

ASM triggers the Oracle ASM instance to attempt bad block remapping, Oracle ASM reads a good copy of the extent and copies it to the disk that had the read error.

- If the write to the same location succeeds, then the underlying allocation unit (sector) is deemed healthy. This might be because the underlying disk did its own bad block reallocation.
- If the write fails, Oracle ASM attempts to write the extent to a new allocation unit on the same disk. If this write succeeds, the original allocation unit is marked as unusable. If the write fails, the disk is taken offline.

One unique benefit on Oracle ASM based mirroring is that the database instance is aware of the mirroring. For many types of logical corruptions such as a bad checksum or incorrect System Change Number (SCN), the database instance proceeds through the mirror side looking for valid content and proceeds without errors. If the process in the database that encountered the read can obtain the appropriate locks to ensure data consistency, it writes the correct data to all mirror sides.

When encountering a write error, a database instance sends the Oracle ASM instance a *disk offline* message.

- If database can successfully complete a write to at least one extent copy and receive acknowledgment of the offline disk from Oracle ASM, the write is considered successful.
- If the write to all mirror side fails, database takes the appropriate actions in response to a write error such as taking the tablespace offline.

When the Oracle ASM instance receives a write error message from a database instance or when an Oracle ASM instance encounters a write error itself, the Oracle ASM instance attempts to take the disk offline. Oracle ASM consults the Partner Status Table (PST) to see whether any of the disk's partners are offline. If too many partners are offline, Oracle ASM forces the dismounting of the disk group. Otherwise, Oracle ASM takes the disk offline.

The `ASMCMD remap` command was introduced to address situations where a range of bad sectors exists on a disk and must be corrected before Oracle ASM or database I/O. For information about the `remap` command, see [remap](#).

## Oracle ASM Fast Mirror Resync

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Restoring the redundancy of an Oracle ASM disk group after a transient disk path failure can be time consuming. This is especially true if the recovery process requires rebuilding an entire Oracle ASM disk group. Oracle ASM fast mirror resync significantly reduces the time to resynchronize a failed disk in such situations. When you replace the failed disk, Oracle ASM can quickly resynchronize the Oracle ASM disk extents.



### Note:

To use this feature, the disk group compatibility attributes must be set to 11.1 or higher.

Any problems that make a failure group temporarily unavailable are considered transient failures that can be recovered by the Oracle ASM fast mirror resync feature. For example, transient failures can be caused by disk path malfunctions, such as cable failures, host bus adapter failures, controller failures, or disk power supply interruptions.

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Oracle ASM fast resync keeps track of pending changes to extents on an offline disk during an outage. The extents are resynced when the disk is brought back online.

By default, Oracle ASM drops a disk in 12 hours after it is taken offline. You can set the `DISK_REPAIR_TIME` disk group attribute to delay the drop operation by specifying a time interval to repair the disk and bring it back online. The time can be specified in units of minutes (`m` or `M`) or hours (`h` or `H`). If you omit the unit, then the default unit is hours. The `DISK_REPAIR_TIME` disk group attribute can only be set with the `ALTER DISKGROUP` SQL statement and is only applicable to normal and high redundancy disk groups.

If the attribute is not set explicitly, then the default value (12h) applies to disks that have been set to `OFFLINE` mode without an explicit `DROP AFTER` clause. Disks taken offline due to I/O errors do not have a `DROP AFTER` clause.

The default `DISK_REPAIR_TIME` attribute value is an estimate that should be adequate for most environments. However, ensure that the attribute value is set to the amount of time that you think is necessary in your environment to fix any transient disk error, and during which you are able to tolerate reduced data redundancy.

The elapsed time (since the disk was set to `OFFLINE` mode) is incremented only when the disk group containing the offline disks is mounted. The `REPAIR_TIMER` column of `V$ASM_DISK` shows the amount of time left (in seconds) before an offline disk is dropped. After the specified time has elapsed, Oracle ASM drops the disk. You can override this attribute with the `ALTER DISKGROUP OFFLINE DISK` statement and the `DROP AFTER` clause.

**Note:**

If a disk is offlined by Oracle ASM because of an I/O (write) error or is explicitly offlined using the `ALTER DISKGROUP... OFFLINE` statement without the `DROP AFTER` clause, then the value specified for the `DISK_REPAIR_TIME` attribute for the disk group is used.

Altering the `DISK_REPAIR_TIME` attribute has no effect on offline disks. The new value is used for any disks that go offline after the attribute is updated. You can confirm this behavior by viewing the Oracle ASM alert log.

If an offline disk is taken offline for a second time, then the elapsed time is reset and restarted. If another time is specified with the `DROP AFTER` clause for this disk, the first value is overridden and the new value applies. A disk that is in `OFFLINE` mode cannot be dropped with an `ALTER DISKGROUP DROP DISK` statement; an error is returned if attempted. If for some reason the disk must be dropped (such as the disk cannot be repaired) before the repair time has expired, a disk can be dropped immediately by issuing a second `OFFLINE` statement with a `DROP AFTER` clause specifying `0h` or `0m`.

You can use `ALTER DISKGROUP` to set the `DISK_REPAIR_TIME` attribute to a specified hour or minute value, such as 6 hours or 360 minutes. For example:

```
ALTER DISKGROUP data SET ATTRIBUTE 'disk_repair_time' = '6h'  
ALTER DISKGROUP data SET ATTRIBUTE 'disk_repair_time' = '360m'
```

After you repair the disk, run the SQL statement `ALTER DISKGROUP ONLINE DISK`. This statement brings a repaired disk group back online to enable writes so that no new