PowerODBA Ansible Collection

Overview: The Power Oracle Database Automation (PowerODBA) Collection modules are based on the Oravirt collection https://github.com/oravirt/ansible-oracle which helps automation of Oracle Database Administration activities on AIX. These have been modified and tested exclusively to work on AIX.

Capabilities:

- Database creation [Single Instance/RAC & Multitenant]
- Apply RU Patches [Standalone DB/Database on ASM & RAC]
- Manage Users [Create/drop users, grant/revoke privileges]
- Manage Pluggable databases.
- Manage Tablespaces.
- Manage Redo logs.
- Manage Database directories.
- Manage ASM
- Manage ACFS
- Manage DBMS jobs.

  PODBA v2.0 and later: The following automation capabilities have been introduced
- Upgrade Single Instance Grid & Databases from 12c to 19c.
- Upgrade RAC Grid & Databases from 12c to 19c.
- Implement Physical Standby
- Download Patches from My Oracle Support.

Version Change History:

- **PODBA v2.0.7:** Introduced Dataguard feature for single instance database using RMAN Backup and RMAN DUPLICATE method.

- **PODBA v2.0.6:** Introduced RAC Grid Infrastructure and Database Upgrade from 12c to 19c. Following roles are added.
  - a) podba_rac_upgrade_precheck
  - b) podba_rac_crs_upgrade
  - c) podba_rac_db_install
  - d) podba_rac_db_upgrade

- **PODBA v2.0.5:**
  - o Latest RU patches can be applied during the upgrade to 19c. Previously it was restricted till RU 19.17.
  - o Introduced patch staging options – NFS, local (target node) and remote (ansible controller) for Single Instance Upgrade.

- **PODBA version 2.0.4:**
  - Enhanced the role "oraswdb_manage_patches" patching module which uses "opatch" utility with restart of database and listener services while patching.
  - Added support for patch staging options – NFS, local (target node) & remote (ansible controller).

- **PODBA version 2.0.3:** Refactored variables to a common path for easy usage.

- **PODBA version 2.0.2:** Enhanced the roles oracle_install & db_upgrade to upgrade multiple Oracle databases to 19c.

- **PODBA version 2.0.1:** Added new role orasw_download_patches to Download Patches from My Oracle Support.

- **PODBA version 2.0.0:** Added three roles to upgrade Single Instance Grid & Database from 12c to 19c.
  a) podba_si_has_upgrade
  b) podba_oracle_install
  c) podba_db_upgrade

- **PODBA version 1.0.1**: Provided a single file to store all the user passwords making it feasible to use "ansible-vault" for security.

- **PODBA version 1.0**: Initial release.

Assumptions:

1. The user is familiar with Ansible and has basic knowledge on YAML, for the purpose of running this playbook.
2. The user is familiar with Oracle Database Administration.
3. The user is familiar with the AIX Operating system.
4. The version of AIX is 7.2 TL4 SP1 or later. (It should work on other versions of AIX supported by the oracle database AIX OS requirements but has not been tested).
5. The DB version which was tested is 19c and it may or may not work on other DB versions.

Getting started:

To get started with Ansible refer:

https://docs.ansible.com/ansible/latest/user_guide/intro_getting_started.html To get

started with Oracle Database on AIX refer:

https://docs.oracle.com/en/database/oracle/oracle-database/19/axdbi/index.html https://www.ibm.com/support/pages/oracle-db-rac-19c-ibm-aix-tips-and-considerations

To get started with AIX refer:

https://www.ibm.com/support/knowledgecenter/ssw_aix_72/navigation/welcome.html

Prepare the Ansible Controller:

The following will describe the setup of Ansible environment for command line. To use Ansible Automation Platform (GUI), please refer https://github.com/IBM/ansible-power-aix-oracledba/blob/main/docs/PowerODBA_using_AAP2.pdf

1. Requires Ansible >= 2.10 on Linux on Power (or) x86 machine.
2. Requires Python 3.6 (or) later [dnf install python3].
3. **Cx_oracle**: This is a python module which makes the connection to the database using sys privileges.

   Prerequisites: gcc, python3x-devel [dnf install gcc python3x-devel] (x is the version of python. Ex: If python version is 3.9.16, use 'dnf install python39-devel') Online installation:

   As root: python -m pip install cx_Oracle --upgrade

   As a non-root user: python -m pip install cx_Oracle--upgrade --user **Offline installation:**

   i. Download the source distribution from https://pypi.org/project/cxOracle/#files and place it a location, ex: /tmp. ii. python3 -m pip install --no-build-isolation /tmp/cx_Oracle-8.3.0.tar.gz Note: If there are multiple python versions, the python version which was used to install cx_oracle must be used for running the playbooks.

   ```
   $ pip3.9 show cx-Oracle
   Name: cx-Oracle
   Version: 8.3.0
   Summary: Python interface to Oracle
   Home-page: https://oracle.github.io/python-cx_Oracle
   Author: "Anthony Tuininga",
   Author-email: "anthony.tuininga@gmail.com",
   License: BSD License
   Location: /home/ansible/.local/lib/python3.9/site-packages Requires:
   Required-by:
   ```

   As, we can see the Location of cx-Oracle is in python3.9 site-packages. So, python3.9 must be used as the python interpreter to run the playbooks.

   Reference: https://cx-oracle.readthedocs.io/en/latest/user_guide/installation.html

4. Download and extract Oracle Instant client software from Oracle site: https://www.oracle.com/database/technologies/instant-client/downloads.html **Note:** For Linux on Power, click on "other platforms" in the above URL.

5. The packages “libnsl” & “libaio” are required by Oracle client to connect to the database.   a   dnf install libnsl -y b. dnf install libaio -y
6. **Install the collection:** Run the following command.
    a. $ ansible-galaxy collection install ibm.power_aix_oracle_dba

Documentation: The detailed steps for each capability can be found here:

1. PowerODBA_Ansible_Collection.pdf : This file.
2. PowerODBA_using_AAP2.pdf : Playbooks execution using GUI.
3. ASM Create Diskgroups
4. ASM Add Disks
5. ASM Drop Disk
6. ASM Drop Diskgroup
7. Manage SQL Scripts
8. Manage SQL Queries
9. Create Databases
10. View DB Facts
11. Manage Database Directories
12. Manage DBMS Jobs
13. Delete Database
14. View GI Facts
15. Gather Global Statistics
16. Manage AWR
17. Manage Initialization Parameters
18. Manage ACFS on RAC
19. Manage ACFS
20. Manage Database Grants
21. Manage Job Class
22. Manage Job Schedule
23. Manage Job Window
24. Manage PDBs
25. Manage REDO
26. Manage Database Roles
27. Manage Tablespaces
28. Manage Users
29. Patch Standalone GI Home
30. Patch RAC GI Home
31. Patch Standalone RDBMS Home
32. Patch RAC RDBMS Home

33. Patch Download
34. Run Datapatch
35. Manage Resource Consume Groups
36. Upgrade Single Instance Grid and Databases: Oracle Single Instance Grid & Databases upgrade.
37. Upgrade RAC Grid and Databases: Oracle RAC Grid Infrastructure and Databases upgrade.
38. Single Instance Dataguard Setup: Physical Standby Database configuration for Single Instance database.