

KERNEL PANIC ERROR (Initramfs Error) Troubleshooting

DAY – 7 14-12-2024

Main Directory - /boot/

```
[root@localhost boot]# ls -lrth
total 117M
-rw-----. 1 root root 3.3M Mar 21 2018 System.map-3.10.0-862.el7.x86_64
-rw-r--r--. 1 root root 145K Mar 21 2018 config-3.10.0-862.el7.x86_64
-rwxr-xr-x. 1 root root 6.1M Mar 21 2018 vmlinuz-3.10.0-862.el7.x86_64
-rw-r--r--. 1 root root 298K Mar 21 2018 symvers-3.10.0-862.el7.x86_64.gz
drwxr-xr-x. 3 root root 17 Apr 7 2020 efi
-rw-----. 1 root root 71M Apr 7 2020 initramfs-0-rescue-6259d5148e6141359734b587d55e2a4d.img
-rwxr-xr-x. 1 root root 6.1M Apr 7 2020 vmlinuz-0-rescue-6259d5148e6141359734b587d55e2a4d
-rw-----. 1 root root 30M Apr 7 2020 initramfs-3.10.0-862.el7.x86_64.img
drwx-----. 5 root root 97 Apr 7 2020 grub2
```

Kernel

Initial RAM filesystem

Why do kernel panics occur?

Kernel panics occur:

1. If the initramfs file gets corrupted.
2. If initramfs is not created properly for the specified kernel. Every kernel version has its own corresponding initramfs.
3. If the installed kernel is not supported or not installed correctly.
4. If recent patches have some flaws.
5. If a module has been installed from online or another source, but the initrd image is not created with the latest installed module.

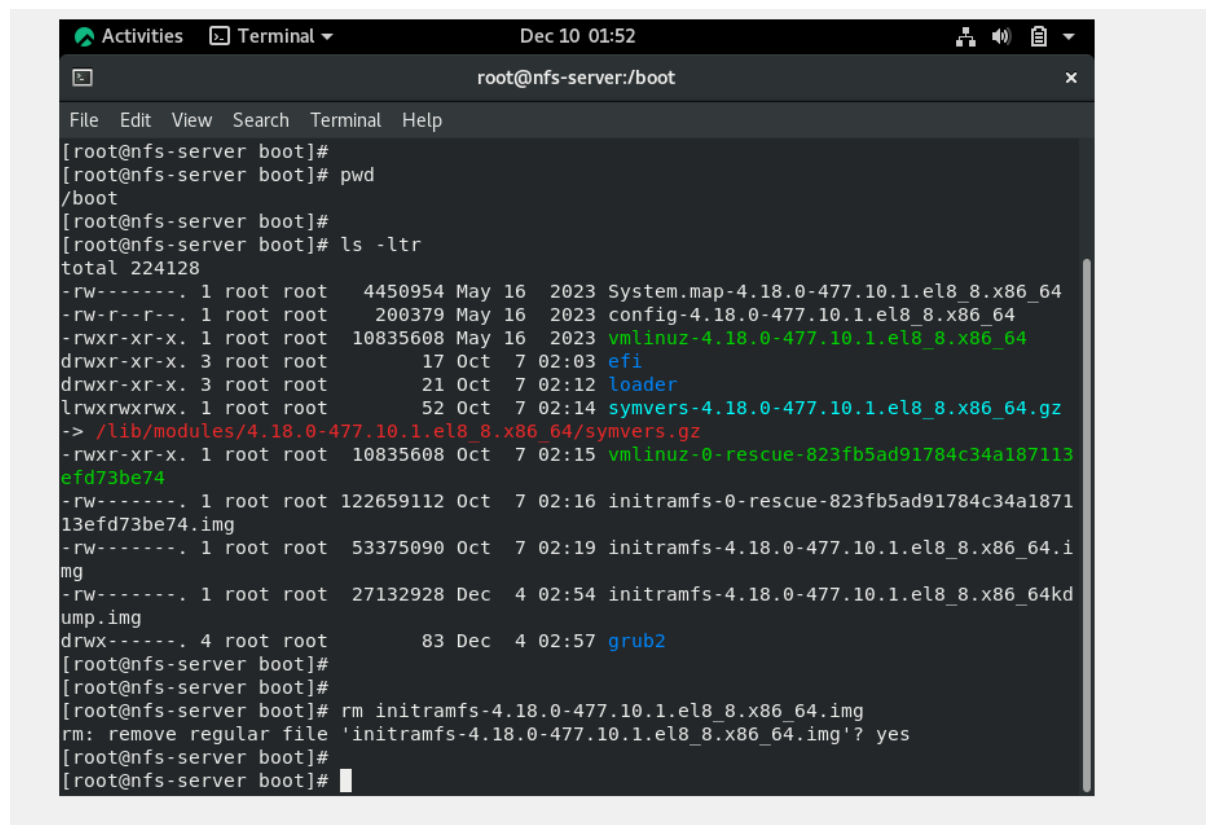
For Testing purpose removing **initramfs** -kernel file in server (Directory /boot/)

rm initramfs-kernel_version.img (Removing the initramfs in /boot directory)

Example 1 -

```
[root@nfs-server boot]# ls -ltr
total 224116
-rw-----. 1 root root 4450954 May 16 2023 System.map-4.18.0-477.10.1.el8_8.x86_64
-rw-r--r--. 1 root root 208379 May 16 2023 config-4.18.0-477.10.1.el8_8.x86_64
-rwxr-xr-x. 1 root root 10835608 May 16 2023 vmlinuz-4.18.0-477.10.1.el8_8.x86_64
drwxr-xr-x. 3 root root 17 Oct 7 02:03 efi
drwxr-xr-x. 3 root root 21 Oct 7 02:12 loader
lrwxrwxrwx. 1 root root 52 Oct 7 02:14 symvers-4.18.0-477.10.1.el8_8.x86_64.gz -> /lib/modules/4.18.0-477.10.1.el8_8.x86_64/symvers.gz
-rw-r--r--. 1 root root 10835608 Oct 7 02:15 vmlinuz-0-rescue-823fb5ad91784c34a187113efd73be74
-rw-----. 1 root root 122659112 Oct 7 02:16 initramfs-0-rescue-823fb5ad91784c34a187113efd73be74.img
-rw-----. 1 root root 27132928 Dec 4 02:54 initramfs-4.18.0-477.10.1.el8_8.x86_64kdump.img
drwx-----. 4 root root 83 Dec 4 02:57 grub2
-rw-----. 1 root root 53363745 Dec 13 23:59 initramfs-4.18.0-477.10.1.el8_8.x86_64.img
[root@nfs-server boot]#
[root@nfs-server boot]# rm initramfs-4.18.0-477.10.1.el8_8.x86_64.img
rm: remove regular file 'initramfs-4.18.0-477.10.1.el8_8.x86_64.img'? yes
[root@nfs-server boot]#
[root@nfs-server boot]# ls -ltr
total 172080
-rw-----. 1 root root 4450954 May 16 2023 System.map-4.18.0-477.10.1.el8_8.x86_64
-rw-r--r--. 1 root root 208379 May 16 2023 config-4.18.0-477.10.1.el8_8.x86_64
-rwxr-xr-x. 1 root root 10835608 May 16 2023 vmlinuz-4.18.0-477.10.1.el8_8.x86_64
drwxr-xr-x. 3 root root 17 Oct 7 02:03 efi
drwxr-xr-x. 3 root root 21 Oct 7 02:12 loader
lrwxrwxrwx. 1 root root 52 Oct 7 02:14 symvers-4.18.0-477.10.1.el8_8.x86_64.gz -> /lib/modules/4.18.0-477.10.1.el8_8.x86_64/symvers.gz
-rw-r--r--. 1 root root 10835608 Oct 7 02:15 vmlinuz-0-rescue-823fb5ad91784c34a187113efd73be74
-rw-----. 1 root root 122659112 Oct 7 02:16 initramfs-0-rescue-823fb5ad91784c34a187113efd73be74.img
-rw-----. 1 root root 27132928 Dec 4 02:54 initramfs-4.18.0-477.10.1.el8_8.x86_64kdump.img
drwx-----. 4 root root 83 Dec 4 02:57 grub2
[root@nfs-server boot]#
```

Example - 2



```
Activities Terminal Dec 10 01:52
root@nfs-server:/boot

File Edit View Search Terminal Help

[root@nfs-server boot]#
[root@nfs-server boot]# pwd
/boot
[root@nfs-server boot]#
[root@nfs-server boot]# ls -ltr
total 224128
-rw-----. 1 root root 4450954 May 16 2023 System.map-4.18.0-477.10.1.el8_8.x86_64
-rw-r--r--. 1 root root 200379 May 16 2023 config-4.18.0-477.10.1.el8_8.x86_64
-rwxr-xr-x. 1 root root 10835608 May 16 2023 vmlinuz-4.18.0-477.10.1.el8_8.x86_64
drwxr-xr-x. 3 root root 17 Oct 7 02:03 efi
drwxr-xr-x. 3 root root 21 Oct 7 02:12 loader
lrwxrwxrwx. 1 root root 52 Oct 7 02:14 symvers-4.18.0-477.10.1.el8_8.x86_64.gz
-> /lib/modules/4.18.0-477.10.1.el8_8.x86_64/symvers.gz
-rwxr-xr-x. 1 root root 10835608 Oct 7 02:15 vmlinuz-0-rescue-823fb5ad91784c34a187113
efd73be74
-rw-----. 1 root root 122659112 Oct 7 02:16 initramfs-0-rescue-823fb5ad91784c34a1871
13efd73be74.img
-rw-----. 1 root root 53375090 Oct 7 02:19 initramfs-4.18.0-477.10.1.el8_8.x86_64.i
mg
-rw-----. 1 root root 27132928 Dec 4 02:54 initramfs-4.18.0-477.10.1.el8_8.x86_64kd
ump.img
drwx-----. 4 root root 83 Dec 4 02:57 grub2
[root@nfs-server boot]#
[root@nfs-server boot]#
[root@nfs-server boot]# rm initramfs-4.18.0-477.10.1.el8_8.x86_64.img
rm: remove regular file 'initramfs-4.18.0-477.10.1.el8_8.x86_64.img'? yes
[root@nfs-server boot]#
[root@nfs-server boot]#
```

Then Reboot the system to see the error.

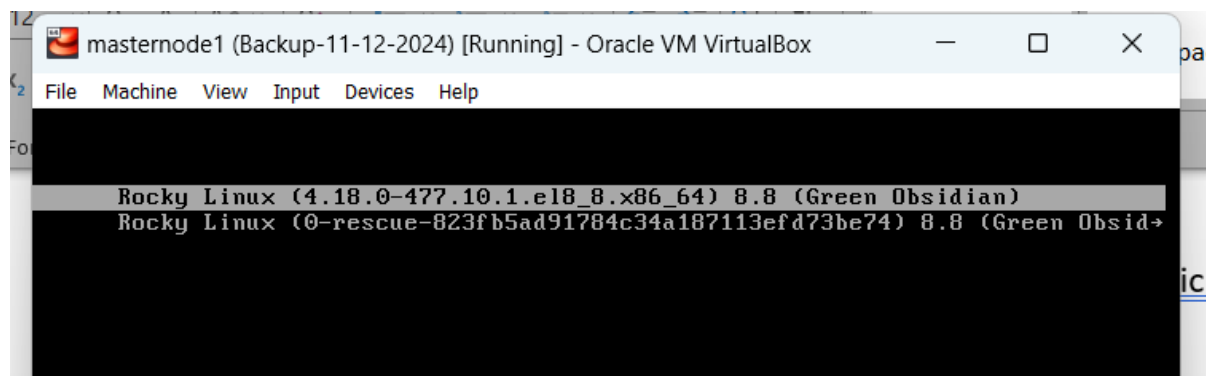
reboot

How to troubleshoot?

The first thing to do after seeing a kernel panic error is not to panic , because now you are aware of the image file related to the error.

Step 1: Boot the system normally with your given kernel version.

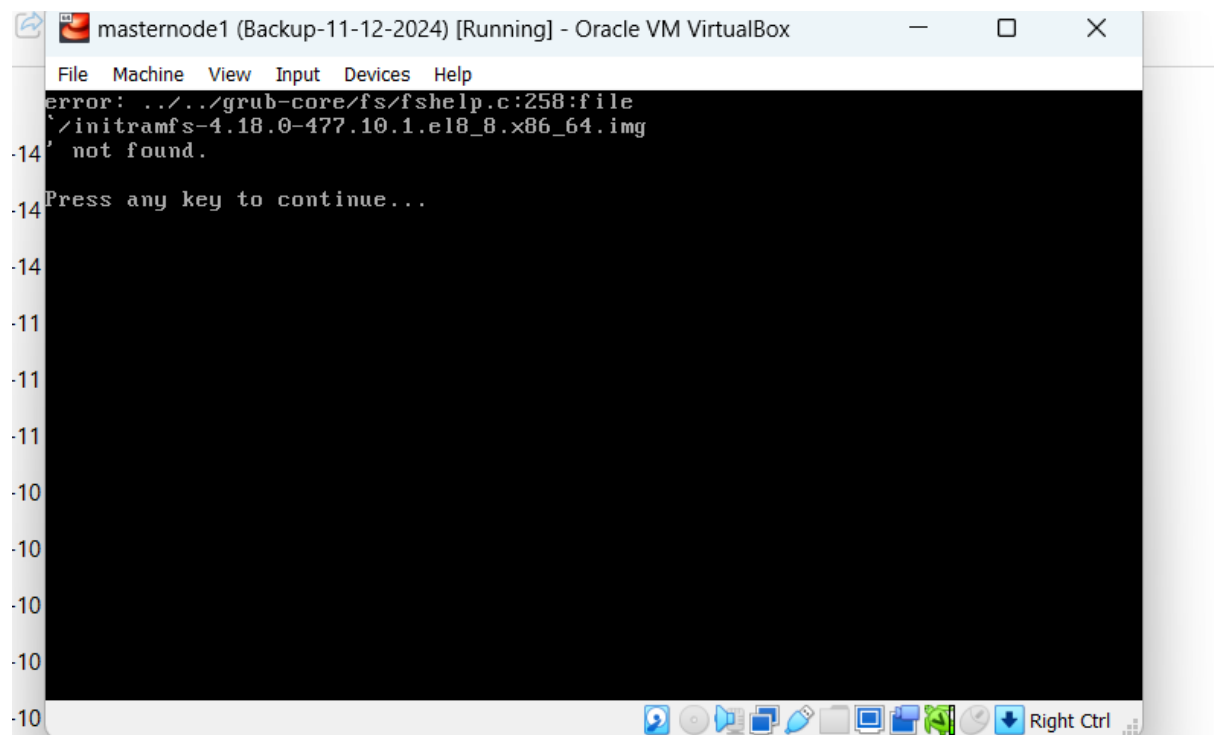
Then enter -



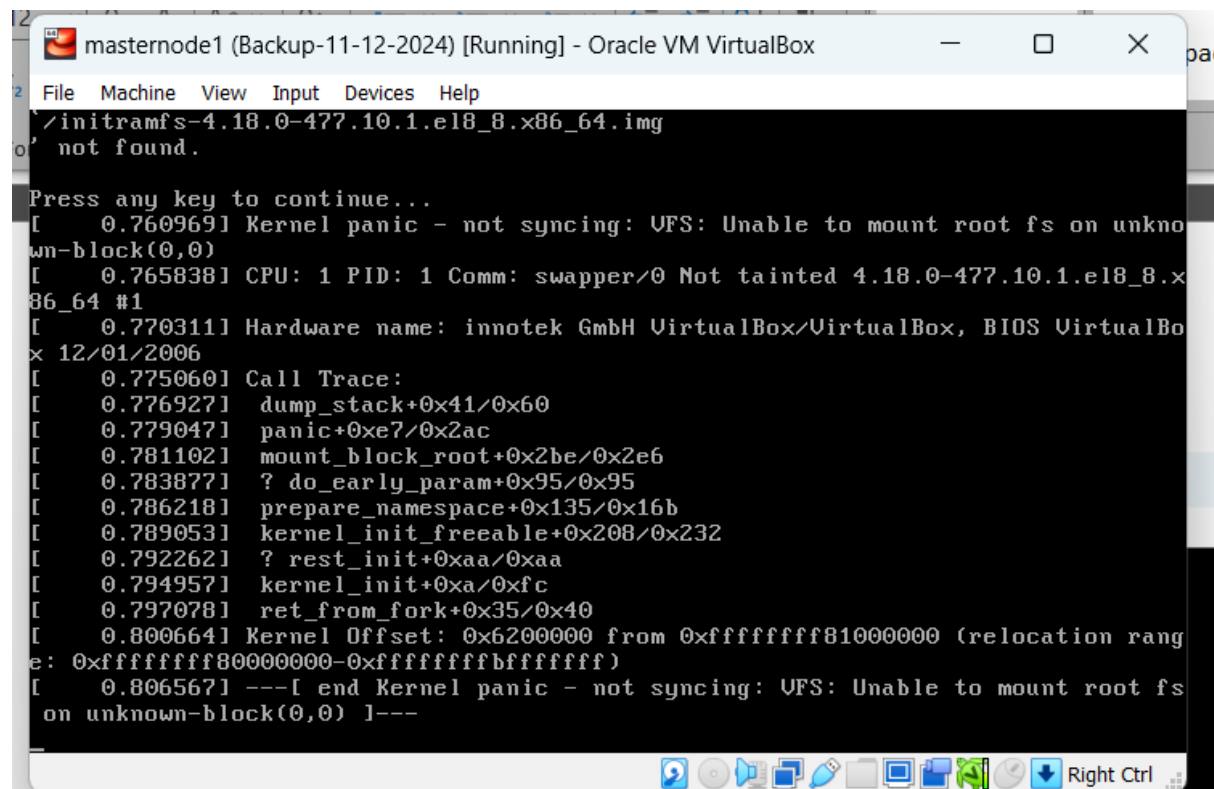
```
masternode1 (Backup-11-12-2024) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

Rocky Linux (4.18.0-477.10.1.el8_8.x86_64) 8.8 (Green Obsidian)
Rocky Linux (0-rescue-823fb5ad91784c34a187113efd73be74) 8.8 (Green Obsid
```

Error appear then ENTER



Then ENTER – Its will appear the error

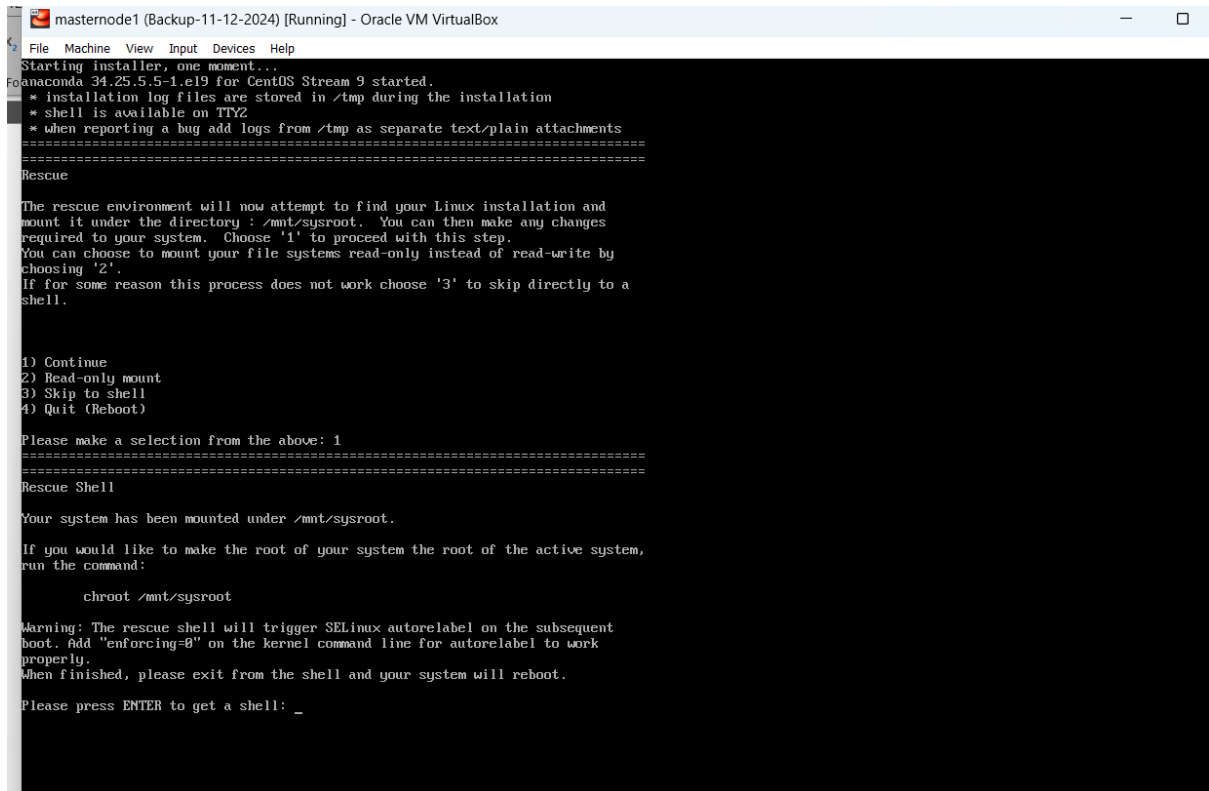


Solution –

Step 1 – Attached the Boot DVD/ISO image in VM Server, Or physical means pen drive

reset or reboot the server

Then click Troubleshooting option >> Rescue option >> Enter 1 to continue >> Enter

A screenshot of a VirtualBox window titled 'masternode1 (Backup-11-12-2024) [Running] - Oracle VM VirtualBox'. The window shows the CentOS Stream 9 installer's rescue environment. The text in the terminal is as follows:

```
Starting installer, one moment...
For anaconda 34.25.5-1.el9 for CentOS Stream 9 started.
* installation log files are stored in /tmp during the installation
* shell is available on TTY2
* when reporting a bug add logs from /tmp as separate text/plain attachments
=====
Rescue
=====
The rescue environment will now attempt to find your Linux installation and
mount it under the directory : /mnt/sysroot. You can then make any changes
required to your system. Choose '1' to proceed with this step.
You can choose to mount your file systems read-only instead of read-write by
choosing '2'.
If for some reason this process does not work choose '3' to skip directly to a
shell.

1) Continue
2) Read-only mount
3) Skip to shell
4) Quit (Reboot)

Please make a selection from the above: 1
=====
Rescue Shell
=====
Your system has been mounted under /mnt/sysroot.

If you would like to make the root of your system the root of the active system,
run the command:

    chroot /mnt/sysroot

Warning: The rescue shell will trigger SELinux autorelabel on the subsequent
boot. Add "enforcing=0" on the kernel command line for autorelabel to work
properly.
When finished, please exit from the shell and your system will reboot.

Please press ENTER to get a shell: _
```

Step 2 - Mounting Chroot RESCUE ENVIRONMENT ROOT USER into LOCAL SYSTEM ROOT USER in directory

Reason for step is without mount filesystem we cannot access the sysroot directory

Chroot /mnt/sysroot

A terminal window showing the execution of the chroot command. The prompt changes from 'bash-5.1#' to 'bash-4.4#' after the command is run.

```
bash-5.1#
bash-5.1#
bash-5.1# chroot /mnt/sysroot
bash-4.4#
bash-4.4#
```

Now we entire in system shell, Then

cd /boot

ls -ltr /boot

To list and verify the initramfs image (.img) with kernel version

```

bash-4.4# cd /boot
bash-4.4#
bash-4.4# pwd
/boot
bash-4.4#
bash-4.4# ls -ltr
total 172888
-rw-r--r-- 1 root root 4458954 May 16 2023 System.map-4.18.0-477.10.1.el8_8.x86_64
-rw-r--r-- 1 root root 288379 May 16 2023 config-4.18.0-477.10.1.el8_8.x86_64
-rwxr-xr-x 1 root root 18835688 May 16 2023 vmlinuz-4.18.0-477.10.1.el8_8.x86_64
drwxr-xr-x 3 root root 17 Oct 7 02:03 efi
drwxr-xr-x 3 root root 21 Oct 7 02:12 loader
lrwxrwxrwx 1 root root 52 Oct 7 02:14 symvers-4.18.0-477.10.1.el8_8.x86_64.gz -> /lib/modules/4.18.0-477.10.1.el8_8.x86_64/symvers.gz
-rwxr-xr-x 1 root root 18835688 Oct 7 02:15 vmlinuz-0-rescue-823fb5ad91784c34a187113efd73be74
-rw-r--r-- 1 root root 122659112 Oct 7 02:16 initramfs-0-rescue-823fb5ad91784c34a187113efd73be74.img
-rw-r--r-- 1 root root 27132928 Dec 4 02:54 initramfs-4.18.0-477.10.1.el8_8.x86_64kdump.img
drwx----- 4 root root 63 Dec 4 02:57 grub2
bash-4.4# _

```

Step 3 - Important - Two Method can use to create the new initramfs image file

Method 1 - # dracut command

Method 2 - # mkinitrd command

Already file is existing and corrupted in /boot directory means we can use the **--force** command in both methods

Example - # dracut --force initramfs-<kernel_ver>.img <kernel_ver>

dracut /boot/initramfs-<kernel-version>.img <kernel-version> OR

Present working dir means # dracut initramfs-<kernel-version>.img <kernelversion>

```

5.14.0-407.el9.x86_64
bash-4.4#
bash-4.4# dracut initramfs-4.18.0-477.10.1.el8_8.x86_64.img 4.18.0-477.10.1.el8_8.x86_64
bash-4.4#
bash-4.4# _

```

ls -ltr cmd will display the created initramfs.image file

Initramfs-4.18.0-477.10.1.el8_8.x86_64.img

```

5.14.0-407.el9.x86_64
bash-4.4#
bash-4.4# dracut initramfs-4.18.0-477.10.1.el8_8.x86_64.img 4.18.0-477.10.1.el8_8.x86_64
bash-4.4#
bash-4.4#
bash-4.4# ls -ltr
total 224116
-rw-r--r-- 1 root root 4458954 May 16 2023 System.map-4.18.0-477.10.1.el8_8.x86_64
-rw-r--r-- 1 root root 288379 May 16 2023 config-4.18.0-477.10.1.el8_8.x86_64
-rwxr-xr-x 1 root root 18835688 May 16 2023 vmlinuz-4.18.0-477.10.1.el8_8.x86_64
drwxr-xr-x 3 root root 17 Oct 7 02:03 efi
drwxr-xr-x 3 root root 21 Oct 7 02:12 loader
lrwxrwxrwx 1 root root 52 Oct 7 02:14 symvers-4.18.0-477.10.1.el8_8.x86_64.gz -> /lib/modules/4.18.0-477.10.1.el8_8.x86_64/symvers.gz
-rwxr-xr-x 1 root root 18835688 Oct 7 02:15 vmlinuz-0-rescue-823fb5ad91784c34a187113efd73be74
-rw-r--r-- 1 root root 122659112 Oct 7 02:16 initramfs-0-rescue-823fb5ad91784c34a187113efd73be74.img
-rw-r--r-- 1 root root 27132928 Dec 4 02:54 initramfs-4.18.0-477.10.1.el8_8.x86_64kdump.img
drwx----- 4 root root 63 Dec 4 02:57 grub2
-rw-r--r-- 1 root root 53363745 Dec 14 23:33 initramfs-4.18.0-477.10.1.el8_8.x86_64.img
bash-4.4#
bash-4.4# _

```

#exit

#reboot

Output – Its load the initramfs.img file then appear user interface to access the system

Booting process – Kernel panic troubleshooting done

