



10-25-2020

<https://youtu.be/BaAolHcypdc>

Software and package Management RPM and YUM

RPM – Redhat Package manager

This is used to manage a package – add, remove, update – not efficient

Rpm base Linux – RHEL, OEL, CentOS, Fedora, SuSE

The package extension is .rpm

YUM – Yellowdog, Updater, Modifier

Yum is the primary tool for getting, installing, deleting, querying, and managing RPM software packages

RPM

Wuery the installed packages on the system

```
[root@zmpt01 ~]# rpm -qa | sort
```

To check detailed specific dteails of package

```
[root@zmpt01 ~]# rpm -qi tree
```

Name : tree

Version : 1.6.0

Release : 10.el7

Architecture: x86_64

Install Date: Sat 10 Oct 2020 04:37:34 PM EDT

Group : Applications/File

Size : 89505

License : GPLv2+

Signature : RSA/SHA256, Fri 04 Jul 2014 01:36:46 AM EDT, Key ID 24c6a8a7f

Source RPM : **tree-1.6.0-10.el7.src.rpm**

Build Date : Mon 09 Jun 2014 03:28:53 PM EDT

Build Host : worker1.bsys.centos.org

Relocations : (not relocatable)

Packager : CentOS BuildSystem <<http://bugs.centos.org>>

Vendor : CentOS

URL : <http://mama.indstate.edu/users/ice/tree/>



Summary : File system tree viewer

Description :

The tree utility recursively displays the contents of directories in a tree-like format. Tree is basically a UNIX port of the DOS tree utility.

View by date

```
[root@zmpt01 ~]# rpm -qa -last | grep tree
tree-1.6.0-10.el7.x86_64      Sat 10 Oct 2020 04:37:34 PM EDT
[root@zmpt01 ~]# rpm -qa -last
```

View the package Location

```
[root@zmpt01 ~]# rpm -ql tree
/usr/bin/tree
/usr/share/doc/tree-1.6.0
/usr/share/doc/tree-1.6.0/LICENSE
/usr/share/doc/tree-1.6.0/README
/usr/share/man/man1/tree.1.gz
```

View the package documentation

```
[root@zmpt01 ~]# rpm -qld tree
/usr/share/doc/tree-1.6.0/LICENSE
/usr/share/doc/tree-1.6.0/README
/usr/share/man/man1/tree.1.gz
```

Check the configuration files of a package

```
[root@zmpt01 ~]# rpm -qlc firewalld
/etc/dbus-1/system.d/Firewalld.conf
/etc/firewalld/firewalld.conf
/etc/firewalld/lockdown-whitelist.xml
/etc/sysconfig/firewalld
```

Check file or folder belongs to using name

```
[root@zmpt01 ~]# rpm -qf /etc/firewalld/firewalld.conf
firewalld-0.6.3-2.el7.noarch
```

Find the documentation using the file name

```
[root@zmpt01 ~]# rpm -qfd /etc/firewalld
```



```
/usr/share/doc/firewalld-0.6.3/COPYING
/usr/share/doc/firewalld-0.6.3/README
/usr/share/man/man1/firewall-cmd.1.gz
/usr/share/man/man1/firewall-offline-cmd.1.gz
/usr/share/man/man1/firewalld.1.gz
/usr/share/man/man5/firewalld.conf.5.gz
/usr/share/man/man5/firewalld.dbus.5.gz
/usr/share/man/man5/firewalld.direct.5.gz
/usr/share/man/man5/firewalld.helper.5.gz
/usr/share/man/man5/firewalld.icmptype.5.gz
/usr/share/man/man5/firewalld.ipset.5.gz
/usr/share/man/man5/firewalld.lockdown-whitelist.5.gz
/usr/share/man/man5/firewalld.richlanguage.5.gz
/usr/share/man/man5/firewalld.service.5.gz
/usr/share/man/man5/firewalld.zone.5.gz
/usr/share/man/man5/firewalld.zones.5.gz
```

Query what package provides

```
[root@zmpt01 ~]# rpm -q --provides firewalld
config	firewalld = 0.6.3-2.el7
firewalld = 0.6.3-2.el7
```

```
[root@zmpt01 ~]# rpm -q --provides tree
tree = 1.6.0-10.el7
tree(x86-64) = 1.6.0-10.el7
```

Package dependencies

```
[root@zmpt01 ~]# rpm -q --requires tree
libc.so.6()(64bit)
libc.so.6(GLIBC_2.14)(64bit)
libc.so.6(GLIBC_2.2.5)(64bit)
libc.so.6(GLIBC_2.3)(64bit)
libc.so.6(GLIBC_2.3.4)(64bit)
libc.so.6(GLIBC_2.4)(64bit)
rpmLib(CompressedFileNames) <= 3.0.4-1
rpmLib(FileDigests) <= 4.6.0-1
rpmLib(PayloadFilesHavePrefix) <= 4.0-1
rtld(GNU_HASH)
rpmLib(PayloadsXz) <= 5.2-1
```

To get a list of locations where the package will be written – when the packages are downloaded locally

```
[root@zmpt01 ~]# rpm -qlp firefox-68.12.0-1.el7.centos.x86_64.rpm
```



Man pages

```
[root@zmpt01 ~]# man rpm
```

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YUM

- YUM uses .rpm to install packages on RPM base OS [RHEL]
- YUM resolves dependencies automatically
- YUM uses repositories < --- centralized location to download software from [org, universities, companies]
- You can maintain your own local repo or use from internet
- YUM local repos is maintained by Administrator
- YUM also has a concept of group packages
- YUM group packages contain multiple packages
- Group packages can be installed and removed a group
- Groups can contain optional packages
- Installing group packages is easier and fast
- **YUM check preinstalled package – system will not corrupted if you accidentally install again**

- Location of local repo on the system
- /etc/yum.repos.d
- YUM gets the list of available software packages
- YUM downloads the packages and install them using .rpm libraries
- YUM updates RPM database locally after installation
- *** Installing using YUM is easy

If you want to see if the package is available

```
[root@zmpt01 ~]# yum provides firefox
```

```
firefox-68.12.0-1.el7.centos.x86_64 : Mozilla Firefox Web browser
```

```
Repo      : updates
```

To check the package dependencies

```
[root@zmpt01 ~]# yum deplist firefox | wc -l
```

```
Repodata is over 2 weeks old. Install yum-cron? Or run: yum makecache fast
551
```



Install using yum

```
[root@zmpt01 ~]# yum install firefox
```

< ---This will install the latest available packaged/ software

Transaction Summary

=====

Install 1 Package (+83 Dependent packages)

Total download size: 126 M

Installed size: 324 M

Is this ok [y/d/N]:

Remove package

This will not remove the dependencies

```
[root@zmpt01 ~]# yum remove firefox -y
```

Remove package and Dependencies

```
[root@zmpt01 ~]# yum autoremove firefox -y
```

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Check obsolete packages on your system

```
[root@zmpt01 ~]# yum list obsoletes
```

Get the list of packages which are available to install from repo – and still supported

```
[root@zmpt01 ~]# yum --showduplicates list available
```

firefox.i686	68.5.0-2.el7.centos	base
firefox.x86_64	68.5.0-2.el7.centos	base
firefox.i686	68.6.0-1.el7.centos	updates
firefox.x86_64	68.6.0-1.el7.centos	updates
firefox.i686	68.6.1-1.el7.centos	updates
firefox.x86_64	68.6.1-1.el7.centos	updates
firefox.i686	68.7.0-2.el7.centos	updates
firefox.x86_64	68.7.0-2.el7.centos	updates
firefox.i686	68.8.0-1.el7.centos	updates
firefox.x86_64	68.8.0-1.el7.centos	updates
firefox.i686	68.9.0-1.el7.centos	updates
firefox.x86_64	68.9.0-1.el7.centos	updates
firefox.i686	68.10.0-1.el7.centos	updates



firefox.x86_64	68.10.0-1.el7.centos	updates	
firefox.i686	68.11.0-1.el7.centos	updates	
firefox.x86_64	68.11.0-1.el7.centos	updates	
firefox.i686	68.12.0-1.el7.centos	updates	
<u>firefox.x86_64</u>	68.12.0-1.el7.centos	updates	< ---if you see package underline, its installed

If you want to search the package using term

```
[root@zmpt01 ~]# yum search firefox
```

```
===== N/S matched: firefox =====
firefox.i686 : Mozilla Firefox Web browser
firefox.x86_64 : Mozilla Firefox Web browser
```

If you want to list all the packages from repo – ONLY LATEST PACKAGES

```
[root@zmpt01 ~]# yum list all | grep firefox
firefox.x86_64      68.12.0-1.el7.centos    @updates
firefox.i686       68.12.0-1.el7.centos    updates
```

Install the download only plugin

```
[root@zmpt01 ~]# yum install yum-plugin-downloadonly
```

Download locally specifying the directory – THIS WILL ALSO DOWNLOAD THE DEPENDENT PACKAGES

```
[root@zmpt01 ~]# yum install --downloadonly --downloadaddir=. Firefox
```

TO CHECK the files and directories updated by the package

```
[root@zmpt01 ~]# rpm -qlp firefox-68.12.0-1.el7.centos.x86_64.rpm
```

Reinstall the package – good when package is corrupted or configuration file is missing

```
[root@zmpt01 ~]# yum reinstall firefox -y < ---from repo

[root@zmpt01 ~]# yum reinstall firefox-68.12.0-1.el7.centos.x86_64.rpm -y < --- from local
download
```

Yum detects installed files and only install corrupted files, missing and files and folder



```
[root@zmpt01 lib64]# rm -rf firefox
```

```
[root@zmpt01 lib64]# yum reinstall firefox-68.12.0-1.el7.centos.x86_64.rpm -y
```

skip package which are causing issue

```
--skip-broken
```

Resolve depsolve problems by removing packages that are causing problems from the transaction.

```
[root@zmpt01 ~]# yum install --skip-broken firefox-68.12.0-1.el7.centos.x86_64.rpm -y
```

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https://youtu.be/Ds7UJ_ILG7s

System wide update

To see the installed packages

```
[root@zmpt01 ~]# yum list installed
```

Bold	Update in repo available
Bold and Underline	Current installed Kernel
Red	Package is installed but its not in repo -
Yellow	New package is available in repo



Check for updates

```
[root@zmpt01 ~]# yum check-updates
```

This will provide the current listed packages that will be updated

```
kernel.x86_64      3.10.0-1127.19.1.el7 updates < ---Careful with the kernel update – this will
system upgrade
```

7.1 kernel 3.10.0-229	7.1.1503/
7.2 kernel 3.10.0-327	7.2.1511/
7.3 kernel 3.10.0-514	7.3.1611/
7.4 kernel 3.10.0-693	7.4.1708/
7.5 kernel 3.10.0-862	7.5.1804/
7.6 kernel 3.10.0-957	7.6.1810/
7.7 kernel 3.10.0-1062 < ---current Kernel Version	7.7.1908/
7.8 kernel 3.10.0-1127 upgrade < ---update version < ---this will be considered	7.8.2003/

7.9 kernel 3.10.0-1160

Kernel: Linux **3.10.0-1062.el7.x86_64**

Major Version	Major Release	Patch	Rehat Version	Linux Verion	64 bit Arch
3	10	0	1062	el7	x86_64
3	10	0	1127	el7	X86_64

You can use this to look at any package information

```
[root@zmpt01 ~]# yum update -y < ---System Update
```

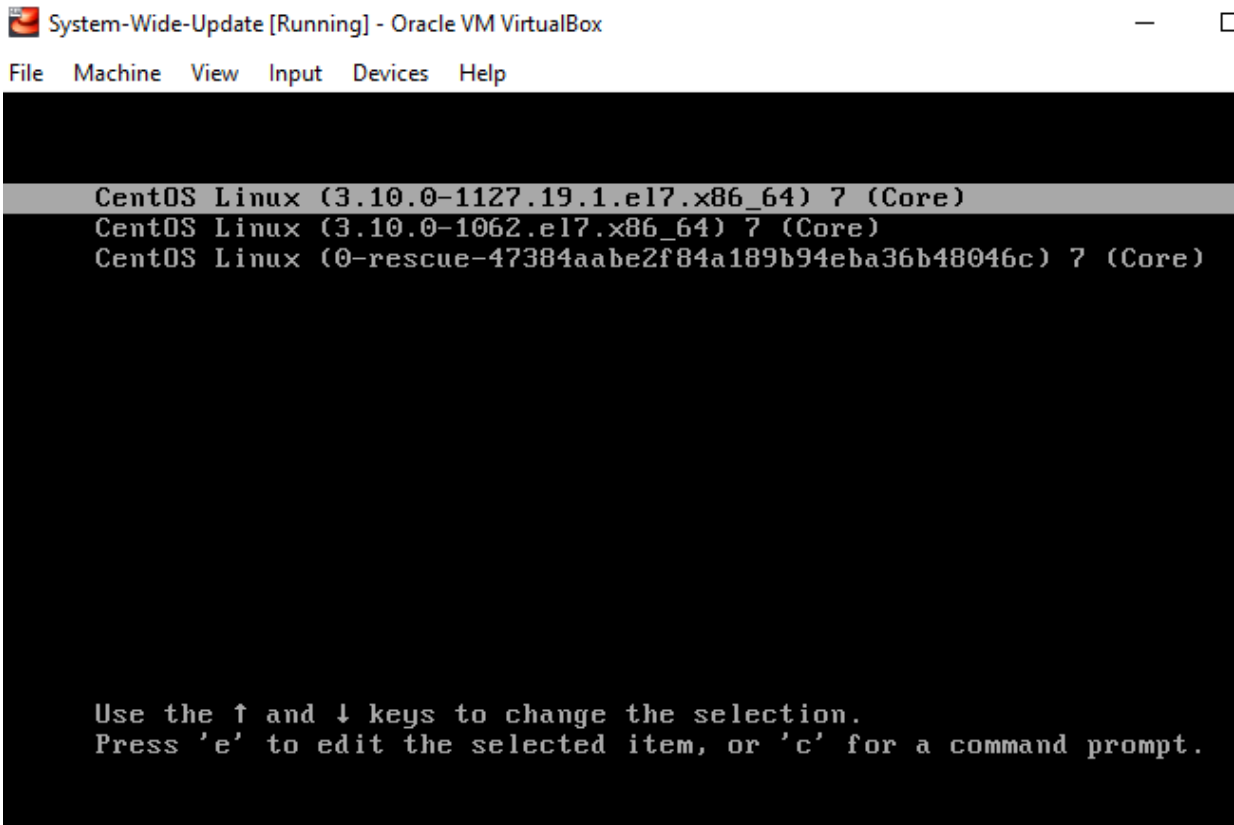
Install 2 Packages



Upgrade 141 Packages

Total download size: 258 M

Complete!



```
System-Wide-Update [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

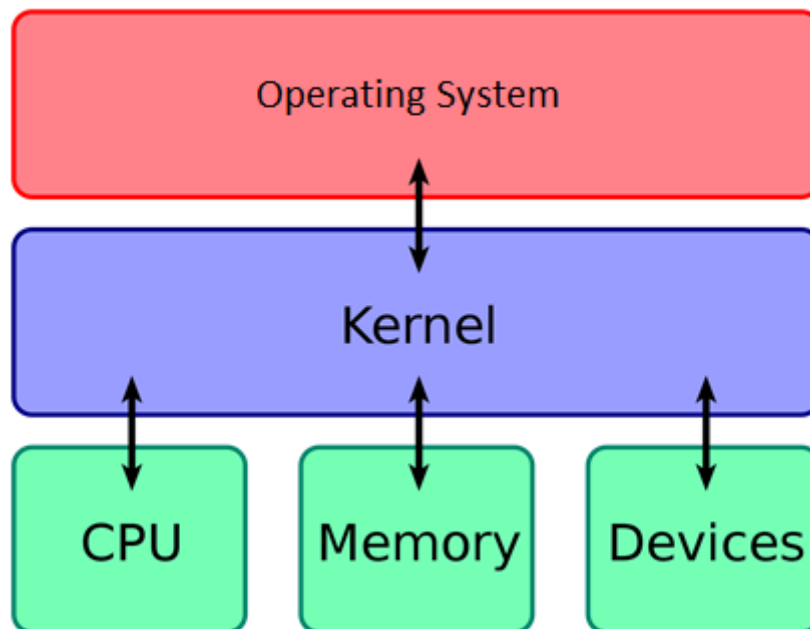
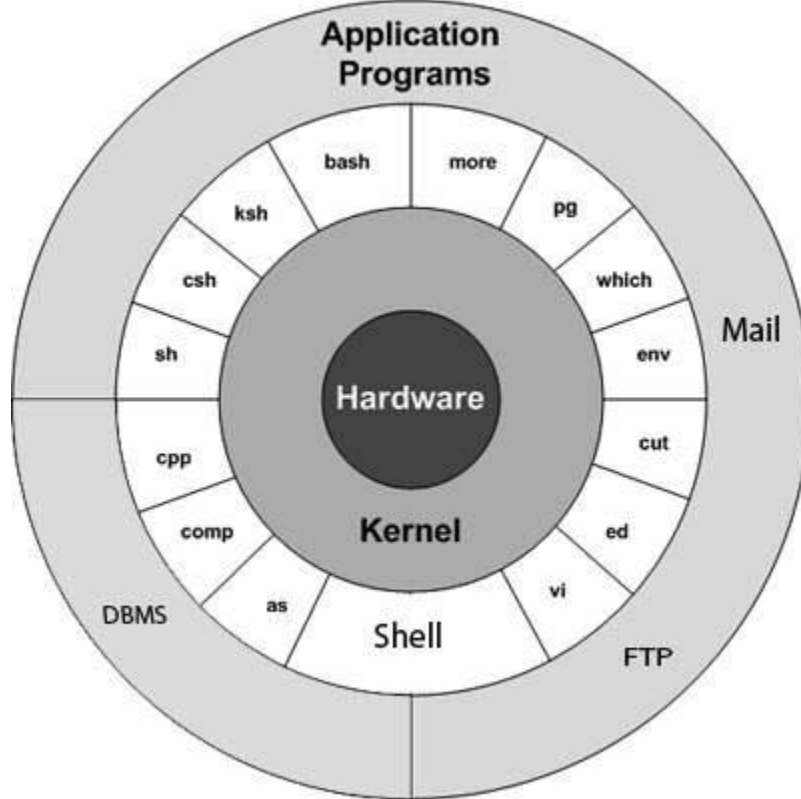
CentOS Linux (3.10.0-1127.19.1.el7.x86_64) 7 (Core)
CentOS Linux (3.10.0-1062.el7.x86_64) 7 (Core)
CentOS Linux (0-rescue-47384aabe2f84a189b94eba36b48046c) 7 (Core)

Use the ↑ and ↓ keys to change the selection.
Press 'e' to edit the selected item, or 'c' for a command prompt.
```

NOTE: you can see new kernel as well as old kernel

If you want you can use old kernel if there is issue after the kernel UPDATE

Kernel update is considered as security update –



Kernel is central component of an operating system that manages **operations** of computer and hardware. It basically manages operations of memory and CPU time. It is core component of an **operating system**

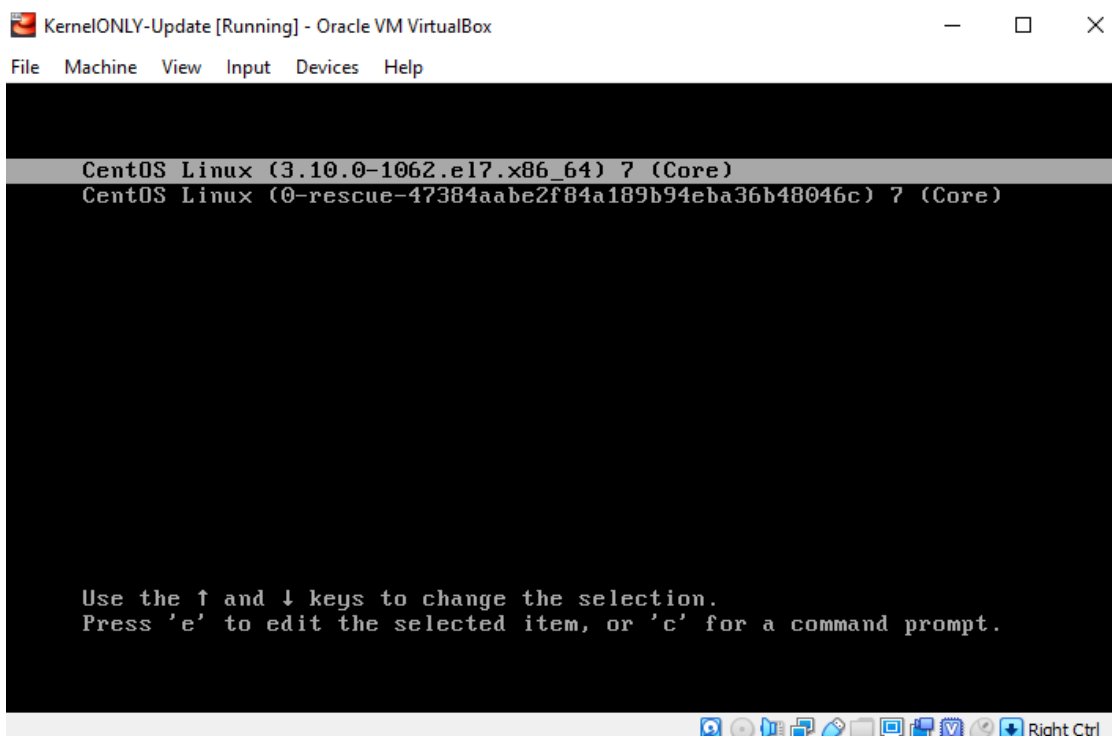


Kernel: Linux **3.10.0-1062.el7.x86_64**

Major Version	Major Release	Patch	Rehat Version	Linux Verion	64 bit Arch
3	10	0	1062	el7	x86_64

You can use this to look at any package information

Kernel ONLY UPGrade



If only kernel update is required – Kernel update is considered Security Update

Check for available kernel

```
[root@zmpt01 ~]# yum list available kernel
```

```
kernel.x86_64          3.10.0-1127.19.1.el7          updates
```

Current version



```
[root@zmpt01 ~]# uname -r  
3.10.0-1062.el7.x86_64
```

Update kernel now

```
=====
```

Package	Arch	Version	Repository	Size
=====				
Installing:				
kernel	x86_64	3.10.0-1127.19.1.el7	updates	50 M

Transaction Summary

```
=====
```

Install 1 Package

Total download size: 50 M

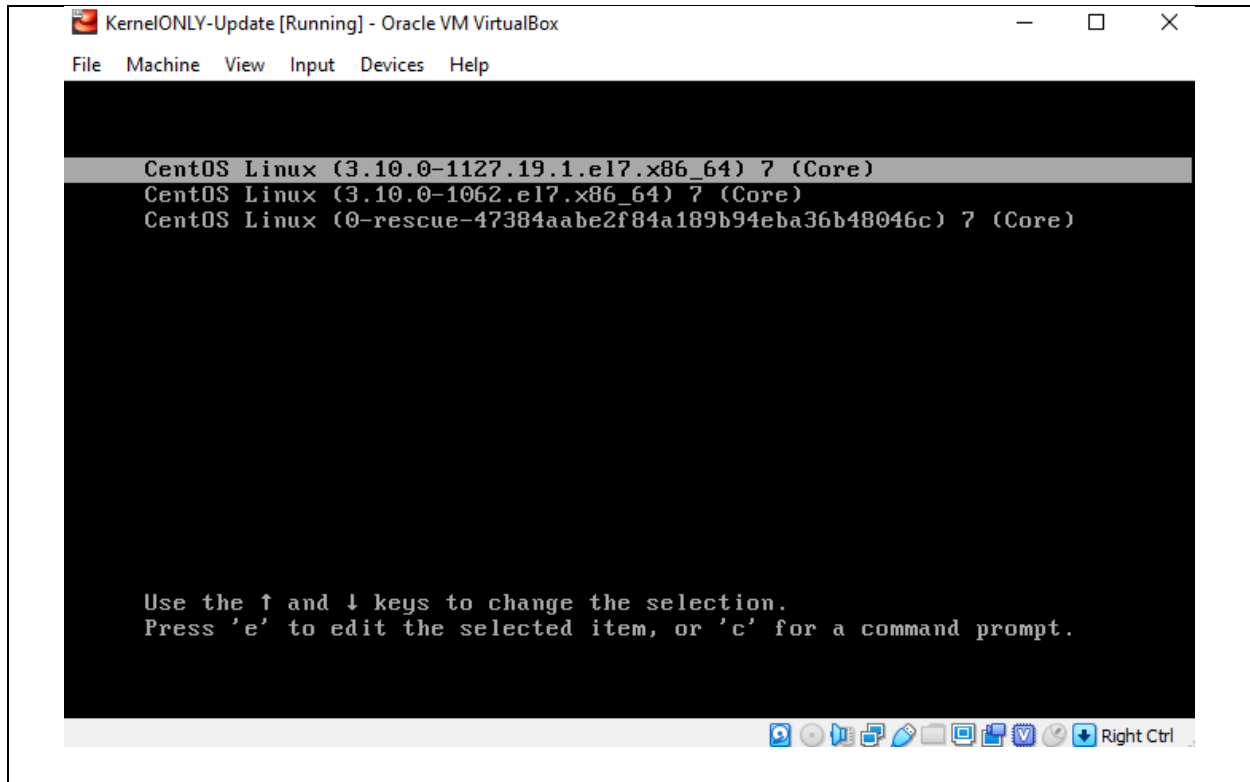
Installed size: 64 M

Is this ok [y/d/N]: y

Reboot

```
[root@zmpt01 ~]# init 6
```

The new kernel will be set as default Kernel



```
[root@zmpt01 ~]# uname -r
3.10.0-1127.19.1.el7.x86_64
```

Kernal physical location on Hard disk

```
[root@zmpt01 boot]# pwd
/boot
[root@zmpt01 boot]# ls -ltrh | grep vm
-rwxr-xr-x. 1 root root 6.5M Aug 7 2019 vmlinuz-3.10.0-1062.el7.x86_64 < ---Old Kernel
-rwxr-xr-x. 1 root root 6.5M Aug 25 13:27 vmlinuz-3.10.0-1127.19.1.el7.x86_64 < ---New
Kernel
-rwxr-xr-x. 1 root root 6.5M Oct 4 15:49 vmlinuz-0-rescue-47384aabe2f84a189b94eba36b48046c < -
--Rescue Kernel
```

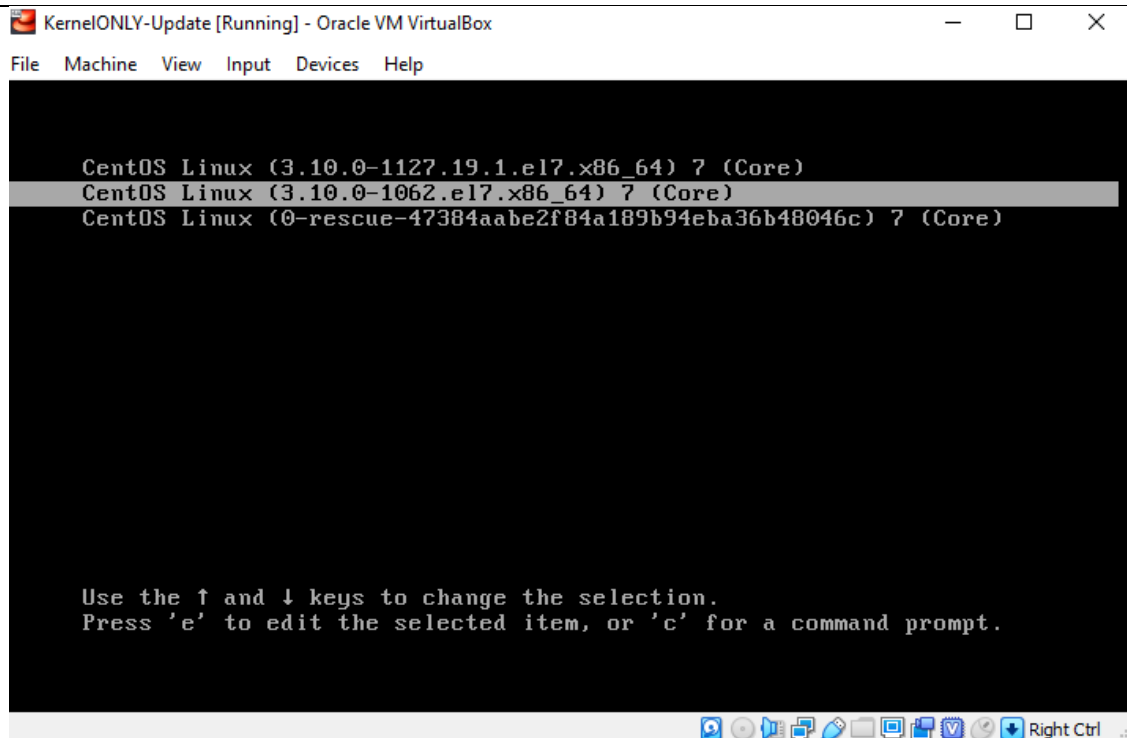
List of installed kernels using awk command

```
[root@zmpt01 ~]# awk -F' '$1=="menuentry '{print $2}' /etc/grub2.cfg
CentOS Linux (3.10.0-1127.19.1.el7.x86_64) 7 (Core) < ---This is position 0
CentOS Linux (3.10.0-1062.el7.x86_64) 7 (Core) < ---This is position 1
CentOS Linux (0-rescue-47384aabe2f84a189b94eba36b48046c) 7 (Core)
```

Default kernel is set in following file



```
[root@zmpt01 ~]# grub2-set-default 1
```



Old version is now default

```
[root@zmpt01 ~]# uname -r
3.10.0-1062.el7.x86_64
```

Change it to new version

```
[root@zmpt01 ~]# grub2-set-default 0
```

If you want to set BIOS based or UEFI base GRUB

BIOS based system

Grub2.mkconfig /boot/grub2/grub.cfg < ----if you see this file in this folder then it's a BIOS based OS

UEFI based system

Grub2.mkconfig -o /boot/efi/EFI/centos/grub.cfg < ---if you see this file in this folder then it's a UEFI based OS

10-31-2020
https://youtu.be/Ds7UJ_ILG7s

GUI Install

```
[root@zmpt01 ~]# uname -r
3.10.0-1062.el7.x86_64
```

```
[root@zmpt01 ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        484M   0 484M   0% /dev
tmpfs           496M   0 496M   0% /dev/shm
tmpfs           496M  6.8M 489M   2% /run
tmpfs           496M   0 496M   0% /sys/fs/cgroup
/dev/mapper/centos-root 14G  1.8G 12G 14% /
/dev/sda1       1014M 136M 879M 14% /boot
tmpfs           100M   0 100M   0% /run/user/0
```

< ---Size is just about 2GB, at this point its full functioning OS

GUI Installation is a major upgrade

```
[root@zmpt01 ~]# yum group install gnome-desktop x11 fonts -y
```

```
Install 286 Packages (+740 Dependent packages)
Upgrade   ( 21 Dependent packages)
```

```
Total download size: 720 M
Complete
```

11-01-2020
https://www.youtube.com/watch?v=UxK_uzWrc10

Reboot

```
[root@zmpt01 ~]# uname -r
3.10.0-1127.19.1.el7.x86_64
```

< ---Kernel is updated

```
[root@zmpt01 ~]# df -h
```



```
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        479M   0 479M   0% /dev
tmpfs           496M   0 496M   0% /dev/shm
tmpfs           496M  7.2M 489M   2% /run
tmpfs           496M   0 496M   0% /sys/fs/cgroup
/dev/mapper/centos-root 14G 4.2G 9.3G 32% /
/dev/sda1       1014M 185M 830M 19% /boot
tmpfs          100M   0 100M   0% /run/user/0
```

< ---Size of the OS disk increased

Security updates

```
[root@zmpt01 ~]# yum update --security
```

```
[root@zmpt01 ~]# yum update-minimal --security
```

Group packages

List of packages which are grouped together, usually similar packages

```
[root@zmpt01 ~]# yum group list
```

You will get a list of group packages

Example: Security Tools, Development Tools

List of packages in the group package

```
[root@zmpt01 ~]# yum group info "Development Tools"
```

Prefix	Description
-	Package was not installed and won't be installed as part of group
+	Package was not installed but will be installed when you install as group
=	Package was installed as part of group
Blank Space	Package was installed but not as part of the group

If you want to install a group package

```
[root@zmpt01 ~]# yum group install "Development Tools"
```

If you want to update the group package



```
[root@zmpt01 ~]# yum group update "Development Tools"
```

If you want to remove the group package

```
[root@zmpt01 ~]# yum group remove "Development Tools"
```

NOTE: There is no autoremove available for group uninstall