

# Oracle Linux Test User Guide

March 2019

# Introduction

This document details the steps to setup and execute Oracle Linux Test (OLT) kit.

The steps to setup the kit and execute the tests on your system include:

- Verification of Hardware Requirements
- Pre-Installation
  - OS Configuration
  - Storage Configuration
- OLT Installation and Configuration
- Execution of OLT tests - Single instance, RAC
- Execution of OLT Destructive tests
- Results Collation for Auditing

# Hardware Requirements

The following are the minimum requirements.

## Server Requirements

- 2 servers or more setup as a RAC cluster
- For server IP requirements refer to section 3.1.2
- Disable NUMA with the BIOS settings (if it is provided)
- For validating NAS, a dedicated network port is required
- An additional IP address is required for configuring this interface.
- For validating SAN, single, or multiple FC cards for the SAN.
- For performing network destructive tests when FC storage is used, tester must have access to the Network/FC Switch

## Storage Requirements

Storage such as NAS or a SAN which can be configured for asm/asmlib or ocfs2.

The following are the storage requirements for the OLT kit.

Location	Space	Purpose	Ownership
/opt/oracle/oltest	70GB	Test Kit Software	oracle:oinstall
/home/oracle	15GB	Runtime work area	oracle:oinstall
/tmp	1GB	Temporary files	oracle:oinstall

The following are the storage requirements for the Test Data.

Location	Space	Purpose	Ownership
/olt-storage	300GB	Test data for single node	oracle:oinstall
/olt-storage	110GB	For RAC database on NFS	oracle:oinstall
/olt-storage (for OCFS2)	50GB	For RAC database on OCFS2	oracle:oinstall
For asm – use the appropriate device names. For asmLib – use the label name.	50GB (per failure group)	For RAC database on asm/ asmLib	N/A
/olt-storage or OCR/VOTE location	Additional 5GB	For mgmt_db on 12.1.0.2 and above	oracle:oinstall

## Pre-Installation

### ▼ OS Packages

OLT tests can be performed on any kernel on a Linux Operating system.

- **Install the following rpms for OLT.**
  - apache-1.3.29-71.15 or higher or httpd
  - sysstat
  - bind-utils
  - kernel<type>-devel (Oracle Linux 5, Oracle Linux 6, Oracle Linux 7)
  - nc, netcat or nmap-ncat
  - perl and perl- CGI
  - procmail
  - oracle-validated for Oracle Linux 5
  - oracle-rdbms-server-11gR2-preinstall => for 11gR2 on Oracle Linux 6 and above
  - oracle-rdbms-server-12cR1-preinstall => for 12cR1 on Oracle Linux 6 and above
  - oracle-database-server-12cR2-preinstall => for 12cR2 on Oracle Linux 7 and above
  - oracle-database-preinstall-18c-1.0-1.el7.x86\_64 => for 18c on Oracle Linux 7 and above
  - gdb
  - sud
  - elfutils-libelf-devel on Oracle Linux 7 for 11.2.0.4
  - mlocate

## System Configuration

### ▼ Configuring the Network

1. **Edit /etc/hosts file to include the fully qualified name first, followed by the other names.**
2. **Edit /etc/hosts file to include localhost entry.**

3. **Setup your system such that hostname returns the fully qualified name, with domainname.**
4. **For RAC, perform the following setup:**
  - Ensure that /etc/hosts contains all the public, vip, and private node names, with and without domain names, on all the nodes.
  - Ensure that the two nodes have their public and private interfaces on the same subnet. Configure the public and private network interfaces. Ensure they are up and running.
  - Ensure that the interface name for the public IP is the same on both nodes. Ensure that the interface name for the private interconnect is the same on both nodes.
  - Ensure that VIP for any of the nodes does not match the following pattern:
    - 172.16.x.x
    - 172.20.x.x
    - 192.168.x.x
    - 10.x.x.x

These IP addresses are assumed to be private and may not be fit for being used as a VIP or public.

5. **Make sure that VIP is not pingable.**

The VIP should be in the same subnet as the public IP on all the nodes.

6. **From 11g Release 2 onwards, ensure the following in regard to SCAN IP :**

- Hostname corresponding to SCAN IP has to be less than 15 characters
- SCAN IP has to be on the same subnet as public IP
- Hostname corresponding to SCAN IP should be configured on the domain name server (DNS) for Round Robin resolution to three addresses (recommended), or at least one address
- SCAN IP should not be pingable

## ▼ **Configuring the Environment**

For 11gR1 or higher release, perform the following steps.

1. **Ensure that time is synchronized on all the RAC nodes using ntp.**
2. **Use cluster time synchronization process.**

- For 11gR2:

```
# stop ntpd service
# mv /etc/ntp.conf etc/ntp.conf.org
```
- For 12.1.0.1.0, the ntpd service may be running.

```
# service ntpd start
```

The ntp.conf file should be present in /etc.

Note: On Oracle Linux 7, the file /etc/sysconfig/ntpd must contain `OPTIONS="-x -u ntp:ntp -p /var/run/ntpd.pid"`.

- For 12.1.0.2.0, the ntpd service is not compulsory. Oracle uses ntpd if available.

3. **Ensure Iptables are turned off while running RAC tests.**

```
# service iptables stop
```

---

**Note** - Use `systemctl stop firewalld` on Oracle Linux 7 for the same.

---

4. **Ensure SELinux is disabled from the boot command line or SELinux config file `/etc/selinux/config`.**
5. **If testing 12cR1 and above, ensure `avahi-daemon` is stopped.**

## Storage Configuration

The following storage types can be used for the test data. OLT requires to be configured each time a new storage type is to be validated. See [“Storage Requirements” on page 2](#).

- For Oracle Database version 12.1 and below, supported storage options are:
  - NFS (single node + RAC tests) using Oracle's DNFS or traditional NFS
  - OCFS2 (single node + RAC tests)
  - ASMLib (RAC tests)
- For Oracle Database version 12.2 and above, supported filesystems are:
  - ASMFD
  - ASM on NAS
  - ASM on block devices

Filesystems such as `ext3`, `ext4`, `btrfs`, and `xf`s are supported on single node. For more information, see [“Storage Requirements” on page 2](#)

### ▼ Configuring NFS

Follow the steps below to setup your NFS storage for single node or RAC for Oracle Linux Test.

1. **Create a directory `/olt-storage` default location.**
2. **Create a partition on the NAS filer of required size.**
3. **Mount the NAS storage with the following options:**
  - **For kernel version 2.6.25 or greater, the deprecated mount option `nointr` is removed.**
    - Single node - `rw,bg,hard,tcp,nfsvers=3,timeo=600,rsize=32768,wsiz=32768`
    - RAC – `rw,rsiz=32768,wsiz=32768,hard,bg,nfsvers=3,tcp,actimeo=0,timeo=600`
  - **For kernel versions less than 2.6.25**
    - Single node - `rw,bg,hard,nointr,tcp,nfsvers=3,timeo=600,rsize=32768,wsiz=32768`
    - RAC – `rw,rsiz=32768,wsiz=32768,hard,nointr,bg,nfsvers=3,tcp,actimeo=0,timeo=600`

### ▼ Configuring OCFS2

Follow the steps below to setup your OCFS2 storage for single node or RAC for OLT.

---

**Note** - For RHEL, download and setup `ocfs2` from [oss.oracle.com](http://oss.oracle.com).

---

1. **Create a directory `/olt-storage`** *default location*.
2. **Create an OCFS2 partition of required size.**
3. **Mount the OCFS2 partition on `/olt-storage`.**

For details on the setup and mount options, refer to the `ocfs2` documentation on [oss.oracle.com](http://oss.oracle.com).

## ▼ **Configuring ASMLIB**

Follow the steps below to setup `asmlib` on your machine and label your disks for OLT.

---

**Note** - For RHEL, download, install and setup `asmlib` from <http://www.oracle.com/technetwork/server-storage/linux/asmlib/index-101839.html>.

---

1. **Identify the disks you want to use for `asm` (default is external redundancy).** For example `/dev/sdh1` and `/dev/sdi1`.
2. **Zero out the disks you plan to use for `asm` by doing the following, on the master node only.**

```
$ dd if=/dev/zero of=/dev/<device> bs=<blocksize> count=<size-of-disk/blocksize>
```

Execute following commands on all the RAC nodes:

3. **Configure `oracleasm`.**

```
# oracleasm configure -i
```

4. **Edit the `/etc/sysconfig/oracleasm` to configure Oracle ASM to recognize the multipath disks.**

Change the following lines:

```
ORACLEASM_SCANORDER="" to ORACLEASM_SCANORDER="dm"
```

```
ORACLEASM_SCANEXCLUDE="" to ORACLEASM_SCANEXCLUDE="sd"
```

```
# oracleasm configure
```

5. **Create a label on the disks to be used by `asm`.**

```
# oracleasm createdisk VOL1 /dev/sdh1
```

6. **Scan the disks on all other RAC nodes except master node.**

```
# oracleasm listdisks
```

---

**Note** - On Oracle Linux 7, run `systemctl enable oracleasm.service` prior to configuration.

---

## ▼ **Configuring ASM on a Block Device**

1. **Identify the disks you want to use for ASM (default is external redundancy), for example, `/dev/sdh`.**
2. **Zero out the disks you plan to use for ASM by typing the following, only on the master node:**

```
$ dd if=/dev/zero of=/dev/<device> bs=<blocksize> count=<size of disk/blocksize>
```

3. Create udev rules for the disk. Refer to [Oracle Support Document 1518243.1 \(How To Setup UDEV Rules For RAC OCR And Voting Devices on Partitions\)](https://docs.oracle.com/en/database/oracle/oracle-database/12.2/ladbi/configuring-device-persistence-manually-for-oracle-asm.html#GUID-70D50812-CCB2-41E4-AA3B-4689E1DA934E) or <https://docs.oracle.com/en/database/oracle/oracle-database/12.2/ladbi/configuring-device-persistence-manually-for-oracle-asm.html#GUID-70D50812-CCB2-41E4-AA3B-4689E1DA934E> in the *Oracle Database Installation Guide for Linux*.

## ▼ Configuring ASMFD

1. To create ASMFD disk labels first `olt-iso-copy` should be executed.

Execute the following for the downloaded file to setup Oracle for the OLT kit:

```
$ /opt/oracle/oltest/olt-schedule/utlils/olt-iso-copy
```

2. After executing `olt-iso-copy`, go to grid home, for example `/opt/oracle/clusterware-<DB_VERSION>-X86_64/crs/bin`, and execute:

```
# export ORACLE_HOME=/opt/oracle/clusterware-<DB_VERSION>-X86_64/crs
# export ORACLE_BASE=/tmp

# ./asmcmd afd_label DATA11 /dev/mapper/<ocrvotedisk> --init
# ./asmcmd afd_label DATA12 /dev/mapper/<dbdisk> --init

# ./asmcmd afd_lslbl /dev/mapper/<ocrvotedisk> ( To verify the ASMFD disk label)

unset ORACLE_BASE
```

## ▼ Configuring ASM on NAS

1. Create two partitions on NAS filer for ocr/vote and DB files.
2. Mount the partition1 with the NFS mount option given above under NFS.
3. Mount the second partition with the same options.
4. When Oracle Grid is installed `oraclasm diskgroup` is created on the partition used for ocr/vote.

## ▼ Configuring the Filesystem

Follow these steps to setup your filesystem for a single node for OLT.

1. Create a directory `/olt-storage` (default location).
2. Create a partition of the required size.
3. Mount the partition on `/olt-storage`.

# OLT Installation and Configuration

OLT is available in two formats, set of rpms, for hosted packages only, and a single archived file, which is used for installation and execution.

## ▼ Installation and Configuration of a Single Archived File

1. **Download the archive file OLT<version>.tar.gz from [oss.oracle.com/projects/olt](http://oss.oracle.com/projects/olt) to <Location>.**

2. **Change to the download location.**

```
# cd <Location>
```

3. **Execute:**

```
# tar xzvf OLT<version>.tar.gz
```

4. **Edit oltsetup.env as per requirements for your mode (SI/RAC).**

Such as - filesystem, DNFS\_CLIENT, hostname, storage (for asm/ocr/vote redundancy and disknames), user, rac node related information (no., nodenames, interconnect details, VIP). More details are available in Appendix A.

5. **Execute oltInstaller as root.**

---

**Note** - If there is any change in configuration mentioned above, /opt/oracle/oltest/olt-schedule/olt-configure needs to be run manually for reconfiguration. ( Refer to Appendix A )

---

---

**Note** - OLT is setup in the context of oracle user. The tests can be run in the context of any user.

---

## Setup of Oracle for OLT

Download and setup the Oracle software for OLT as mentioned below. When OLT is run, Oracle will be installed by the first test of OLT (install-silent-rac for RAC and install-silent-oracle-<version> for single node). In order to install Oracle Database and/or Grid software, the Oracle installables need to be made available. Prior to running install-silent-rac or install-silent-oracle-<version>, Oracle software and patches (if required) need to be setup as below.

## ▼ Setup of Oracle Database Software - Main Releases and Patchsets

For the database software download/availability prior to Oracle Database 11gR2, refer to section "Previous Database Release Software mentioned in <http://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html>.

1. **Download the appropriate file for your Oracle Database version.**

Version	Description
11.2.0.4	<p>If using 11.2.0.4 on Oracle Linux 7, download the patches from <a href="http://metalink.oracle.com">metalink.oracle.com</a>. Use olt-patch-copy for 11.2.0.4 on Oracle Linux 7. Details of patches are present in the Appendix B. There are no patches needed for 11.2.0.4 on Oracle Linux 6 or previous releases.</p> <p>For downloading the 11.2.0.4 patchset refer to Oracle support note Doc Id: 1674277.1 or download from <a href="#">11.2.0.4.0 PATCH SET FOR ORACLE DATABASE SERVER</a> and choose Linux X86 or Linux</p>

Version	Description
	X86_64 for the platform. The files 1of7.zip and 2of7.zip is for Oracle Database and file 3of7.zip is for the Oracle Grid installation.
12.1.0.1.0	<a href="http://www.oracle.com/technetwork/database/enterprise-edition/downloads/database12c-linux-download-1959253.html">http://www.oracle.com/technetwork/database/enterprise-edition/downloads/database12c-linux-download-1959253.html</a>
12.1.0.2	<a href="http://www.oracle.com/technetwork/database/enterprise-edition/downloads/database12c-linux-download-2240591.html">http://www.oracle.com/technetwork/database/enterprise-edition/downloads/database12c-linux-download-2240591.html</a>
12.2.0.1	<a href="http://www.oracle.com/technetwork/database/enterprise-edition/downloads/oracle12c-linux-12201-3608234.html">http://www.oracle.com/technetwork/database/enterprise-edition/downloads/oracle12c-linux-12201-3608234.html</a>  For Grid, the installable type is "cluster", and for DB zip files the installable type is "database".
18.3.0.0	<a href="https://www.oracle.com/technetwork/database/enterprise-edition/downloads/oracle18c-linux-180000-5022980.html">https://www.oracle.com/technetwork/database/enterprise-edition/downloads/oracle18c-linux-180000-5022980.html</a>  For Grid, the installable type is "cluster", and for DB zip files the installable type is "database".

## 2. Execute the following for the downloaded file to setup Oracle for the OLT kit.

```
$ /opt/oracle/oltest/olt-schedule/utls/olt-iso-copy
```

For DB version 12.2 and above, while executing `olt-iso-copy`, installable type is "cluster" for Grid and "database" for DB zip files.

For Db version below 12.2, installable type is "clusterware" for Grid and "database" for DB zip files.

## ▼ Setup Oracle Patches

1. **Download the required set of Oracle Patches (See Appendix B) to /home/oracle/oracle-patch. Download all Clusterware (CRS) patches to /home/oracle/crs-patch.**
2. **Setup the Oracle patches one of the following ways:**
  - Navigate to each patch directory and run the following command in each directory, to setup the Oracle patches.

```
$ /opt/oracle/oltest/olt-schedule/utls/olt-patch-copy
```
  - If setting up the patches manually, see Appendix B.

---

**Note** - There are two patch levels, namely `-critical` and `extra`. The patches copied under the critical directory are applied by default by the kit.

---

## ▼ Setup the ORACLE\_VERSION and Patches for the Kit

The `ORACLE_VERSION` is set to the latest version by default in `/opt/oracle/oltest/olt-schedule/env/<node-name>/olt-schedule.env`. If you are using and installing an `ORACLE_VERSION` other than the one mentioned there, then reset the `ORACLE_VERSION`.

1. **To change the ORACLE\_VERSION, edit the /opt/oracle/oltest/olt-schedule/env/<node-name>/olt-schedule.env file for all the nodes.**  
For example, in `/opt/oracle/oltest/olt-schedule/env/<node-name>/olt-schedule.env`, change 12.1.0.2 to 18.3.0.0 here: `export ORACLE_VERSION=18.3.0.0`
2. **To apply patches:**

- Critical patches - All the patches found under the critical patches directory will be applied by default.
- Extra patches (customer-specific required patches) - To apply the additional patches placed under the extra patches directory, edit the testcase env files and add PATCHLEVEL=2

For example, for a single node 11.2.0.4, edit the olt-schedule/testcases/<hostname>/install-silent-oracle-11204.env as follows:

```
TEST_PARAMS="PRODUCT_NAME=oracle:PRODUCT_VERSION=11.2.0.4:UNIX_GROUP \
_NAME=oinstall:ORACLE_HOME_NAME=ohome_ora_11204:PATCHLEVEL=2"
```

Once the above steps have been completed, Oracle will be installed by OLT when running the silent install tests, namely install-silent-oracle-<version> for single instance and install-silent-rac for a RAC installation. Refer to the Oracle Linux Test document for details on the testcases.

---

**Note** - For 11.2.0.4 on Oracle Linux 7, download the patches mentioned in Appendix B. Use olt-patch-copy to copy the patches to the OLT directory and use the steps mentioned above in the file install-silent-oracle-11204.env to ensure that the patches are applied.

---

## Execution of OLT Tests

### ▼ Scheduling Tests

1. To schedule tests on the node specify:

```
olt-schedule -f <cmd> -r
```

where cmd=validate.cmd for OS testing cmd=vc-validate.cmd for validated configuration testing.

---

**Note** - For single node tests, ensure that the install-silent-oracle-<> test completes successfully before proceeding to any other test. For RAC, ensure that the install-silent-rac test completes successfully before proceeding to any other test.

---

2. Execute the hugetlb/hugepage tests separately with the hugepage setting, nr\_hugepages to 800 on your system either through /proc/sys/vm/nr\_hugepages or through grub.conf. Also, edit the /opt/oracle/oltest/olt-schedule/env/<node>/olt-schedule.env and uncomment the export MTARGET=false.

The rest of the tests can be run without this setting.

---

**Note** - On Oracle Linux 7, installation of 11gR2 checks for pdksh rpm which is not available. This can be overcome by adding IGNORE\_PREREQ=TRUE in the install-silent-oracle-<>.env or install-silent-rac files.

---

### ▼ Monitoring Tests

Apache should be installed and running for this feature to work.

- Prior to executing the tests, specify this command to monitor the progress of tests:

```
olt-schedule -f validate.cmd -s
```

A web-based status page is available at: [http://<testnode\\_name>/cgi-bin/status.pl](http://<testnode_name>/cgi-bin/status.pl)

## Logs and Test Results

The `/opt/oracle/oltest/olt-schedule/log/` directory has node specific scheduling logs.

The `/opt/oracle/oltest/olt-schedule/log/olt-summary.csv` has the collated results of all the runs.

The `/home/oracle/work` has the test run logs. A `run.suc` file in the work area for the test indicates success. A `run.dif` in the work area for the test indicates failure.

For RAC related tests, besides the presence of a `run.suc` file in the work area, check for errors in the `major_errors` file in this area, for the success of a test.

## ▼ Terminating Tests

### ● Use one of these options to terminate and clean up test scripts.

- For RAC, to cleanup all test scripts, Oracle process, other derivative processes and test related file/network locks across each of the RAC nodes, execute the following command from the master node:

```
# olt-schedule -k <master_node_name> -z
```

---

**Note** - If a machine reboots during a test, do a cleanup on all the nodes before restarting a test.

---

- For SI, to cleanup all test scripts, Oracle process, other derivative processes and test related file/network locks, execute the following command as oracle user:

```
# olt-schedule -k <node_name>
```

## ▼ Reporting Results

### ● Use the following tasks to collect and audit results.

- Collect and submit the following logs for auditing:
  - The work area for the test in `/home/oracle/work`
  - `/var/log/messages`
  - `/opt/oracle/oltest/olt-schedule/log`
- In addition for RAC, the following logs are also required:
  - `/opt/oracle/clusterware-<version>-<architecture>/crs/log/<node_name>/`
  - `/opt/oracle/oltest/.srchome/ora-rac-<oracle-version>-<arch>/diag/crs/<node>/crs/` (for 12.1.0.2 and above)
  - `X` (for 12.1.0.2 and above)
- To archive the above mentioned files automatically, use the `/opt/oracle/oltest/olt-schedule/utls/olt-archive-logs`. For example:

```
cd /opt/oracle/oltest/olt-schedule/utls
```

- To collect single instance test logs, type:

```
./olt-archive-logs si
```

- To collect RAC test logs, execute this script on all the nodes:

```
./olt-archive-logs rac
```

Then upload the collected file `/home/oracle/work/olt-testlogs- <hostname>-<timestamp>.tgz` from all the nodes for result auditing.

## ASM Cleanup to Recreate the Database

- Stop the crs on both the nodes.  
This stops all the components including the ASM DG and ASM instance.
- Use `oracleasm deletedisk` to delete only the DB data disk. **Do not delete the OCR disk.**
- `dd` the disk used for DB, the initial 1Gb should be enough.
- Use `oracleasm` commands to `createdisk` on `node1` and `scandisks` on `node2`.
- `rm -rf /opt/oracle/oltest/.srchome/rac-database/asm/<version>/dbcreate.suc` or add `FORCEDBCREATE=true` in the env file, namely, `/opt/oracle/oltest/olt-schedule/testcases/<host>/install-silent-rac.env`

## Executing RAC Destructive Tests

### ▼ Run Automated Destructive Tests

If you have configured for a two node rac with the nodes `node1` and `node2`, the cmd file for destructive tests is `/opt/oracle/oltest/olt-schedule/rac/<node1>_<node2>_dest_schedule.cmd`.

- Use these commands to schedule the tests:

```
$ cd /opt/oracle/oltest/olt-schedule
$ olt-schedule -f rac/<node1>_<node2>_dest_schedule.cmd -r
```

### ▼ Run Manual Destructive Tests

This involves running a normal rac test using the OLT framework, then doing the destructive part manually and then observing the behavior. This is required for network failure and storage failure.

1. Use these commands to schedule the tests:

```
$ cd /opt/oracle/oltest/olt-schedule
$ olt-schedule -f rac/ <node1>_<node2>_dest_manual_schedule.cmd
```

2. When test `rac-st-<storage>1` starts, wait until the test shows the following message in `rac_tuning.tlg` on the master node.

```
$ tail -f /home/oracle/work/<current-test-run>.../work/rac_tuning.tlg
```

"For manual destructive tests manually do the failure part".

3. Then fail the private interconnect on the non-master node in one of two ways.

- Bring down the private interface using the ifdown command:

```
$ ifdown eth1
```

- Pull the interconnect physically or if you have a web-interface for the network switches, then disable the corresponding switch from the web-interface.

---

**Note** - Cluster reconfiguration depends on the load and environment. Restore the induced failure once the node goes down.

---

4. **When test rac-st-`<storage>2` starts, wait until the test shows the following message in rac\_tuning.tlg on the master node.**

```
$ tail -f /home/oracle/work/<current-test-run>.../work/rac_tuning.tlg
"For manual destructive tests manually do the failure part"
```

5. **Then disable the storage on the non-master node.**

Pull the storage cable physically or if you have a web-interface for the storage switches, then disable the corresponding switch from the web-interface.

In this case, the node for which the storage is disabled is expected to be evicted from the cluster.

6. **Observe the results of the destructive tests.**

Generally the following behavior is observed in any of the above destructive tests:

- One of the nodes will get evicted and the other node reconfigures as a cluster.
- Check the crs logs in ocssd.log for cluster reconfiguration on both nodes.  
Refer to the cssd directory under /opt/oracle/oltest/.srchome/ora-rac-`<oracle-version>`-`<arch>`/diag/crs/`<node>`/ for 12.1.0.2.0 or /opt/oracle/clusterware-`<version>`-`<architecture>`/crs/log/`<node name>`/ for other versions.
- The connections on the evicted node will failover to the surviving nodes. You can check this by checking the run-process file in /home/oracle/`<work-area>`.

---

**Note** - There will be failures reported in the oracle/crs logs on the node on which the failure is induced. Restore the induced failure (storage failure) once the node goes down.

Failures to be done as mentioned in the above section. Any other method of failure is not recommended.

For Oracle versions less than 11.2.0.2, during manual destructive tests, the induced storage or network failure needs to be reconnected within 5-10 mins of failure.

---

## ▼ Run Manual Destructive Tests With Failback

1. **Schedule the tests, use the following command:**

```
$ cd /opt/oracle/oltest/olt-schedule
```

Edit the rac/`<node1>`\_`<node2>`\_dest\_manual\_schedule.cmd and comment out the rest of the test cases retaining only rac-dest-`<storage>`-HA1 testcase.

```
$ olt-schedule -f rac/ <node1>_<node2>_dest_manual_schedule.cmd -r
```

2. **Wait until the test rac-dest-`<storage>`-HA1) shows the following message in rac\_tuning.tlg on the master node.**

```
$ cd /home/oracle/work/<current test run>.../work/
$ tail -f rac_tuning.tlg
```

"For manual destructive tests manually do the failure part" "For automated destructive test now failure will happen" "Waiting for failure [ ] min..." [ NOTE: default is 20 Min. This can be changed by setting MANUAL\_FAILTIMEOUT in the testcase env file ]

3. **Perform the storage failure condition, similar to [Step 3](#), in Run Manual Destructive Tests.**
4. **Verify behavior of the cluster, as mentioned in [Step 4](#) in Run Manual Destructive Tests.**
5. **For Oracle version less than 11.2.0.2, during manual destructive tests, the induced storage or network failure needs to be reconnected within 5-10 mins of failure. The node may not reboot in case of database version greater than 11.2.0.2.**
6. **Check rac\_tuning.tlg file. It should show the following w.r.t the node ( used for failure/ restoration.**
  - CRS startup
  - Database instance startup
  - New Oracle connections on the node. This can be also seen in the run-process log.
7. **Verify ocssd.log on all the nodes for reconfiguration of failed node.**

Refer to cssd directory under /opt/oracle/oltest/.srchome/ora-rac-<oracle-version>-<arch>/diag/crs/<node>/ for 12.1.0.2.0 or /opt/oracle/clusterware-<version>-<architecture>/crs/log/<nodename>/ for other versions.

## ▼ Report Results

1. **Collect and submit the following logs for auditing:**
  - The work area for the test in /home/oracle/work
  - /var/log/messages
  - /opt/oracle/oltest/olt-schedule/log
2. **For RAC, in addition to the above logs, the following are also required:**
  - /opt/oracle/clusterware-<version>-<architecture>/crs/log/<node-name>/ (For versions other than 12.1.0.2.0)
  - /opt/oracle/oltest/.srchome/ora-rac-<oracle-version>-<arch>/diag/crs/<node>/crs/\* (For 12.1.0.2.0)
  - /tmp/crsctl\*

You can use the /opt/oracle/oltest/olt-schedule/utills/olt-archive-logs to archive the above mentioned log files automatically:

```
cd /opt/oracle/oltest//olt-schedule/utills
```

3. **To collect single instance test logs, execute:**

```
./olt-archive-logs si
```
4. **To collect RAC test logs, execute:**

```
./olt-archive-logs rac
```

Execute the above script on all the nodes and upload the collected file /home/oracle/work/olt-testlogs-<hostname>-<timestamp>.tgz. from all the nodes for result auditing.

## ▼ Clean Up the Oracle Software Installation

Shutdown crs on all node, if running. To clean up the installations add the parameter FORCEORAINSTALL=true in testcase env file.

### 1. Remove oracle/crs home (for example).

- For 18.3.0.0 single node oracle:

```
# /opt/oracle/oltest/olt-schedule/testcases/<node>/install-silent-oracle-  
<db_version>.env, set TEST_PARAMS="PRODUCT_NAME=oracle:PRODUCT_VERSION=18.3.0.0:UNIX_GROUP_NAME=  
$GROUPNAME:  
ORACLE_HOME_NAME=ohome_ora_18300:OUI_TIMEOUT=150:FORCEORAINSTALL=true"
```

- For RAC:

```
# /opt/oracle/oltest/olt-schedule/testcases/<node>/install-silent-rac.env, set  
TEST_PARAMS="rac_install ORACLE_VERSION=${ORACLE_VERSION}:FORCEORAINSTALL=true"
```

### 2. Remove the inventory location specified in /etc/oraInst.loc (for example).

### 3. For 18.3.0.0 single node/RAC:

```
# cat /etc/oraInst.loc inventory_loc=/opt/oracle/oltest/.srchome/ora-rac  
- 10.2.0.3/oraInventory inst_group=oinstall  
# rm -rf /opt/oracle/oltest/.srchome/ora-rac-18.3.0.0/ora-Inventory
```

### 4. From 11.2.0.1 onwards, perform these tasks:

- Bring down any vip interfaces, if they are up.
- Remove ohasd/crsd/evmd/cssd entries from /etc/inittab

## Debugging OLT Issues

For detailed documentation please refer to DEBUG.txt under /opt/oracle/oltest/olt-schedule/doc.

## Appendix A - Configuring OLT

Standard Hosts configuration.

OLT can be configured in two ways, either manually or silently. To run silently, run command olt-configure-s. To run manually, run command olt-configure.

## ▼ Manual OLT Host Configuration

- Choose Single instance or RAC tests from the menu depending on the tests you plan to run.

---

**Note** - During configuration, when prompted for the hostname, enter the full host name, including the domain name.

---

- For single instance setup:

You are prompted to enter a repository location (node and directory) and the root passwords for the involved nodes. For a local system, this remains the current machine name and the default repository location (/opt/oracle/oltest/olt-repository). It also prompts for the storage type.

■ **For RAC setup:**

The user will be prompted for nodenames (public, private interconnect and vip, scan ip for 11gr2 onwards), storage type and location, ocr and vote locations for ASM, asm redundancy level (external by default) and ocr and vote redundancy levels, dnfs\_client for 11gR2 onwards.

■ Storage location:

- For asmlib, provide the label names (ORCL:<label\_name>) for DB version 12.1 and below
- For NFS/OCFS2, provide the appropriate name for the storage location
- For DB version 12.2 and above the disk label for DB is AFD:DATA12 and for OCR/VOTE is /dev/mapper/ocrvote for ASMFD configuration
- For DB 12.2 + ASM\_ON\_NAS give the partition names
- For DB 12.2 + ASM on block devices give the DB label as /dev/DISK02 and OCR/VOTE label as /dev/DISK01

■ OCR/Vote:

- From 11gR2 onwards provide necessary location type (NAS or ASM) and their corresponding ocr and vote locations
- For DB version less than 18.3.0.0, in case of ASM location provide ocr/vote label name as ORCL:XXX.
- In case of DB Version greater than 18.3.0.0, provide ocr/vote label as /dev/mapper/<disk> and DB disk as AFD:DATA12
- For DB Version greater than 18.3.0.0, in case of ASM\_ON\_NAS the ocr/vote label is NFS partition/asm\_disk and DB disk is NFS partition 2
- For DB 12.2 + ASM on block devices give the DB label as /dev/DISK02 and OCR/VOTE label as /dev/DISK01

The environment variables at the end of setup are saved in env/<HOSTNAME>/olt-schedule.env. This file can be edited to affect changes in environment. The storage locations can be edited here. If using the advanced setup, OLT can be configured using the following command:

```
olt-configure -G
```

## ▼ Silent OLT Host Configuration

- To silently configure, modify all the required parameter settings in /opt/oracle/oltest/olt-schedule/env/olt-configure.env.

Details on the parameters and settings are available in this file.

## Appendix B - Patch Matrix

This table describes the patch matrix for an Oracle product version for a given platform.

Oracle Product	Version	Architecture	Patch Numbers
Database	11.1.0.6	X86_64	7592335, 6778860
Database	11.1.0.7	X86_64	7520217, 7135702

Oracle Product	Version	Architecture	Patch Numbers
Clusterware	11.2.0.4	X86_64	For OL7, 19404309,18370031
Database	11.2.0.4	X86_64	For OL7, 19404309,19375887

## Appendix C - OLT Utilities

This section contains the list of OLT Utilities available in /opt/oracle/oltest/olt-schedule/utills.

- **asm-debug/run** - [run (script) as oracle user with all asm devices as command line arguments]

Generates as mtraces-<node\_name> .tgz files with debug and trace informations for debugging ASM related issues on RAC.2.
- **olt-debug** - [No arguments]

This script collects system configuration and log files for debugging issues related to OLT test executions. Generates a tar file olt-debug-logs -\${time\_stamp}.tgz in utills.
- **olt-iso-copy** - [No arguments - Interactive]

This script copies iso images downloaded by the user (from Oracle) into a directory where OLT expects to find the iso image.
- **olt-logcleaner** - [No arguments]

Clean up test logs for freeing up space. All QA directories older than 10 days will be deleted. No archive will be maintained.
- **olt-patch-copy** - [No arguments - Interactive ]

This script copies oracle patch files downloaded by the user ( from metalink.oracle.com) into a directorywhere OLT expects to find the patches.
- **olt-archive-logs** [si/rac/ovm]

This utility collects olt test log files and system logs as an archive file -/home/oracle/work/olt-testlogs-`hostname`-\${time\_stamp}.tgz.
- **start-qa/stop-qa** - [No arguments]

A script to manually start up/stop qa monitor without running OLT. Useful for collecting system logs during debugging.



**Part No: E98725**

Copyright © 2018, 2019, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

**Access to Oracle Support**

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

**Référence: E98725**

Copyright © 2018, 2019, Oracle et/ou ses affiliés. Tous droits réservés.

Ce logiciel et la documentation qui l'accompagne sont protégés par les lois sur la propriété intellectuelle. Ils sont concédés sous licence et soumis à des restrictions d'utilisation et de divulgation. Sauf stipulation expresse de votre contrat de licence ou de la loi, vous ne pouvez pas copier, reproduire, traduire, diffuser, modifier, accorder de licence, transmettre, distribuer, exposer, exécuter, publier ou afficher le logiciel, même partiellement, sous quelque forme et par quelque procédé que ce soit. Par ailleurs, il est interdit de procéder à toute ingénierie inverse du logiciel, de le désassembler ou de le décompiler, excepté à des fins d'interopérabilité avec des logiciels tiers ou tel que prescrit par la loi.

Les informations fournies dans ce document sont susceptibles de modification sans préavis. Par ailleurs, Oracle Corporation ne garantit pas qu'elles soient exemptes d'erreurs et vous invite, le cas échéant, à lui en faire part par écrit.

Si ce logiciel, ou la documentation qui l'accompagne, est livré sous licence au Gouvernement des Etats-Unis, ou à quiconque qui aurait souscrit la licence de ce logiciel pour le compte du Gouvernement des Etats-Unis, la notice suivante s'applique :

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

Ce logiciel ou matériel a été développé pour un usage général dans le cadre d'applications de gestion des informations. Ce logiciel ou matériel n'est pas conçu ni n'est destiné à être utilisé dans des applications à risque, notamment dans des applications pouvant causer un risque de dommages corporels. Si vous utilisez ce logiciel ou ce matériel dans le cadre d'applications dangereuses, il est de votre responsabilité de prendre toutes les mesures de secours, de sauvegarde, de redondance et autres mesures nécessaires à son utilisation dans des conditions optimales de sécurité. Oracle Corporation et ses affiliés déclinent toute responsabilité quant aux dommages causés par l'utilisation de ce logiciel ou matériel pour des applications dangereuses.

Oracle et Java sont des marques déposées d'Oracle Corporation et/ou de ses affiliés. Tout autre nom mentionné peut correspondre à des marques appartenant à d'autres propriétaires qu'Oracle.

Intel et Intel Xeon sont des marques ou des marques déposées d'Intel Corporation. Toutes les marques SPARC sont utilisées sous licence et sont des marques ou des marques déposées de SPARC International, Inc. AMD, Opteron, le logo AMD et le logo AMD Opteron sont des marques ou des marques déposées d'Advanced Micro Devices. UNIX est une marque déposée de The Open Group.

Ce logiciel ou matériel et la documentation qui l'accompagne peuvent fournir des informations ou des liens donnant accès à des contenus, des produits et des services émanant de tiers. Oracle Corporation et ses affiliés déclinent toute responsabilité ou garantie expresse quant aux contenus, produits ou services émanant de tiers, sauf mention contraire stipulée dans un contrat entre vous et Oracle. En aucun cas, Oracle Corporation et ses affiliés ne sauraient être tenus pour responsables des pertes subies, des coûts occasionnés ou des dommages causés par l'accès à des contenus, produits ou services tiers, ou à leur utilisation, sauf mention contraire stipulée dans un contrat entre vous et Oracle.

**Accès aux services de support Oracle**

Les clients Oracle qui ont souscrit un contrat de support ont accès au support électronique via My Oracle Support. Pour plus d'informations, visitez le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> ou le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> si vous êtes malentendant.