Support for ASM databases without ASMLib

SnapManager Oracle

NetApp
November 04, 2025

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Support for ASM databases without ASMLib

SnapManager supports ASM without ASMLib, by default. The basic requirement is that the devices that are used for ASM disk groups must be partitioned.

When ASMLib is not installed, the device permissions related to ASM disk groups are changed to root:disk when you perform the following operations:

- Restart the host
- Restore a database from the primary storage by using volume-based SnapRestore (VBSR)
- Restore a database from the secondary storage

You can set the proper device permissions by assigning true to the oracleasm.support.without.asmlib configuration variable in smo.conf. The devices related to the ASM disk groups are added or removed from the initasmdisks file whenever new devices are added or removed from the host. The initasmdisks file is located at /etc/initasmdisks.

For example, if you set oracleasm.support.without.asmlib=true and then perform a backup mount, new devices are added to initasmdisks. When the host is restarted, the device permissions and ownership are maintained by the startup scripts.

The default value for oracleasm.support.without.asmlib is false.

Related information

Supported partition devices

Supported scripts

The asmmain.sh and asmquerydisk.sh scripts allow you to change the grid user, group, and the user, all of which are used to query the ASM disks. The scripts must always be executed from the root.

The asmmain.sh is the main script file called from any operation that adds or deletes devices. The asmmain.sh script calls another script internally, which needs to be executed from the root that has oracle grid credentials. This script queries the ASM disk group's devices, then adds those entries in the initasmdisk file with the permission and the ownership of the devices. You can change the permissions and ownership of this file based on your environment and the regex pattern that is used for matching only the /dev/mapper/*p1.

The asmquerydisk.sh script is used to query the disk list, which is used to create the ASM disk group. You must assign values to ORACLE_BASE, ORACLE_HOME, and ORACLE_SID, depending on your configuration.

The scripts are located at /opt/NetApp/smo/plugins/examples/noasmlib. However, these scripts must be moved to /opt/NetApp/smo/plugins/noasmlib before starting the SnapManager for Oracle server on the host.

Limitations of using scripts to support an ASM database without ASMLib

You must be aware of certain limitations to using scripts to support an ASM database without ASMLib.

- The scripts provide an alternative solution for any kernel version, but only if ASMLib is not installed.
- The permissions for the scripts must be set in such a way that the scripts can be accessed by root, grid, oracle, or equivalent users.
- The scripts do not support restoration from a secondary location.

Deploying and running the scripts

You can deploy and run the asmmain.sh and asmquerydisk.sh scripts to support ASM databases without ASMLib.

These scripts do not follow the pre-scripts or post-scripts syntax and workflow is called when intitasmdisks is enabled. You can change anything related to your configuration settings in the scripts. It is recommended to verify if everything in the scripts are working as expected by performing a quick dry run.

> These scripts do not harm your system on failures nor will they impact your system. These scripts are executed to update the ASM-related disks to have proper permissions and ownership, so that the disks will always be under ASM instance control.

1. Create the ASM disk groups with the partitioned disks.
2. Create the Oracle database on the DISK GROUPS.
3. Stop the SnapManager for Oracle server.

   > In an RAC environment, you need perform this step on all the RAC nodes.

4. Modify the smo.conf to include the following parameters:

   a. oracleasm.support.without.asmlib = true

   b. oracleasm.support.without.asmlib.ownership = true

   c. oracleasm.support.without.asmlib.username = user name of your ASM instance environment

   d. oracleasm.support.without.asmlib.groupname = group name of your ASM instance environment

   These modifications set the permissions for the absolute path only, which means instead of partition device, permissions will be set only for dm-* device.

5. Modify the plugins scripts available in /opt/NetApp/smo/plugins/examples/noasmlib to include your configuration settings in the scripts.
6. Copy the scripts to /opt/NetApp/smo/plugins/noasmlib before starting the SnapManager for Oracle server on the host.
7. Navigate to the /opt/NetApp/smo directory and perform a dry run by running the following script: sh plugins/noasmlib/asmmain.sh

   The etc/initasmdisks file is created, which is the main file that is used.

You can confirm that the etc/initasmdisks file contains all the devices related to configured the ASM database, such as:

```
chown -R grid:oinstall /dev/mapper/360a98000316b61396c3f394645776863p1
         chmod 777 /dev/mapper/360a98000316b61396c3f394645776863p1
         chown -R grid:oinstall
/dev/mapper/360a980003754322f7a2b433469714239p1
         chmod 777 /dev/mapper/360a980003754322f7a2b433469714239p1
         chown -R grid:oinstall
/dev/mapper/360a980003754322f7a2b433469714241p1
         chmod 777 /dev/mapper/360a980003754322f7a2b433469714241p1
         chown -R grid:oinstall
/dev/mapper/360a980003754322f7a2b433469714243p1
         chmod 777 /dev/mapper/360a980003754322f7a2b433469714243p1
```

8. Start the SnapManager for Oracle server.
9. Configure SnapDrive for UNIX by adding the following to snapdrive.conf file.disconnect-luns-before-vbsr=on
10. Restart the SnapDrive for UNIX server.

> In an RAC environment, you need perform the Step 3 through Step 10 for all the RAC nodes.

The /etc/initasmdisks file created, must be executed from either one of the startup scripts or from a script that is newly defined in the rc3.d. The /etc/initasmdisks file should always be executed before the oracleha service starts.

Example

```
# ls -ltr *ohasd*
          lrwxrwxrwx 1 root root 17 Aug  7 02:34 S96ohasd ->
/etc/init.d/ohasd
          lrwxrwxrwx 1 root root 17 Aug  7 02:34 K15ohasd ->
/etc/init.d/ohasd
```

In the following example, sh -x/etc/initasmdisks will not be available by default, and you need to append it as the first line in the function `start_stack()` in an ohasd script:

```
start_stack()
{
sh -x /etc/initasmdisks
# see init.ohasd.sbs for a full rationale case $PLATFORM in Linux
}
```

Support for Oracle RAC ASM databases without ASMLib

If you are using Oracle RAC databases, the RAC nodes must be updated with the initasmdisks file whenever an operation is performed in the master RAC node.

If no authentication is required to log in into the RAC nodes from the master node, the asmmain.sh performs a secure copy (SCP) of initasmdisks to all the RAC nodes. The master node's initasmdisks file will be called whenever restore happens, and the asmmain.sh script can be updated to invoke the same script in all the RAC nodes.

The /etc/initasmdisks file created that must be executed from either one of the startup scripts or from a newly defined script in the rc3.d. The /etc/initasmdisks file should always be executed before the oracleha service starts.

Support for Oracle 10g ASM databases without ASMLib

If you are using Oracle 10g, the asmcmd command is not available for listing disks. You can use the sql query to obtain the disks list.

The disk_list.sql script is included in the existing scripts provided in the examples directory to support sql queries. When you execute theasmquerydisk.sh script, the disk_list.sql script must be executed manually. The example script lines are added with comments in the asmquerydisk.sh file. This file can either be placed in the /home/grid location or another location of your choice.

Sample scripts to support ASM databases without ASMLib

The sample scripts are available in the plugins/examples/noasmlib directory of the SnapManager for Oracle installation directory.

asmmain.sh

```
#!/bin/bash
griduser=grid
gridgroup=oinstall

# Run the script which takes the disklist from the asmcmd
# use appropriate user , here grid user is being used to run
# asmcmd command.
su -c "plugins/noasmlib/asmdiskquery.sh" -s /bin/sh grid
cat /home/grid/disklist

# Construct the final file as .bak file with propre inputs
awk -v guser=$griduser -v ggroup=$gridgroup '/^\/dev\/mapper/ { print
"chown -R "guser":"ggroup" "$1; print "chmod 777 " $1; }'
/home/grid/disklist > /etc/initasmdisks.bak

# move the bak file to the actual file.
mv /etc/initasmdisks.bak /etc/initasmdisks
```

```
# Set full full permission for this file to be called while rebooting and
restore
chmod 777 /etc/initasmdisks

# If the /etc/initasmdisks needs to be updated in all the RAC nodes
# or /etc/initasmdisks script has to be executed in the RAC nodes, then
the following
# section needs to be uncommented and used.
#
# Note: To do scp or running scripts in remote RAC node via ssh, it needs
password less login
# for root user with ssh keys shared between the two nodes.
#
# The following 2 lines are used for updating the file in the RAC nodes:
# scp /etc/initasmdisks root@racnode1:/etc/initasmdisks
# scp /etc/initasmdisks root@racnode2:/etc/initasmdisks
#
# In order to execute the /etc/initasmdisks in other RAC nodes
# The following must be added to the master RAC node /etc/initasmdisks
file
# from the asmmain.sh script itself. The above scp transfer will make sure
# the permissions and mode for the disk list contents are transferred to
the other RAC nodes
# so now appending any command in the /etc/initasmsdisks will be retained
only in the master RAC node.
# The following lines will add entries to the /etc/initasmsdisks file in
master RAC node only. When this script is executed
#  master RAC node, /etc/initasmdisks in all the RAC nodes will be
executed.
# echo 'ssh racnode1 /etc/initasmdisks' >> /etc/initasmdisks
# echo 'ssh racnode2 /etc/initasmdisks' >> /etc/initasmdisks
```

asmquerydisk.sh

```
#!/bin/bash
export  ORACLE_BASE=/u01/app/oracle
export ORACLE_HOME=/u01/app/grid/product/11.2.0.3/grid
export ORACLE_SID=+ASM
export  PATH=$ORACLE_HOME/bin:$PATH

# Get the Disk List and save this in a file called dglist.
asmcmd lsdsk  > /home/grid/disklist

# In oracle 10g the above used command 'asmcmd' is not available so use
SQL
# query can be used to take the disk list. Need to uncomment the following
# line and comment the above incase oracle 10g is being in use.
# The disk_list.sql script is availbe in this noasmlib examples folder
itself
# which can be modified as per customer needs.
# sqlplus "/as sysdba" @/home/grid/disk_list.sql > /home/grid/disklist
```

disk_list.sql

```
# su - oracle
-bash-4.1$ cat disk_list.sql
select path from v$asm_disk;
exit
-bash-4.1$
```

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