

ORACLE®
VM

ovm-bkp: Oracle VM 3.4 Backup Utilities

Installation and User Guide

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Summary

The objective of this document is to describe and show how-to install, implement and use Virtual Machines Backup Utilities for Oracle VM 3.4; those backup utilities are grouped into a project named "**ovm-bkp**" and are dedicated to the backup management for Virtual Machines running on Oracle VM 3.4.

Oracle VM is a platform that provides a fully equipped environment that enables you to leverage the benefits of virtualization technology and enables you to deploy operating systems and application software within a supported virtualization environment.

Oracle VM enables rapid enterprise application deployment, such as Oracle Database, Middleware, and Applications as well as many non-Oracle applications.

Oracle VM supports Oracle Linux, Microsoft Windows, Oracle Solaris, and many other Linux distributions.

The components of Oracle VM are as follows:

Oracle VM Server for x86

Oracle VM Server for x86 (Oracle VM Server) is a self-contained virtualization environment designed to provide a lightweight, secure, server-based platform to run virtual machines on x86 hardware. Oracle VM Server is based upon an updated version of the underlying Xen hypervisor technology, and includes Oracle VM Agent. It also includes a Linux kernel with support for a broad array of devices and file systems. The Linux kernel is run as Dom0 to manage one or more DomU virtual machines, each of which could be Linux, Oracle Solaris, or Microsoft Windows.

Oracle VM Manager

Oracle VM Manager is an application that allows you to configure and manage your Oracle VM environment. Oracle VM Manager includes both a command line interface and a web-based user interface, which is a standard Application Development Framework (ADF) web application. Oracle VM Manager provides virtual machine management facilities, including creating virtual machines from installation media or from templates. It provides features such as power on, power off, deleting, importing, deploying, and live migration of virtual machines. Oracle VM Manager also manages resources, including ISO files, virtual machine templates, and shared virtual disks.

For further details about Oracle VM Server and Oracle VM Manager, see the [Oracle VM 3.4 documentation Library](#).

Assumptions

Oracle VM 3.4 Backup Utilities for Virtual Machines have following requirements:

- "**ovm-bkp**" Backup Utilities have to be installed on Oracle VM Manager machine; no other option is actually supported.
- "**ovm-bkp**" Backup Utilities are supported on Oracle VM 3.4.
- "**ovm-bkp**" properly works on environments where resources do not contain spaces in their names:
 - Oracle VM Pool(s) Name
 - Oracle VM Virtual Machine(s) Name
 - Oracle VM Repository(ies) Name



If this is the case, please rename your resource-name and replace the “space” with characters like “-“ or “_”.

- Oracle VM Manager machine hostname has to be correctly associated to an IP address (managed by /etc/hosts or DNS server).
- Running Virtual Machines backups can be taken only if virtual-disks reside on OCFS2 repositories (iSCSI and Fiber Channel storage); Virtual Machines running on NFS repositories have to be stopped.
- Backup obtained from a running Virtual Machine is always a crash-consistent backup of the running vm.
- If the Virtual Machine also owns physical-disks, the backup taken will contain only virtual-disks and so, a manual intervention may be required to have it correctly restored and consequently booted.
- Having a dedicated NFS repository for Virtual Machines backups is strongly suggested; OCFS2 repository can be used and possibly also shared to external systems by "[Repository Exports](#)" feature.

Solution Architecture

Target of the ovm-bkp utilities is to get a crash-consistent backup of a running Virtual Machine and, between the others, give the option to get this backup shared to external systems like Storages or Media Server.

As shown in the picture below, thanks to the utility, so, you can get a real backup of your Virtual Machines and constantly share the same to your media server:

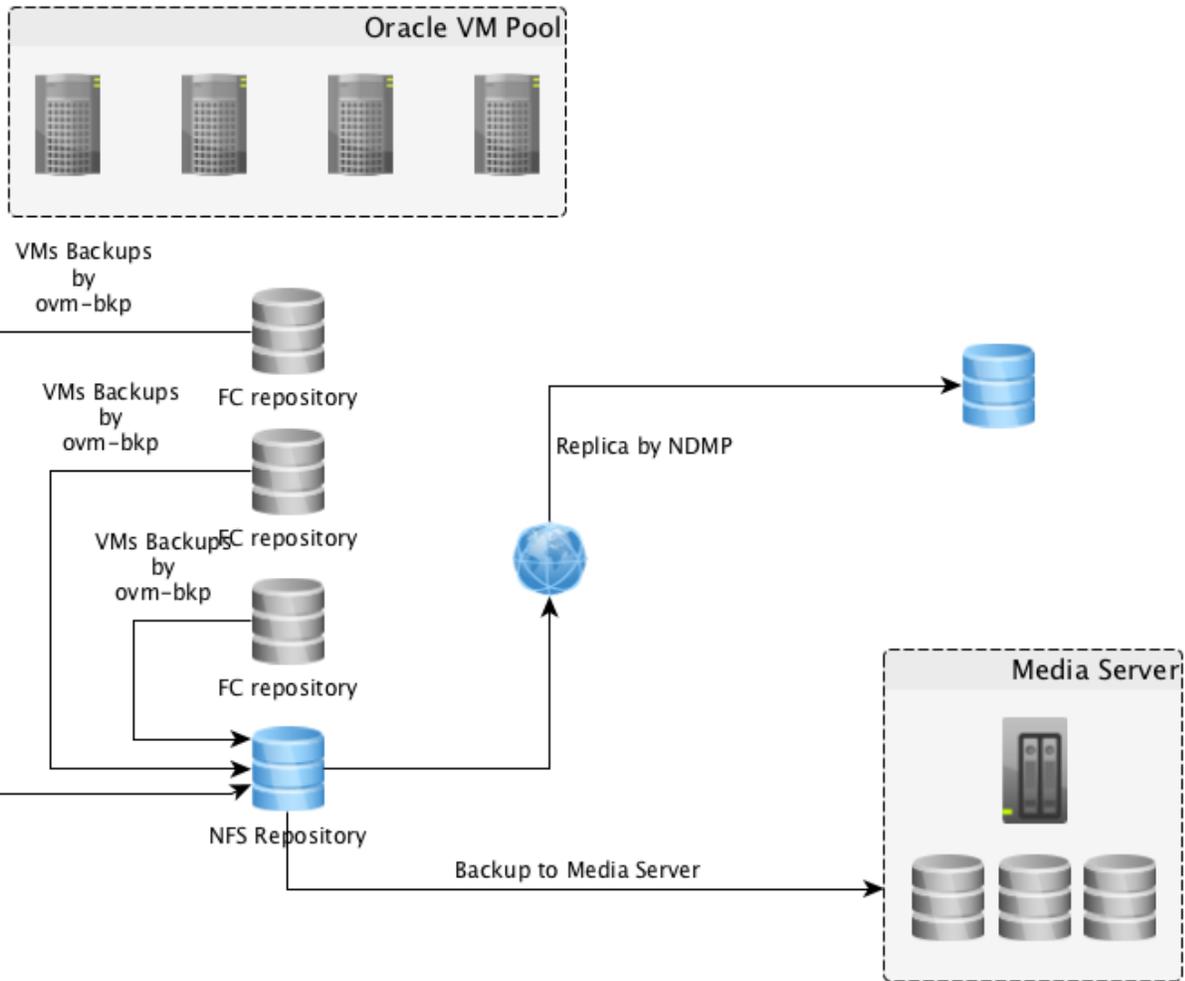


Figure 1. ovm-bkp flowchart

All the backup operations will be executed starting from Oracle VM Manager machine managing the Oracle VM Pool(s); the entire solution is based on scripts and Oracle VM CLI interface.

On the picture above operations like "**Replicas by NDMP**" or "**Backup to Media Server**" have to be managed by your own existing solution; "**ovm-bkp**" utilities will manage backups taken and saved on the dedicated "**NFS Repository**".

What's new in Release 1.1.0-20190221

- "*ovm-backup.sh*" script is now able to exclude specific virtual-disks from the backup
- "*ovm-setup-vm.sh*" now includes the option to configure virtual-disk exclusion for VM backups

Preinstallation Tasks and Requirements

"ovm-bkp" is based on a single RPM, built for Oracle Linux 6 and 7, with following dependencies:

- [expect.x86_64](#): A program-script interaction and testing utility
- [openssl.x86_64](#): Utilities from the general purpose cryptography library with TLS implementation
- [nmap-ncat.x86_64](#): Nmap's Netcat replacement

"ovm-bkp" uses the Oracle VM CLI (Command Line Interface) to execute operations on Oracle VM Pool(s)/Server(s) so following Oracle VM Manager Linux services have to be enabled and running:

- ovm_mysq
- ovm
- ovmcli

Installing "ovm-bkp" Backup Utilities for Oracle VM 3.4

As already said, "ovm-bkp" consists of one RPM build for Oracle Linux 6 and 7; this RPM can be downloaded from OTN (Oracle Technology Network) at the following link:

- <http://www.oracle.com/technetwork/server-storage/vm/downloads/ovm-tools-3604795.html>

Once downloaded, please copy this RPM on your Oracle VM Manager machine and, by "Yum", execute following command:

```
# yum install ./ovm-bkp-1.1.0-20190221.noarch.rpm
```

Yum will take care of missing dependencies and will install everything required to get "ovm-bkp" correctly installed.

Example:

```
[root@ovmm34 ~]# yum install ./ovm-bkp-1.1.0-20190221.noarch.rpm
Loaded plugins: langpacks, ulninfo
Examining ./ovm-bkp-1.1.0-20190221.noarch.rpm: ovm-bkp-1.1.0-20190221.noarch
Marking ./ovm-bkp-1.1.0-20190221.noarch.rpm to be installed
Resolving Dependencies
--> Running transaction check
---> Package ovm-bkp.noarch 0:1.0-20180208 will be installed
--> Processing Dependency: expect for package: ovm-bkp-1.1.0-20190221.noarch
--> Processing Dependency: nc for package: ovm-bkp-1.1.0-20190221.noarch
--> Running transaction check
---> Package expect.x86_64 0:5.45-14.el7_1 will be installed
---> Package nmap-ncat.x86_64 2:6.40-7.el7 will be installed
--> Finished Dependency Resolution
```

Dependencies Resolved

```
=====
=====
Package Arch Version Repository Size
=====
```

```
=====  
Installing:  
ovm-bkp noarch 1.0-20180208 /ovm-bkp-1.1.0-20190221.noarch 99 k  
Installing for dependencies:  
expect x86_64 5.45-14.el7_1 ol7_latest_x86_64 262 k  
nmap-ncat x86_64 2:6.40-7.el7 ol7_latest_x86_64 200 k  
  
Transaction Summary  
=====
```

```
=====  
Install 1 Package (+2 Dependent packages)  
  
Total size: 561 k  
Total download size: 462 k  
Installed size: 1.1 M  
Is this ok [y/d/N]: y  
Downloading packages:  
(1/2): expect-5.45-14.el7_1.x86_64.rpm | 262 kB 00:00:00  
(2/2): nmap-ncat-6.40-7.el7.x86_64.rpm | 200 kB 00:00:00  
-----  
-----  
Total 3.8 MB/s | 462 kB 00:00:00  
Running transaction check  
Running transaction test  
Transaction test succeeded  
Running transaction  
Installing : 2:nmap-ncat-6.40-7.el7.x86_64 1/3  
Installing : expect-5.45-14.el7_1.x86_64 2/3  
Installing : ovm-bkp-1.1.0-20190221.noarch 3/3  
Verifying : expect-5.45-14.el7_1.x86_64 1/3  
Verifying : 2:nmap-ncat-6.40-7.el7.x86_64 2/3  
Verifying : ovm-bkp-1.1.0-20190221.noarch 3/3  
  
Installed:  
ovm-bkp.noarch 0:1.0-20180208  
  
Dependency Installed:  
expect.x86_64 0:5.45-14.el7_1 nmap-ncat.x86_64 2:6.40-7.el7  
  
Complete!
```

Figure 2. ovm-bkp installation

Once the RPM has been installed on Oracle VM Manager system, you can proceed to configure the Oracle VM Manager access for "ovm-bkp" utilities.

To accomplish this step, execute following commands:

```
# cd /opt/ovm-bkp/bin
```

```
# ./ovm-setup-ovmm.sh
```

This script will proceed to configure the ssh-key exchange required to get all the "ovm-bkp" scripts working with Oracle VM CLI without the need to supply any password; the same script will create a configuration file dedicated to

the Oracle VM Manager instance running; this is an operation required only during the configuration of the utility and does not have to be executed anymore; the only case where you could be required to re-execute "**ovm-setup-ovmm.sh**" is to recover a broken or lost Oracle VM Manager configuration file.

Example:

```
[root@ovmm34 bin]# ./ovm-setup-ovmm.sh
Enter Oracle VM Manager administrator User: admin
Enter Oracle VM Manager administrator Password:
Enter Oracle VM Manager administrator Password (again):

New configuration file /opt/ovm-bkp/conf/ovmm/ovmm34.conf created:

# Oracle VM Manager Command Line Interface User
ovmmuser=admin

# Oracle VM Manager Command Line Interface Password - Encrypted
ovmmpassenc=U2FsdGVkX1/OVmiqZfrAHjwkkZXIFDpa12eVpKh0J9I=

# Oracle VM Manager Host
ovmmhost=ovmm34

# Oracle VM Manager CLI Port
ovmmport=10000

# Oracle VM Manager UUID
ovmmuuid=0004fb00000100000b0b42638e45f5b9
```

Figure 3. Oracle VM Manager Setup: ovm-setup-ovmm.sh (interactive)

To get a backup configured you have to execute the "**ovm-setup-vm.sh**" script for each Virtual Machine; this script is required *before* executing a backup for a Virtual Machine.

This script will create a dedicated configuration file for each Virtual Machine with following information:

- **ovmpool**: Oracle VM Pool that guest the Virtual Machine
- **vmname**: Oracle VM Virtual Machine Name
- **vmuuid**: Oracle VM Virtual Machine Unique ID
- **retention**: Backup retention for the Virtual Machine; retention can be time-based or redundancy-based
 - d: days (ex. 8d is to keep a retention of 8 days)
 - c: count (ex. 4c is to keep a retention of 4 copies)
- **targetrepo**: Target Repository where the backup will be saved
- **disktoexclude**: Disk slots that have to be excluded while executing the backup

Example:

```

[root@ovmm34: /opt/ovm-bkp/bin]# ./ovm-setup-vm.sh ol4_hvmpv 4c it-
nfs-backup 3,5

New configuration file for VM ol4_hvmpv has been created at /opt/ovm-
bkp/conf/vm/ol4_hvmpv-0004fb00000600005e4ec501b59878c4.conf:

# Oracle VM Pool

ovmpool=it-pool

# VM Details

vmname=ol4_hvmpv

vmuuid=0004fb00000600005e4ec501b59878c4

vdiskstoexclude=3,5

# Retention to Apply

retention=4c

# Target Repository

targetrepo=it-nfs-backup

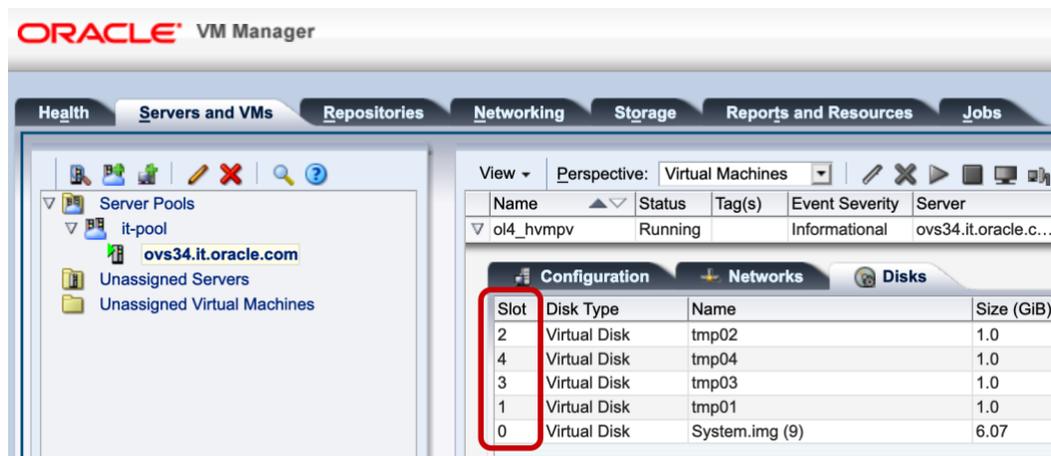
```

Figure 4. Virtual Machine Setup: ovm-setup-vm.sh (interactive)

"**ovm-setup-vm.sh**" has to be executed for each Virtual Machine you want to manage backups with "**ovm-bkp**" utilities.

Existing VM configuration files can be edited to add the "**vdiskstoexclude**" option or recreated by re-executing the "**ovm-setup-vm.sh**" binary.

Disk slots can be easily identified by using the Oracle VM Manager UI:



Using "ovm-bkp" Backup Utilities for Oracle VM 3.4

"ovm-bkp" utilities are composed of different scripts where each one has a specific function:

- common.sh
- ovm-backup.sh
- ovm-delete.sh
- ovm-listbackup.sh
- ovm-preserve.sh
- ovm-restore.sh
- common.sh

"common.sh" script does not have to be executed; this script only contains different functions that are used by other scripts part of the tool.

ovm-backup.sh

"ovm-backup.sh" script is the real executor of Virtual Machines backups; by executing the script without any option you can get information required:

```
[root@ovmm34 bin]# ./ovm-backup.sh

#####
You have to specify <guest id> or <guest name>:
Use ovm-backup.sh <guest name> <backup type> <preserve>
<backup_type> options are (no case-sensitive):
- FULL => ovm-backup will create a full vdisk backup on a further repository
- SNAP => ovm-backup will create an ocfs2 reference-link snapshot of the vm on
the same repository
- OVA => ovm-backup will create a packaged OVA file on a further repository -
available only from 3.4
Example:
ovm-backup.sh vmdb01 FULL Y
ovm-backup.sh vmdb01 SNAP n
ovm-backup.sh vmdb01 OVA N
#####
```

Figure 5. ovm-backup.sh syntax

- "guest name": name of the Virtual Machine you want to get backup
- "backup type": type of backup that has to be taken
 - **FULL**: the backup will be a full sparse copy of the virtual machine configuration file and all virtual disks saved to the Oracle VM repository specified into the Virtual Machine configuration file (see "ovm-setup-vm.sh")
 - **SNAP**: the backup will be a copy of the virtual machine configuration file and an OCFS2 reflink of all virtual disks; the backup will remain on same repository as source Virtual Machine

- **OVA**: the backup will be an OVA file created from the Virtual Machine (see Virtual Appliances for Oracle VM 3.4)
- **"preserve"**: this option allows to declare a backup as "preserved"; a preserved backup will be ignored by the retention policy applied and so "preserved".

All other information, required to get the virtual machine backup, will be picked up from the configuration file created by "ovm-setup-vm.sh"

Example:

```
[root@ovmm34 bin]# ./ovm-backup.sh ca-osbovm SNAP n
=====
Oracle VM 3.4 CLI
=====
=====
Adding VM ca-osbovm information to bkpinfo file /opt/ovm-bkp/bkpinfo/info-
backup-ca-osbovm-SNAP-20180208-1800.txt
=====
Creating Clone-Customizer to get VM snapshot....
=====
Getting VM snapshot....
=====
Backup Type: SNAP....
=====
Adding proper TAG to backup VM....
=====
Moving backup VM to the Unassigned Folder....
=====
Retention type is Redundancy-Based
Actual reference is: 20180208-1800
Latest 8 backup images will be retained while other backup images will be
deleted!!!
All backedup guests that:
=====
1) aren't in a stopped state
2) have physical disk configured
3) have configured vNIC
=====
Won't be removed by the automatic retention even if are obsolete backups.

=====
=====>> GUEST BACKUP EXPIRED AND REMOVED: <<=====
=====
Based on retention policy any guest backup will be deleted!!!
=====
=====> Backup available for guest ca-osbovm (sorted by date) :
<=====
=====
= BACKUP TYPE == BACKUP DATE == BACKUP TIME == BACKUP NAME == PRESERVED ==
=====
```

```

=====
= FULL == 20170801 == 0105 == ca-osbovm-FULL-20170801-0105 == YES
= OVA == 20170828 == 2002 == ca-osbovm-OVA-20170828-2002 == YES
= SNAP == 20180208 == 0026 == ca-osbovm-SNAP-20180208-0026 == YES
= SNAP == 20180208 == 1800 == ca-osbovm-SNAP-20180208-1800 == NO

```

Figure 6. ovm-backup.sh example

where, information gathered by the configuration file are:

```

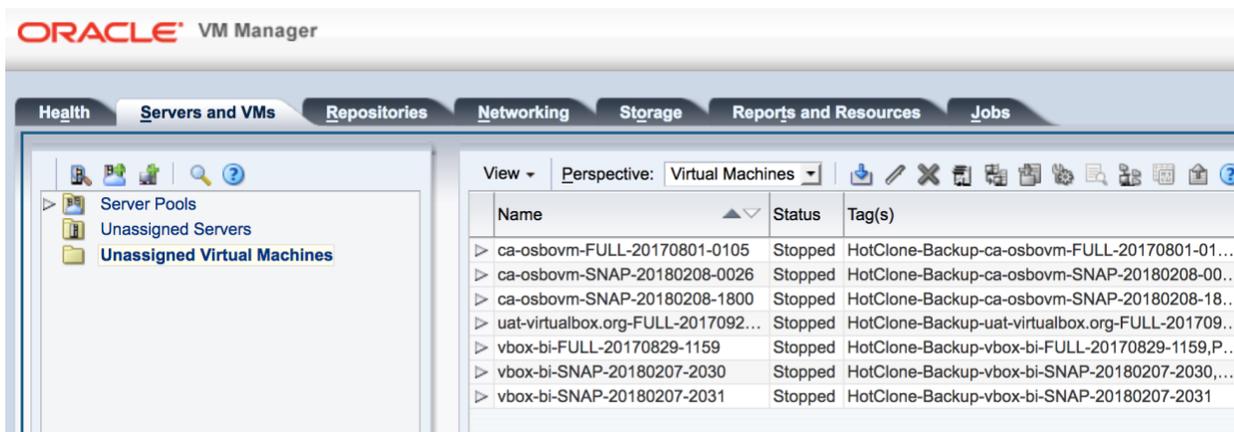
[root@ovmm34 bin]# cat ../conf/vm/ca-osbovm-
0004fb000006000086804eee76850b0c.conf
# Oracle VM Pool
ovmpool=ca-pool
# VM Details
vmname=ca-osbovm
vmuuid=0004fb000006000086804eee76850b0c
vdiskstoexclude=
# Retention to Apply
retention=8c
# Target Repository
targetrepo=ca-nfs-backup

```

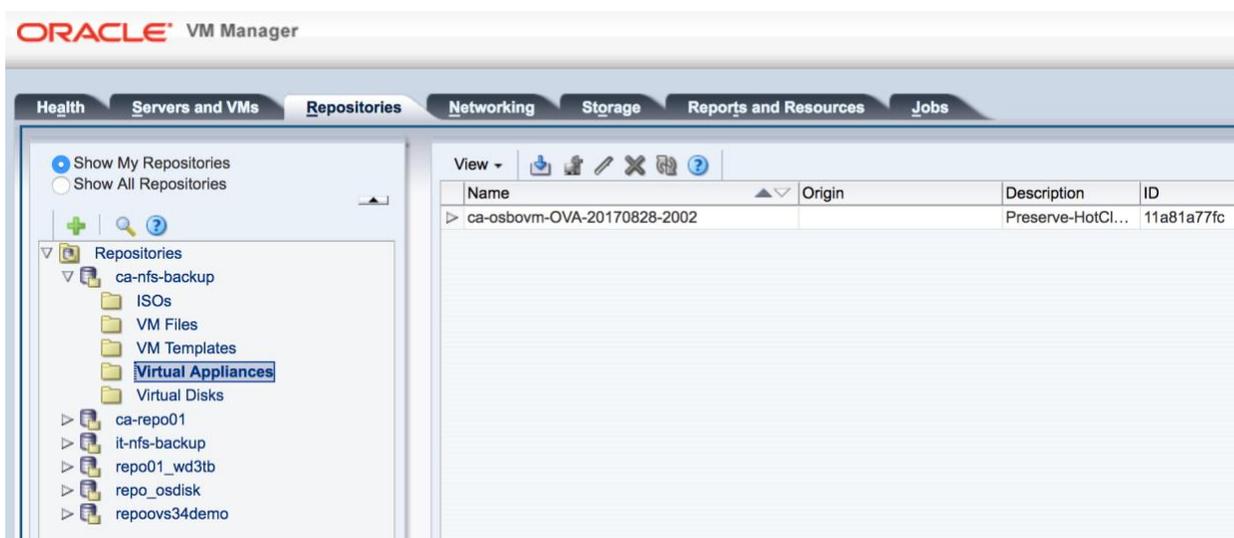
Figure 6. Virtual Machine configuration file example

"**ovm-backup.sh**" executes following steps:

1. Collect all the information required: Virtual Machine name, id and configuration.
2. Create a dedicated "Clone Customizer" based on the info of the Virtual Machine.
3. Create a clone of the Virtual Machine on the same ocfs2 repository (using [ocfs2-reference-link](#)) where it excludes possible physical disks associated to the Virtual Machine.
 - o If the "*backup type*" declared is "**SNAP**" it goes to step (4).
 - o If the "*backup type*" declared is "**FULL**" then it moves the cloned Virtual Machine to the target Oracle VM Repository (that could be NFS and/or OCFS2) reported into the configuration file.
 - o If the "*backup type*" declared is "**OVA**" then it creates an OVA file - starting from the clone taken on step (3) - and saves it to the target Oracle VM Repository reported into the configuration file.
4. Move the cloned Virtual Machine under folder "**Unassigned Virtual Machine**" on Oracle VM Manager
 - o All "**SNAP**" and "**FULL**" backups will be displayed under "**Unassigned Virtual Machines**"



- "OVA" backups will be displayed on "Repository Tab", "Virtual Appliance" folder



to get the complete list of backups available see "ovm-listbackup.sh" script on this document.

- Apply retention policy declared into the configuration file and proceed to delete obsolete backups that are not "preserved".

All Virtual Machine backups recognized as obsolete that:

- are running
- own physical disk(s)
- own vNic(s)

won't be removed and will only be reported as candidate.

ovm-delete.sh

"ovm-delete.sh" script is dedicated to delete a specific Virtual Machine backup.

```
[root@ovmm34 bin]# ./ovm-delete.sh

#####
Use ovm-delete.sh <backup name>
Example:
ovm-delete.sh vmdb01-FULL-20170824
ovm-delete.sh vmdb01-SNAP-20170629
ovm-delete.sh vmdb01-OVA-20170529
#####
```

Figure 6. ovm-delete.sh syntax

So, by this script you can force the deletion of a specific Virtual Machine backup (preserved or not).

Example:

- **Preserved** (Confirmation required):

```
[root@ovmm34 bin]# ./ovm-delete.sh ca-osbovm-SNAP-20180208-0026
=====
WARNING: Backup ca-osbovm-SNAP-20180208-0026 is tagged as -Preserved- !
=====
Are you sure to delete this -Preserved- backup ? (y/n)
Y
=====
Deleting backup ca-osbovm-SNAP-20180208-0026.....
=====
Backup ca-osbovm-SNAP-20180208-0026 and its tags have been deleted
=====
```

Figure 7. ovm-delete.sh example on preserved

- **Normal** (Confirmation not required):

```
[root@ovmm34 bin]# ./ovm-delete.sh ca-osbovm-SNAP-20180208-1800
=====
Deleting backup ca-osbovm-SNAP-20180208-1800.....
=====
Backup ca-osbovm-SNAP-20180208-1800 and its tags have been deleted
=====
```

Figure 8. ovm-delete.sh example on normal

ovm-listbackup.sh

"ovm-listbackup.sh" script is dedicated to get the list of backups available for a specific Virtual Machine.

```
[root@ovmm34 bin]# ./ovm-listbackup.sh

#####
Use ovm-listbackup.sh <vm name>
Example:
ovm-listbackup.sh vmdb01
#####
```

Figure 9. ovm-listbackup.sh syntax

So, by this script you can evaluate all the backups available for a specific Virtual Machine ordered by date; information available are:

- Backup Type (OVA, FULL or SNAP)
- Backup Date and Time
- Backup Name (that reflects the Virtual Machine name for Oracle VM)
- Preserved (Y/N)

Example:

```
[root@ovmm34 bin]# ./ovm-listbackup.sh vbox-bi

=====
=====> Backup available for guest vbox-bi (sorted by date) :
<=====
=====
= BACKUP TYPE == BACKUP DATE == BACKUP TIME == BACKUP NAME == PRESERVED ==
=====
=====
= FULL == 20170829 == 1159 == vbox-bi-FULL-20170829-1159 == YES
= SNAP == 20180207 == 2030 == vbox-bi-SNAP-20180207-2030 == YES
= SNAP == 20180207 == 2031 == vbox-bi-SNAP-20180207-2031 == NO
=====
=====
```

Figure 10. ovm-listbackup.sh example

ovm-preserve.sh

"ovm-preserve.sh" script is dedicated to change the "Preserve" option for a specific Virtual Machine backup.

```
[root@ovmm34 bin]# ./ovm-preserve.sh

#####
Use ovm-preserve.sh <backup name> <preserve>
Example:
ovm-preserve.sh vmdb01-FULL-20170824 Y
ovm-preserve.sh vmdb01-SNAP-20170629 n
ovm-preserve.sh vmdb01-OVA-20170529 N
#####
```

Figure 11. ovm-preserve.sh syntax

By this script you can change the "Preserve" option for an existing backup, where:

- *Preserve=y* means that the backup will be preserved from the retention policy so, even if the backup is an obsolete one, the same won't be deleted while applying the retention policy.
- *Preserve=n* means that the backup will be treated by the retention policy and if obsolete will be according deleted.

Example:

```
[root@ovmm34 bin]# ./ovm-listbackup.sh vbox-bi
=====
=====> Backup available for guest vbox-bi (sorted by date) :
<=====
=====
= BACKUP TYPE == BACKUP DATE == BACKUP TIME == BACKUP NAME == PRESERVED ==
=====
= FULL == 20170829 == 1159 == vbox-bi-FULL-20170829-1159 == YES
= SNAP == 20180207 == 2030 == vbox-bi-SNAP-20180207-2030 == YES
= SNAP == 20180207 == 2031 == vbox-bi-SNAP-20180207-2031 == NO
=====

[root@ovmm34 bin]# ./ovm-preserve.sh vbox-bi-SNAP-20180207-2031 y
=====
==
Backup name vbox-bi-SNAP-20180207-2031 has now proper Tag and is configured as
-Preserved-!
=====
==

[root@ovmm34 bin]# ./ovm-listbackup.sh vbox-bi
=====
=====> Backup available for guest vbox-bi (sorted by date) :
<=====
=====
= BACKUP TYPE == BACKUP DATE == BACKUP TIME == BACKUP NAME == PRESERVED ==
=====
= FULL == 20170829 == 1159 == vbox-bi-FULL-20170829-1159 == YES
= SNAP == 20180207 == 2030 == vbox-bi-SNAP-20180207-2030 == YES
= SNAP == 20180207 == 2031 == vbox-bi-SNAP-20180207-2031 == YES
=====
```

Figure 12. ovm-preserve.sh example

ovm-restore.sh

"ovm-restore.sh" script is dedicated to restore the Virtual Machine backup; this script is interactive.

```
[root@ovmm34 bin]# ./ovm-restore.sh

#####
Use ovm-restore.sh <guest name>
Example:
ovm-restore.sh vmdb01
#####
```

Figure 13. ovm-restore.sh syntax

Questions that the user has to answer:

- Please choose the VM <vm name> backup you want to restore
 - On this step a list of backups will be displayed; by the number associated you have the option to decide which backup will be picked-up.
 - On the example below you have so supply (1) to get backup named "ca-osbovm-FULL-20170801-0105" or (2) to get backup named "ca-osbovm-OVA-20170828-2002".

```
[root@ovmm34 bin]# ./ovm-restore.sh ca-osbovm
=====
Please choose the VM ca-osbovm backup you want to restore:
=====
1) ca-osbovm-FULL-20170801-0105 2) ca-osbovm-OVA-20170828-2002
=====
Choice:
```

Figure 14. ovm-restore.sh: choose "Backup Name"

- Please choose the Oracle VM Pool where to restore <backup name>
 - On this step a list of Oracle VM Pool(s) will be displayed; to get a specific Oracle VM Pool showed up on this step you need, at least, one Oracle VM Server (part of the pool) that mounts the Oracle VM Repository where the backup resides; consider that an Oracle VM Repository can be shared between more Oracle VM Pools only if it's of NFS type.

```
1
=====
Here you can see the Oracle VM Pool(s) with the backup available
If you want to see other Oracle VM Pool(s) you should present the
backup repository ca-nfs-backup to at least one server of those Pools.
Please consider that only NFS Repositories can be presented to
different Oracle VM Pool(s) at the same time.
Please choose the Oracle VM Pool where to restore ca-osbovm-FULL-20170801-0105:
=====
1) ca-pool
=====
Choice:
```

Figure 15. ovm-restore.sh: choose "Oracle VM Pool"

- Please choose the Oracle VM repository where to restore the backup named <backup name>
 - On this step a list of Oracle VM repositories will be displayed; the script will also check the free disk-space required to get the Virtual Machine restored and will propose only the Oracle VM repositories that can guest the restore.
 - If an Oracle VM Repository is available but the free disk-space is not enough, the same won't be selectable (see "**it-nfs-backup**" in the example below); at the same time, the Virtual Machine backup size will be displayed.

```

1
=====
Refreshing repository - it-nfs-backup - to get updated information...
=====
Refreshing repository - ca-nfs-backup - to get updated information...
=====
Refreshing repository - ca-repo01 - to get updated information...
=====

Here you can see the list of repositories where the restore can be
executed on Oracle VM Pool ca-pool.
Backup ca-osbovm-FULL-20170801-0105 size is equal to 45 GB
*****
****
Consider that following repositories have been excluded due to low free-disk
space:
*****
****
it-nfs-backup - Free 35 GB
*****
****
Please choose the Oracle VM repository where to restore the backup
named ca-osbovm-FULL-20170801-0105:
=====

1) ca-nfs-backup - Free 82 GB 2) ca-repo01 - Free 73 GB
=====
Choice:

```

Figure 16. ovm-restore.sh: choose "Repository Name"

- [OPTIONAL] Do you want to keep the same vNICs HWADDR for the restored VM ? (y/n)
 - This step is optional; only if the source VM is not more available the script will ask the confirmation to restore the same vNIC HW-ADDR (MAC Address) on the Virtual Machine restored.

```

2
=====
Source VM ca-osbovm was configured with following vNIC(s) and HW-ADDR
vNic 1 on Network-Id 0ad30000 with HW-ADDR 00:21:f6:d5:2f:52
vNic 2 on Network-Id 10e098228f with HW-ADDR 00:21:f6:38:56:12
=====
Do you want to keep the same vNICs HWADDR for the restored VM ? (y/n)

```

Figure 17. ovm-restore.sh: optional feature on vNIC HW-ADDR

With proper confirmation, vNICs of the restored Virtual Machine will be the same used by the source one:

```
Y
=====
Following vNICs will be configured with the source-VM HW-ADDR:
=====
vNic 1 with Hw-Addr 00:21:f6:d5:2f:52
vNic 2 with Hw-Addr 00:21:f6:38:56:12
=====
```

Figure 18. ovm-restore.sh: vNIC HW-ADDR used for the restore

At this point the restore process starts; you'll get an update each 10 seconds:

```
=====
Creating Clone-Customizer to get VM restored....
=====
Restoring to target repository ca-repo01....
=====
Waiting for Vm restore to be available.....0 seconds
Waiting for Vm restore to be available.....10 seconds
Waiting for Vm restore to be available.....20 seconds
Waiting for Vm restore to be available.....30 seconds
Waiting for Vm restore to be available.....40 seconds
Waiting for Vm restore to be available.....50 seconds
Waiting for Vm restore to be available.....60 seconds
Waiting for Vm restore to be available.....70 seconds
Waiting for Vm restore to be available.....80 seconds
Waiting for Vm restore to be available.....90 seconds
Waiting for Vm restore to be available.....100 seconds
```

Figure 19. ovm-restore.sh: restore process started

- Once the restore process is completed you'll get further information related like:
 - vNIC(s) added to the Virtual Machine restored
 - If source Virtual Machine owns physical-disks you'll also see which physical-disks were associated; thanks to this option, by Oracle VM Manager web console or Oracle VM CLI, you'll get the chance to re-associate physical-disks that were used by the source Virtual Machine.

```
=====
Deleting temporary CloneCustomizer created.....
=====
Addinv vNIC(s) using configuration of the source VM
vNic 1 on Network-Id: 0ad30000
vNic 1 with source Hw-Addr 00:21:f6:d5:2f:52
vNic 2 on Network-Id: 10e098228f
vNic 2 with source Hw-Addr 00:21:f6:38:56:12
=====
Moving Vm ca-osbovm-RESTORE-20180209-1613
to the Oracle VM Pool: ca-pool
```

```

=====
=====
Please consider that source VM was configured with also
physical-disks; here the details:
VmDiskMapping 1 for disk-id 0004fb00001800008e3f20471f3ee3e0 of size 50 GB

```

Figure 20. ovm-restore.sh: output for restore completed

- The same restored Virtual Machine, will be also displayed on Oracle VM Manager web-interface:

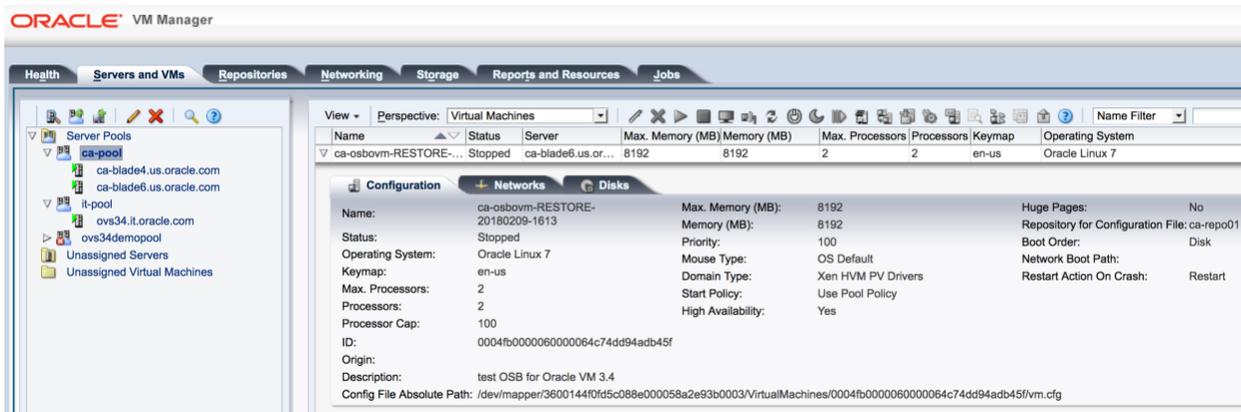


Figure 21. ovm-restore.sh: restore completed on Oracle VM Manager

Further options and Conclusion.

A possible further solution could be to have low-retention backups available on the NFS Oracle VM Repository and medium/long retention on a Tape-Library / Further solution (see NDMP)

So the retention can be managed between the two solutions (ovm-bkp Utilities and Tape Library/NDMP) where:

- ovm-backup.sh manages low-retention on the NFS Repository
- Third party tools manage long-retention on the Tape Library/NDMP
- Low-retention on the NFS allows faster restore for Single Virtual Machine or a list of them

So, this script can be also integrated to further backup solutions that work on Tape Library and/or any other support type.

Feel free to leave your feedback at <https://blogs.oracle.com/scoter/hands-on-backup-utilities-for-oracle-vm-34> .



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