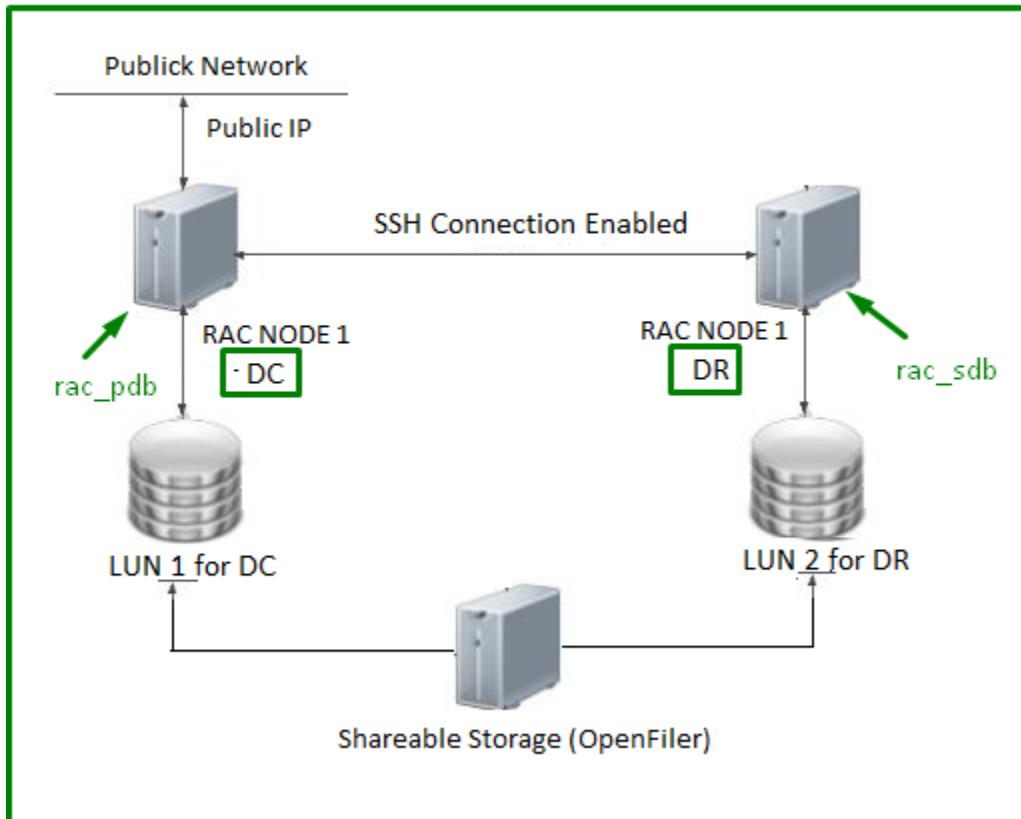


## Oracle Database 11g Release 2 (11.2.0.3.0) 1-Node RAC (DC & DR) on Oracle Linux 6.10 (Using OPENFILER and VMware Work Station Pro)

### **Introduction:**

One of the biggest obstacles preventing people from setting up test RAC environments is the requirement for shared storage. In a production environment, shared storage is often provided by a SAN or high-end NAS device, but both of these options are very expensive when all you want to do is get some experience installing and using RAC. A cheaper alternative is to use an open filer as shared storage, overcoming the obstacle of expensive shared storage.

Now, Using VMware work station pro you can run multiple Virtual Machines (VMs) on a single server, allowing you to run both RAC (DC & DR) on a single machine. I am installing this configuration over my machine having processor: core i7, Memory: 8GB and SSD 248 GB.



### **We needs to download Software:**

Download the following software for 64 bit.

1. Oracle Linux Server 6.10
  - V37084-01.iso
2. Oracle Database 11g Release 2 (11.2.0.3.0), Grid Infrastructure
  - p10404530\_112030\_Linux-x86-64\_1of7.zip
  - p10404530\_112030\_Linux-x86-64\_2of7.zip
  - p10404530\_112030\_Linux-x86-64\_3of7-Clusterware.zip
3. Open Filer Version 2.99.1
  - openfileresa-2.99.1-x86\_64-disc1.iso
4. RPM's
  - oracleasmlib-2.0.4-1.el6.x86\_64.rpm
  - elfutils-libelf-devel-static-0.164-2.el6.x86\_64.rpm

## Overview of Linux Servers:

VM Linux Servers are configured as follows

Nodes	RAC NODE1 - DC	RAC NODE1 - DR	OPENFILER(STORAGE)
Host Name	rac_pdb.mydoamin	rac_sdb.mydoamin	openfiler.mydoamin
Database Name	racdb	racdb_dr	
Instance Name	racdb1	racdb1	
Operatig System	OEL 6.10 - (x86_64)	OEL 6.10 - (x86_64)	Openfiles-2.99.1-(x86_64)
Public IP	IPADDR=192.168.1.105 NETMASK=255.255.255.0 GATEWAY=192.168.1.6 DNS1=192.168.1.16 DNS2=192.168.1.2	IPADDR=192.168.1.106 NETMASK=255.255.255.0 GATEWAY=192.168.1.6 DNS1=192.168.1.16 DNS2=192.168.1.2	IPADDR=192.168.1.104 NETMASK=255.255.255.0 GATEWAY=192.168.1.6 DNS1=192.168.1.16 DNS2=192.168.1.2
Private IP	IPADDR=192.168.1.102 NETMASK=255.255.255.0 GATEWAY=192.168.1.6 DNS1=192.168.1.16 DNS2=192.168.1.2	IPADDR=192.168.1.103 NETMASK=255.255.255.0 GATEWAY=192.168.1.6 DNS1=192.168.1.16 DNS2=192.168.1.2	
Virtual IP	192.168.1.107	192.168.1.108	
SCAN IP	192.168.1.109 192.168.1.110	192.168.1.120 192.168.1.121	

## Oracle Software Components

Software Component	OS User	Primary Group	Supplementary Groups
Grid Infrastructure	grid	oinstall	dba,asmadmin,asmdba,asmoper,beoper
Oracle RAC	oracle	oinstall	dba,oper,asmdba,asmadmin

## Storage Components (DC)

Storage Component	File System	Volume Size	ASM Volume Group Name	Openfiler Volumn Name
OCR/Voting Disk	ASM	20GB	OCR	ocr_pdb
Database File	ASM	40GB	DATA	data_pdb
Fast Recovery Area	ASM	25GB	FRA	fra_pdb

## Storage Components (DR)

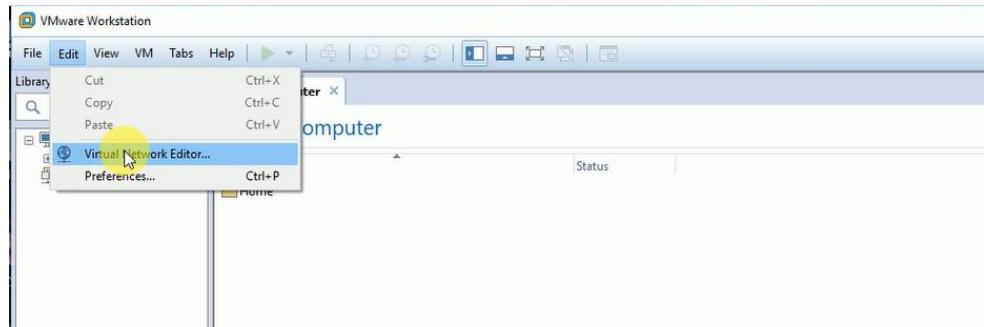
Storage Component	File System	Volume Size	ASM Volume Group Name	Openfiler Volumn Name
OCR/Voting Disk	ASM	20GB	OCR	ocr_sdb
Database File	ASM	40GB	DATA	data_sdb
Fast Recovery Area	ASM	25GB	FRA	fra_sdb

## Installation Steps of Openfiler (VM 1):

This section provides the screens used to install the Openfiler software. For the purpose of this article, I opted to install Openfiler with all default options. The only manual change required was for configuring the local network settings and rest of the configuration using web link with default username is openfiler and password is password.

### 1. Configure Virtual Network Editor IP

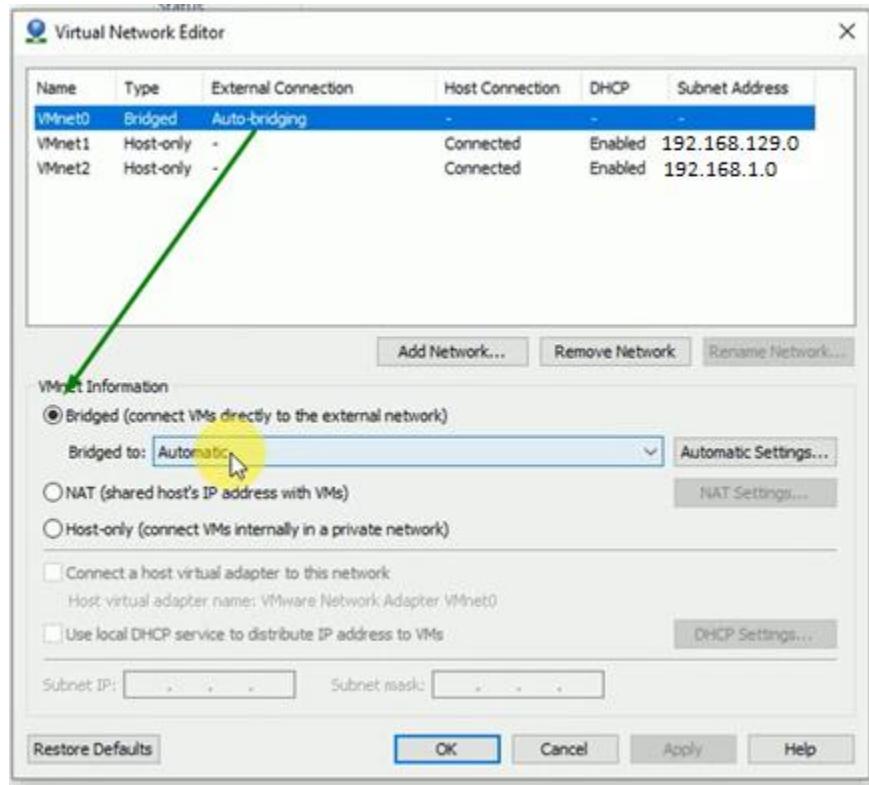
#### 1.1. Edit => Virtual Network Editor



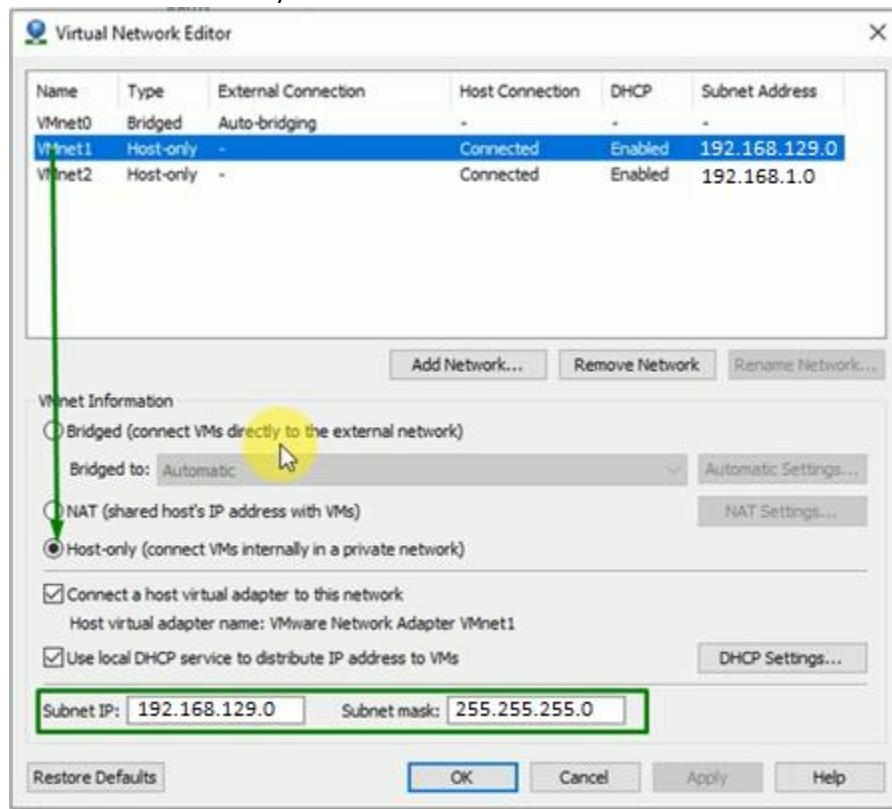
#### 1.2. Initializing virtual networks



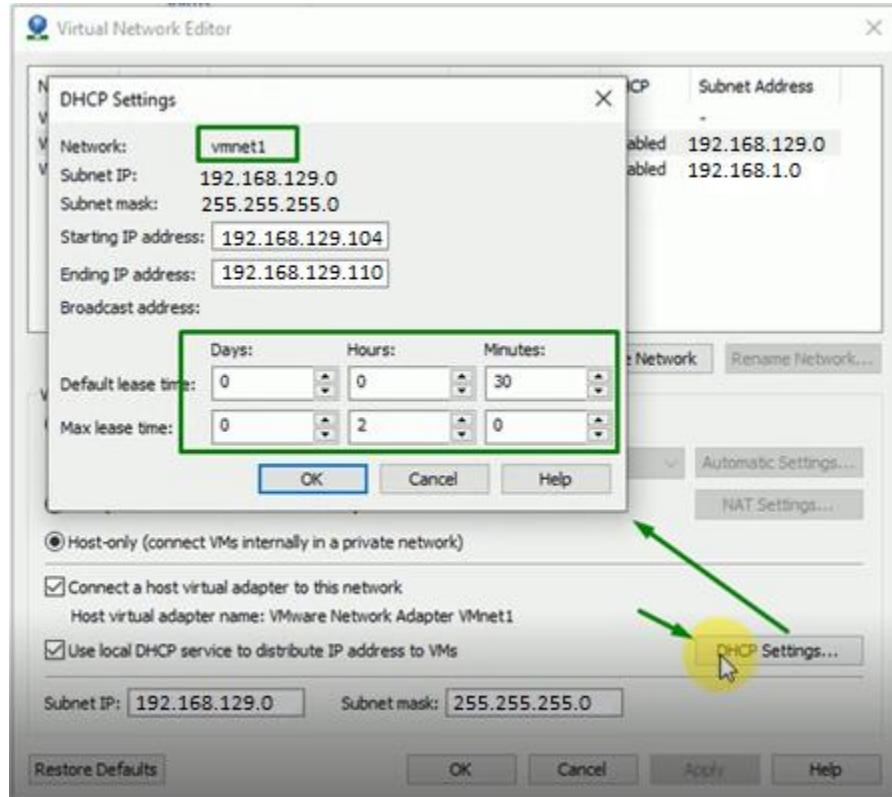
#### 1.3. VMnet0 => Bridged => Automatic



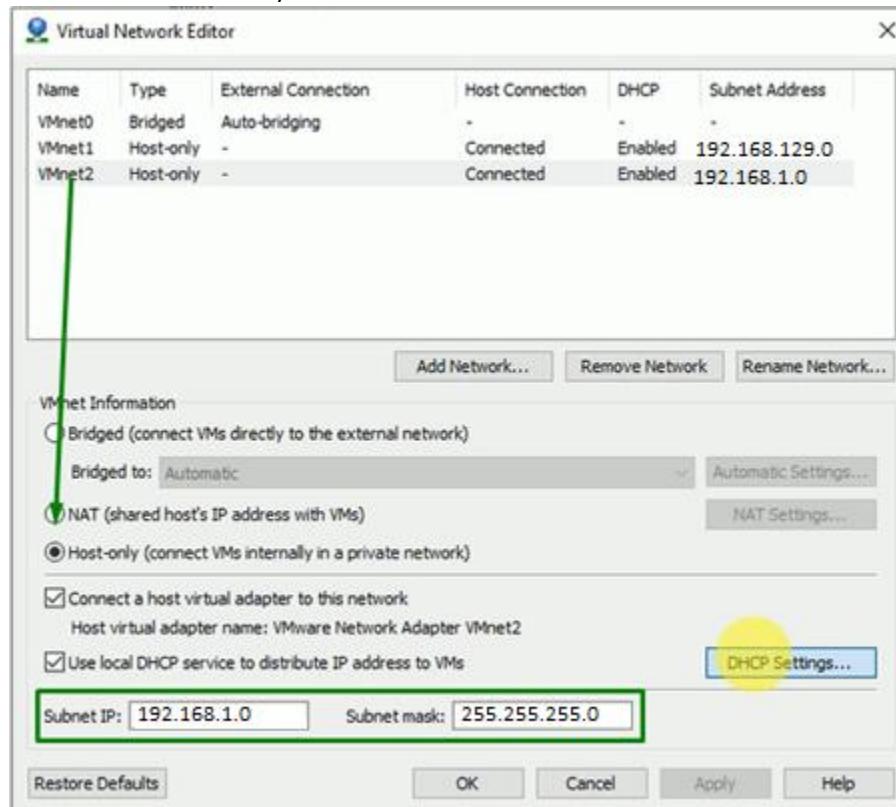
#### 1.4. VMnet1 => Host-only => DHCP



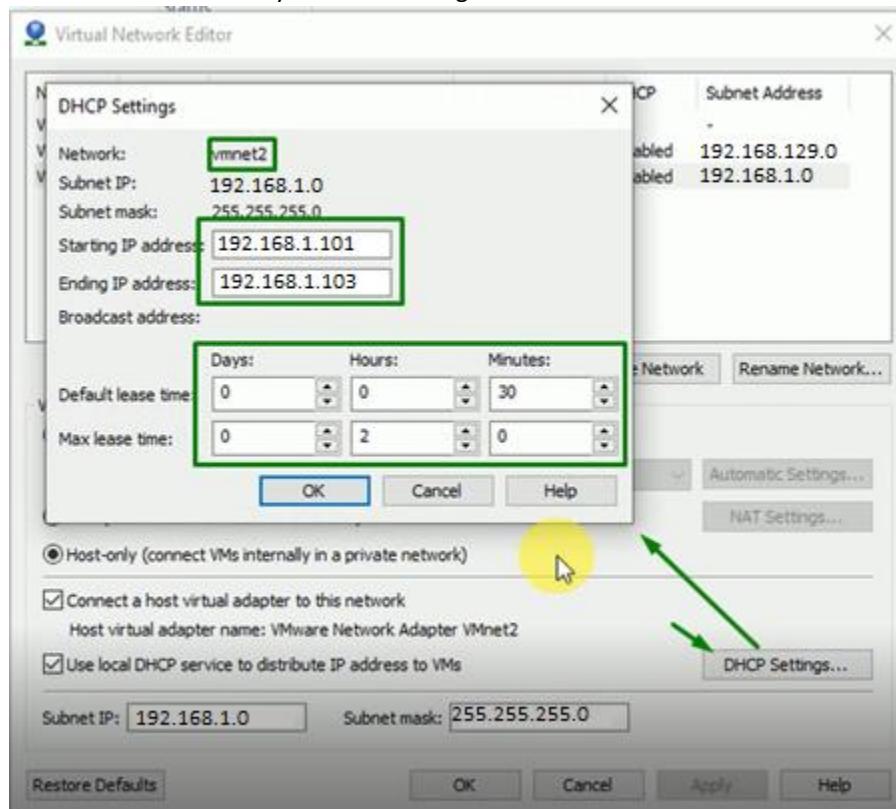
#### 1.5. VMnet1 => Host-only => DHCP Setting



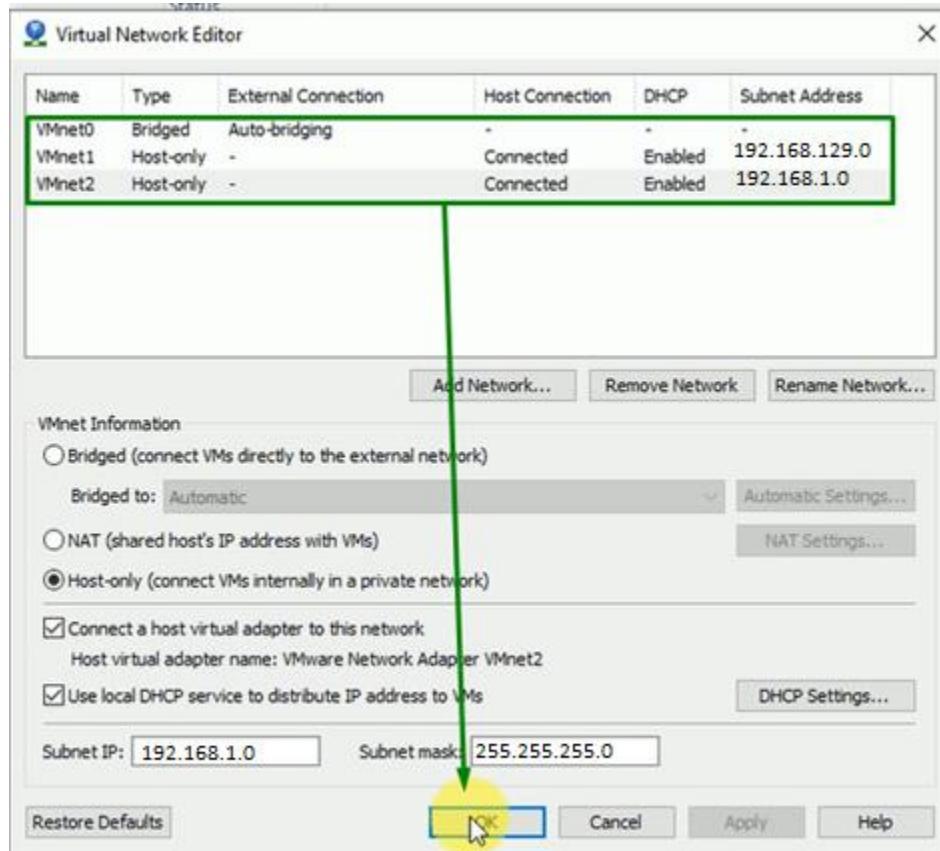
### 1.6. VMnet2 => Host-only => DHCP



### 1.7. VMnet2 => Host-only => DHCP Setting

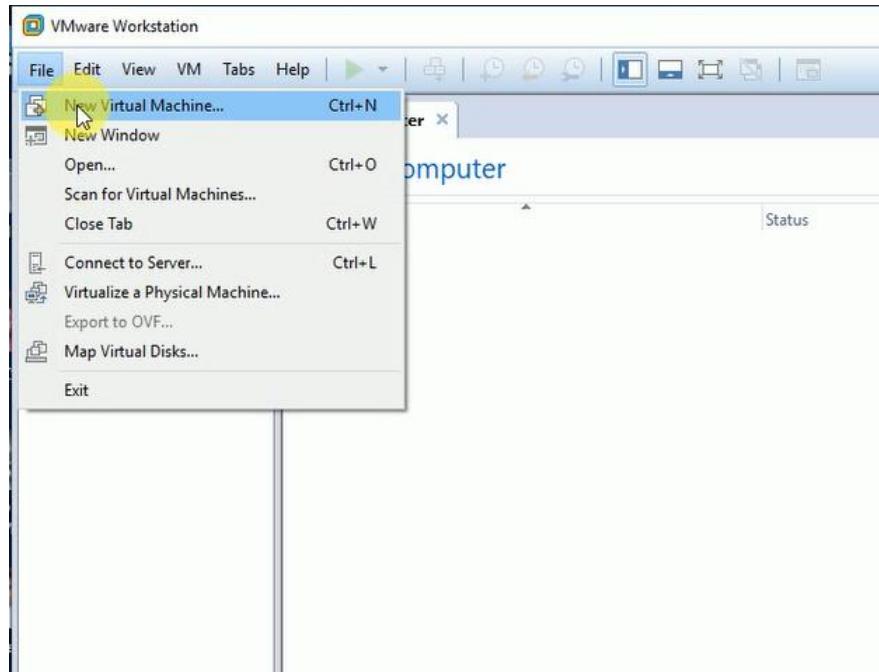


### 1.8. Finley the Configuration look like, Virtual Network Editor IP



### 2. New VM Configuration for Openfiler

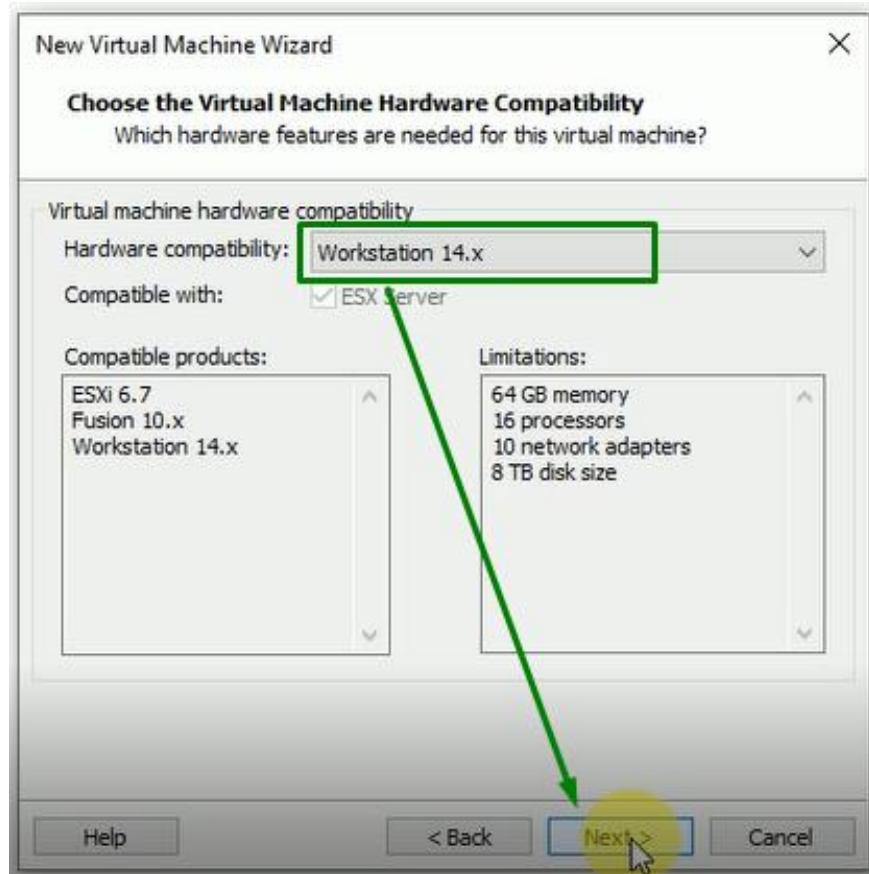
#### 2.1. File => New Virtual Machine



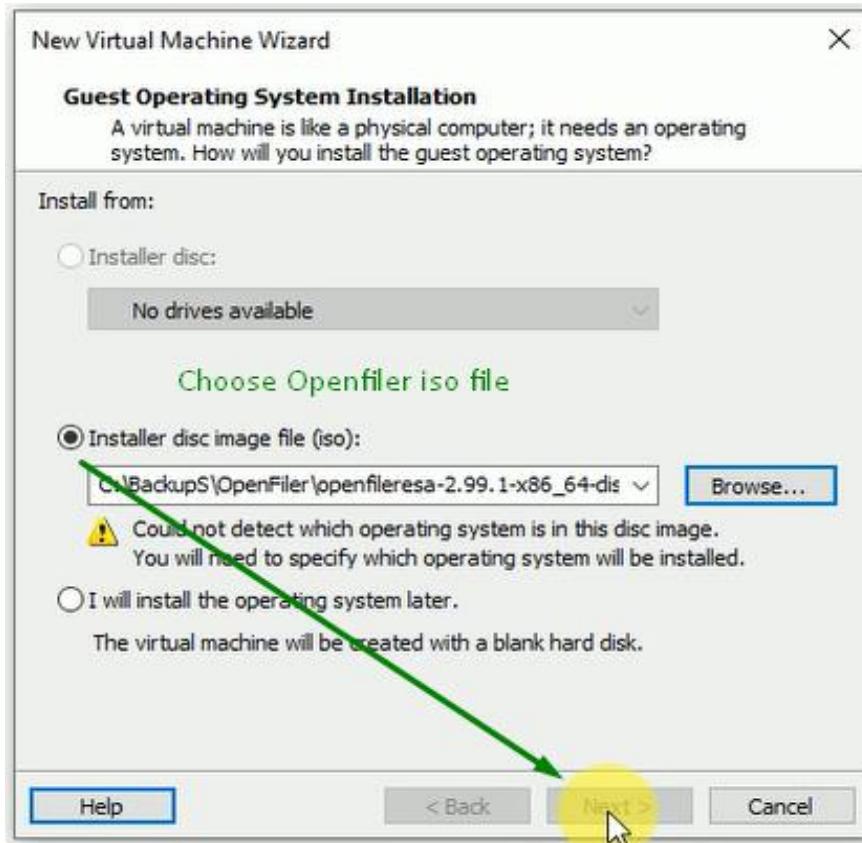
## 2.2. Choose Custom configuration



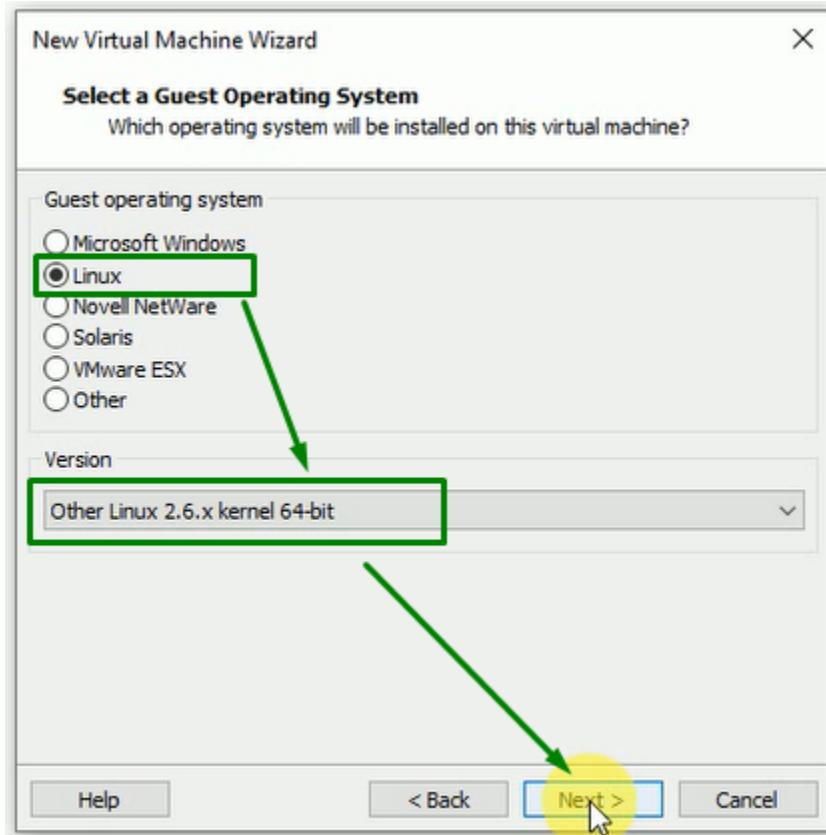
## 2.3. Choose default Hardware compatibility



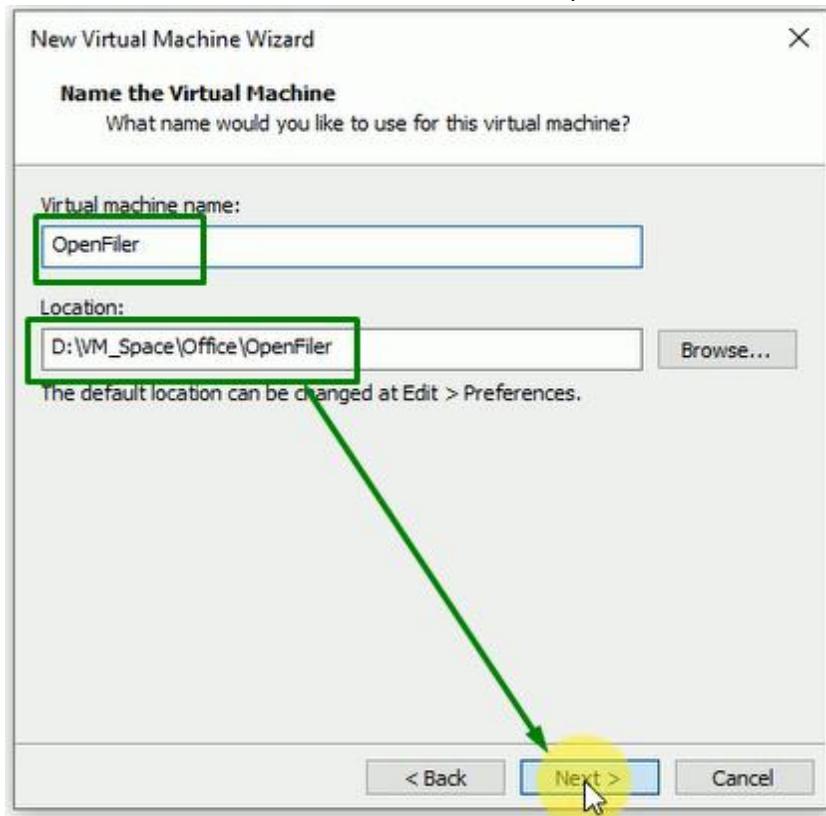
2.4. Choose Openfiler iso file (openfileresa-2.99.1-x86\_64-disc1.iso) using Browse



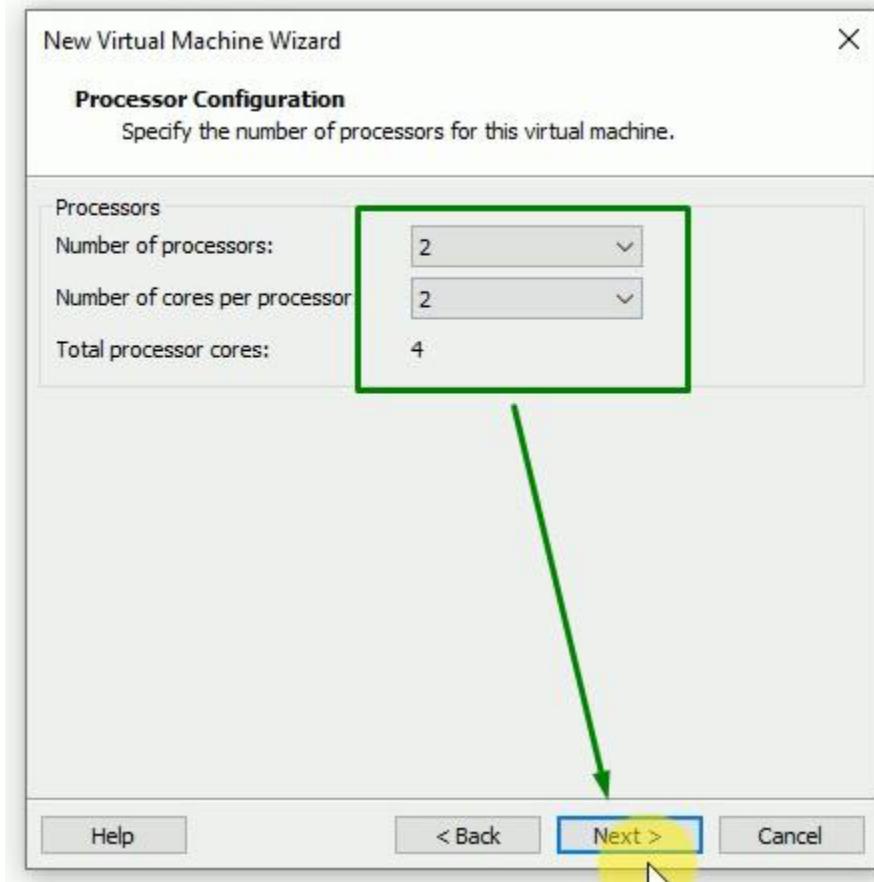
2.5. Choose OS and Version



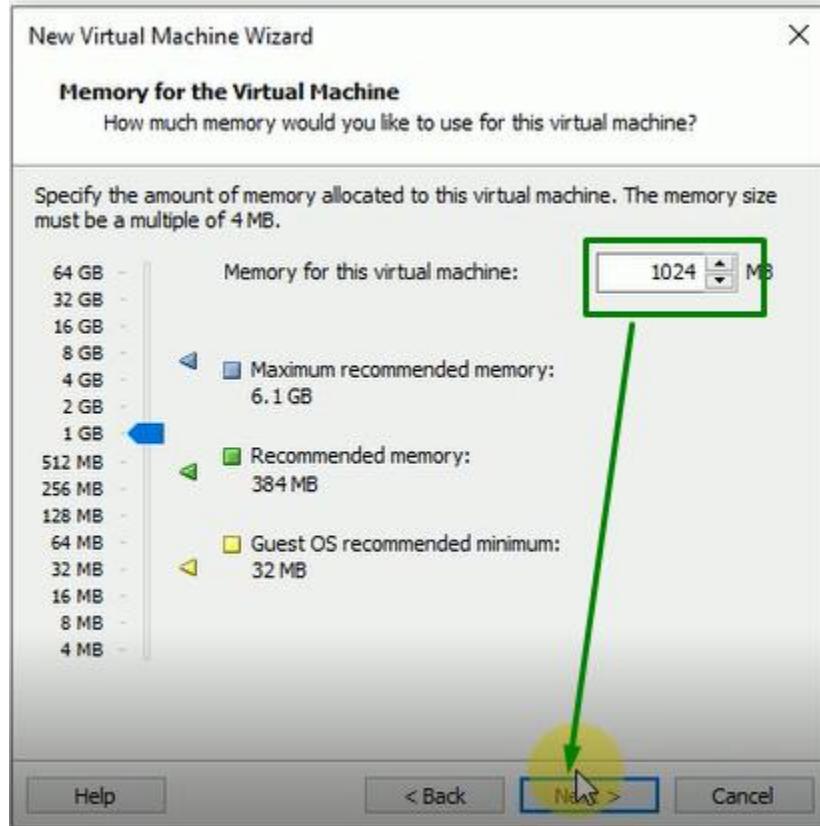
2.6. Provide VM Machine name and location where you want to store



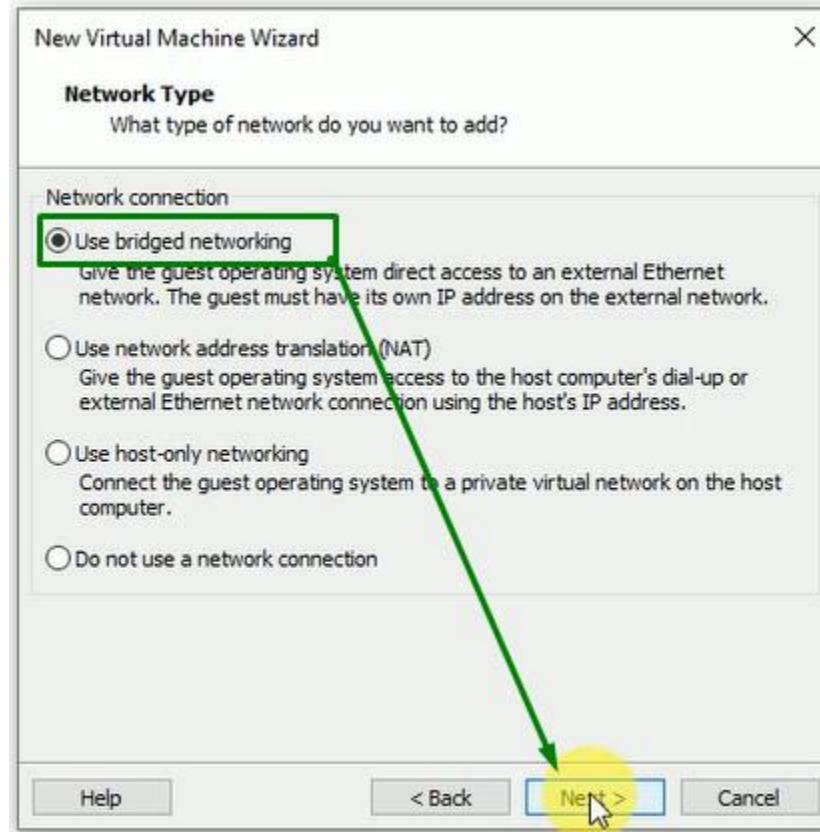
2.7. Select the processors and core as your machine



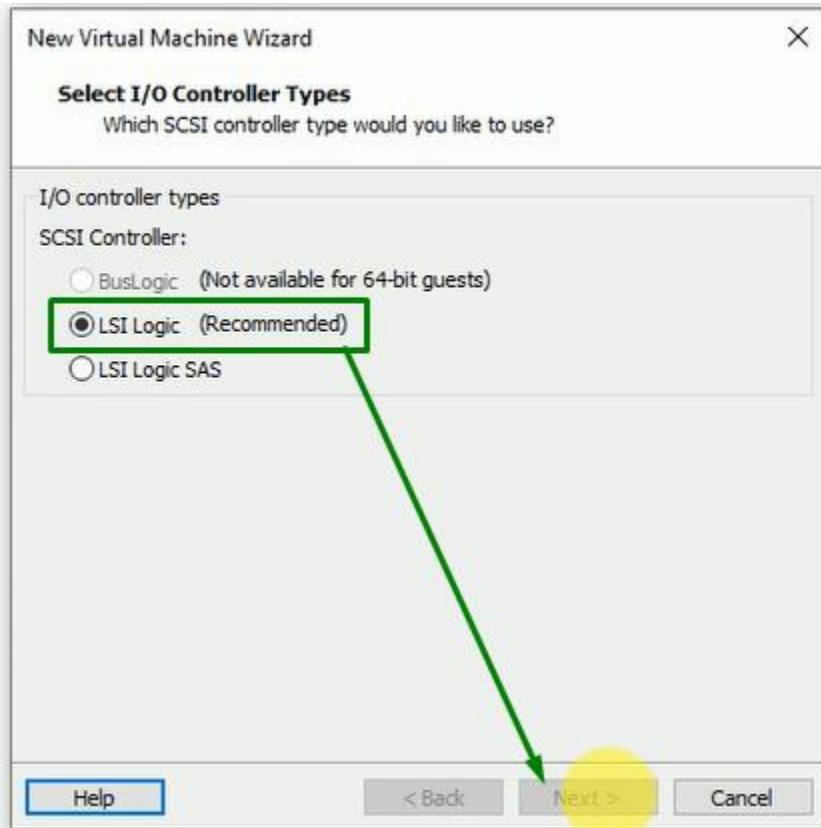
## 2.8. Put the memory 1GB for Openfiler (Storage)



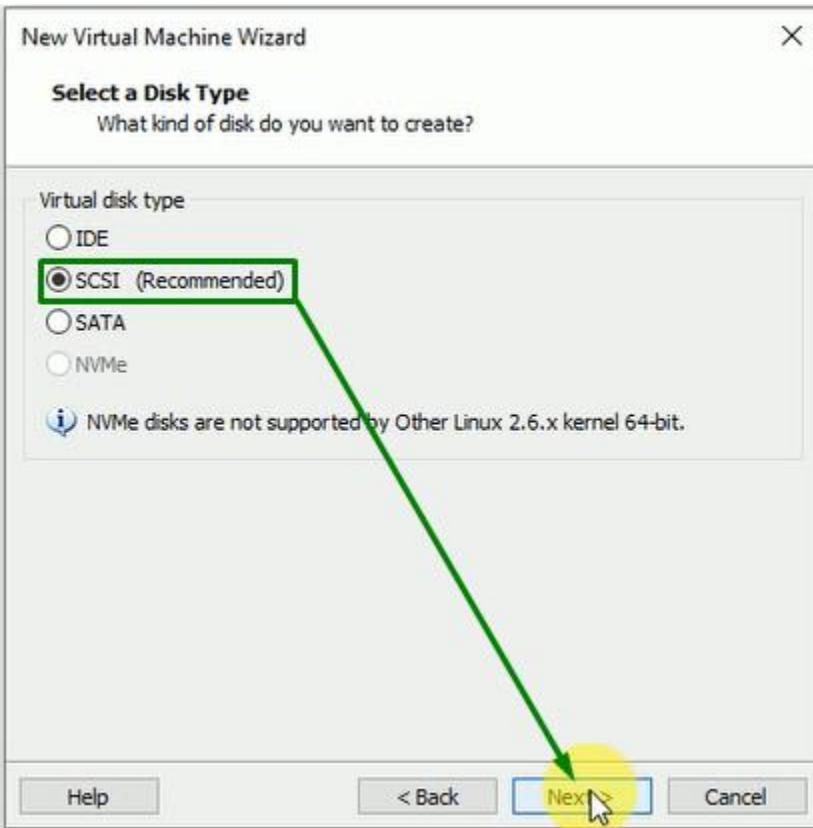
## 2.9. Choose Bridge Network Connection



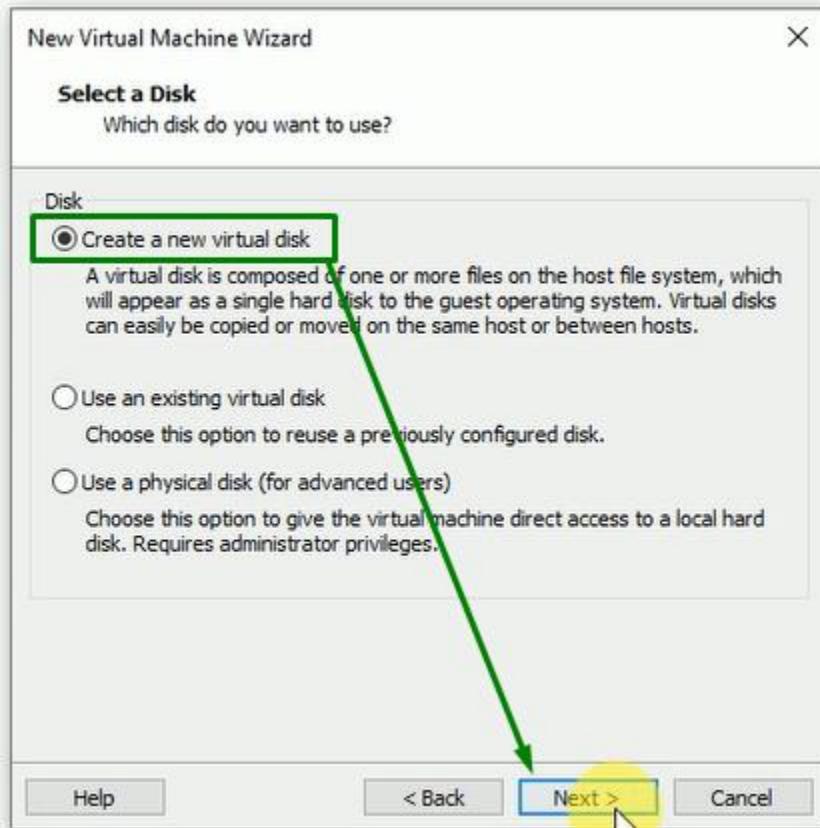
## 2.10. Select I/O Controller Type as LSI Logic



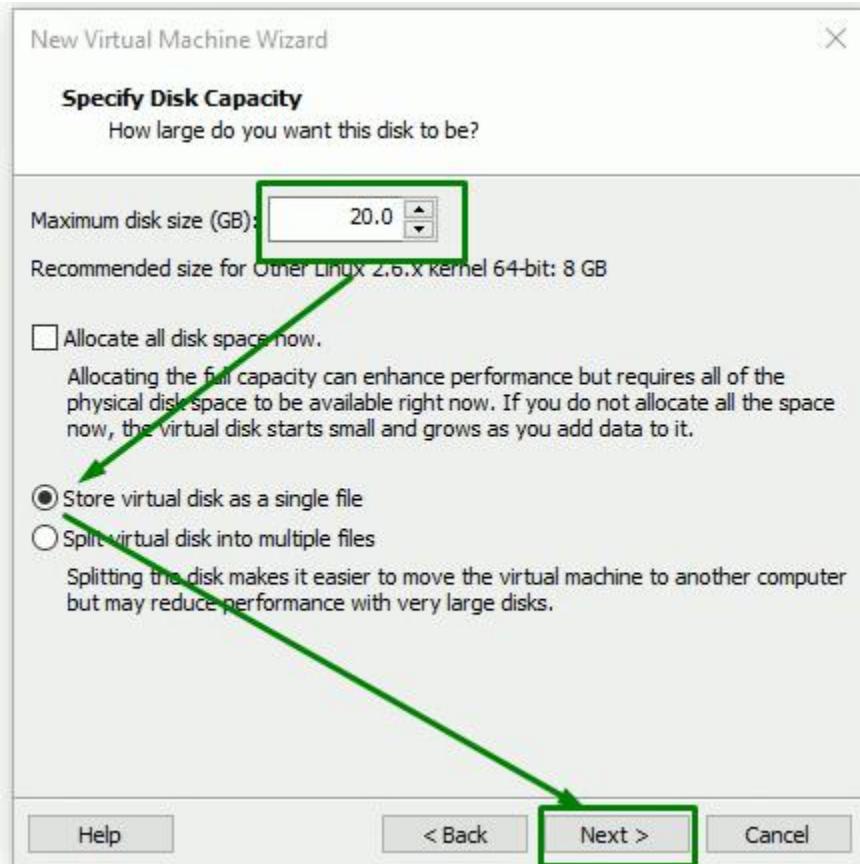
## 2.11. Select Disk Type as SCSI



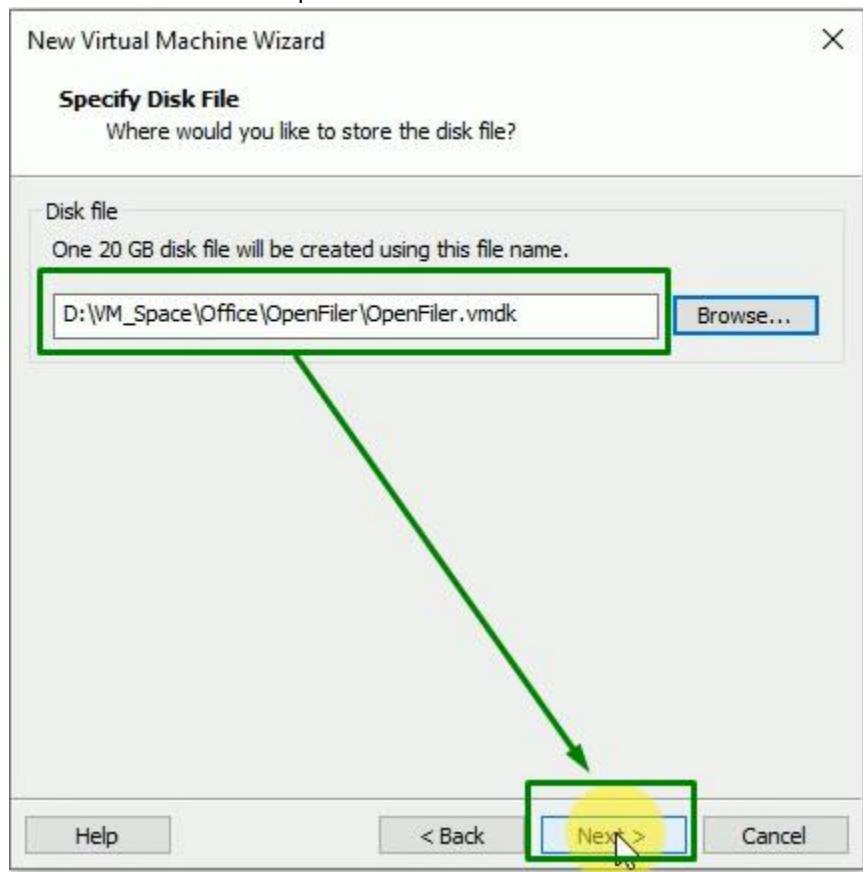
## 2.12. Create Disk to install Openfiler



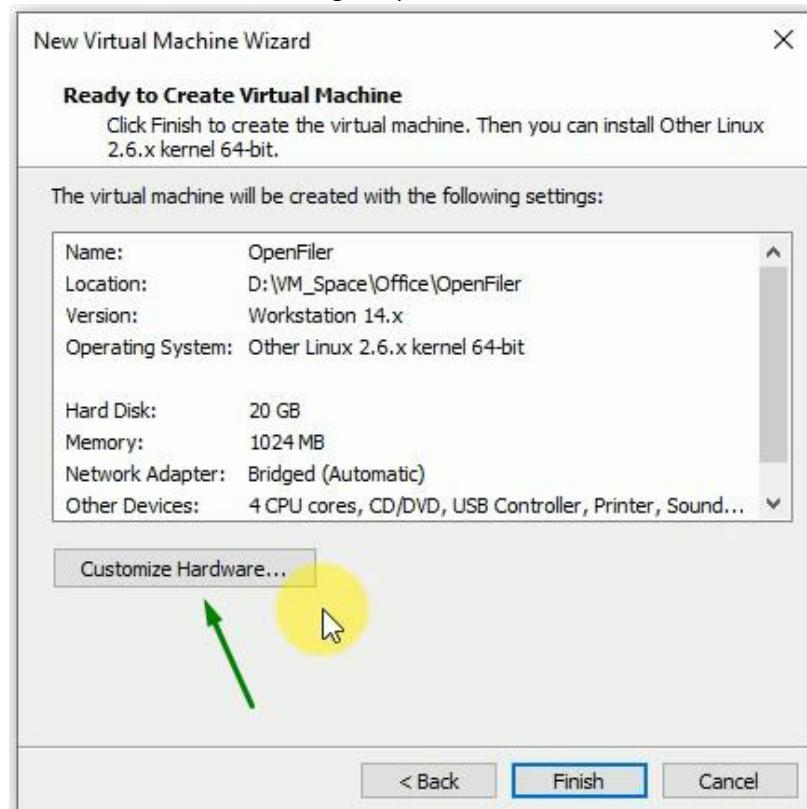
## 2.13. Put at list 10GB size to install Openfiler



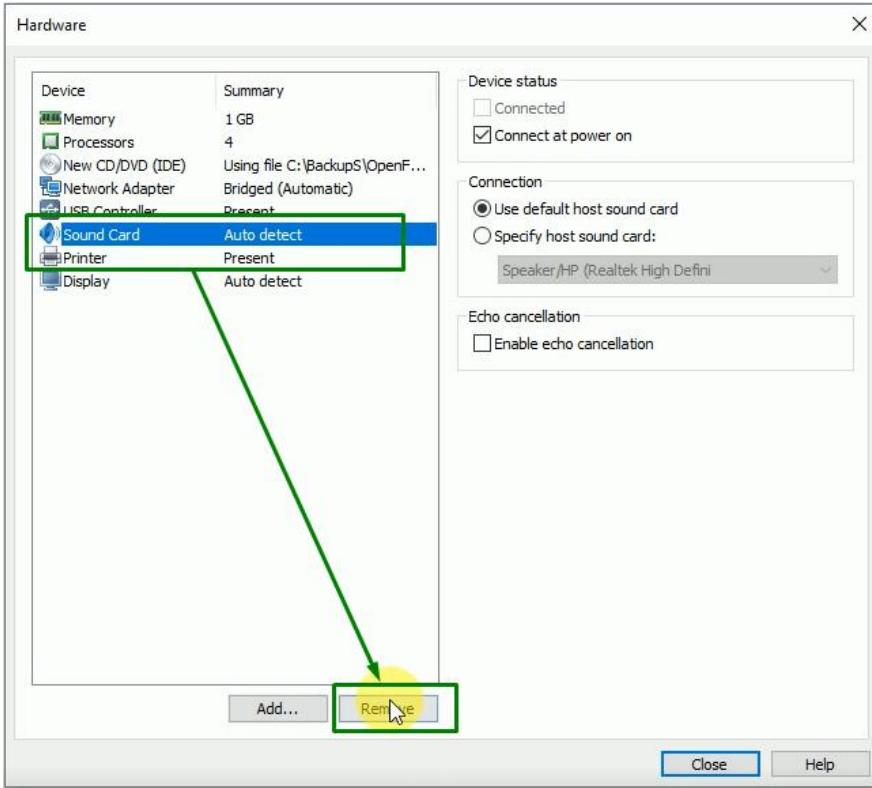
2.14. Provide location of Openfiler disk file



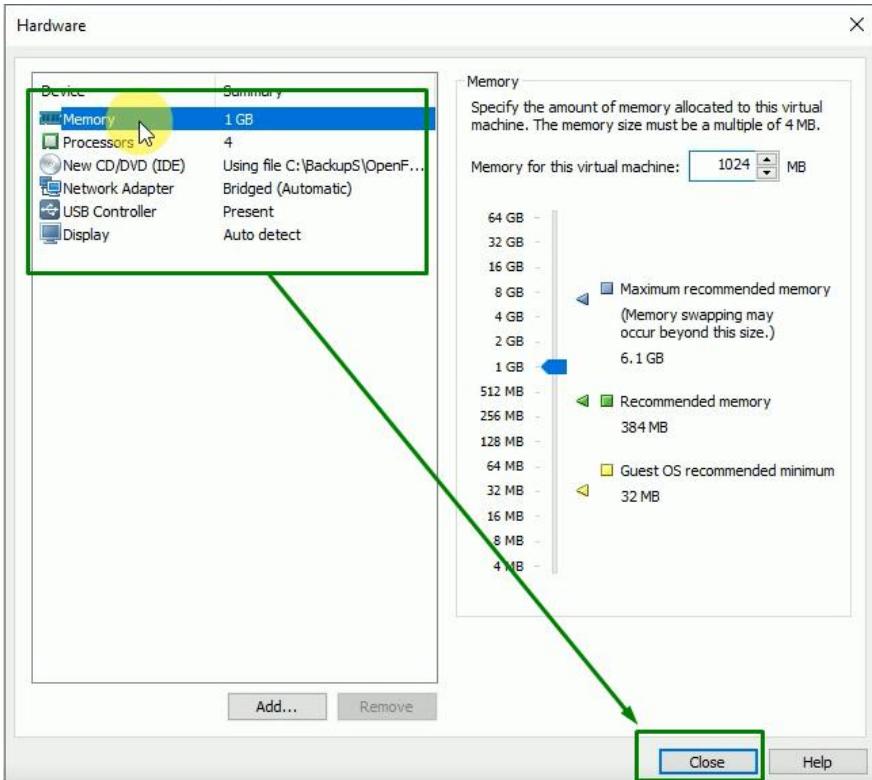
2.15. Click on hardware setting of Openfiler to remove drivers



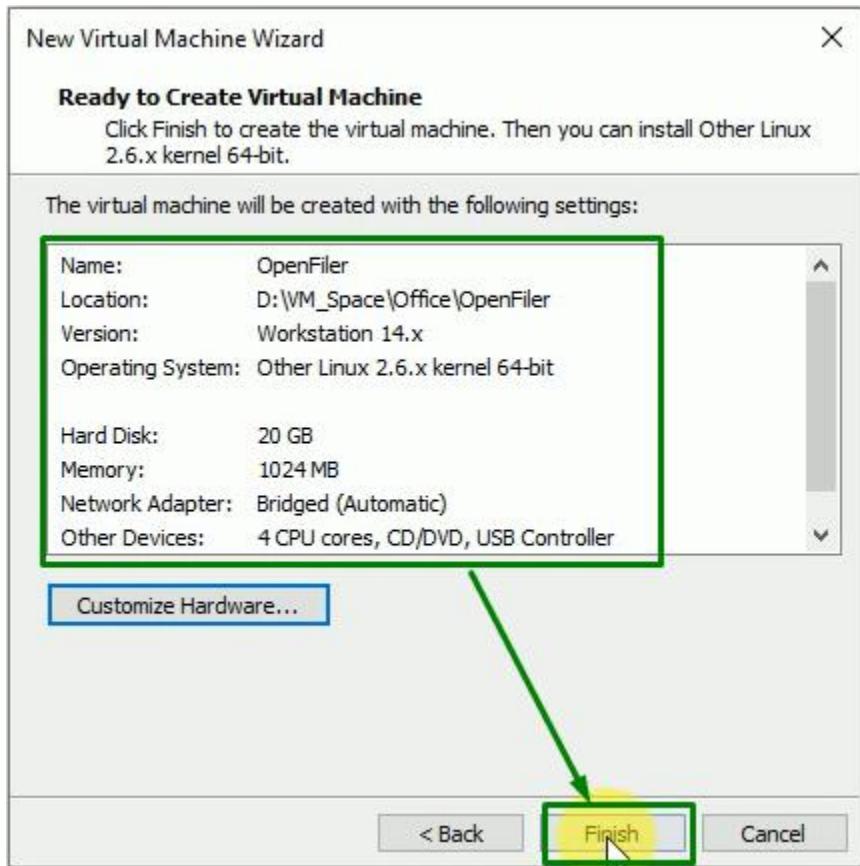
## 2.16. Remove the unnecessary drivers



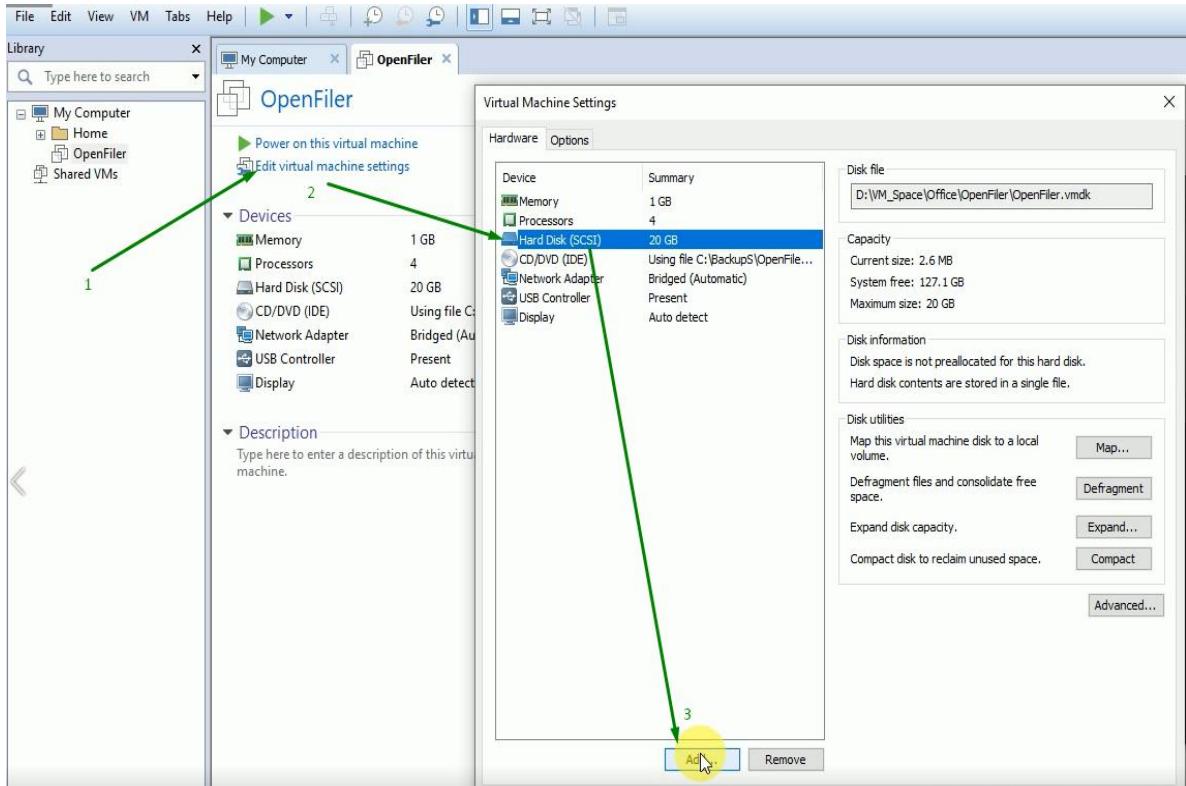
## 2.17. After removing the unnecessary drivers



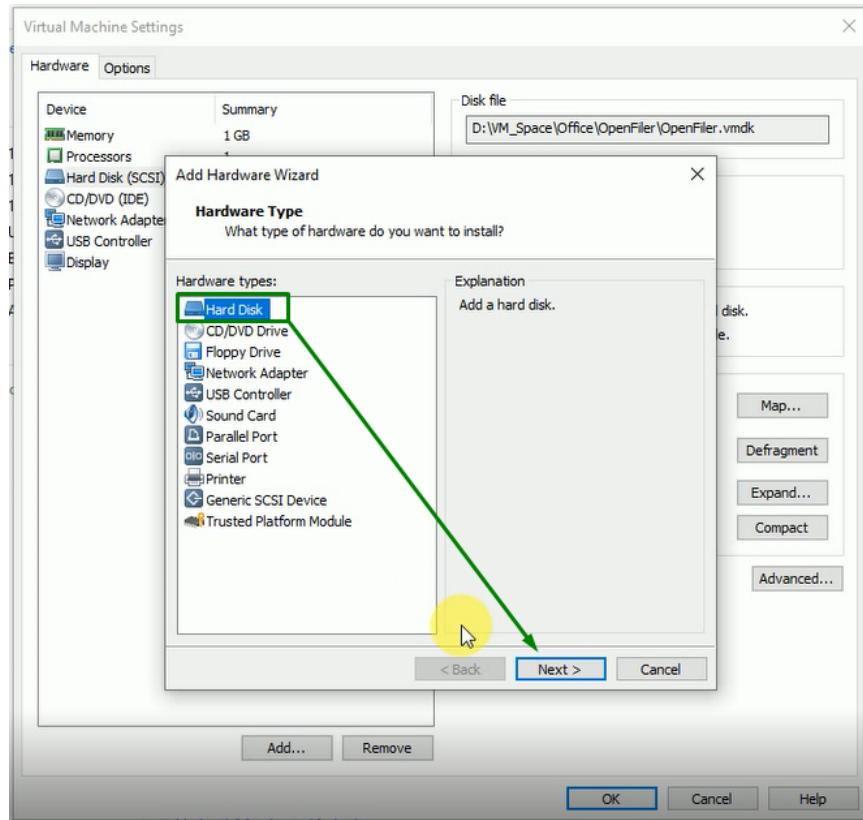
## 2.18. Verification of new VM machine



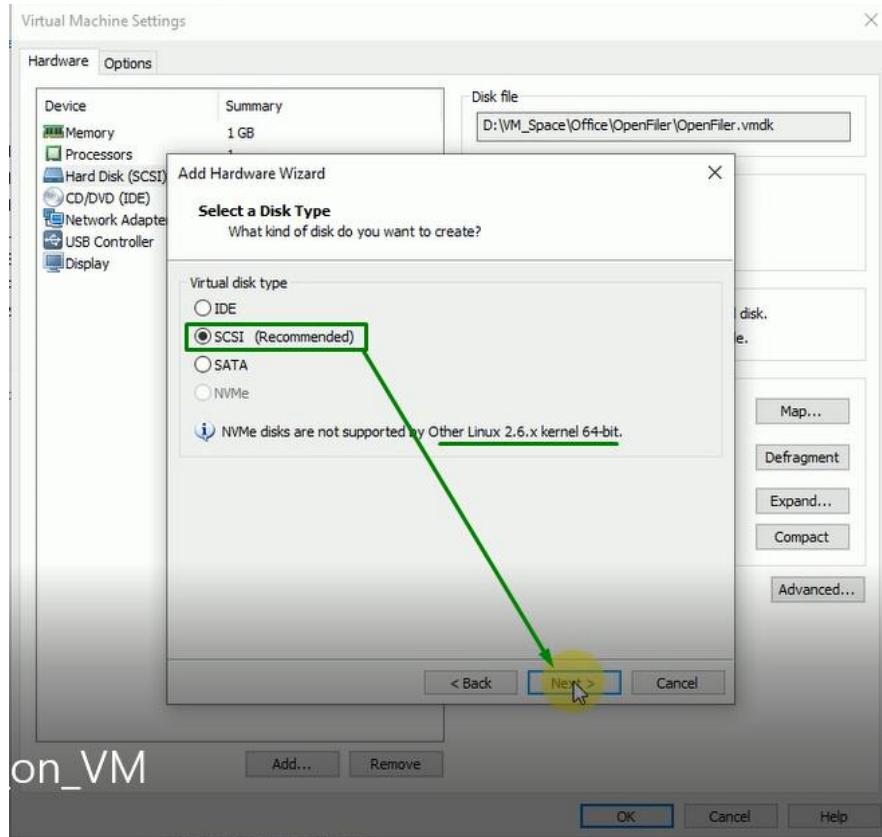
## 2.19. Adding Hard disk space to create OCR, DATA & FRA for DC



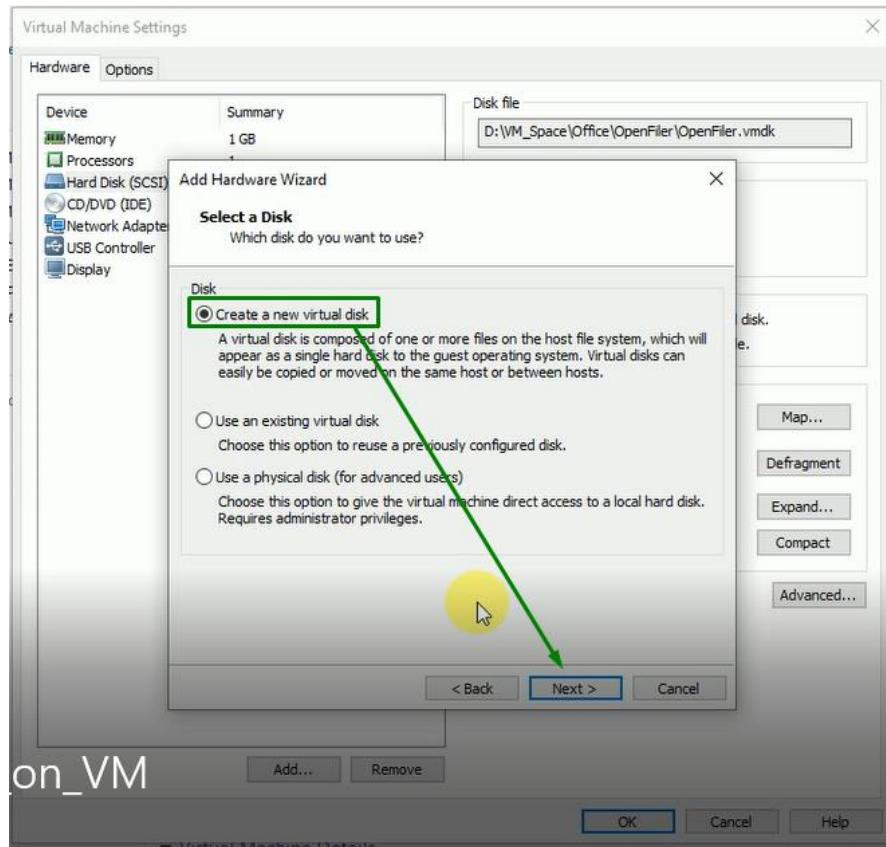
## 2.20. Run the VM Wizard to add hard disk



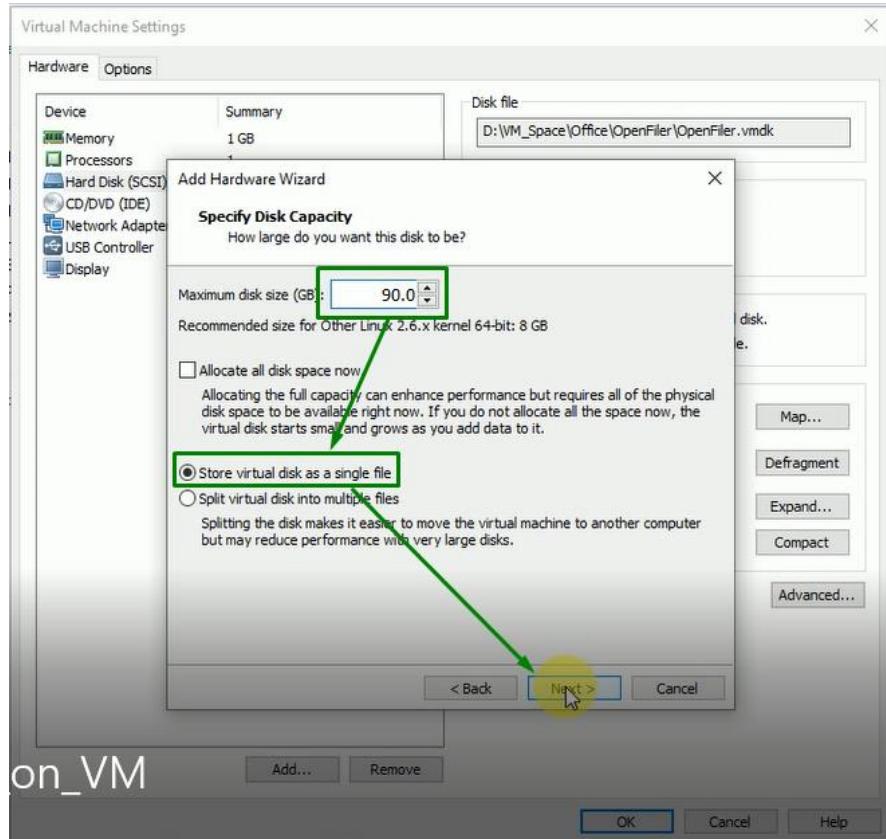
## 2.21. Select a disk type as SCSI



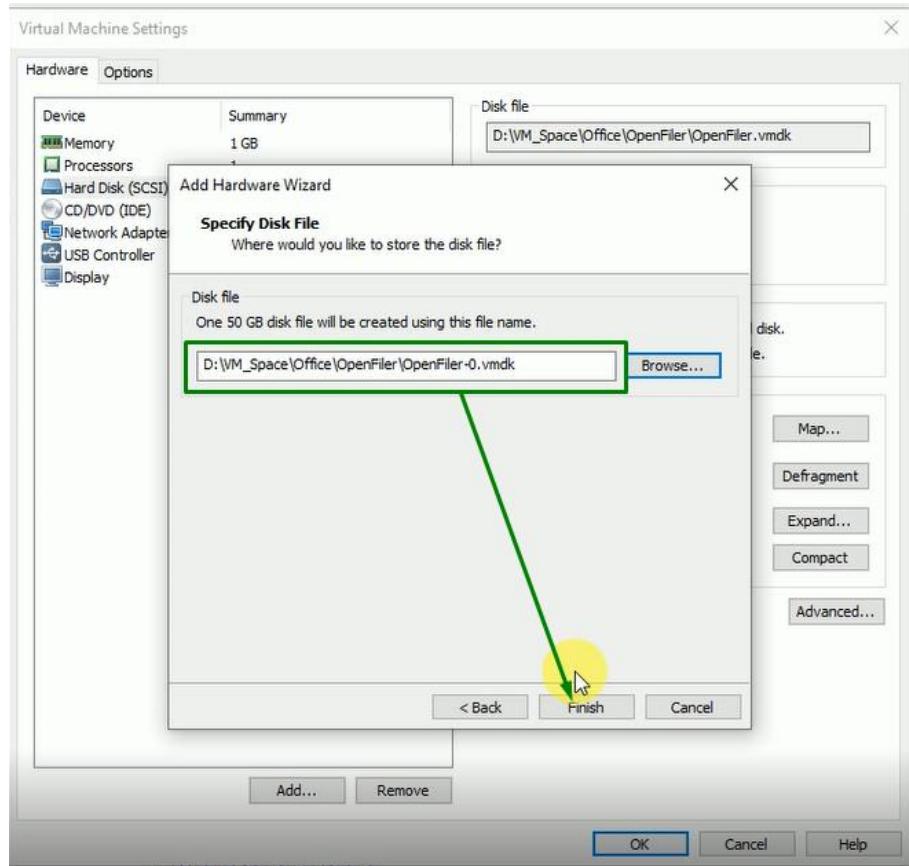
## 2.22. Select to Create a new virtual disk



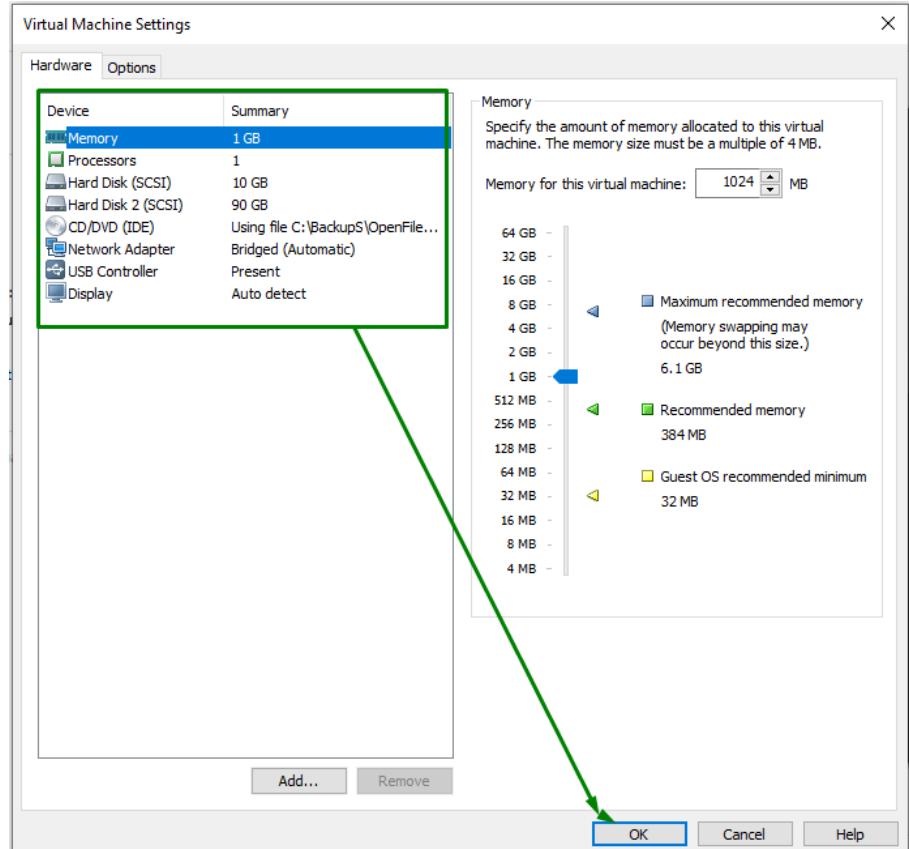
## 2.23. Select to Create a new virtual disk



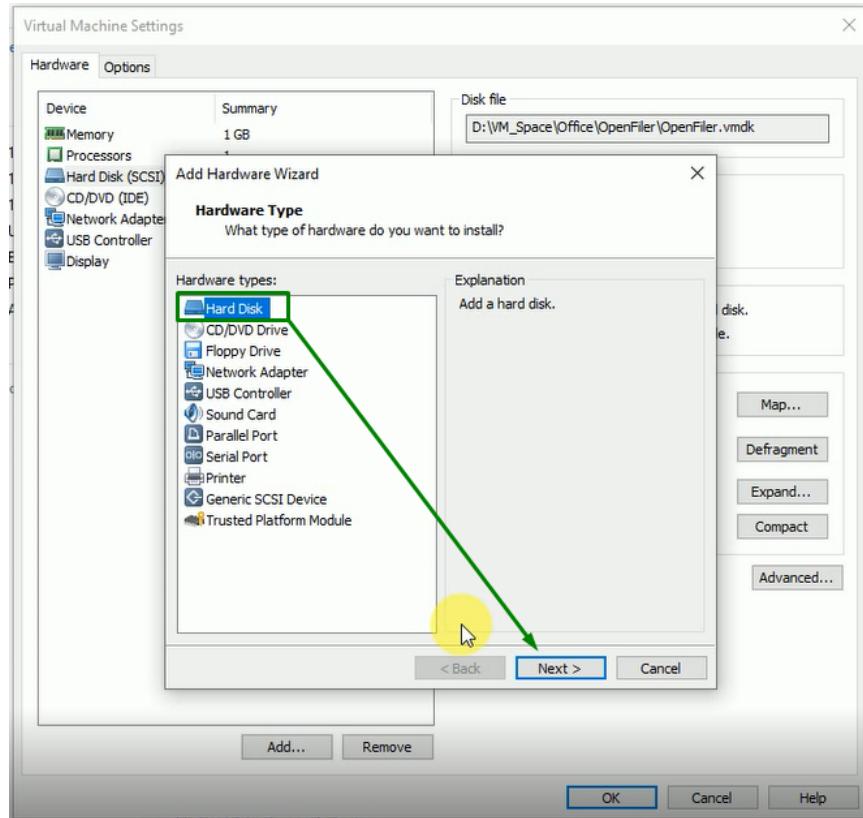
## 2.24. Provide location to store vm disk



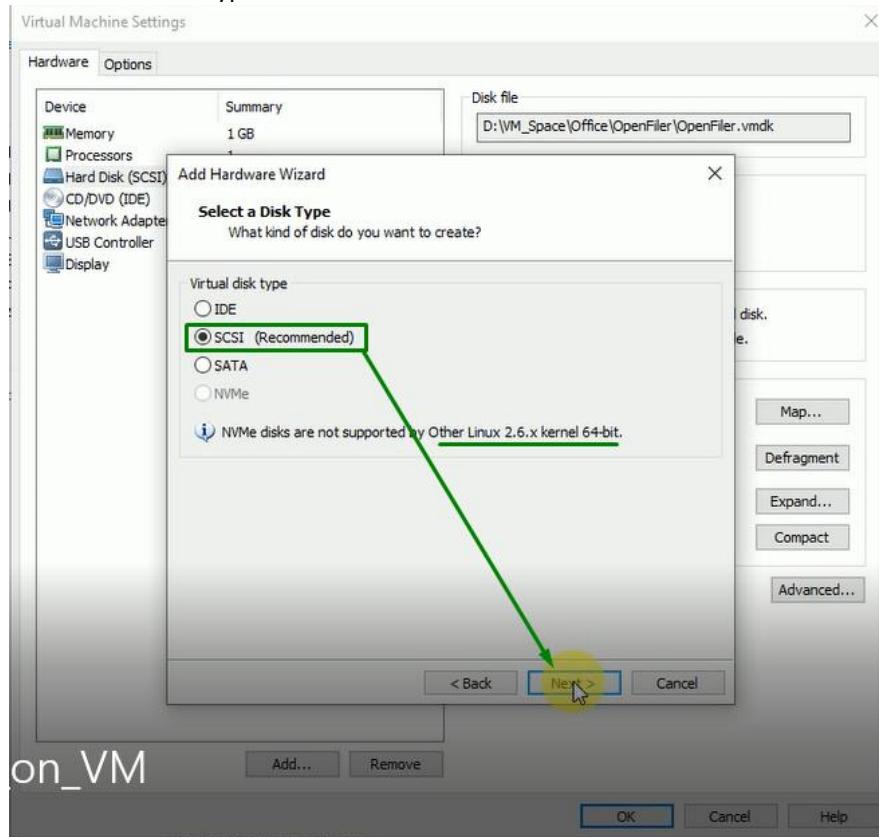
## 2.25. Verification of Openfiler Configuration for DC



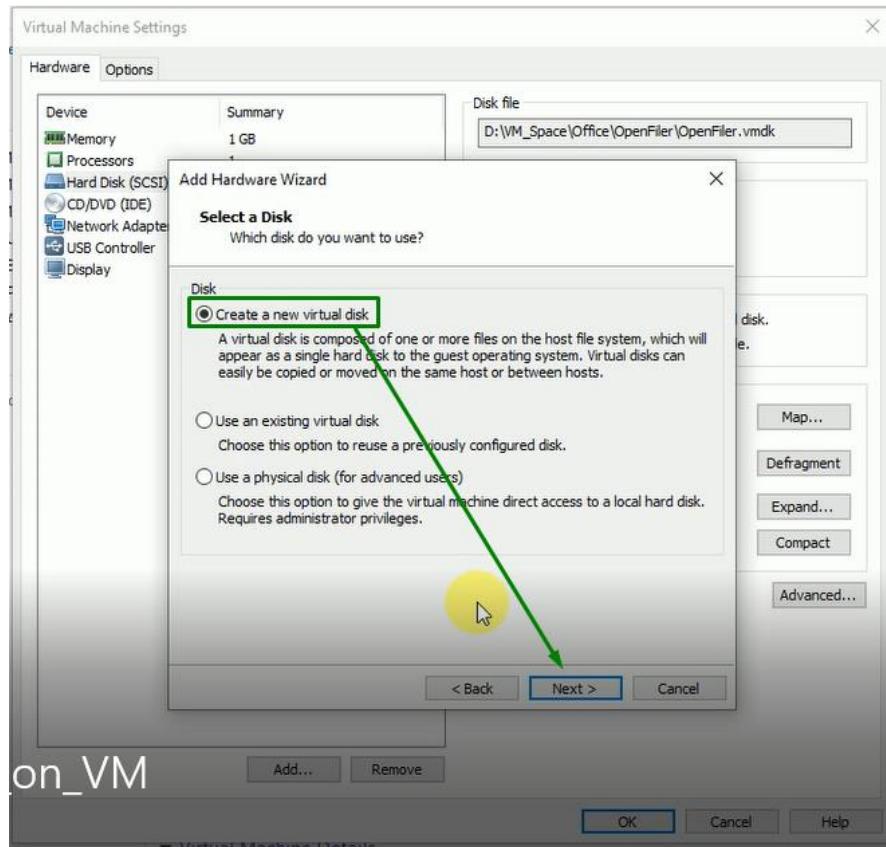
## 2.26. Run the VM Wizard to add hard disk - Adding Hard disk space to create OCR, DATA & FRA for DR



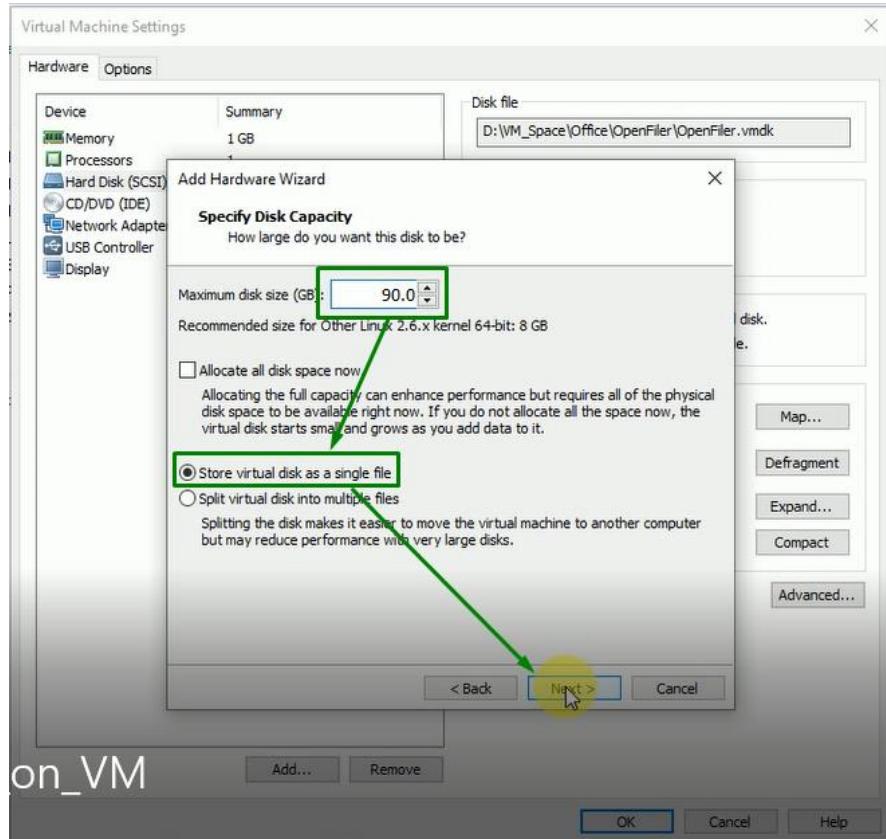
## 2.27. Select a disk type as SCSI



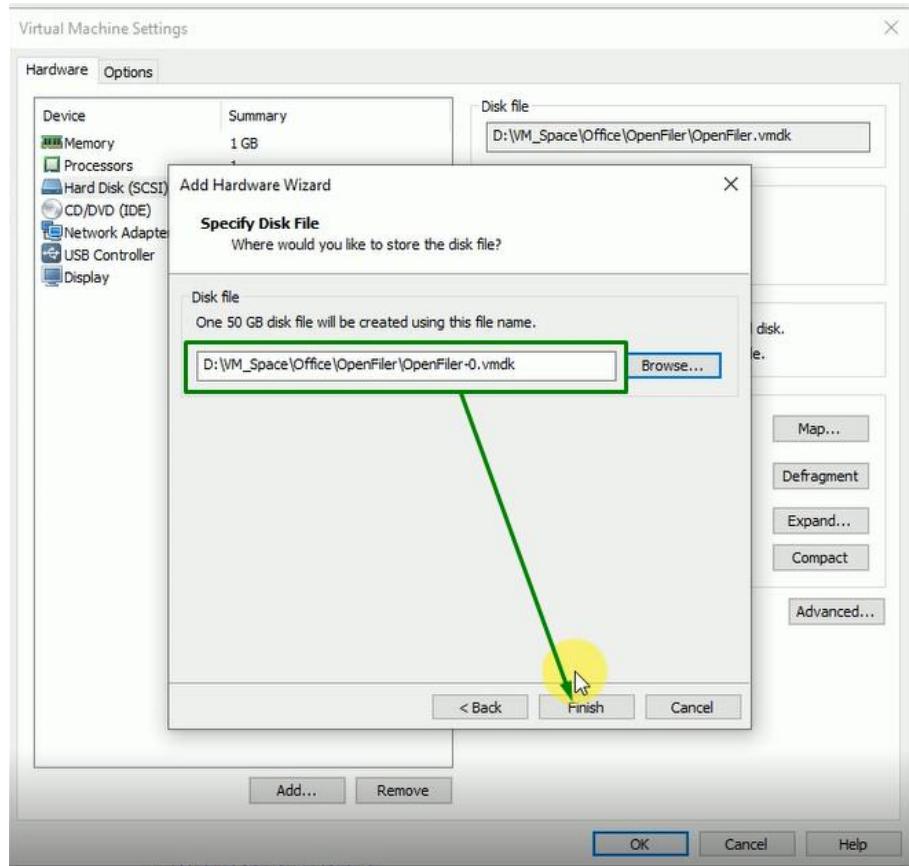
## 2.28. Select to Create a new virtual disk



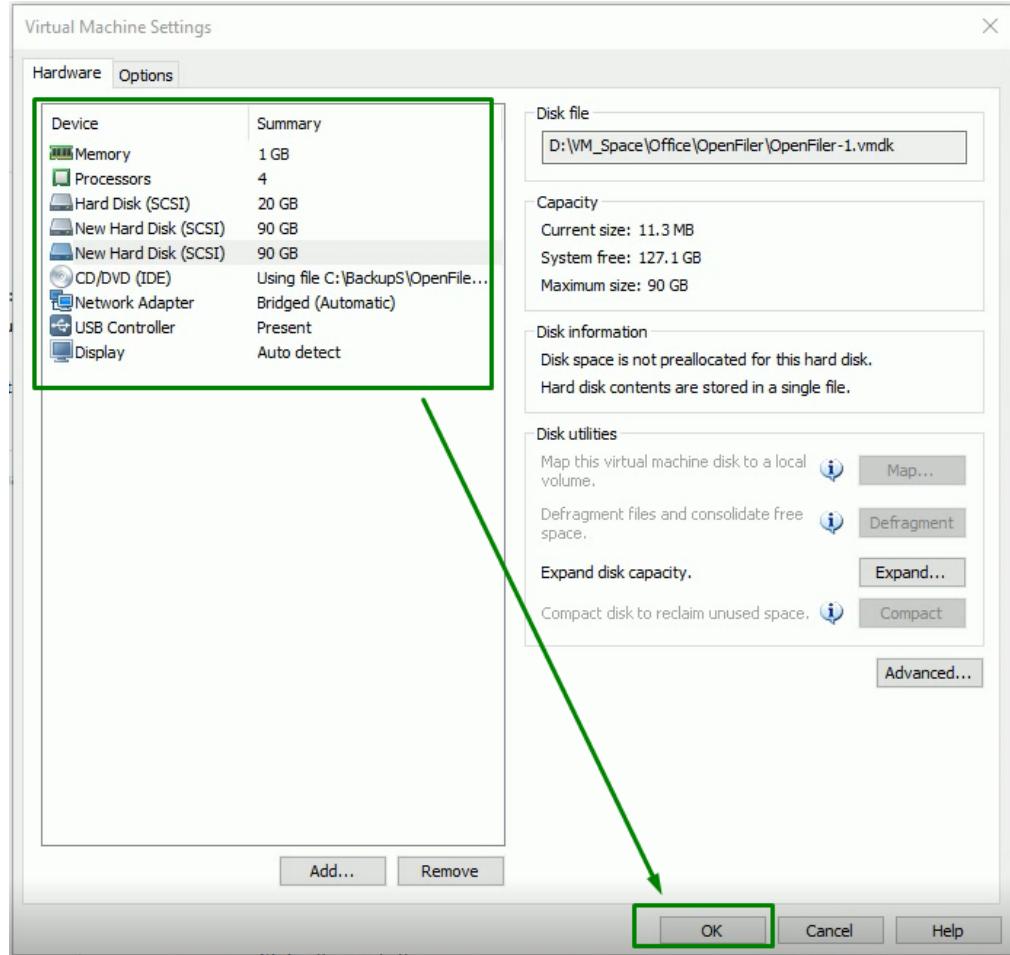
## 2.29. Select to Create a new virtual disk



### 2.30. Provide location to store vm disk

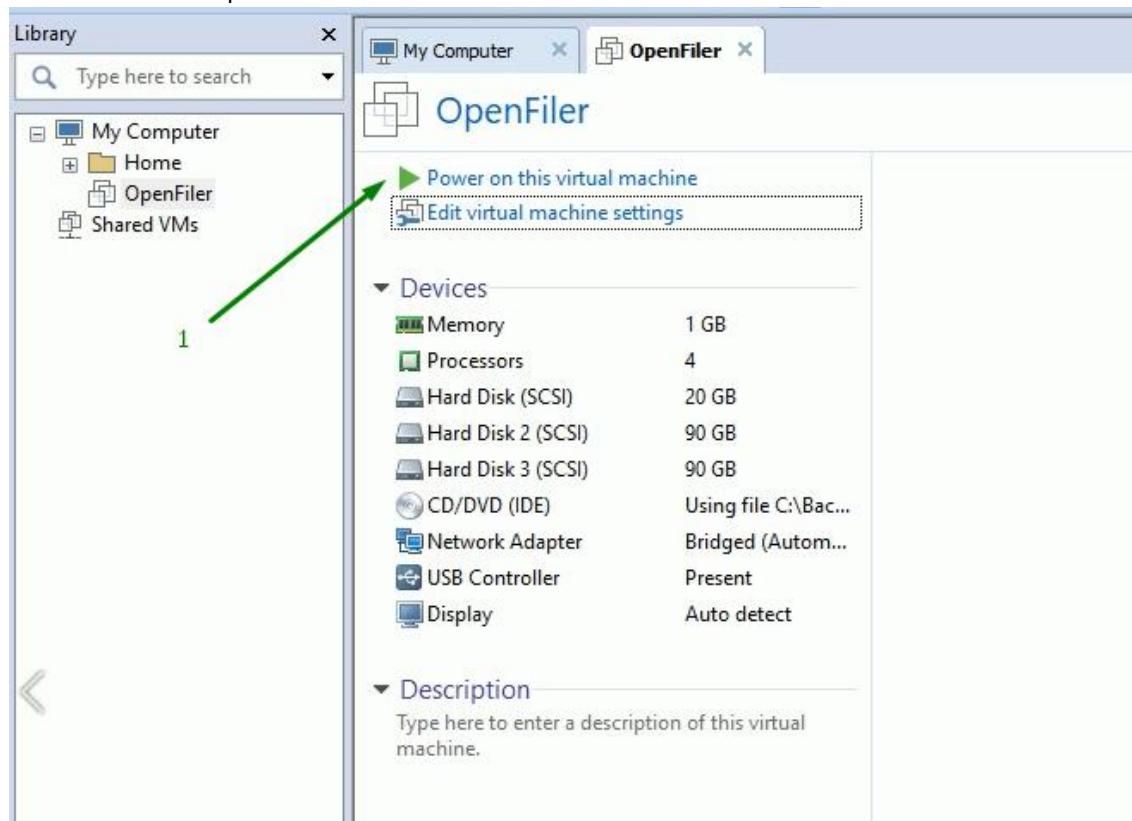


### 2.31. Verification of Openfiler Configuration for DC and DR

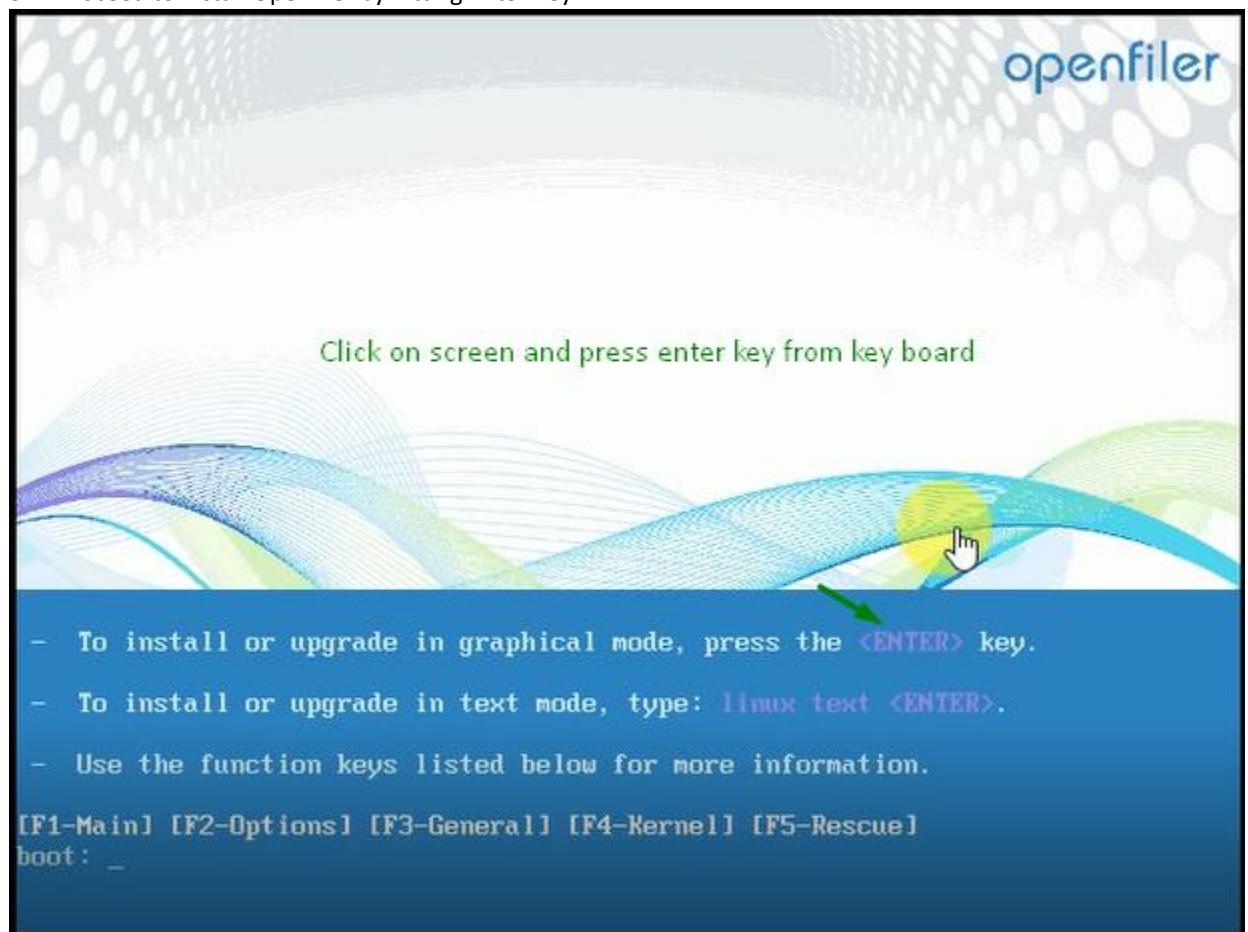


3. Installation of Openfiler over VM machine

3.1. Power on the Openfiler VM machine to install



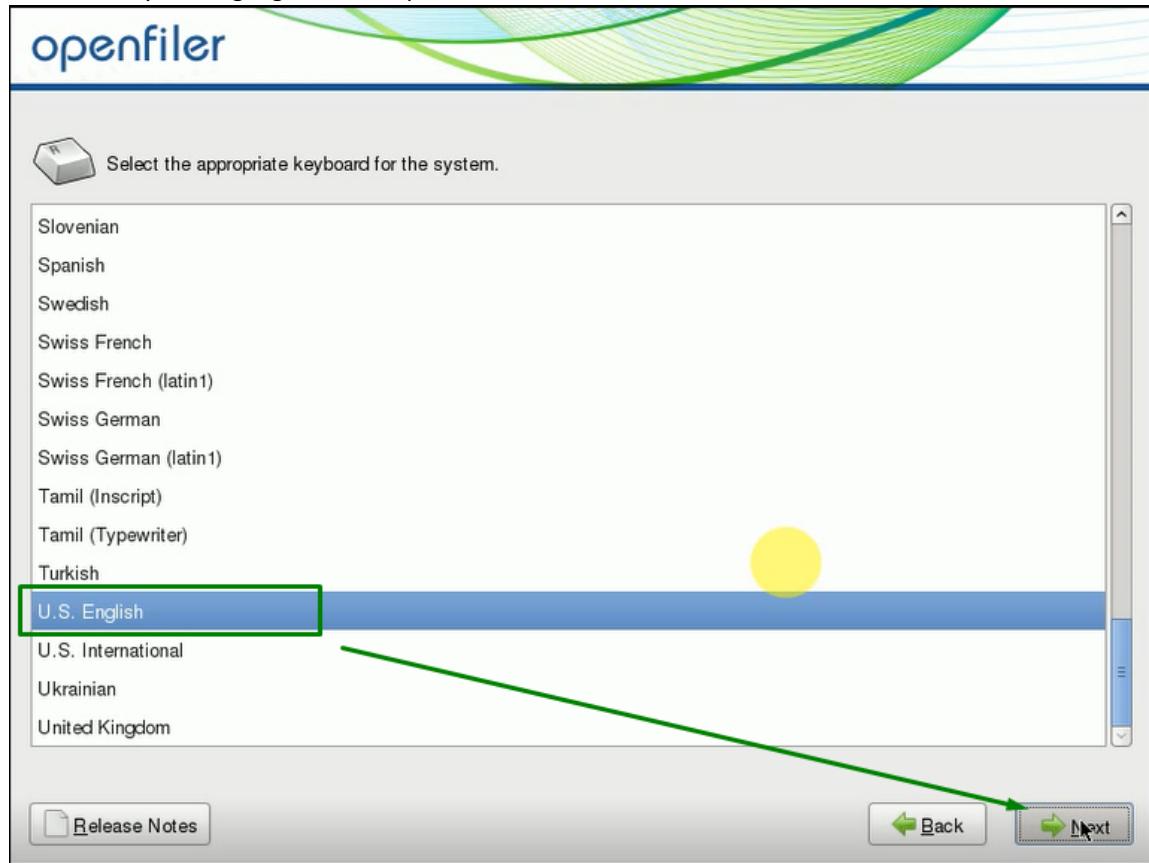
3.2. Proceed to install Openfiler by hitting Enter Key



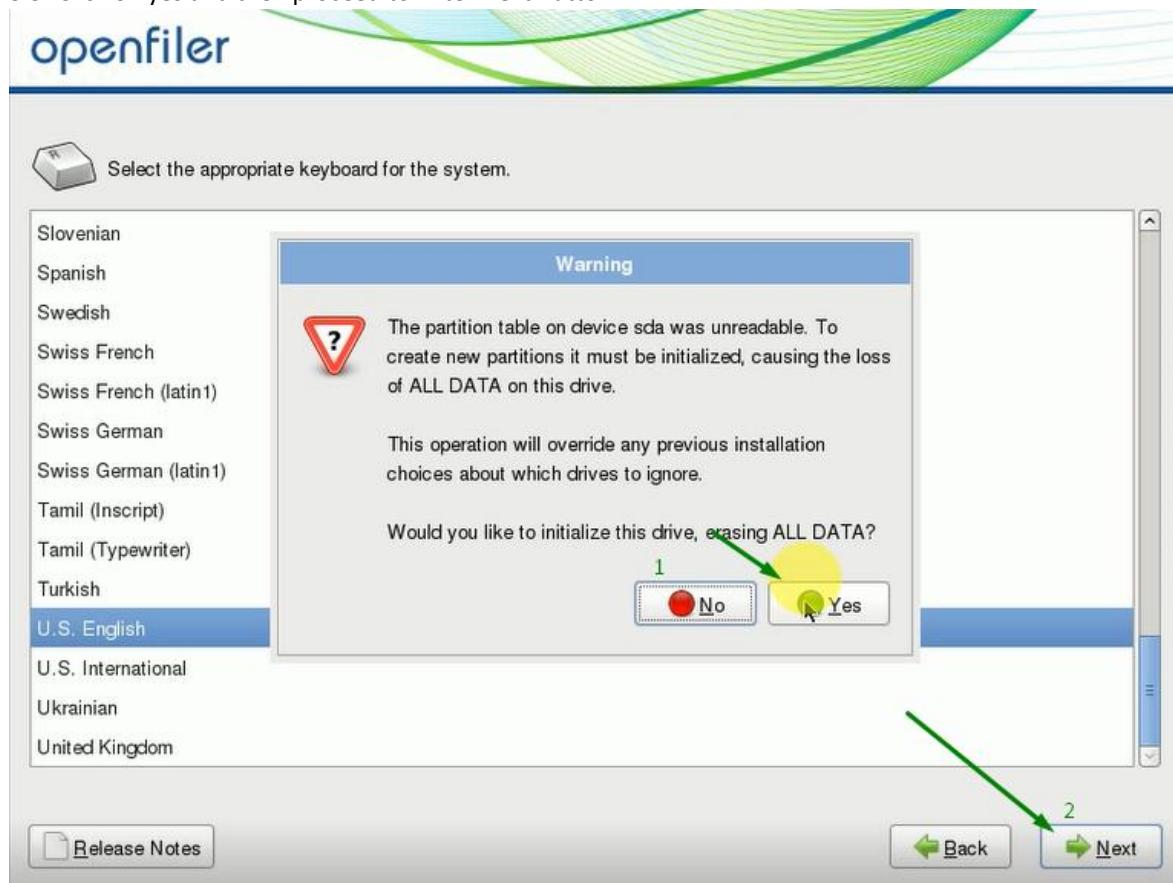
3.3. Proceed to Enter Next Button



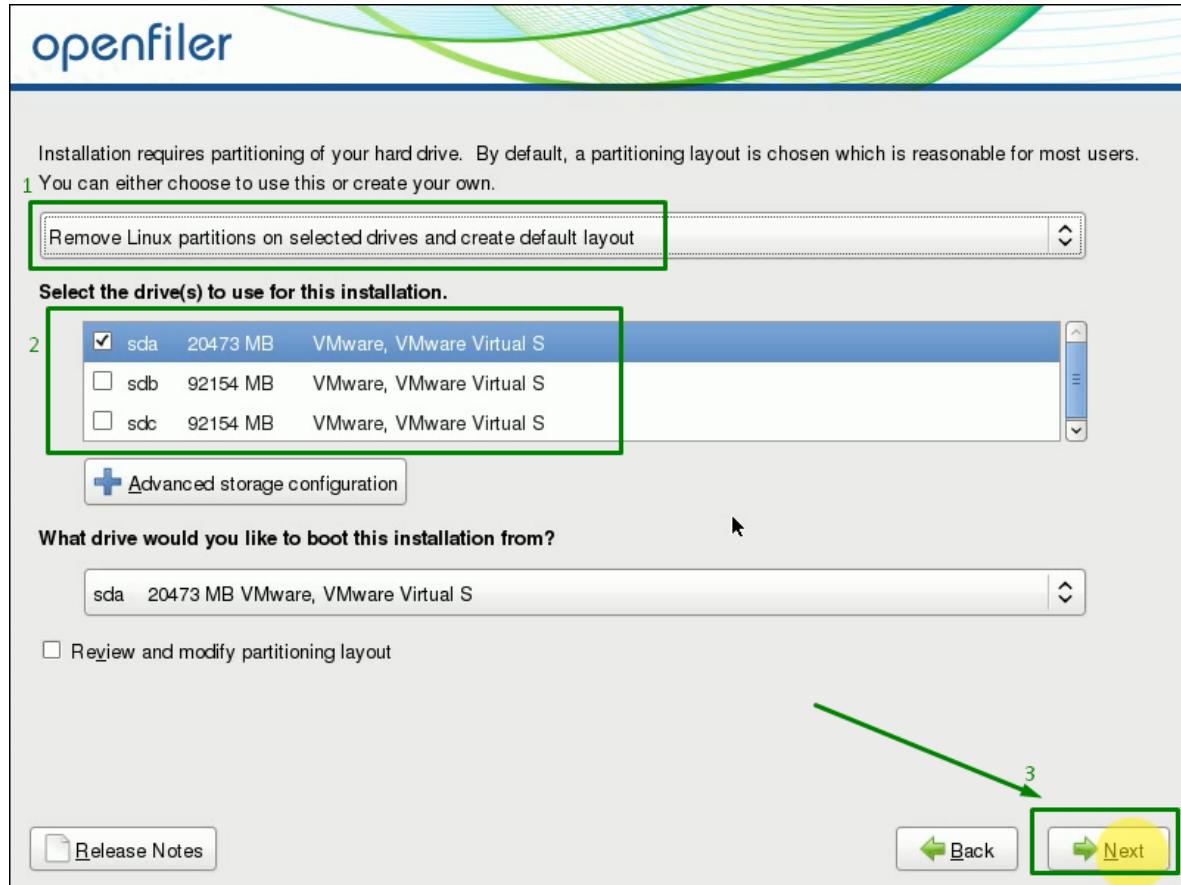
3.4. Choose your language and then proceed to Enter Next Button



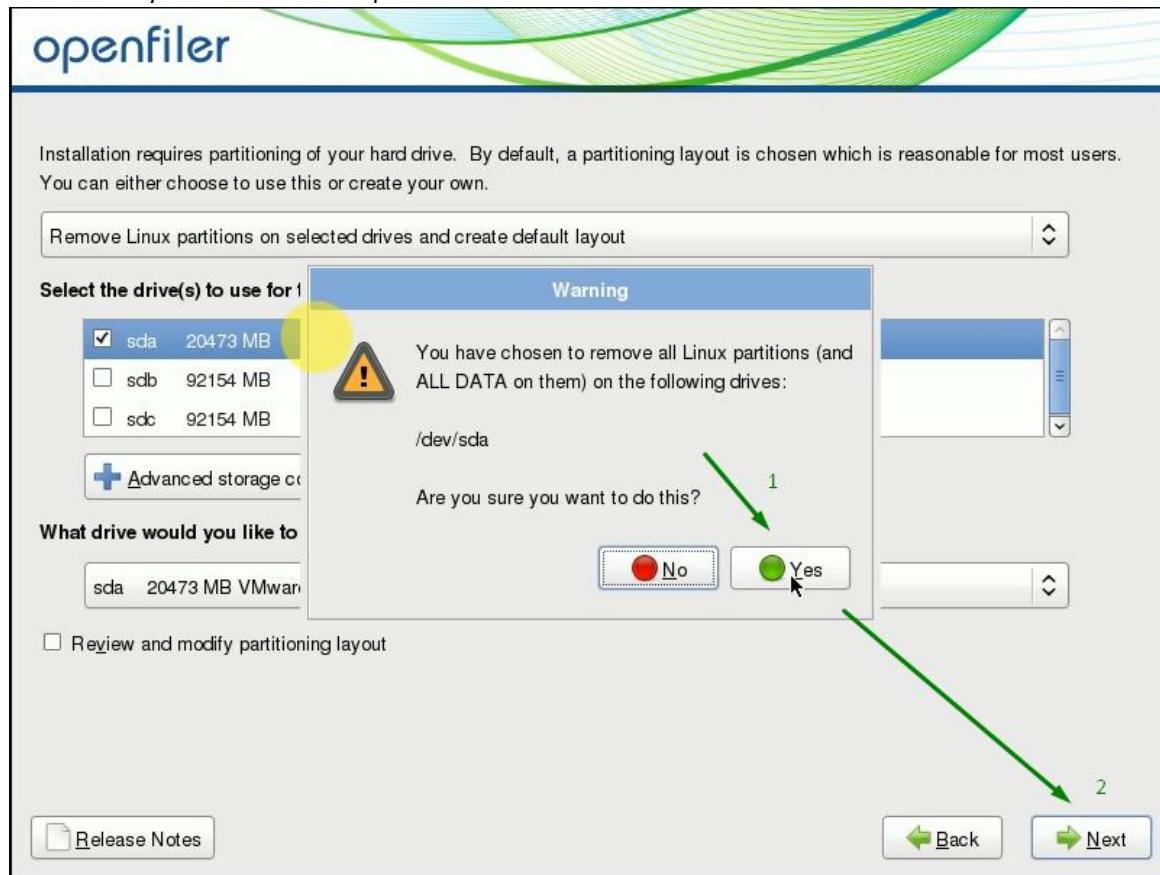
3.5. Click on yes and then proceed to Enter Next Button



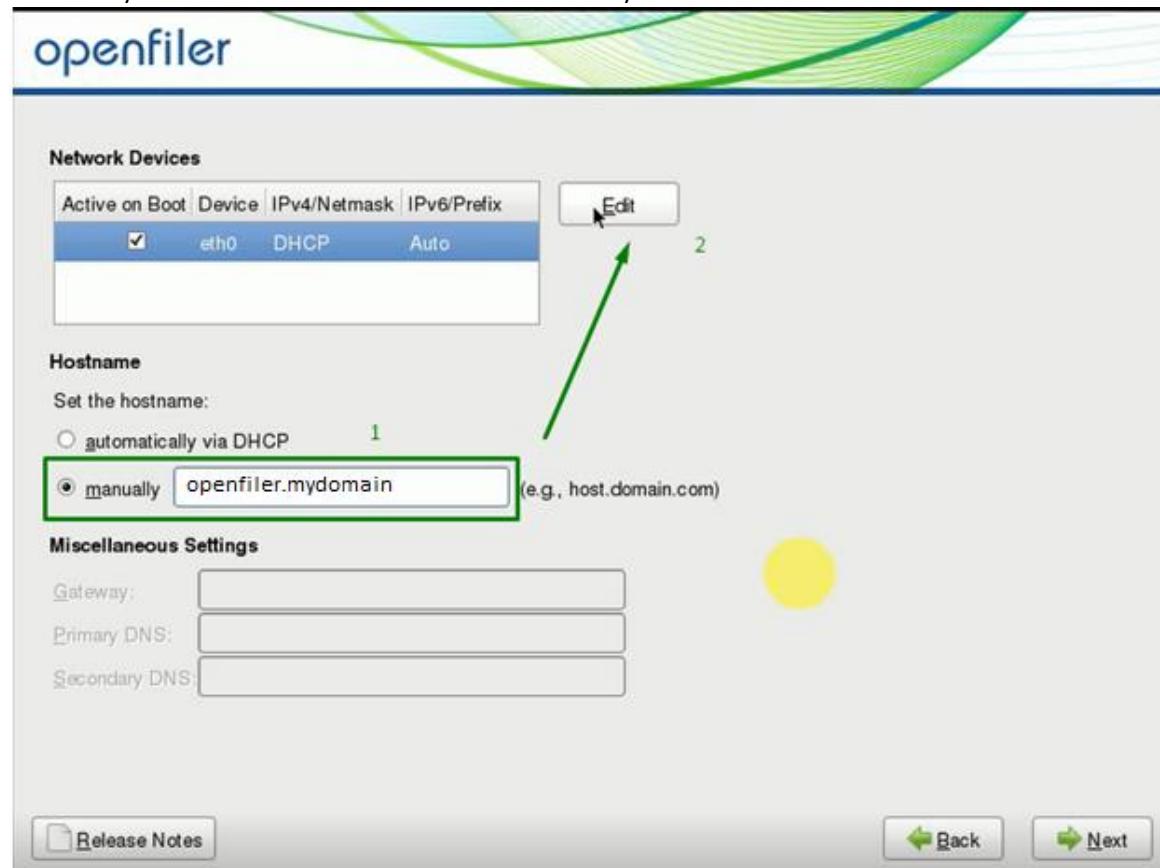
3.6. Choose storage, format option and then proceed to Enter Next Button



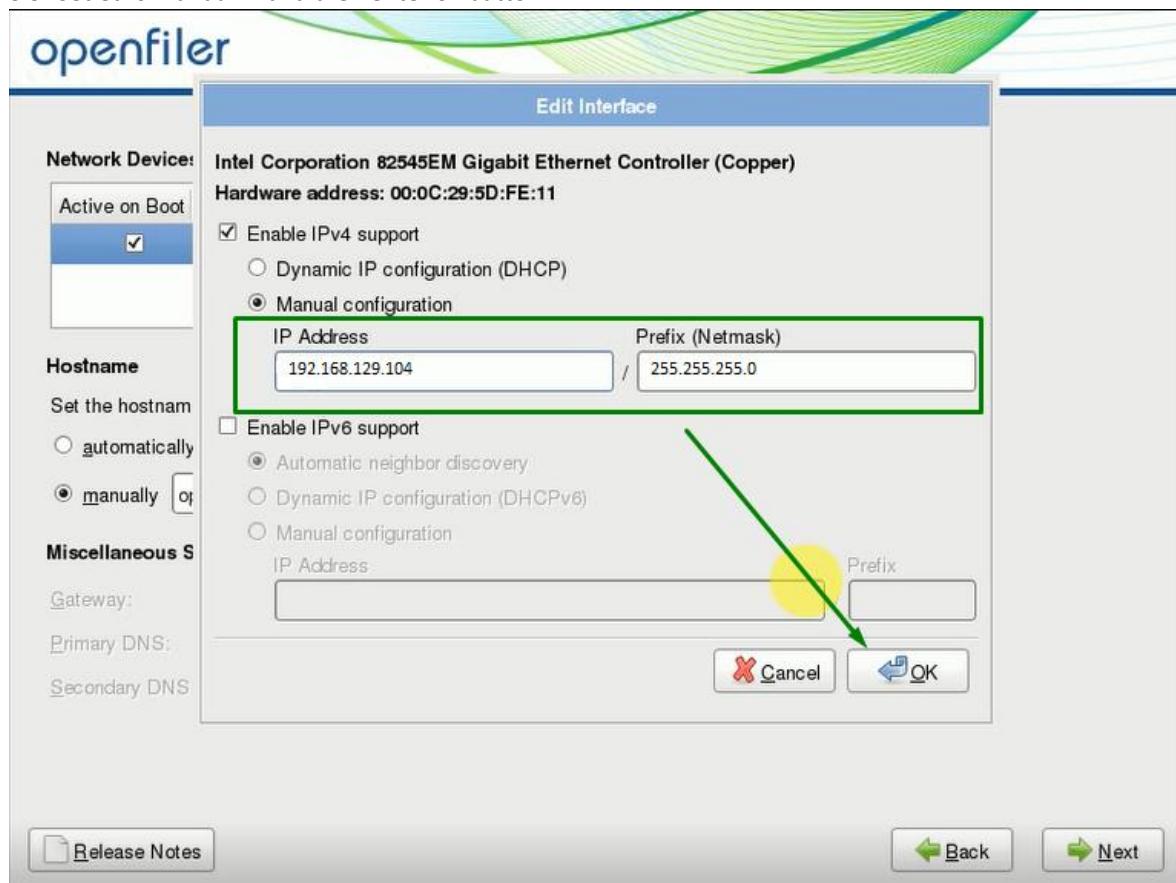
3.7. Click on yes button and then proceed to Enter Next Button



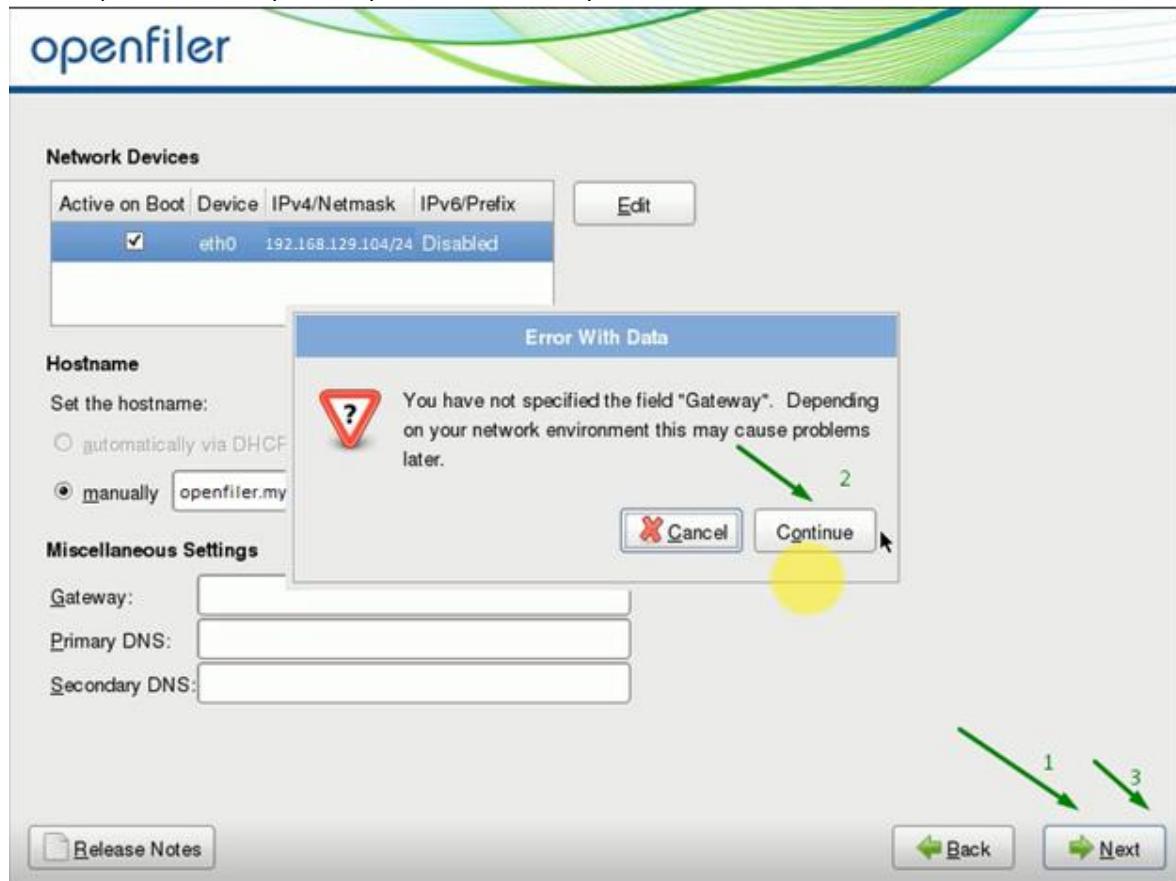
3.8. Enter your hostname and click on edit button to set your network



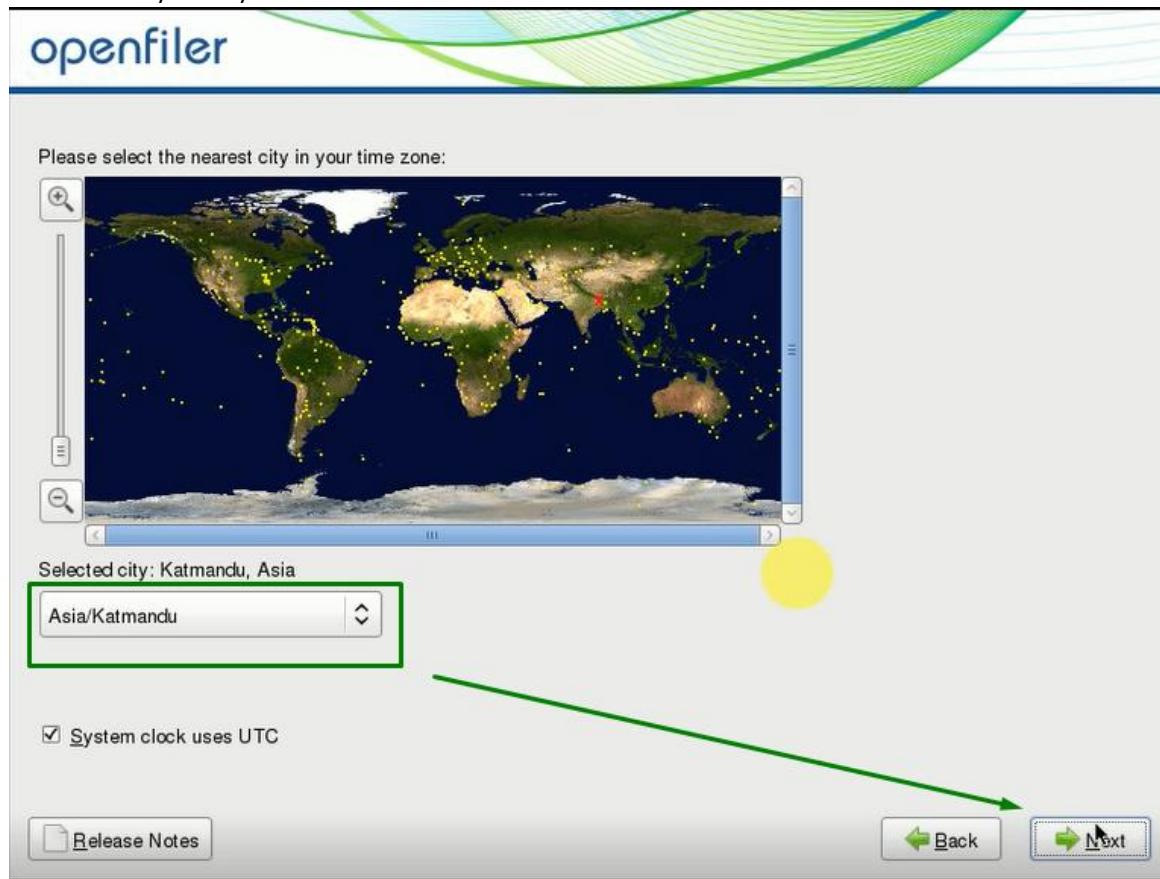
### 3.9. Set eth0 manual IP and then enter ok button



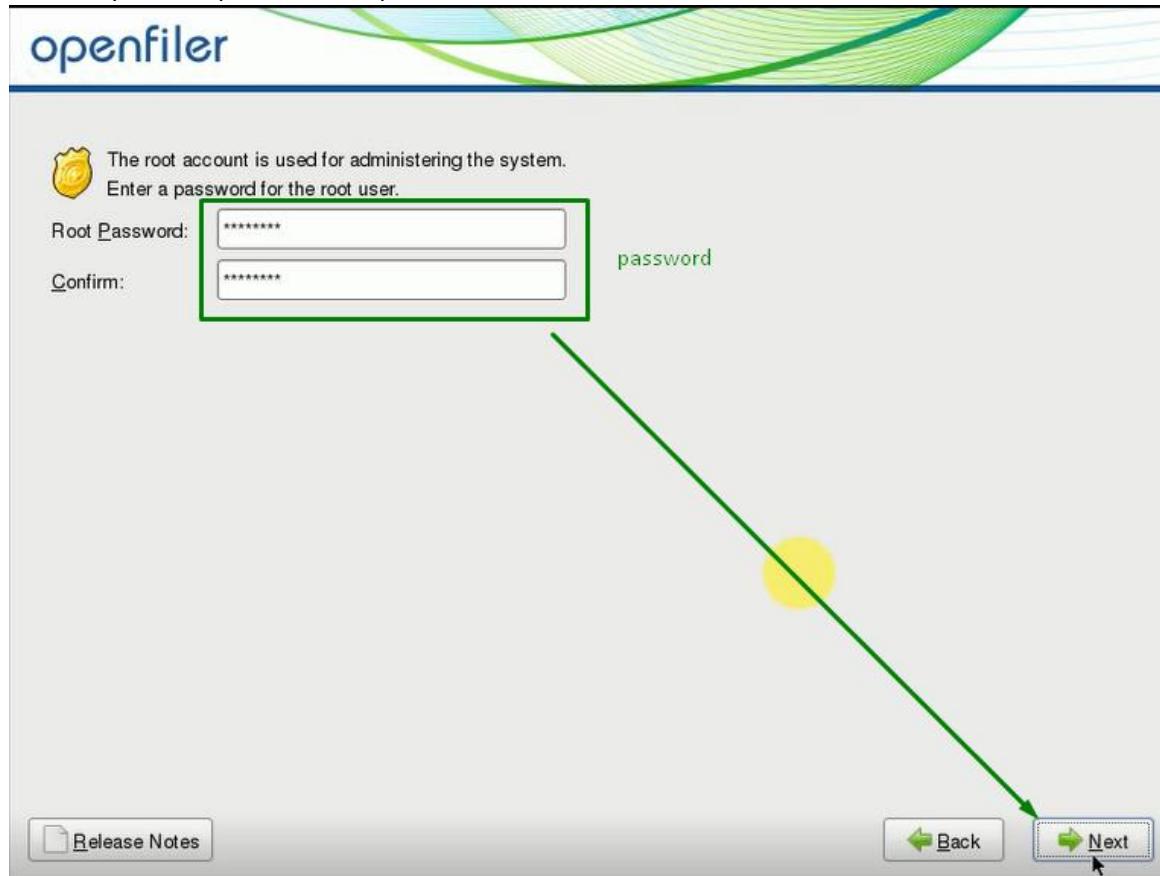
### 3.10. Skip when Gateway, Primary DNS and Secondary DNS IP asked and then enter ok button



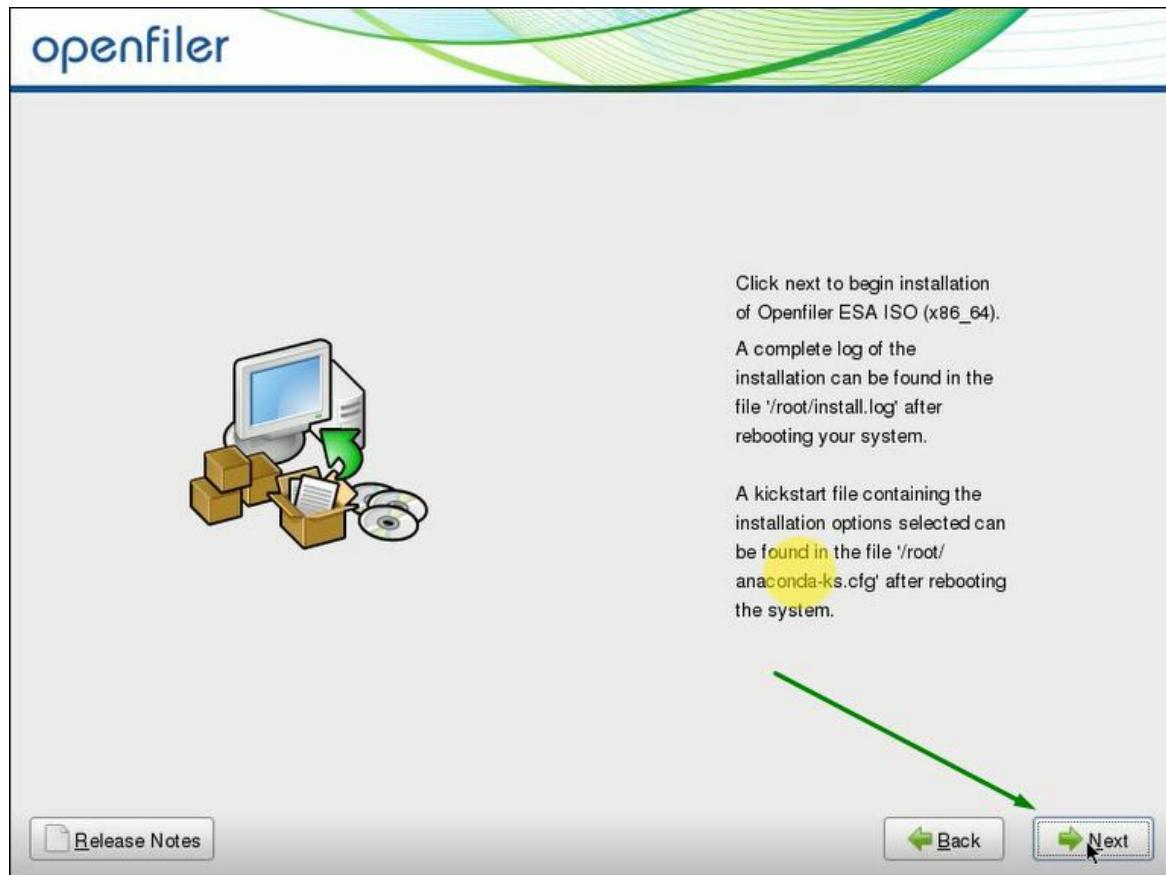
3.11. Choose your city and then enter ok button



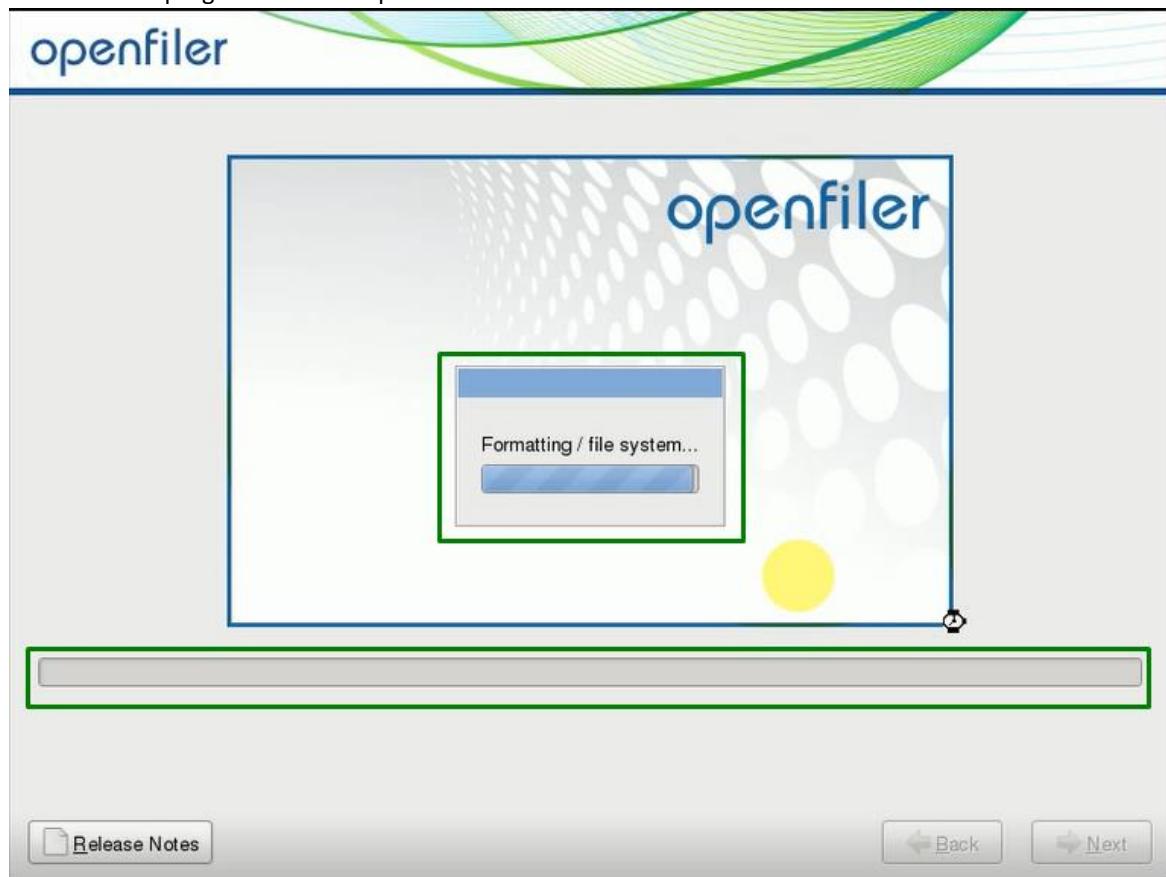
3.12. Set your root password for openfiler and then enter ok button



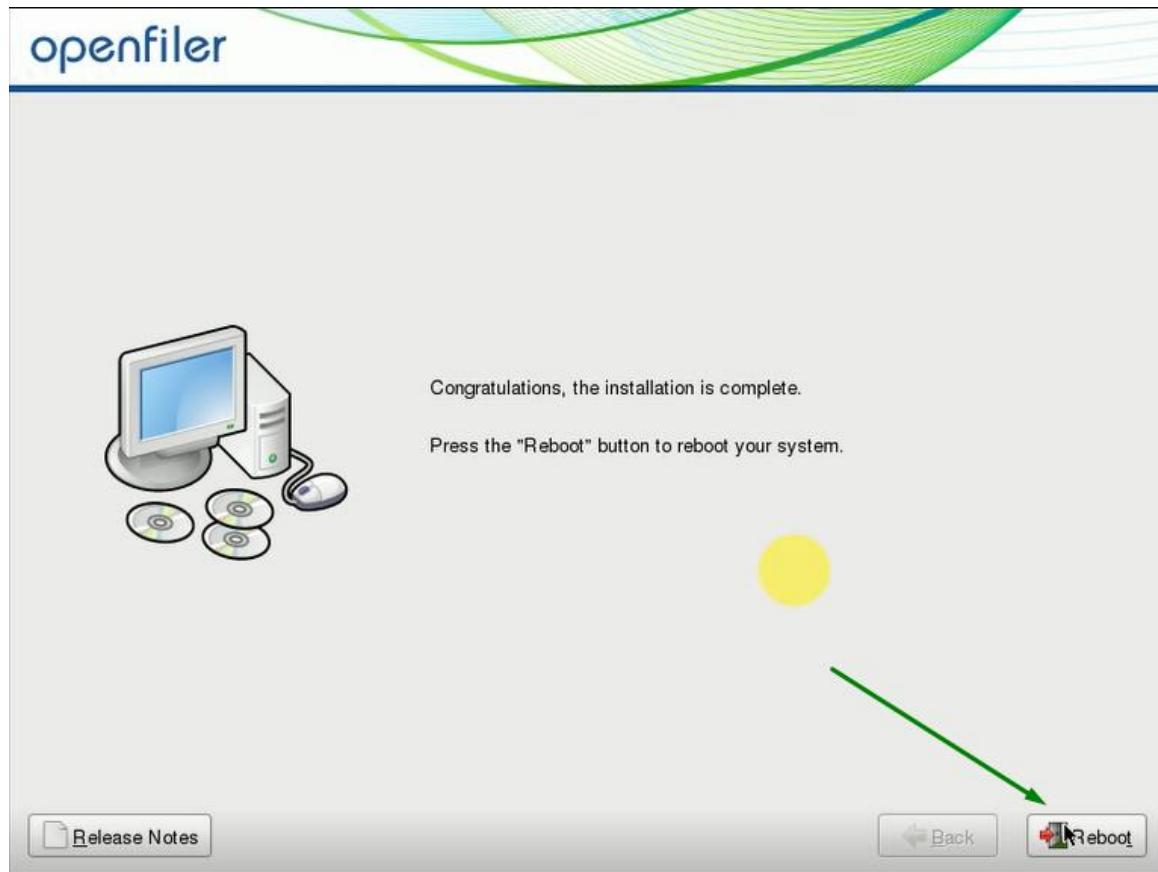
3.13. Proceed to enter ok button



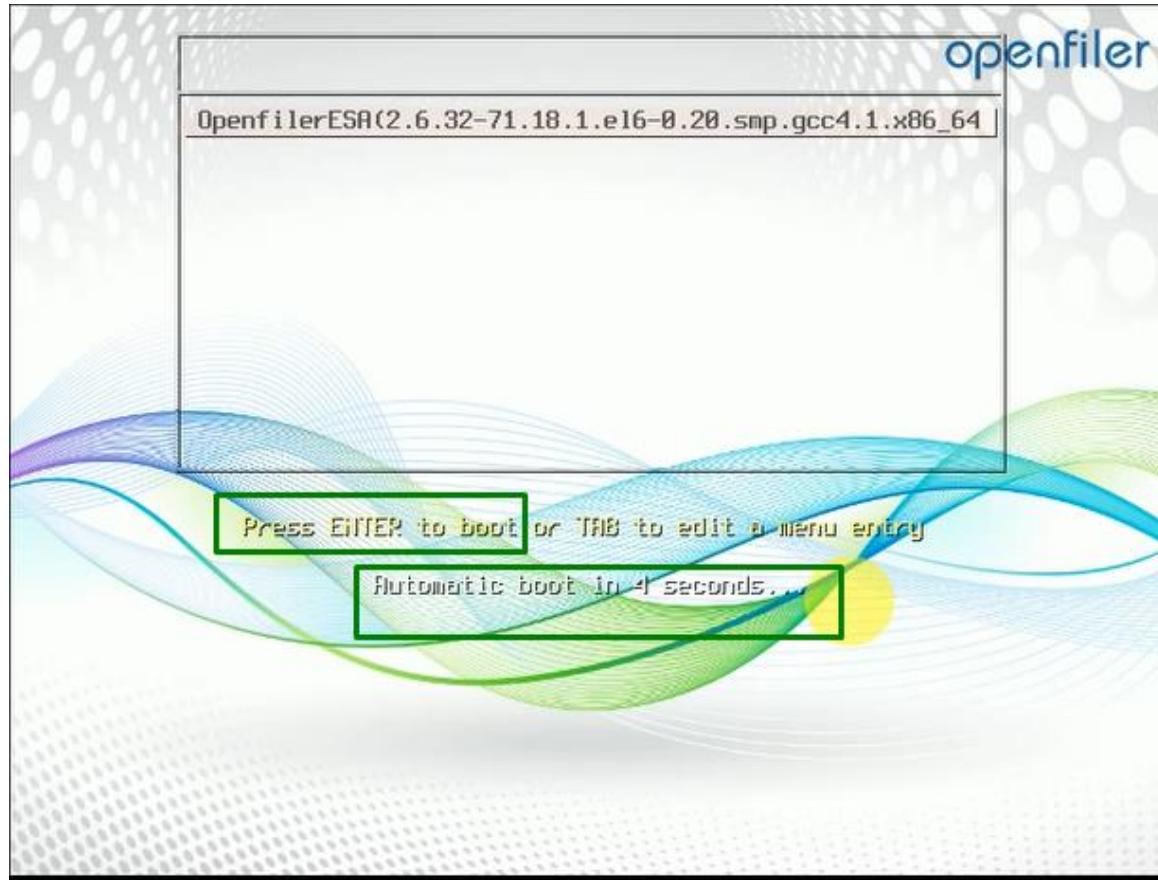
3.14. Wait for progress status of openfiler



3.15. Proceed to enter Reboot button



3.16. Proceed to enter from Key board



3.17. Openfiler provide us url as <https://192.168.129.104:446/>

```
Openfiler login: [root@openfiler ~]#
```

---

```
| Commercial Support: http://www.openfiler.com/support/
| Administrator Guide: http://www.openfiler.com/buy/administrator-guide
| Community Support: http://www.openfiler.com/community/forums/
| Internet Relay Chat: server: irc.freenode.net channel: #openfiler
|
| (C) 2001-2011 Openfiler. All Rights Reserved.
| Openfiler is licensed under the terms of the GNU GPL, version 2
| http://www.gnu.org/licenses/gpl-2.0.html
```

---

```
Welcome to Openfiler ESA, version 2.99.1
Web administration GUI: https://192.168.129.104:446/
openfiler login:
```

```
[root@openfiler ~]#
```

#### 4. Change the parameter files of Openfiler using root user

##### 4.1. Login as root user

```
Openfiler login: [root@openfiler ~]#
```

---

```
| Commercial Support: http://www.openfiler.com/support/
| Administrator Guide: http://www.openfiler.com/buy/administrator-guide
| Community Support: http://www.openfiler.com/community/forums/
| Internet Relay Chat: server: irc.freenode.net channel: #openfiler
|
| (C) 2001-2011 Openfiler. All Rights Reserved.
| Openfiler is licensed under the terms of the GNU GPL, version 2
| http://www.gnu.org/licenses/gpl-2.0.html
```

---

```
Welcome to Openfiler ESA, version 2.99.1
Web administration GUI: https://192.168.129.104:446/
openfiler login: root
Password:
[root@openfiler ~]#
```

```
[root@openfiler ~]#
```

#### 4.2. Verify the storage used by OS

```
[root@openfiler ~]# df -h
/*
Filesystem           Size  Used  Avail  Use%  Mounted on
/dev/sda2            7.5G  1.4G  5.8G  20%  /
tmpfs                491M  208K  490M  1%   /dev/shm
/dev/sda1            289M  23M  252M  9%   /boot
*/

```

#### 4.3. Edit the hosts files to reconfigure

```
[root@openfiler ~]# vi /etc/hosts
/*
#.Public
192.168.1.105    rac_pdb.mydoamin    rac_pdb
192.168.1.106    rac_sdb.mydoamin    rac_sdb

#.Private
192.168.1.102    rac_pdb-priv.mydoamin    rac_pdb-priv
192.168.1.103    rac_sdb-priv.mydoamin    rac_sdb-priv

#.Virtual
192.168.1.107    rac_pdb-vip.mydoamin    rac_pdb-vip
192.168.1.108    rac_sdb-vip.mydoamin    rac_sdb-vip

#.Openfiler (SAN/NAS Storage)
192.168.1.104    openfiler.mydoamin    openfiler

#.SCAN (DC)
192.168.1.109    rac-scan.mydoamin    rac-scan
192.168.1.110    rac-scan.mydoamin    rac-scan

#.SCAN (DR)
192.168.1.120    rac-scandr.mydoamin    rac-scandr
192.168.1.121    rac-scandr.mydoamin    rac-scandr
*/

```

#### 4.4. Edit the ifcfg-eh0 files as

```
[root@openfiler ~]# vi /etc/sysconfig/network-scripts/ifcfg-eth0
/*
DEVICE=eth0
TYPE=Ethernet
ONBOOT=yes
NM_CONTROLLED=yes
BOOTPROTO=static
IPADDR=192.168.129.104
NETMASK=255.255.255.0
GATEWAY=192.168.129.6
DNS1=192.168.129.16
DNS2=192.168.129.2
DEFROUTE=yes
IPV4_FAILURE_FATAL=yes
IPV6INIT=no
*/

```

4.5. Restart the OS network to reset

```
[root@openfiler ~]# service network restart
```

4.6. To disabling the firewall

```
[root@openfiler ~]# chkconfig --list iptables
[*]
iptables 0:off 1:off 2:on 3:on 4:on 5:on 6:off
*/
[root@openfiler ~]# service iptables stop
[*]
iptables: Setting chains to policy ACCEPT: nat mangle filter[...OK...]
iptables: Flushing firewall rules: [...OK...]
iptables: Unloading modules: [...OK...]
*/
[root@openfiler ~]# chkconfig iptables off
[root@openfiler ~]# iptables -F
[root@openfiler ~]# service iptables save
[*]
iptables: Saving firewall rules to /etc/sysconfig/iptables:[...OK...]
*/
[root@openfiler ~]# /etc/init.d/iptables stop
[*]
iptables: Setting chains to policy ACCEPT: filter[...OK...]
iptables: Flushing firewall rules: [...OK...]
iptables: Unloading modules: [...OK...]
*/
[root@openfiler ~]# iptables -L
[*]
Chain INPUT (policy ACCEPT)
target prot opt source destination
Chain FORWARD (policy ACCEPT)
target prot opt source destination
Chain OUTPUT (policy ACCEPT)
target prot opt source destination
*/
[root@openfiler ~]# chkconfig --list iptables
[*]
iptables 0:off 1:off 2:off 3:off 4:off 5:off 6:off
*/.
```

#### 4.7. To disabling the ntpd service

```
[root@openfiler ~]# service ntpd stop
[*/
Shutting down ntpd: ..... [FAILED]
*/
[root@openfiler ~]# service ntpd status
[*/
ntp is stopped
*/
[root@openfiler ~]# chkconfig ntpd off
[root@openfiler ~]# mv /etc/ntp.conf /etc/ntp.conf.backup
[root@openfiler ~]# rm /etc/ntp.conf
[root@openfiler ~]# rm /var/run/ntpd.pid
--- To Reboot the OS
[root@openfiler ~]# init 6
```

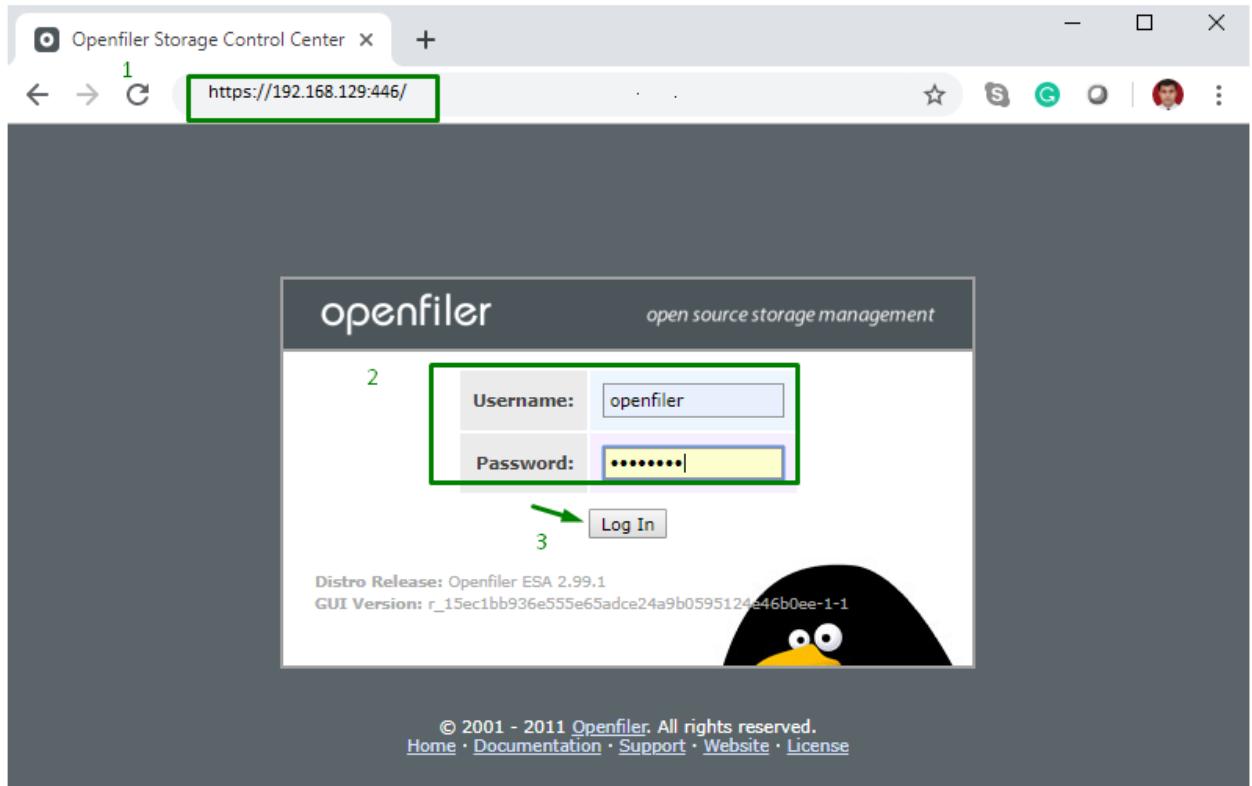
#### 4.8. After reboot verification

```
[root@openfiler ~]# chkconfig --list iptables
iptables      0:off    1:off    2:off    3:off    4:off    5:off    6:off
[root@openfiler ~]#
[root@openfiler ~]# chkconfig --list ntpd
ntpd         0:off    1:off    2:off    3:off    4:off    5:off    6:off
[root@openfiler ~]#
[root@openfiler ~]# ping google.com
PING google.com (74.125.68.113) 56(84) bytes of data.
64 bytes from sc-in-f113.1e100.net (74.125.68.113): icmp_seq=1 ttl=56 time=95.6
ms
^C
--- google.com ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 95.617/95.617/95.617/0.000 ms
[root@openfiler ~]#
[root@openfiler ~]# _
```

```
[root@openfiler ~]# cat /etc/sysconfig/network
NETWORKING=yes
HOSTNAME= openfiler.mydomain
[root@openfiler ~]#
[root@openfiler ~]#
[root@openfiler ~]# _
```

5. Configure Openfiler using URL <https://192.168.129.104:446/>

5.1. Login as user openfiler with password is password



5.2. First click on Services tab then Enable and Start the iSCSI Target services

The screenshot shows the "Manage Services" interface. The top navigation bar includes tabs for Status, System, Volumes, Cluster, Quota, Shares, Services (which is highlighted with a green box and a green arrow labeled "1"), and Accounts. The main content area is titled "Manage Services" and displays a table of services. A green box labeled "2" highlights the "iSCSI Target" row, which is currently enabled (Status: Enabled, Current Status: Running). The table has columns for Service, Boot Status, Modify Boot, Current Status, and Start / Stop.

Service	Boot Status	Modify Boot	Current Status	Start / Stop
CIFS Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
NFS Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
RSync Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
HTTP/Dav Server	Disabled	<a href="#">Enable</a>	Running	<a href="#">Stop</a>
LDAP Container	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
FTP Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
iSCSI Target	Enabled	<a href="#">Disable</a>	Running	<a href="#">Stop</a>
UPS Manager	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
UPS Monitor	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
iSCSI Initiator	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
ACPI Daemon	Enabled	<a href="#">Disable</a>	Running	<a href="#">Stop</a>
SCST Target	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
FC Target	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
Cluster Manager	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>

- 5.3. First click on System tab then go to Network Interface Configuration section then add primary database name as "rac\_pdb" and secondary database name as "rac\_sdb" and IP details, meanwhile click on update button

The screenshot shows three stacked configuration pages:

- Network Configuration:** A form with fields for Hostname (openfiler.mydomain), Primary DNS (192.168.129.16), Secondary DNS (192.168.129.2), and Gateway. Buttons for Update and Cancel are at the bottom.
- Network Interface Configuration:** A table showing a single interface entry for eth0 with static IP 192.168.129.104. A link to 'Create bonded interface' is at the bottom.
- Network Access Configuration:** A table listing two network access entries: rac\_pdb (IP 192.168.129.105) and rac\_sdb (IP 192.168.129.106). A 'New' button, 'Update' button, and a 'Share' dropdown are visible.

Green arrows labeled Step 1 through Step 5 indicate the sequence of actions: Step 1 highlights the System tab, Step 2 highlights the rac\_pdb entry, Step 3 highlights the rac\_sdb entry, Step 4 highlights the Share dropdown, and Step 5 points to the Update button.

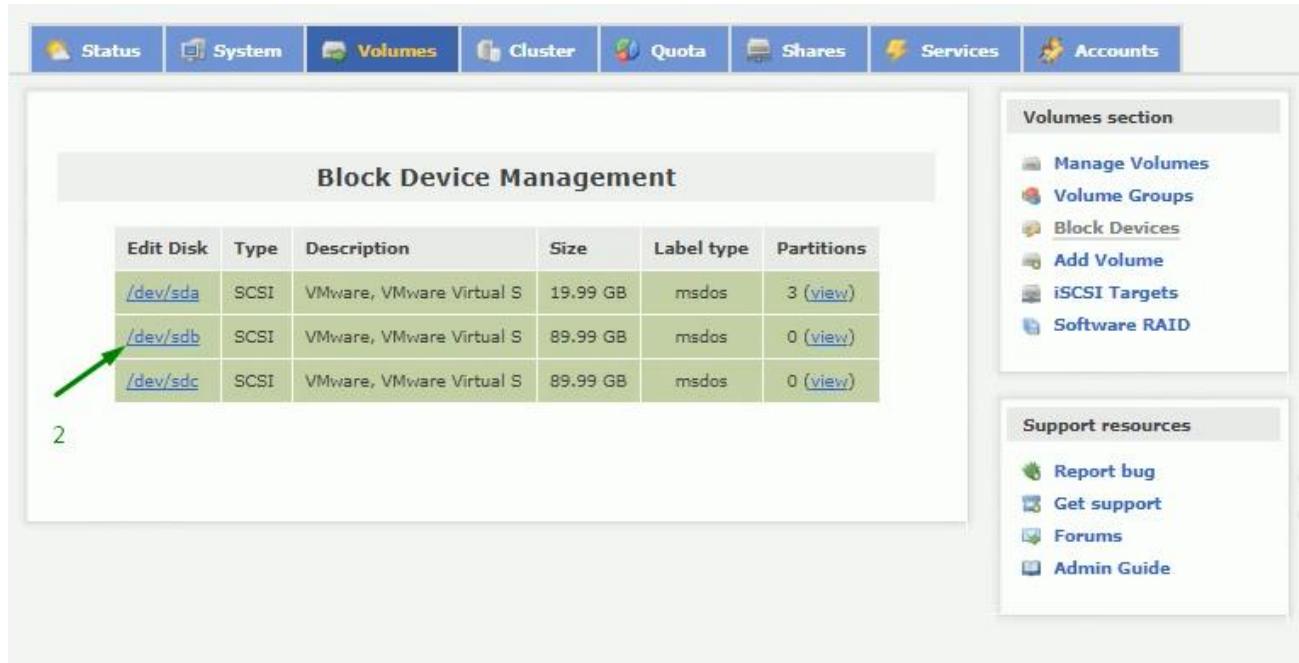
- 5.4. First click on Volumes tab then go to Create a new volume group section then click on create new physical volumes link

The screenshot shows two stacked management sections:

- Volume Group Management:** A table with columns for Volume Group Name, Size, Allocated, Free, Members, Add physical storage, and Delete VG. A 'Create a new volume group' link is at the bottom.
- Create a new volume group:** A form with a warning message: "No existing physical volumes were found, or all existing physical volumes are used. You can create new physical volumes." It includes a 'Create' button.

Green arrows labeled Step 1 and Step 2 point to the Volumes tab and the 'Create' button respectively.

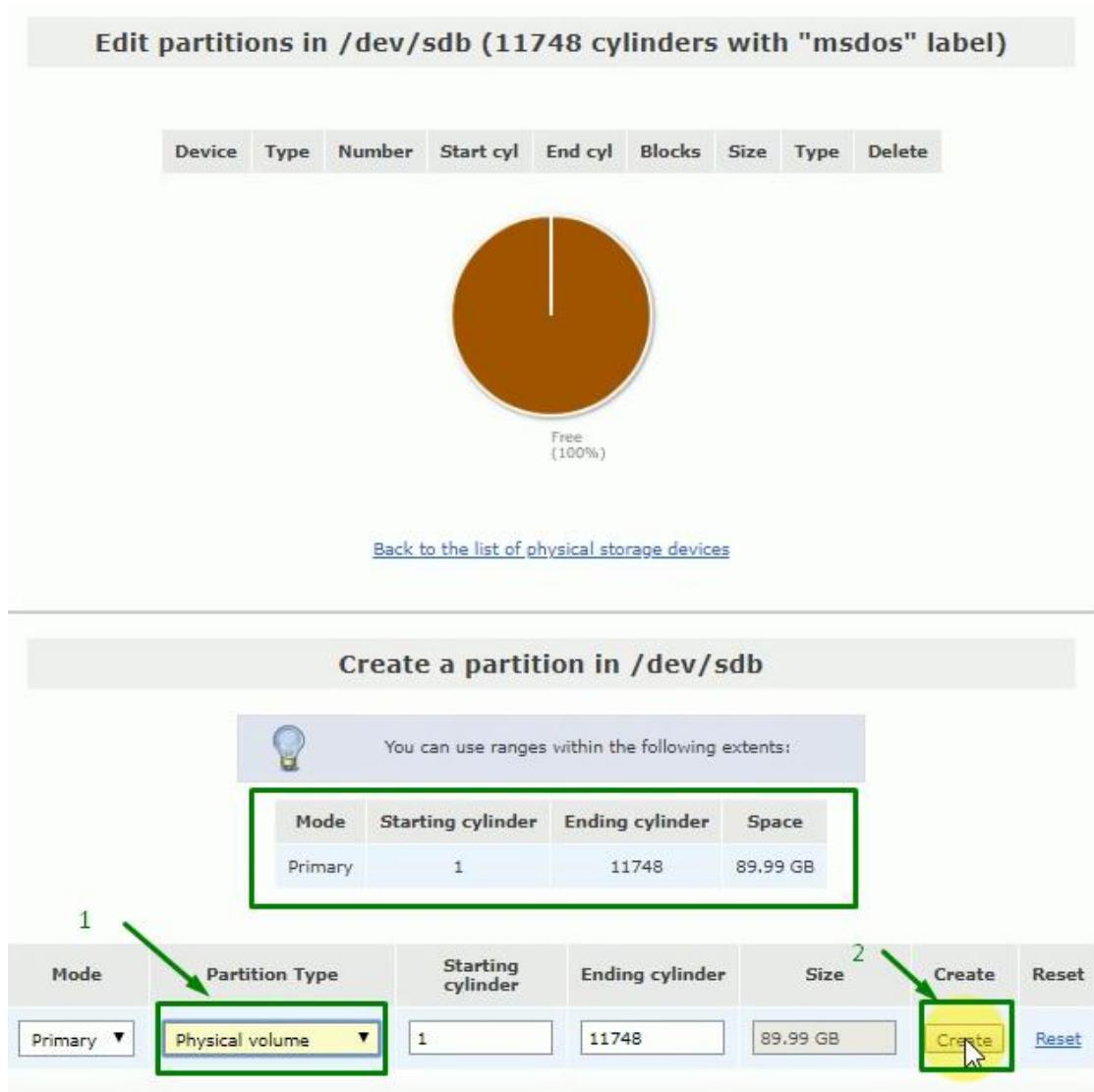
5.5. You have choose the proper partition to create OCR, DATA and FRA disks for primary database and click over link (/dev/sdb)



The screenshot shows the 'Block Device Management' section of a web-based storage management interface. At the top, there's a navigation bar with links for Status, System, Volumes, Cluster, Quota, Shares, Services, and Accounts. On the right, there are sections for 'Volumes section' (Manage Volumes, Volume Groups, Block Devices, Add Volume, iSCSI Targets, Software RAID) and 'Support resources' (Report bug, Get support, Forums, Admin Guide). The main table lists three disk entries:

Edit Disk	Type	Description	Size	Label type	Partitions
/dev/sda	SCSI	VMware, VMware Virtual S	19.99 GB	msdos	3 ( <a href="#">view</a> )
<b>/dev/sdb</b>	SCSI	VMware, VMware Virtual S	89.99 GB	msdos	0 ( <a href="#">view</a> )
/dev/sdc	SCSI	VMware, VMware Virtual S	89.99 GB	msdos	0 ( <a href="#">view</a> )

5.6. Go to create a partition in /dev/sdb section and select partition type as Physical volume then click on create button



The screenshot shows the 'Edit partitions in /dev/sdb' page. It displays a circular diagram representing the disk with a single vertical line through the center, labeled 'Free (100%)'. Below the diagram is a link to 'Back to the list of physical storage devices'.

Below this is the 'Create a partition in /dev/sdb' configuration page. It includes a note: 'You can use ranges within the following extents:' followed by a table:

Mode	Starting cylinder	Ending cylinder	Space
Primary	1	11748	89.99 GB

Below this table, there are input fields for creating a new partition:

Mode	Partition Type	Starting cylinder	Ending cylinder	Size	Create	Reset
Primary	Physical volume	1	11748	89.99 GB	<b>Create</b>	<a href="#">Reset</a>

Two green arrows point to specific fields: one from the number '1' to the 'Partition Type' dropdown, and another from the number '2' to the 'Create' button.

## 5.7. Now your Physical volume looks like

The screenshot shows a table of partition details for /dev/sdb1:

Device	Type	Number	Start cyl	End cyl	Blocks	Size	Type	Delete
/dev/sdb1	Linux Physical Volume (8x8e)	1	1	6225	89980928	85.81 GB	Primary	<a href="#">Delete</a>

A pie chart indicates Free (5%) and sdb1 (95%). A yellow cursor arrow points to the 'Delete' link in the table.

[Back to the list of physical storage devices](#)

**Create a partition in /dev/sdb**

## 5.8. Now you have to click over Add Volume link

The screenshot shows the same partition table and pie chart as the previous screen. A green arrow points to the 'Add Volume' link in the sidebar under the 'Volumes section'.

[Back to the list of physical storage devices](#)

## 5.9. Go to Create a new volume group section and provide group name select the partition name and then click on Add volume group button

The screenshot shows the 'Volume Group Management' interface with the 'Create a new volume group' section active.

Step 1: Volume group name (no spaces) - racstore\_pdb

Step 2: Select physical volumes to add - /dev/sdb1 85.82 GB

Step 3: Add volume group

Valid characters for volume group name: A-Z a-z 0-9 \_ + -

**Volume Group Management**

Volume Group Name	Size	Allocated	Free	Members	Add physical storage	Delete VG
-------------------	------	-----------	------	---------	----------------------	-----------

**Create a new volume group**

**Volumes section**

- Manage Volumes
- Volume Groups
- Block Devices
- Add Volume
- iSCSI Targets
- Software RAID

**Support resources**

- Report bug
- Get support
- Forums
- Admin Guide

5.10. Go to Volumes section and click on Add volume button

**Volume Group Management**

Volume Group Name	Size	Allocated	Free	Members	Add physical storage	Delete VG
racstore_pdb	85.81 GB	0 bytes	85.81 GB	<a href="#">View member PVs</a>	All PVs are used	<a href="#">Delete</a>

**Create a new volume group**

**Warning:** No existing physical volumes were found, or all existing physical volumes are used. You can [create new physical volumes](#).

**Volumes section**

- Manage Volumes
- Volume Groups
- Block Devices
- Add Volume**
- iSCSI Targets
- Software RAID

**Support resources**

- Report bug
- Get support
- Forums
- Admin Guide

5.11. Go to Create a volume is "racstore\_pdb" section and create storage for OCR/Voting Disks

**Block storage statistics for volume group "racstore\_pdb"**

Total Space	Used Space	Free Space
89980928 bytes (87872 MB)	0 bytes (0 MB)	89980928 bytes (87872 MB)

**Create a volume in "racstore\_pdb"**

**Step 1** Volume Name (\*no spaces\*. Valid characters [a-zA-Z0-9]):

**Step 2** Volume Description:

**Step 3** Required Space (MB):

**Step 4** Filesystem / Volume type:

**Step 5**

**Software RAID**

**Support resources**

- Report bug
- Get support
- Forums
- Admin Guide

5.12. Now OCR/Voting disk look like and proceed to create storage for DATA Disks click on Add Volume

Select Volume Group

Please select a volume group to display.

Volumes in volume group "racstore\_pdb" (87872 MB)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_pdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
0 MB allocated to snapshots									
67392 MB of free space left									

5.13. Go to Create a volume is "racstore\_pdb" section and create storage for DATA Disks

Please select a volume group to create a volume in.

racstore\_pdb ▾ Change

### Block storage statistics for volume group "racstore\_pdb"

Total Space	Used Space	Free Space
89980928 bytes (87872 MB)	20971520 bytes (20480 MB)	69009408 bytes (67392 MB)

Create a volume in "racstore\_pdb"

Volume Name (\*no spaces\*. Valid characters [a-zA-Z,0-9])

Step 1 Step 2 Volume Description: oracle database

Step 3 Required Space (MB): 40960

Step 4 Filesystem / volume type: block (iSCSI,FC,etc) ▾

Step 5

5.14. Now DATA disk look like and proceed to create storage for FRA Disks click on Add Volume

Select Volume Group

Please select a volume group to display.

racstore\_pdb ▾ Change

Volumes in volume group "racstore\_pdb" (87872 MB)

Free (30%) ocr\_pdb (22%) data\_pdb (47%)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_pdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
data_pdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>

0 MB allocated to snapshots

5.15. Go to Create a volume is "racstore\_pdb" section and create storage for FRA Disks

racstore\_pdb ▾ Change

Block storage statistics for volume group "racstore\_pdb"

Total Space	Used Space	Free Space
89980928 bytes (87872 MB)	62914560 bytes (61440 MB)	27066368 bytes (26432 MB)

Create a volume in "racstore\_pdb"

Step 1 Volume Name (\*no spaces\*. Valid characters [a-zA-Z,0-9]): fra\_pdb

Step 2 Volume Description: oracle fast recovery area

Step 3 Required Space (MB): 25600

Step 4 Filesystem/ Volume type: block (iSCSI,FC,etc)

Step 5 Create

## 5.16. Finally “racstore\_pdb” looks like

Select Volume Group

Please select a volume group to display.

racstore\_pdb ▾ Change

Volumes in volume group "racstore\_pdb" (87872 MB)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_pdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
data_pdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
fra_pdb	oracle fast recovery area	25600 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>

0 MB allocated to snapshots

832 MB of free space left

## 5.17. Configure iSCSI Targets

Select Volume Group

Please select a volume group to display.

racstore\_pdb ▾ Change

Volumes in volume group "racstore\_pdb" (87872 MB)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_pdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
data_pdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
fra_pdb	oracle fast recovery area	25600 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>

0 MB allocated to snapshots

832 MB of free space left

Manage Volumes

Volume Groups

Block Devices

Add Volume

**iSCSI Targets**

Software RAID

Support resources

Report bug

Get support

Forums

Admin Guide

## 5.18. Configure iSCSI Target IQN

Target Configuration LUN Mapping Network ACL CHAP Authentication

Add new iSCSI Target

Target IQN: iqn.openfiler;ocr\_pdb

Add

1 → iqn.openfiler;ocr\_pdb

2 → Add button

5.19. Go to Select iSCSI Target section choose IQN for OCR and click on Change button and then click on Network ACL tab.

The screenshot shows two main sections of the iSCSI Target Configuration interface:

- Add new iSCSI Target:** A form for adding a new target with a "Target IQN" field containing "iqn.2006-01.com.openfiler:tsn.c3064e0dcdb4" and an "Add" button.
- Select iSCSI Target:** A list with a single entry "iqn.openfiler:ocr\_pdb". A yellow circle highlights the "Change" button next to it, with a green arrow labeled "1" pointing to it. Another green arrow labeled "2" points to the "Network ACL" tab at the top of the page.

5.20. Configure Network ACL configuration (Change Access columns status, Deny to Allow) for OCR and click on Update button then click on Target Configuration tab.

The screenshot shows the "ISCSI host access configuration for target 'iqn.openfiler:ocr\_pdb'" section:

- Step 3:** A green arrow points to the "Network ACL" tab at the top of the page.
- Step 1:** A green arrow points to the "Access" column for the entry "rac\_pdb", which has a dropdown menu set to "Allow".
- Step 2:** A green arrow points to the "Update" button at the bottom of the table.

5.21. Configure iSCSI Target IQN for DATA

The screenshot shows the "Add new iSCSI Target" section:

- A green arrow labeled "1" points to the "Target IQN" input field, which contains "iqn.openfiler:data\_pdb".
- A green arrow labeled "2" points to the "Add" button, which is highlighted with a yellow circle.

5.22. Go to Select iSCSI Target section choose IQN for DATA and click on Change button and then click on Network ACL tab.

The screenshot shows two main sections of the iSCSI Target Configuration interface:

- Add new iSCSI Target:** A form for adding a new target with a "Target IQN" field containing "iqn.2006-01.com.openfiler:tsn.93696d3d20fa" and an "Add" button.
- Select iSCSI Target:** A list with a single entry "iqn.openfiler:data\_pdb". A yellow circle highlights the "Change" button next to it, with a green arrow labeled "1" pointing to it. Another green arrow labeled "2" points to the "Network ACL" tab at the top of the page.

5.23. Configure Network ACL configuration (Change Access columns status, Deny to Allow) for DATA and click on Update button then click on Target Configuration tab.

Name	Network/Host	Netmask	Access
rac_pdb	10.0.129.105	255.255.255.255	Allow ▾
rac_sdb	10.0.129.106	255.255.255.255	Deny ▾

5.24. Configure iSCSI Target IQN for FRA

Target IQN		Add
iqn.openfiler:fra_pdb		<input type="button" value="Add"/>

5.25. Go to Select iSCSI Target section choose IQN for FRA and click on Change button and then click on Network ACL tab.

Target IQN		Add
iqn.2006-01.com.openfiler:tsn.d0acbc150e0e		<input type="button" value="Add"/>

5.26. Configure Network ACL configuration (Change Access columns status, Deny to Allow) for FRA and click on Update button then click on Target Configuration tab.

Name	Network/Host	Netmask	Access
rac_pdb	10.0.129.105	255.255.255.255	Allow ▾
rac_sdb	10.0.129.106	255.255.255.255	Deny ▾

5.27. Go to Select iSCSI Target section choose OCR and click on Change button then click on LUN Mapping tab.

The screenshot shows two tabs: 'Target Configuration' and 'LUN Mapping'. A green arrow labeled '2' points from the 'Target Configuration' tab to the 'LUN Mapping' tab. In the 'Select iSCSI Target' section, there is a dropdown menu with 'iqn.openfiler:ocr\_pdb' selected. A yellow circle highlights the 'Change' button next to the dropdown, with a green arrow labeled '1' pointing to it. Below this, a message says 'Please select an iSCSI target to display and/or edit.'

5.28. Verify the iqn for OCR and click on Map button.

The screenshot shows the 'Target Configuration' tab selected. In the 'Map New LUN to Target' section, there is a table with three rows. The first row has 'oracle cluster registry' as the name, '/dev/racstore\_pdb/ocr\_pdb' as the LUN Path, 'write-thru' as the R/W Mode, and '9ivh5q-Dlkn-1mFZ' as the SCSI Serial No. A green box highlights the 'Map' button in the last column. A green arrow labeled '1' points to this button. The table also includes columns for SCSI Id., Transfer Mode, and Map LUN.

5.29. Verify the iqn for OCR and click on Target Configuration tab.

The screenshot shows the 'Target Configuration' tab selected. In the 'LUN Mapping' section, there is a table with one row. The row contains '0' as the LUN Id., '/dev/racstore\_pdb/ocr\_pdb' as the LUN Path, 'write-thru' as the R/W Mode, '9ivh5q-Dlkn-1mFZ' as the SCSI Serial No., '9ivh5q-Dlkn-1mFZ' as the SCSI Id., 'blockio' as the Transfer Mode, and an 'Unmap' button. A green box highlights the 'Unmap' button. A green arrow labeled 'Step 1' points to the 'Target Configuration' tab at the top. Below the table, a message says 'LUNs mapped to target: iqn.openfiler:ocr\_pdb'.

5.30. Go to Select iSCSI Target section choose DATA and click on Change button then click on LUN Mapping tab.

The screenshot shows the 'Target Configuration' tab selected. In the 'Select iSCSI Target' section, there is a dropdown menu with 'iqn.openfiler:data\_pdb' selected. A yellow circle highlights the 'Change' button next to the dropdown, with a green arrow labeled '1' pointing to it. Below this, a message says 'Please select an iSCSI target to display and/or edit.'

5.31. Verify the iqn for DATA and click on Map button.

LUNs mapped to target: **iqn.openfiler:data\_pdb**

No LUNs mapped to this target

Map New LUN to Target: "iqn.openfiler:data\_pdb"

Name	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Map LUN
oracle cluster registry	/dev/racstore_pdb/ocr_pdb	write-thru	9ivh5q-Dlkn-1mFZ	9ivh5q-Dlkn-1mFZ	blockio	<input type="button" value="Map"/>
oracle database	<b>/dev/racstore_pdb/data_pdb</b>	write-thru	KJQ9DU-IIID-Bcun	KJQ9DU-IIID-Bcun	blockio	<b><input type="button" value="Map"/></b>
oracle fast recovery area	/dev/racstore_pdb/fra_pdb	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<input type="button" value="Map"/>

5.32. Verify the iqn for DATA and click on Target Configuration tab.

Target Configuration    LUN Mapping    Network ACL    CHAP Authentication

LUNs mapped to target: **iqn.openfiler:data\_pdb**

Map New LUN to Target: "iqn.openfiler:data\_pdb"

LUN Id.	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Unmap LUN
0	<b>/dev/racstore_pdb/data_pdb</b>	write-thru	KJQ9DU-IIID-Bcun	KJQ9DU-IIID-Bcun	blockio	<input type="button" value="Unmap"/>

5.33. Go to Select iSCSI Target section choose FRA and click on Change button then click on LUN Mapping tab.

Add new iSCSI Target

Target IQN

**iqn.2006-01.com.openfiler:tsn.1655657d3bed**

Select iSCSI Target

Please select an iSCSI target to display and/or edit.

**iqn.openfiler:fra\_pdb**

**Change**

5.34. Verify the iqn for FRA and click on Map button.

LUNs mapped to target: **iqn.openfiler:fra\_pdb**

No LUNs mapped to this target

Map New LUN to Target: "iqn.openfiler:fra\_pdb"

Name	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Map LUN
oracle cluster registry	/dev/racstore_pdb/ocr_pdb	write-thru	9ivh5q-Dlkn-1mFZ	9ivh5q-Dlkn-1mFZ	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_pdb/data_pdb	write-thru	KJQ9DU-IIID-Bcun	KJQ9DU-IIID-Bcun	blockio	<input type="button" value="Map"/>
oracle fast recovery area	<b>/dev/racstore_pdb/fra_pdb</b>	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<b><input type="button" value="Map"/></b>

5.35. Verify the iqn for FRA and click on Target Configuration tab.

The screenshot shows the 'Target Configuration' tab selected in a software interface. At the top, it displays 'LUNs mapped to target: iqn.openfiler fra\_pdb'. Below this is a table with columns: LUN Id., LUN Path, R/W Mode, SCSI Serial No., SCSI Id., Transfer Mode, and Unmap LUN. A row for LUN ID 0, path /dev/racstore\_pdb/fra\_pdb, and mode write-thru is highlighted with a green box. An arrow points from this row to a button labeled 'Map New LUN to Target: "iqn.openfiler:fra\_pdb"'. Another green box highlights this button. A yellow circle with a cursor icon is positioned at the top left of the table area, with the number '1' below it.

LUN Id.	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Unmap LUN
0	/dev/racstore_pdb/fra_pdb	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<a href="#">Unmap</a>

**Map New LUN to Target: "iqn.openfiler:fra\_pdb"**

5.36. Verify the iSCSI service.

The screenshot shows the 'Manage Services' page. At the top, there's a navigation bar with tabs: Status, System, Volumes, Cluster, Quota, Shares, Services (selected), and Accounts. The main table lists services with columns: Service, Boot Status, Modify Boot, Current Status, and Start / Stop. The 'iSCSI Target' service is highlighted with a green box around its row. Its current status is 'Running' and the start/stop button is labeled 'Stop'. Other services listed include CIFS Server, NFS Server, RSync Server, HTTP Dav Server, LDAP Container, FTP Server, UPS Manager, UPS Monitor, iSCSI Initiator, ACPI Daemon, SCST Target, FC Target, and Cluster Manager.

Service	Boot Status	Modify Boot	Current Status	Start / Stop
CIFS Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
NFS Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
RSync Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
HTTP Dav Server	Disabled	<a href="#">Enable</a>	Running	<a href="#">Stop</a>
LDAP Container	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
FTP Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
iSCSI Target	Enabled	<a href="#">Disable</a>	Running	<a href="#">Stop</a>
UPS Manager	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
UPS Monitor	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
iSCSI Initiator	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
ACPI Daemon	Enabled	<a href="#">Disable</a>	Running	<a href="#">Stop</a>
SCST Target	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
FC Target	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
Cluster Manager	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>

5.37. Now add the Volume Group for Secondary database DR.

Select Volume Group

Please select a volume group to display.

racstore\_pdb ▾ Change

Volumes in volume group "racstore\_pdb" (87872 MB)

Free (1%)

ocr\_pdb (23%)

data\_pdb (47%)

fra\_pdb (29%)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_pdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	In use	Edit	Create
data_pdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	In use	Edit	Create
fra_pdb	oracle fast recovery area	25600 MB	iSCSI	Not applicable	Not applicable	Not applicable	In use	Edit	Create

0 MB allocated to snapshots.

**Volumes section**

- Manage Volumes
- Volume Groups
- Block Devices
- Add Volume
- iSCSI Targets
- Software RAID

**Support resources**

- Report bug
- Get support
- Forums
- Admin Guide

5.38. Now click on Create new Physical Volume to Create "racstore\_sdb" for DR.

Volume Group Management

Volume Group Name	Size	Allocated	Free	Members	Add physical storage	Delete VG
racstore_pdb	85.81 GB	85.00 GB	832.00 MB	<a href="#">View member PVs</a>	All PVs are used	<a href="#">VG contains volumes</a>

Create a new volume group

No existing physical volumes were found, or all existing physical volumes are used. You can [create new physical volumes](#).

Step 1

Step 2

5.39. You have choose the proper partition to create OCR, DATA and FRA disks and click over link (/dev/sdc) for DR

Block Device Management

Edit Disk	Type	Description	Size	Label type	Partitions
<a href="#">/dev/sda</a>	SCSI	VMware, VMware Virtual S	19.99 GB	msdos	3 ( <a href="#">view</a> )
<a href="#">/dev/sdb</a>	SCSI	VMware, VMware Virtual S	89.99 GB	msdos	1 ( <a href="#">view</a> )
<a href="#">/dev/sdc</a>	SCSI	VMware, VMware Virtual S	89.99 GB	msdos	0 ( <a href="#">view</a> )

Step 1

5.40. Go to create a partition in /dev/sdc section and select partition type as Physical volume then click on create button

Edit partitions in /dev/sdc (11748 cylinders with "msdos" label)

Device	Type	Number	Start cyl	End cyl	Blocks	Size	Type	Delete
Free (100%)								

[Back to the list of physical storage devices](#)

---

Create a partition in /dev/sdc

You can use ranges within the following extents:

Mode	Starting cylinder	Ending cylinder	Space
Primary	1	11748	89.99 GB

Mode	Partition Type	Starting cylinder	Ending cylinder	Size	Create	Reset
Primary ▾	Physical volume ▾	1	11748	89.99 GB	<b>Create</b>	<a href="#">Reset</a>

Step 1

5.41. Now your Physical volume looks like

[Status](#) [System](#) [Volumes](#) [Cluster](#) [Quota](#) [Shares](#) [Services](#) [Accounts](#)

Edit partitions in /dev/sdc (11748 cylinders with "msdos" label)

Device	Type	Number	Start cyl	End cyl	Blocks	Size	Type	Delete
/dev/sdc1	Linux Physical Volume (0x8e)	1	1	11204	89993272	85.82 GB	Primary	<a href="#">Delete</a>
Free (5%)								

[Back to the list of physical storage devices](#)

---

Create a partition in /dev/sdc

#### 5.42. Now you have to click over Add Volume link

**Edit partitions in /dev/sdc (11748 cylinders with "msdos" label)**

Device	Type	Number	Start cyl	End cyl	Blocks	Size	Type	Delete
/dev/sdc1	Linux Physical Volume (0x8e)	1	1	11204	89993272	85.82 GB	Primary	<a href="#">Delete</a>

Free (5%)

sdcl (95%)

[Back to the list of physical storage devices](#)

**Create a partition in /dev/sdc**

You can use ranges within the following extents:

Mode	Starting cylinder	Ending cylinder	Space
Primary	11205	11748	4.17 GB

#### 5.43. Now click on Change Button to Create new volume group named as "racstore\_sdb"

**Select Volume Group**

Please select a volume group to create a volume in.

racstore\_pdb ▾ **Change**

**Block storage statistics for volume group "racstore\_pdb"**

Total Space	Used Space	Free Space
89980928 bytes (87872 MB)	89128960 bytes (87040 MB)	851968 bytes (832 MB)

Free (1%)

Used (99%)

**Create a volume in "racstore\_pdb"**

Volume Name (\*no spaces\*. Valid characters [a-zA-Z0-9-\_+]):

Volume Description:

#### 5.44. Go to Create a new volume group section and provide group name select the partition name and then click on Add volume group button

**Volume Group Management**

Volume Group Name	Size	Allocated	Free	Members	Add physical storage	Delete VG
racstore_pdb	85.81 GB	85.00 GB	832.00 MB	<a href="#">View member PVs</a>	<a href="#">Add PVs</a>	<a href="#">VG contains volumes</a>

**Create a new volume group**

Valid characters for volume group name: A-Z a-z 0-9 \_ + -

Volume group name (no spaces):  1

Select physical volumes to add:

/dev/sdc1 85.82 GB 2

**Add volume group** 3

5.45. Go to Volumes section and click on Add volume button

Volume Group Name	Size	Allocated	Free	Members	Add physical storage	Delete VG
racstore_sdb	85.81 GB	0 bytes	85.81 GB	<a href="#">View member PVs</a>	All PVs are used	<a href="#">Delete</a>
racstore_pdb	85.81 GB	85.00 GB	832.00 MB	<a href="#">View member PVs</a>	All PVs are used	<a href="#">VG contains volumes</a>

1

[Create a new volume group](#)

⚠ No existing physical volumes were found, or all existing physical volumes are used. You can [create new physical volumes](#).

© 2001 - 2011 Openfiler. All rights reserved.  
Home · Documentation · Support · Website · License · Log Out

Volumes section  
Manage Volumes · Volume Groups · Block Devices · Add Volume · iSCSI Targets · Software RAID

Support resources  
Report bug · Get support · Forums · Admin Guide

5.46. Go to Create a volume is "racstore\_sdb" section and create storage for OCR/Voting Disks

**Block storage statistics for volume group "racstore\_sdb"**

Total Space	Used Space	Free Space
89980928 bytes (87872 MB)	0 bytes (0 MB)	89980928 bytes (87872 MB)

**Create a volume in "racstore\_sdb"**

Step 2: Volume Name (\*no spaces\*. Valid characters [a-z,A-Z,0-9]):

Step 3: Volume Description:

Step 4: Required Space (MB):

Step 5: Filesystem / Volume type:

Step 6:

5.47. Now OCR/Voting disk look like and proceed to create storage for DATA Disks click on Add Volume

Select Volume Group

Please select a volume group to display.

Volumes in volume group "racstore\_sdb" (87872 MB)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_sdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>

5.48. Go to Create a volume is "racstore\_sdb" section and create storage for DATA Disks

Block storage statistics for volume group "racstore\_sdb"

Total Space	Used Space	Free Space
89980928 bytes (87872 MB)	20971520 bytes (20480 MB)	69009408 bytes (67392 MB)

Create a volume in "racstore\_sdb"

Step 1: Volume Name (\*no spaces\*. Valid characters [a-zA-Z0-9]) → data\_sdb

Step 2: Volume Description → oracle database

Step 3: Required Space (MB): 40960

Step 4: Filesystem / Volume Type → block (iSCSI,FC,etc)

Step 5: Create

5.49. Now DATA disk look like and proceed to create storage for FRA Disks click on Add Volume

Select Volume Group

Please select a volume group to display.

racstore\_sdb ▾ Change

Volumes in volume group "racstore\_sdb" (87872 MB)

1

Support resources

Manage Volumes

Volume Groups

Block Devices

Add Volume

ISCSI Targets

Software RAID

Report bug

Get support

Forums

Admin Guide

ocr\_sdb (23%)  
Free (30%)  
data\_sdb (47%)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Edit	Properties	Snapshots
ocr_sdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	Delete	Edit	Create	
data_sdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	Delete	Edit	Create	

5.50. Go to Create a volume is "racstore\_sdb" section and create storage for FRA Disks

racstore\_sdb ▾ Change

Block storage statistics for volume group "racstore\_sdb"

Total Space: 89980928 bytes (87872 MB)

Used Space: 62914560 bytes (61440 MB)

Free Space: 27066368 bytes (26432 MB)

Free (30%)

Used (70%)

Create a volume in "racstore\_sdb"

Step 1: Volume Name (\*no spaces\*. Valid characters [a-zA-Z,0-9]) fra\_sdb

Step 2: Volume Description oracle fast recovery area

Step 3: Required Space (MB) 25600

Step 4: Filesystem / Volume type block (iSCSI,FC,etc)

Step 5: Create

### 5.51. Finally “racstore\_sdb” looks like

Select Volume Group

Please select a volume group to display.

racstore\_sdb ▾ Change

Volumes in volume group 'racstore\_sdb' (87872 MB)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_sdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
data_sdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
fra_sdb	oracle fast recovery area	25600 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>

0 MB allocated to snapshots

832 MB of free space left

### 5.52. Configure iSCSI Targets

Select Volume Group

Please select a volume group to display.

racstore\_sdb ▾ Change

Volumes in volume group "racstore\_sdb" (87872 MB)

Volume name	Volume description	Volume size	File system type	File system size	FS used space	FS free space	Delete	Properties	Snapshots
ocr_sdb	oracle cluster registry	20480 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
data_sdb	oracle database	40960 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>
fra_sdb	oracle fast recovery area	25600 MB	iSCSI	Not applicable	Not applicable	Not applicable	<a href="#">Delete</a>	<a href="#">Edit</a>	<a href="#">Create</a>

0 MB allocated to snapshots

832 MB of free space left

1 → Volumes section

2 → Support resources

### 5.53. Configure iSCSI Target IQN

Target Configuration LUN Mapping Network ACL CHAP Authentication

Add new iSCSI Target

Target IQN

1 → iqn.openfiler:ocr\_sdb

2 → Add

Select iSCSI Target

5.54. Go to Select iSCSI Target section choose IQN for OCR and click on Change button and then click on Network ACL tab.

The screenshot shows the 'Target Configuration' tab selected at the top. Below it, the 'Add new iSCSI Target' section is visible with a 'Target IQN' input field containing 'iqn.2006-01.com.openfiler:tsn.e621c9a0f8dd'. An 'Add' button is next to it. A green arrow labeled '3' points from the top of the 'Target Configuration' tab down to the 'iqn.2006-01.com.openfiler...' input field. In the 'Select iSCSI Target' section below, there is a message 'Please select an iSCSI target to display and/or edit.' A dropdown menu shows 'iqn.openfiler:ocr\_sdb' with a 'Change' button next to it. A yellow circle highlights the 'Change' button, and a green arrow labeled '1' points to the dropdown, while another green arrow labeled '2' points to the 'Change' button. A cursor arrow is positioned over the 'Change' button.

5.55. Configure Network ACL configuration (Change Access columns status, Deny to Allow) for OCR and click on Update button then click on Target Configuration tab.

The screenshot shows the 'Network ACL' tab selected at the top. Below it, the 'iSCSI host access configuration for target "iqn.openfiler:ocr\_sdb"' section displays two rows of access rules:

Name	Network/Host	Netmask	Access
rac_pdb	10.0.129.105	255.255.255.255	Deny ▾
rac_sdb	10.0.129.106	255.255.255.255	Allow ▾

A green arrow labeled '3' points from the top of the 'Network ACL' tab down to the 'rac\_pdb' row. A green arrow labeled '1' points to the 'Allow ▾' dropdown for the 'rac\_sdb' row. A yellow circle highlights the 'Allow ▾' dropdown, and a green arrow labeled '2' points to the 'Update' button at the bottom left of the table. A cursor arrow is positioned over the 'Update' button.

5.56. Configure iSCSI Target IQN for DATA

The screenshot shows the 'Target Configuration' tab selected at the top. Below it, the 'Add new iSCSI Target' section has a 'Target IQN' input field containing 'iqn.openfiler:data\_sdb'. An 'Add' button is next to it. A yellow circle highlights the 'Add' button, and a green arrow labeled '1' points to the 'iqn.openfiler:data\_sdb' input field, while another green arrow labeled '2' points to the 'Add' button. In the 'Select iSCSI Target' section below, there is a message 'Please select an iSCSI target to display and/or edit.' A dropdown menu shows 'iqn.openfiler:data\_sdb' with a 'Change' button next to it. A yellow circle highlights the 'Change' button, and a green arrow labeled '1' points to the dropdown, while another green arrow labeled '2' points to the 'Change' button. A cursor arrow is positioned over the 'Change' button.

5.57. Go to Select iSCSI Target section choose IQN for DATA and click on Change button and then click on Network ACL tab.

The screenshot shows the 'Network ACL' tab selected at the top. Below it, the 'iSCSI host access configuration for target "iqn.openfiler:ocr\_sdb"' section displays two rows of access rules (same as in step 5.55). A green arrow labeled '3' points from the top of the 'Network ACL' tab down to the 'rac\_pdb' row. A green arrow labeled '1' points to the 'Allow ▾' dropdown for the 'rac\_sdb' row. A yellow circle highlights the 'Allow ▾' dropdown, and a green arrow labeled '2' points to the 'Update' button at the bottom left of the table. A cursor arrow is positioned over the 'Update' button.

5.58. Configure Network ACL configuration (Change Access columns status, Deny to Allow) for DATA and click on Update button then click on Target Configuration tab.

Name	Network/Host	Netmask	Access
rac_pdb	10.0.129.105	255.255.255.255	Deny ▾
rac_sdb	10.0.129.106	255.255.255.255	Allow ▾

5.59. Configure iSCSI Target IQN for FRA

5.60. Go to Select iSCSI Target section choose IQN for FRA and click on Change button and then click on Network ACL tab.

5.61. Configure Network ACL configuration (Change Access columns status, Deny to Allow) for FRA and click on Update button then click on Target Configuration tab.

Name	Network/Host	Netmask	Access
rac_pdb	10.0.129.105	255.255.255.255	Deny ▾
rac_sdb	10.0.129.106	255.255.255.255	Allow ▾

5.62. Go to Select iSCSI Target section choose OCR and click on Change button then click on LUN Mapping tab.

Add new iSCSI Target

Target IQN

iqn.2006-01.com.openfiler:tsn.5e19ca0f8f2e

Add

Select iSCSI Target

Please select an iSCSI target to display and/or edit.

1 iqn.openfiler:ocr\_sdb Change 2 Add

5.63. Verify the iqn for OCR and click on Map button.

LUNs mapped to target: iqn.openfiler:ocr\_sdb

No LUNs mapped to this target

Map New LUN to Target: "iqn.openfiler:ocr\_sdb"

Name	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Map LUN
oracle cluster registry	/dev/racstore_pdb/ocr_pdb	write-thru	9ivh5q-Dlkn-1mFZ	9ivh5q-Dlkn-1mFZ	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_pdb/data_pdb	write-thru	KIQ9DU-IIID-Bcun	KIQ9DU-IIID-Bcun	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_pdb/fra_pdb	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<input type="button" value="Map"/>
oracle cluster registry	/dev/racstore_sdb/ocr_sdb	write-thru	uQfvOL-WsNc-7Uj5	uQfvOL-WsNc-7Uj5	blockio	<input type="button" value="Map"/> 1
oracle database	/dev/racstore_sdb/data_sdb	write-thru	VDyvkl-BpXb-Ics5	VDyvkl-BpXb-Ics5	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_sdb/fra_sdb	write-thru	LYY56a-LB4c-zIZk	LYY56a-LB4c-zIZk	blockio	<input type="button" value="Map"/>

5.64. Verify the iqn for OCR and click on Target Configuration tab.

Target Configuration LUN Mapping Network ACL CHAP Authentication

LUNs mapped to target: iqn.openfiler:ocr\_sdb

LUN Id.	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Unmap LUN
0	/dev/racstore_sdb/ocr_sdb	write-thru	uQfvOL-WsNc-7Uj5	uQfvOL-WsNc-7Uj5	blockio	<input type="button" value="Unmap"/> 1

Map New LUN to Target: "iqn.openfiler:ocr\_sdb"

Name	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Map LUN
oracle cluster registry	/dev/racstore_pdb/ocr_pdb	write-thru	9ivh5q-Dlkn-1mFZ	9ivh5q-Dlkn-1mFZ	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_pdb/data_pdb	write-thru	KIQ9DU-IIID-Bcun	KIQ9DU-IIID-Bcun	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_pdb/fra_pdb	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_sdb/data_sdb	write-thru	VDyvkl-BpXb-Ics5	VDyvkl-BpXb-Ics5	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_sdb/fra_sdb	write-thru	LYY56a-LB4c-zIZk	LYY56a-LB4c-zIZk	blockio	<input type="button" value="Map"/>

5.65. Go to Select iSCSI Target section choose DATA and click on Change button then click on LUN Mapping tab.

Add new iSCSI Target

Select iSCSI Target

Please select an iSCSI target to display and/or edit.

Target IQN: iqn.2006-01.com.openfiler:tsn.e34d6531c182

Add

Change

5.66. Verify the iqn for DATA and click on Map button.

LUNS mapped to target: iqn.openfiler:DATA\_sdb

No LUNS mapped to this target

Map New LUN to Target: "iqn.openfiler:DATA\_sdb"

Name	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Map LUN
oracle cluster registry	/dev/racstore_pdb/ocr_pdb	write-thru	9ivh5q-Dlkn-1mFZ	9ivh5q-Dlkn-1mFZ	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_pdb/data_pdb	write-thru	KQ9DU-IIID-Bcun	KQ9DU-IIID-Bcun	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_pdb/fra_pdb	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<input type="button" value="Map"/>
oracle cluster registry	/dev/racstore_sdb/ocr_sdb	write-thru	uQfvOL-WsNc-7Uj5	uQfvOL-WsNc-7Uj5	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_sdb/data_sdb	write-thru	VDyvkl-Bpxb-Ics5	VDyvkl-Bpxb-Ics5	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_sdb/fra_sdb	write-thru	LYY56a-LB4c-zIZk	LYY56a-LB4c-zIZk	blockio	<input type="button" value="Map"/>

5.67. Verify the iqn for DATA and click on Target Configuration tab.

Target Configuration

LUN Mapping

Network ACL

CHAP Authentication

LUNS mapped to target: iqn.openfiler:DATA\_sdb

LUN Id.	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Unmap LUN
0	/dev/racstore_sdb/data_sdb	write-thru	Vdyvkl-Bpxb-Ics5	Vdyvkl-Bpxb-Ics5	blockio	<input type="button" value="Unmap"/>

Map New LUN to Target: "iqn.openfiler:DATA\_sdb"

Name	LUN Path	R/W Mode	SCSI Serial No.	SCSI Id.	Transfer Mode	Map LUN
oracle cluster registry	/dev/racstore_pdb/ocr_pdb	write-thru	9ivh5q-Dlkn-1mFZ	9ivh5q-Dlkn-1mFZ	blockio	<input type="button" value="Map"/>
oracle database	/dev/racstore_pdb/data_pdb	write-thru	KQ9DU-IIID-Bcun	KQ9DU-IIID-Bcun	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_pdb/fra_pdb	write-thru	7svdac-Y4Q3-MRxH	7svdac-Y4Q3-MRxH	blockio	<input type="button" value="Map"/>
oracle cluster registry	/dev/racstore_sdb/ocr_sdb	write-thru	uQfvOL-WsNc-7Uj5	uQfvOL-WsNc-7Uj5	blockio	<input type="button" value="Map"/>
oracle fast recovery area	/dev/racstore_sdb/fra_sdb	write-thru	LYY56a-LB4c-zIZk	LYY56a-LB4c-zIZk	blockio	<input type="button" value="Map"/>

5.68. Go to Select iSCSI Target section choose FRA and click on Change button then click on LUN Mapping tab.

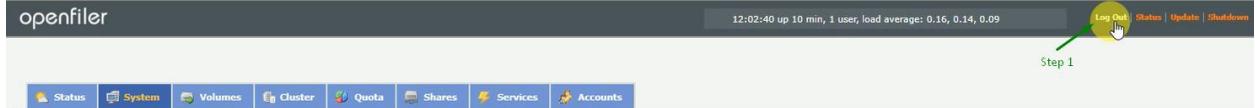
5.69. Verify the iqn for FRA and click on Map button.

5.70. Verify the iqn for FRA and click on Target Configuration tab.

5.71. Verify the iSCSI service.

Service	Boot Status	Modify Boot	Current Status	Start / Stop
CIFS Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
NFS Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
RSync Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
HTTP Dav Server	Disabled	<a href="#">Enable</a>	Running	<a href="#">Stop</a>
LDAP Container	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
FTP Server	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
iSCSI Target	Enabled	<a href="#">Disable</a>	Running	<a href="#">Stop</a>
UPS Manager	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
UPS Monitor	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
iSCSI Initiator	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
ACPI Daemon	Enabled	<a href="#">Disable</a>	Running	<a href="#">Stop</a>
SCST Target	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
FC Target	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>
Cluster Manager	Disabled	<a href="#">Enable</a>	Stopped	<a href="#">Start</a>

5.72. Log out from URL of openfiler.



Now, for initial testing I am able to successful install one node DC and DR - Oracle RAC configuration over my machine having processor: core i7, Memory: 8GB and SSD 248 GB.

Thank you,  
Devesh Kumar Shrivastav