQL database.

5 Specify the following for both the ZENworks and Audit databases:

    ◆ Server Name

    ◆ Port Number

    ◆ Database Name

    ◆ User Name

    ◆ Password

Creating External PostgreSQL Database Schema

# 16 Migrating the Data from an External Sybase Database to an External PostgreSQL Database

ZENworks 2020 onwards, the Sybase database will no longer be supported, and the Sybase data will have to be migrated to any ZENworks supported database. Using the new Database Migration tool, you can migrate the Sybase database to the PostgreSQL database. For more information, see Database Migration from Sybase to PostgreSQL.

The migration tool can be downloaded from the ZENworks 2020 downloads in the Micro Focus Customer Center.

**NOTE:** Ensure that you download the latest version of the database migration tool.

# 17 Backing Up and Restoring the PostgreSQL Database

For more information on Back-up and restore of the PostgreSQL database, see "Backing Up and Restoring the PostgreSQL Database" on page 43.

# 18 Migrating from md5 to scram authentication in PostgreSQL

From PostgreSQL 13 onwards, the default password encryption is changed from "md5" to "scram-sha-256". This document provides the complete information on how to migrate from md5 to scram authentication.

To avoid any connection issues with password encryption, ensure that you perform one of the following processes:

## MD5

The method md5 uses a custom and less secure challenge-response mechanism. It prevents password sniffing, and storing passwords on the server in plain text, but it provides no protection if an attacker manages to steal the password hash from the server, the MD5 hash algorithm is nowadays no longer considered secure against determined attacks.

To continue using the md5 encryption, change the method in pg_hba.conf file for all entries to md5 and restart the PostgreSQL database server services.

## SCRAM-SHA-256

The method scram-sha-256 performs SCRAM-SHA-256 authentication, as described in RFC 7677. It is a challenge-response scheme that prevents password sniffing on untrusted connections and supports storing passwords on the server in a cryptographically hashed form which is thought to acquire.

- By default, the freshly installed PostgreSQL user scram-sha=256 authentication. Hence, no modifications are required.

- If you are migrating the database to PostgreSQL 13.x from an older version, then perform the following:

---

**NOTE:** Ensure that you upgrade the ZENworks Management Zone after performing the following steps.

---

1. Modify the method in pg_hba.conf file for all entries to md5.

2. Modify the "password_encryption" parameter in postgresql.conf file to "md5".

3. Restart the PostgreSQL database services.

4. Migrate old data (OR) restore old data from backup, along with the users which are encrypted in "md5".

5. Connect the PostgreSQL using from psql/sql-client with super user (postgres/zenpostgres user) and run the following commands:

   a. alter system set password_encryption = 'scram-sha-256';

   b. select pg_reload_conf();

   c. run below command for all database users including superuser/zenworks/audit, etc..

      ALTER USER <<user_name>> WITH PASSWORD '<<existing (or) new password>>';

   d. To verify if the password is encrypted to scram-sha-256 run the below query.

      select usename,passwd from pg_shadow;

   e. Exit

6. Modify the method in pg_hba.conf file for all entries to scram-sha-256.

7. Restart the PostgreSQL database services.

# III Database Management - Best Practices, Tips, Troubleshooting

This section includes some tips and best practices for database management:

# 19 Database Ports

Following are the default ZENworks database ports:

| Port Number | Description |
| --- | --- |
| 1433 | Default port to connect with the MS SQL database. Based on your configuration, the port number might vary. |
| 1521 | Default port to connect with the Oracle database. Based on your configuration, the port number might vary. |
| 54327 | Default port to connect with the Embedded and Remote OEM PostgreSQL database. |

# 20 Database Tips

## Changing the ZENworks Database User Password

Use system administrator or user with DBA privileges to execute the below commands.

Before changing the password ensure that you shutdown all Primary Servers and Reporting Server.

◆ **For SQL Anywhere or Oracle:** After you log into SQL Anywhere or Oracle database, run the below SQL statement to change the password for existing user.

```
ALTER USER <<username>> IDENTIFIED BY <<new password>>
```

◆ **For Microsoft SQL Server:** Users with SQL Server authentication, might run the below SQL statement to change the password for existing user.

```
ALTER LOGIN <<username>> WITH PASSWORD = 'new password' OLD_PASSWORD = 'old password'
```

Users with Windows authentication, might change the Windows user account password and no changes required in SQL Server.

After changing the database user password, perform the following steps to change the password in all the Primary Servers:

1  Go to the following path;

   ◆ **On Windows:** `C:\Program Files (x86)\Novell\ZENworks\conf\datamodel`

   ◆ **Linux:** `/etc/opt/novell/zenworks/datamodel/`

2  Back up the `dmaccounts.properties` and `zenaudit_dmaccounts.properties` files.

3  Open the `dmaccounts.properties` and `zenaudit_dmaccounts.properties` files.

4  Change the existing password that is in encrypted form.

   For example, the existing value is  `ZENWORKS=@OB@6a7278626bba`

   and the changed value is  `ZENWORKS=<<new password>>`

5  Run the `microfocus-zenworks-configure -c GenerateContentDatasourceConfigureAction` command on all the ZENworks servers.

6  On all the Primary Servers in the zone, restart the ZENworks services by running the following command: `microfocus-zenworks-configure -c Start`.

---

**IMPORTANT:** Do not encrypt the new password. The new password is encrypted automatically when you restart the ZENworks services.

---

# Maximum Pool Size

The MaxPoolSize value configured in the `zdm.xml` file governs the maximum number of connections allowed in a database connection pool from a Primary Server.

The `zdm.xml file` is located on the Primary Server:

**Windows:** `%ZENWORKS_HOME%\conf\datamodel\`

**Linux:** `/etc/opt/novell/zenworks/datamodel/`

With the default MaxPoolSize value of 100, the ZENServer and ZENLoader services currently create a single thread pool. As a result, under the peak load, there are 100 possible connections each from ZENloader and ZENserver.

However, the database server should be able to accept and serve 200*<*N*> concurrent connections from the ZENworks context, where *N* is the number of Primary Servers in the ZENworks Zone.

The current default value is sufficient for most configurations and loads. It is recommended not to customize the MaxPoolSize value; to closely monitor the database, functionality and performance of ZENworks.

If you want to configure a higher value for the MaxPoolSize parameter, ensure that the number of concurrent connections that can be accepted or served by the database server is greater than or equal to 2*<*Configured MaxPoolSize*> * <*Number of Primary Servers*>.

**NOTE:** The default MinPoolSize value is 5.

# Verifying Invalid Objects and Indexes in the Oracle Database

If you encounter Invalid Objects or Invalid Index in ZENworks Control Center or ZENworks logs, you can use the following queries to verify if there are any Invalid objects and Indexes in the Oracle database

**NOTE:** ✦Do NOT use SQuirreL

```
SELECT * FROM USER_OBJECTS WHERE STATUS!='VALID';
SELECT * FROM USER_INDEXES WHERE FUNCIDX_STATUS='DISABLED';
SELECT * FROM USER_INDEXES WHERE STATUS NOT IN ('VALID','USABLE', 'N/A');
SELECT * FROM USER_IND_PARTITIONS WHERE STATUS NOT IN ('N/A','USABLE');
SELECT * FROM USER_IND_SUBPARTITIONS WHERE STATUS NOT IN ('USABLE');
SELECT * FROM USER_CONSTRAINTS WHERE STATUS!='ENABLED';
```

The above queries should NOT return any records.

If these queries return any records, then you need to run the below scripts in the respective schema:

```
DECLARE
  V_CNT NUMBER;
BEGIN
  SELECT COUNT(1)
  INTO V_CNT
  FROM USER_OBJECTS
  WHERE STATUS      ='INVALID'
  AND OBJECT_TYPE IN ('PROCEDURE','TRIGGER','FUNCTION','VIEW');
  WHILE V_CNT        > 0
  LOOP
    FOR REC IN
    (SELECT  *
    FROM USER_OBJECTS
    WHERE STATUS      ='INVALID'
    AND OBJECT_TYPE IN ('PROCEDURE','TRIGGER','FUNCTION','VIEW')
    )
    LOOP
      BEGIN
        EXECUTE IMMEDIATE 'ALTER '||REC.OBJECT_TYPE||'
"'||REC.OBJECT_NAME||'" COMPILE';
      EXCEPTION
      WHEN OTHERS THEN
        NULL;
      END;
    END LOOP;
    SELECT COUNT(1)
    INTO V_CNT
    FROM USER_OBJECTS
    WHERE STATUS      ='INVALID'
    AND OBJECT_TYPE IN ('PROCEDURE','TRIGGER','FUNCTION','VIEW');
  END LOOP;
END;
/


DECLARE
  V_CNT NUMBER;
BEGIN
  SELECT COUNT(1)
  INTO V_CNT
  FROM USER_INDEXES
  WHERE FUNCIDX_STATUS='DISABLED'
  AND TEMPORARY        ='N'
  AND INDEX_TYPE!      ='LOB'
  AND PARTITIONED      ='NO'
  AND TABLE_NAME       IN
    (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N'
    )
  AND TABLE_NAME NOT IN ('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX');
  WHILE V_CNT          > 0
  LOOP
    FOR REC IN
    (SELECT  *
    FROM USER_INDEXES
    WHERE FUNCIDX_STATUS='DISABLED'
```

```
          AND TEMPORARY        ='N'
          AND INDEX_TYPE!      ='LOB'
          AND PARTITIONED      ='NO'
          AND TABLE_NAME       IN
            (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N'
            )
          AND TABLE_NAME NOT IN ('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX')
          )
          LOOP
            EXECUTE IMMEDIATE 'ALTER INDEX '||REC.INDEX_NAME||' ENABLE';
          END LOOP;
          SELECT COUNT(1)
          INTO V_CNT
          FROM USER_INDEXES
          WHERE FUNCIDX_STATUS='DISABLED'
          AND TEMPORARY        ='N'
          AND INDEX_TYPE!      ='LOB'
          AND PARTITIONED      ='NO'
          AND TABLE_NAME       IN
            (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N'
            )
          AND TABLE_NAME NOT IN ('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX');
        END LOOP;
      END;
      /

      BEGIN
        FOR REC1 IN
        (SELECT   *
        FROM USER_INDEXES
        WHERE PARTITIONED='YES'
        AND TABLE_NAME  IN
          (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N'
          )
        AND TABLE_NAME NOT IN ('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX')
        )
        LOOP
          IF REC1.STATUS='N/A' THEN
            FOR REC2 IN
            (SELECT   *
            FROM USER_IND_PARTITIONS
            WHERE INDEX_NAME=REC1.INDEX_NAME
            AND STATUS!      ='USABLE'
            )
            LOOP
              IF REC1.STATUS='N/A' THEN
                FOR REC3 IN
                (SELECT   *
                FROM USER_IND_SUBPARTITIONS
                WHERE INDEX_NAME  =REC2.INDEX_NAME
                AND PARTITION_NAME=REC2.PARTITION_NAME
                AND STATUS!        ='USABLE'
                )
                LOOP
                  EXECUTE IMMEDIATE 'ALTER INDEX '||REC3.INDEX_NAME||' REBUILD
```

```
SUBPARTITION '||REC3.SUBPARTITION_NAME;
          END LOOP;
        ELSE
          EXECUTE IMMEDIATE 'ALTER INDEX '||REC2.INDEX_NAME||' REBUILD
PARTITION '||REC2.PARTITION_NAME;
        END IF;
      END LOOP;
    END IF;
  END LOOP;
  FOR REC IN
  (SELECT * FROM USER_INDEXES WHERE FUNCIDX_STATUS!='ENABLED'
  )
  LOOP
    EXECUTE IMMEDIATE 'ALTER INDEX '||REC.INDEX_NAME||' ENABLE';
  END LOOP;
END;
/
```

Verify the invalid objects after executing above scripts. The following queries should NOT return any records:

```
SELECT * FROM USER_OBJECTS WHERE STATUS='INVALID';
SELECT * FROM USER_INDEXES WHERE FUNCIDX_STATUS='DISABLED';
SELECT * FROM USER_INDEXES WHERE STATUS='INVALID';
SELECT * FROM USER_IND_PARTITIONS WHERE STATUS NOT IN ('N/A','USABLE');
SELECT * FROM USER_IND_SUBPARTITIONS WHERE STATUS NOT IN ('USABLE');
SELECT * FROM USER_CONSTRAINTS WHERE STATUS!='ENABLED';
```

# 21 Troubleshooting Database Migration

## After database migration ZEUS is unable to contact the new database server

If you have added the database.conf file to override the default JDBC URL and drivers values. After database migration, the content of the database.conf file might not be updated with the latest database information. Hence, ZEUS might not be able to contact the new database server.

**Workaround:**

By default, the details in the `ZDM.xml` file is used to communicate between database server and ZEUS. If you want to override the default JDBC driver class and JDBC URL values, then updated the database.conf file with the new database information.

To use the default values for driver class and JDBC URL, delete the database.conf, else value in this file will be used to communicate with ZEUS.

The database.conf file is available in the following location:

**On Windows:** `%ZEN_HOME%\ZeUS\conf\`

**Linux:** `/etc/opt/novell/zenworks/datamodel/`

# During Appliance deployment, configuring External PostgreSQL using the New Schema option fails to create Audit database

While deploying the ZENworks 2017 Appliance, if you configure external PostgreSQL as the database (ZENworks and Audit) using the New Schema option, then the Audit database might not be created.

**Workaround:** Create a PostgreSQL database schema and then deploy the appliance. During the appliance deployment, configure the external PostgreSQL database using the Existing Schema option.

For more information on creating PostgreSQL schema, see the "Creating External PostgreSQL Database Schema" on page 69 section.

# Troubleshooting a Java Heap Space Exception

If you encounter a Java heap space exception during the database migration because of low memory:

1 Edit the `ZENworks_installation_path`\bin\novell-zenworks-configure.bat file on Windows or `/opt/novell/zenworks/bin/novell-zenworks-configure` on Linux to change the heap space value in the following line, depending upon the RAM of the device where the migration utility is running:

```
"%JAVA_HOME%\bin\java" -Djava.library.path=%ZENLIB% -cp "%MYCP%"
%DEBUG_OPTS% %JAVA_OPTS% -Xmx1024m
com.novell.zenworks.configure.ConfigureLoader %CONFIG_OPTS%
```

The heap space value is represented in megabytes (MB) within `-Xmx1024m`. By default, it is 1024.

For example, if the RAM of the device is 2048 MB, then the line in the `novell-zenworks-configure.bat` file can be updated as follows:

```
"%JAVA_HOME%\bin\java" -Djava.library.path=%ZENLIB% -cp "%MYCP%"
%DEBUG_OPTS% %JAVA_OPTS% -Xmx2048m
com.novell.zenworks.configure.ConfigureLoader %CONFIG_OPTS%
```

**IMPORTANT:** The heap space value must be either equivalent to or less than the RAM of the device. It is recomended to have a minimum 2048 MB to continue with database migration.

2 At the console prompt, run the `ZENworks_installation_path`\bin\novell-zenworks-configure.bat file on Windows or `/opt/novell/zenworks/bin/novell-zenworks-configure` on Linux.

3 Follow the prompts.

When you are prompted to enter the location of the file required for resuming the migration, enter the the complete path of `DBMigration.xml`. The file is located in the `ZENworks_installtion_path`\bin directory on Windows, and in the `/opt/novell/zenworks/bin` directory on Linux.

The XML file contains a list of tables and a flag indicating whether the table was successfully migrated or not. When the database migration resumes, only the tables with flag value set to False are migrated.

# Troubleshooting an Oracle Database Crash

If the Oracle database crashes during the database migration:

1 At the console prompt, run the `ZENworks_installation_path`\bin\novell-zenworks-configure.bat file on Windows or `/opt/novell/zenworks/bin/novell-zenworks-configure` on Linux.

2 Follow the prompts.

When you are prompted to enter the location of the file required for resuming the migration, enter the complete path of `DBMigration.xml`. The file is located in the `ZENworks_installtion_path`\bin directory on Windows, and in the `/opt/novell/zenworks/bin` directory on Linux.

The XML file contains a list of tables and a flag indicating whether the table was successfully migrated or not. When the database migration resumes, only the tables with flag value set to False are migrated.

IMPORTANT: Do not edit the contents of `DBMigration.xml`.

# Troubleshooting an Oracle Tablespace Issue

If the Oracle USERS tablespace does not have sufficient space to create and store the ZENworks database schema, the database migration fails with the following error messages while trying to create the tables:

```
SEVERE: Terminating the database migration.
SEVERE: An error has occurred while migrating the database.
```

To resolve this issue, perform the following:

◆ The Oracle database administrator must increase the size of the USERS tablespace.

◆ Ensure that the tablespace has a minimum of 100 MB to create ZENworks database schema without any data in it.

◆ Ensure to have some extra space depending upon the size of the database to be migrated.

# Troubleshooting the Database Migration Failure Issue

If the NLS_CHARACTERSET parameter is not set to AL32UTF8 and the NLS_NCHAR_CHARACTERSET parameter is not set to AL16UTF16, the database migration fails with the following error messages:

```
Failed to run the sql script: localization-updater.sql,
message:Failed to execute the SQL command: insert into
zLocalizedMessage(messageid,lang,messagestr)
values('POLICYHANDLERS.EPE.INVALID_VALUE_FORMAT','fr','La stratégie {0}
n''a
pas pu être appliquée du fait que la valeur de la variable "{1}" n''est
pas
dans un format valide.'),
message:ORA-00600: internal error code, arguments: [ktfbbsearch-7], [8],
[],
[], [], [], [], []
```

To resolve the issue of database migration failure:

- Set the NLS_CHARACTERSET parameter to AL32UTF8 and the NLS_NCHAR_CHARACTERSET parameter to AL16UTF16..

- Ensure that the character set parameters are configured with the recommended values, run the following query at the database prompt:

  ```
  select parameter, value from nls_database_parameters where parameter
  like '%CHARACTERSET%';
  ```

# Troubleshooting the Database Migration by Using An Existing User Schema

If you choose to migrate the database by using an existing user schema, the database migration utility creates the ZENworks database but it might fail to migrate the data.

To resolve this issue:

1 Ensure that the ZENworks tables, views, and user sequence are deleted from the newly created ZENworks database by the database administrator. Later on, clear the `user_recyclebin` database table.

2 Start the database migration again by using the same user schema.

# Troubleshooting the ORA-01652: unable to extend temp segment by 128 in tablespace TEMP

The **ORA-01652: unable to extend temp segment by 128 in tablespace TEMP** error appears, when the temp tablespace have default size and the current transaction involves more number of records with `clob` data type.

To troubleshoot this scenario, perform either of the following or both:

1. Add extra `dbf` file for temp tablespace.

2. Reduce the number of records for the transaction (For Database Migration if you are using default batch size 10,000 that can be reduced to 100 or 500 or 1000 based on the nature of each record having clob data.).

**IMPORTANT:** For better performance depending on the database size and resource availability, you can increase the `batchsize` in the `db-migration-mssql-to-oracle.properties` file. It is located in `%ZENWORKS_HOME%\novell\zenworks\conf\` on Windows and in `/etc/opt/novell/zenworks/conf/` on Linux.

# Troubleshooting the ORA-01400: cannot insert NULL

The cannot insert NULL error appears, when you are migrating MS SQL to Oracle database.

To troubleshoot this scenario, perform the following:

1. Go to the `database-table-column-mapping.properties` file located at the following path:
   - **For Windows:** `%ZENWORKS_HOME%\Novell\ZENworks\conf`
   - **For Linux:** `/etc/opt/novell/zenworks/conf`
2. Open the `database-table-column-mapping.properties` file.
3. Append the Table name, Column, and the Replacement value according to the the `database-table-column-mapping.properties` file format.

**IMPORTANT:** If you donot provide a replacement value, then it will take an empty character as a replacement value.

# Troubleshooting the ORA-12516, TNS: listener could not find available handler with matching protocol stack

The TNS: listener could not find available handler with matching protocol stack error appears, when you are migrating MS SQL to Oracle database.

To troubleshoot this scenario, increase the oracle processes by using the below SQL statement and bounce the database to reflect the changes.

```
SQL> alter system set processes=500 scope=spfile
```

# Troubleshooting the database migration failure, duplication of serial numbers in the zDevice table

In the ZENworks database on the Microsoft SQL server, if the unique constraint is not created on the serial number column of the zDevice table, duplicate serial numbers might be assigned to the devices that are connected to the Management Zone. Because of the duplicate serial numbers, the database migration from the Microsoft SQL database to the Oracle database might fail.

To identify and remove the duplicate serial number in the zDevice table, perform the following steps in the Microsoft SQL database:

1. Use the following query to identify the duplicate serial numbers in the Microsoft SQL database:

```
SELECT * FROM zDevice WHERE serialnumber IN (SELECT serialnumber FROM
zDevice GROUP BY serialnumber HAVING COUNT(1) > 1)
```

2. If the duplicate serial numbers are found on the zDevice table, do one of the following:

   - Remove the device from the Management Zone and register the device again.
   - Modify the duplicate serial numbers so that each serial number is unique.

To resume the database migration, perform the following in the Oracle database:

1. Use the following query to identify the duplicate serial numbers in the Oracle database:

```
SELECT * FROM zDevice WHERE serialnumber IN (SELECT serialnumber FROM
zDevice GROUP BY serialnumber HAVING COUNT(1) > 1)
```

2. Run the following SQL query to remove the duplicate entry from the target Oracle database:

```
begin

for rec in (select zuid from zDevice where serialnumber is null)

loop

update zDevice

set serialnumber=NVL(serialnumber,'_')||'_'||dbms_random.string('U',
10)

where zuid=rec.zuid;

commit;

end loop;

for rec in (select serialnumber from zDevice group by serialnumber
having count(1) > 1)

loop

update zDevice

set serialnumber=serialnumber||'_'||dbms_random.string('U', 10)

where serialnumber=rec.serialnumber;

commit;

end loop;
```

3. If there are any duplicate serial numbers, run the following query to verify.

   If there are any duplicate numbers, run `select serialnumber from zDevice group by serialnumber having count(1) > 1;` and remove the duplicate serial numbers.

   If there are no duplicates serial numbers, resume with the migration process.

---

**NOTE:** It is recommends that you clean up the duplicate serial numbers data before starting the database migration. You can continue to use the existing Management Zone without any loss functionality.

---

# The `novell-zenworks-configure -c` and `CheckContentSystem -L` command fails when using the Database Migration tool

While migrating the database from Sybase to PostgreSQL, using the Database Migration tool, running the `novell-zenworks-configure -c` and `CheckContentSystem -L` command on a server displayed an exception message.

This issue occurs because when you extract the Database Migration tool, the `db-migration-utility.jar` file is copied to the *lib\java* directory, duplicating the .jar files. As during the upgrade, we have installed `db-migration-utility-20.1.0.jar` into the *lib\java* directory.

**Workaround:** You need to manually delete the `db-migration-utility.jar` from the *lib\java* directory.

# 22 Customizing JDBC URL for ZENworks

ZENworks provides a way to configure customized JDBC URLs. After providing the URLs, the newer JDBC URL will be used to establish a connection with the database. ZENworks, Audit, and Antimalware databases can be configured to use the customized JDBC URLs.

Perform the following steps to customize the JDBC URLs:

For the ZENworks database, add the following entry in the zdm.xml file:

<entry key="">JDBC URL HERE</entry>

  * **On Windows:** %ZENSERVER_HOME%/conf/datamodel/zdm.xml
  * **On Linux:** /etc/opt/microfocus/zenworks/datamodel/zdm.xml

For the Audit database, add the following entry in the zenaudit.xml file:

<entry key="">JDBC URL HERE</entry>

  * **On Windows:** %ZENSERVER_HOME%/conf/datamodel/zenaudit.xml
  * **On Linux:** /etc/opt/microfocus/zenworks/datamodel/zenaudit.xml

---

**IMPORTANT:** If you are using MS SQL, then ensure that you add encrypt=false.

Example: `<entry key="">JDBC URL HERE;encrypt=false</entry>`

---

**NOTE:** Replace JDBC URL HERE with the actual JDBC URL. The URLs can be obtained from your database administrator.

---

**Antimalware is not enabled, and you want to configure a custom JDBC URL:**

In this scenario, you need to apply the FTF (20.2.0.996 or later) and update the 'database.jdbc.url' key in the amedatasource.properties file available in the following location:

  * **On Windows:** %ZENSERVER_HOME%\services\antimalware\conf
  * **On Linux:** /etc/opt/microfocus/zenworks/antimalware

 For example:

database.jdbc.url=jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=[SCAN_VIP])(PORT=[SCAN_PORT])))(CONNECT_DATA=(SERVICE_NAME=[SERVICE_NAME]))), even before enabling and starting Antimalware enablement(The other key-value pairs in the file should be empty at this point). If this step is performed, the  will be given preference during and after Antimalware enablement.

**Antimalware is already enabled and you want to configure a custom JDBC URL:**

In this scenario, you just need to update the in the amedatasource.properties.

However, if you perform a forced migration to the Antimalware database at a later point, then you need to apply the patch and restart the Antimalware service.

After adding the URLs, restart ZENAdmin, ZENClient and ZENLoader services.

---

**NOTE:** ◆If you have multiple primary servers in the zone, and you are configuring a custom JDBC URL, then you need to manually modify the config files on all the primaries.

 ◆ If you are adding a new Primary Server to the zone (which is already configured with custom JDBC URL), then ZENworks takes care of updating the config file with the custom JDBC URL.

---

For example, this ability can be used to configure ZENworks to use Oracle DataGuard.

Following is the DataGuard JDBC driver URL format:

jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=[SCAN_VIP])( PORT=[SCAN_PORT])))(CONNECT_DATA=(SERVICE_NAME=[SERVICE_NAME])))

---

**IMPORTANT:**

 ◆ If DataGuard is configured in your zone, and facing issues with ZENworks Upgrade. Refer to the Troubleshooting System Updates section in the ZENworks System Updates Reference

 ◆ If you are using MS SQL, then ensure that you add encrypt=false.

   Example: `<entry key="">JDBC URL HERE;encrypt=false</entry>`

---

# 23 Using DBeaver to Export SQL Query Results

The following section explains how to use DBeaver with ZENworks zone database to query and export the data into a CSV file.

1. Install DBeaver on a workstation (not on the ZENworks Primary Server).
2. Open the DBeaver, click Connections, and then select Create Connection.
3. Select PostgreSQL.

   Edit the connection properties as shown in the below image.

   

   On the Primary Server, run `zman dgc` to get the zenadmin and password.

   Go to zdm.xml to collect the database name.

   - On Linux: `/etc/opt/microfocus/zenworks/datamodel`
   - On Windows: `%ZENSERVER_HOME%\conf\datamodel`

4. After connecting, right click on the database on the left side and select SQL Editor > Open SQL Script as show in the below image, and start executing SQL queries.

5. Go to > Window > Preferences > DBeaver > Editors > Data Editor > Lob Editors > Binary data formatter and then select "Hex".

6. Right click on all the results of the query.

**NOTE:** For some tables where comma delimited is not useful (example inventory tables) just copy the results and paste into Excel.

7. Select Export Data, and then select CSV.

Ensure that the output includes hex formatting for the binary fields.

8. Send the resulting CSV file.