

# ORACLE ASMLIB INSTALLATION : INSTALLATION AND CONFIGURATION GUIDE

*Inderpal S. Johal*

## INTRODUCTION

The Automatic Storage Management library driver (ASMLIB) simplifies the configuration and management of the disk devices by eliminating the need to rebind raw devices used with ASM each time the system is restarted. This document describes the steps required to install the Linux specific ASM library and its associated driver. A disk that is configured for use with Automatic Storage Management is known as a candidate disk.

An ASMLib is a storage –management interface between Oracle kernel and disk storage. You can load multiple ASMLibs. These drive will provide more efficient I/O interface as well as increased performance and reliability.

## ASMLIB INSTALLATION STEPS

1. Download and install the ASMLib package on each node.
2. Configure ASMLib on each node.
3. Make disks available to ASMLib on one node.

## DOWNLOAD THE ASMLIB PACKAGE

### *VERIFY THE KERNEL VERSION AND ARCHITECTURE*

Enter the following command to determine the kernel version and architecture of the system:

```
# uname -rm
```

### *DOWNLOAD THE DRIVER*

If necessary, download the required ASMLIB packages from the OTN Web site:

```
http://www.oracle.com/technology/software/tech/linux/asmlib/rhel4.html
```

You must install oracleasm-support package version 2.0.1 or later to use ASMLib on Red Hat Enterprise Linux 4.0 Server

### **Oracle ASMLib Downloads for Red Hat Enterprise Linux 4 AS**

**Note:** All ASMLib installations require the oracleasm-lib and oracleasm-support packages appropriate the "uname -r" command on your machine to determine your kernel version. The corresponding package is

Also, see the [release notes](#)

### **Oracle ASMLib 2.0**

#### **Intel IA32 (x86) Architecture**

##### **Library and Tools**

- [oracleasm-support-2.0.3-1.i386.rpm](#)
- [oracleasm-lib-2.0.2-1.i386.rpm](#)

##### **Drivers for kernel 2.6.9-55.0.2.EL**

- [oracleasm-2.6.9-55.0.2.ELsmp-2.0.3-1.i686.rpm](#)
- [oracleasm-2.6.9-55.0.2.ELhugemem-2.0.3-1.i686.rpm](#)
- [oracleasm-2.6.9-55.0.2.EL-2.0.3-1.i686.rpm](#)

##### **Drivers for kernel 2.6.9-55.EL**

- [oracleasm-2.6.9-55.ELsmp-2.0.3-1.i686.rpm](#)
- [oracleasm-2.6.9-55.ELhugemem-2.0.3-1.i686.rpm](#)
- [oracleasm-2.6.9-55.EL-2.0.3-1.i686.rpm](#)



### INSTALL THE ASMLIB PACKAGE

```
[root@db02pn]# uname -a
Linux db02pn.profnetwork.com 2.6.9-55.ELsmp #1 SMP Fri Apr 20 17:03:35 EDT 2007 i686 i686 i386 GNU/Linux
```

```
[root@db02pn]# ls -ltr
total 226756
-rw-r--r-- 1 oracle oinstall 22662 Jul 23 14:42 oracleasm-support-2.0.3-1.i386.rpm
-rw-r--r-- 1 oracle oinstall 12948 Jul 23 14:42 oracleasm-lib-2.0.2-1.i386.rpm
-rw-r--r-- 1 oracle oinstall 129361 Jul 23 15:10 oracleasm-2.6.9-55.ELsmp-2.0.3-1.i686.rpm
```

```
[root@db02pn]# rpm -Uvh oracleasm-support-2.0.3-1.i386.rpm
Preparing... ##### [100%]
1:oracleasm-support ##### [100%]
```

```
[root@db02pn]# rpm -Uvh oracleasm-2.6.9-55.ELsmp-2.0.3-1.i686.rpm
Preparing... ##### [100%]
1:oracleasm-2.6.9-55.EL ##### [100%]
```

```
[root@db02pn]# rpm -Uvh oracleasm-lib-2.0.2-1.i386.rpm
Preparing... ##### [100%]
1:oracleasm-lib ##### [100%]
```

### CONFIGURE THE ASMLIB

The ASM driver needs to be loaded, and the driver filesystem needs to be mounted. This is taken care of by the initialization script, /etc/init.d/oracleasm. The /etc/init.d/oracleasm script completes the following tasks:

1. Creates the /etc/sysconfig/oracleasm configuration file
2. Creates the /dev/oracleasm mount point
3. Loads the oracleasm kernel module
4. Mounts the ASMLIB driver file system

```
# /etc/init.d/oracleasm configure
This will configure the on-boot properties of the Oracle ASM library
driver. The following questions will determine whether the driver is
loaded on boot and what permissions it will have. The current values
will be shown in brackets ('[]'). Hitting <ENTER> without typing an
answer will keep that current value. Ctrl-C will abort.

Default user to own the driver interface []: oracle
Default group to own the driver interface []: dba
Start Oracle ASM library driver on boot (y/n) [n]: y
Fix permissions of Oracle ASM disks on boot (y/n) [y]: y
Writing Oracle ASM library driver configuration: [ OK ]
Loading module "oracleasm": [ OK ]
Mounting ASMLib driver filesystem: [ OK ]
Scanning system for ASM disks: [ OK ]
```

### MAKING DISK AVAILABLE TO NODES

```
# /etc/init.d/oracleasm listdisks

# /etc/init.d/oracleasm scandisks
# /etc/init.d/oracleasm listdisks
VOL1

# /etc/init.d/oracleasm querydisk VOL1
Disk "VOL1" is a valid ASM disk on device [8, 67]
```

# RAW PARTITIONS FOR OCR AND VOTING FILES : CREATION AND CONFIGURATION GUIDE

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## INTRODUCTION

We are using Raw devices storage for Oracle Clusterware OCR and Voting disks Files. OCR and Voting disk files are not supported on ASM as ASM configure files are only available after the ASM instance is started and Oracle Clusterware needs these file before ASM instance startup.

## STEPS FOR CREATING AND CONFIGURING RAW DEVICES

1. List the Available Raw Devices and Disk Partition
2. Create the Partition for OCR and Voting disk Files
3. Add the Raw devices information in the /etc/sysconfig/rawdevices file
4. Bind the Partitions to the Raw Devices
5. Set the Owner, group and Permissions on the Device file
6. Repeat step 2 through step 4 on each node in the cluster.

### *LIST THE AVAILABLE RAW DEVICES AND DISK PARTITION*

Starting with the 2. 6 Linux kernel distributions, raw devices are not supported automatically. To confirm that raw devices are enabled, enter the following command:

```
# chkconfig --list | grep rawdevices
rawdevices 0:off 1:off 2:off 3:on 4:on 5:on 6:off
```

### *CREATE THE PARTITION FOR OCR AND VOTING DISK FILES*

Check the Disk Partition created on available Disk. I have created 2 partition on /dev/sde to accomadate Voting and OCR files. Their Sizes are as follows

```
/dev/sde1      -      500M  -      OCR
/dev/sde2      -      500M  -      Voting disk
```

```
# fdisk -l /dev/sde
Disk /dev/sde: 268.4 GB, 268435456000 bytes
255 heads, 63 sectors/track, 32635 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sde1		1	62	497983+	83	Linux
/dev/sde2		63	124	498015	83	Linux
/dev/sde3		125	25024	200009250	83	Linux
/dev/sde4		25025	32635	61135357+	83	Linux

### *ADD THE RAW DEVICES INFORMATION IN THE /etc/sysconfig/rawdevices FILE*

```
[root@db02pn ASM]# vi /etc/sysconfig/rawdevices
/dev/raw/raw1 /dev/sde1
/dev/raw/raw2 /dev/sde2
```

### *BIND THE PARTITIONS TO THE RAW DEVICES*

To determine what raw devices are already bound to other devices, enter the following command on every node:

```
[root@db02pn]# /usr/bin/raw -qa
```

Now Bind the partitions to raw devices, enter the following command

```
[root@db02pn]# /sbin/service rawdevices restart
```

Assigning devices:

```
    /dev/raw/raw1 --> /dev/sde1
/dev/raw/raw1: bound to major 8, minor 65
    /dev/raw/raw2 --> /dev/sde2
/dev/raw/raw2: bound to major 8, minor 66
done
```

### *SET THE OWNER, GROUP AND PERMISSIONS ON THE DEVICE FILE*

After you confirm that the raw devices service is running, you should change the default ownership of raw devices.

```
# ls -ltr /dev/raw/*
crw-rw---- 1 root disk 162, 2 Jul 23 15:24 /dev/raw/raw2
crw-rw---- 1 root disk 162, 1 Jul 23 15:24 /dev/raw/raw1

# chown root:oinstall /dev/raw/raw1
# chmod 640 /dev/raw/raw1
# chown oracle:oinstall /dev/raw/raw2
# chmod 644 /dev/raw/raw2
```

By making the oinstall group the owner of the OCR, this permits the OCR to be read by multiple Oracle homes, including those with different OSDBA groups.

```
[root@db02pn ASM]# ls -ltr /dev/raw/*
crw-r----- 1 root oinstall 162, 2 Jul 23 15:24 /dev/raw/raw2
crw-r----- 1 oracle oinstall 162, 1 Jul 23 15:24 /dev/raw/raw1
```

### *ENSURE OWNERSHIP OF RAWDEVICES ON SYSTEM REBOOT*

To ensure correct ownership of these devices when the operating system is restarted, create a new file named oracle.permissions in the /etc/udev/permissions.d directory and enter the raw device permissions information.

```
raw/raw1:root:oinstall:0660
raw/raw2:oracle:oinstall:0644
```

After adding the permissions.d/oracle.permissions file, If you prefer to avoid restarting the raw device service or the operating system, then you can modify /etc/rc.d/rc.local to force ownership changes to take effect immediately, as shown in the following example:

```
# OCR
chown root:oinstall /dev/raw/raw1
chmod 660 /dev/raw/raw1

# Voting Disks
chown oracle:oinstall /dev/raw/raw2
chmod 644 /dev/raw/raw2

# /usr/bin/raw -qa
/dev/raw/raw1: bound to major 8, minor 65
/dev/raw/raw2: bound to major 8, minor 66
```