# Change Runlevel on CentOS 7 / Red Hat 7

putorius.net/2015/01/change-runlevel-on-centos-7-rhel-7.html

Runlevels are handled a little bit different in CentOS 7 and RHEL 7 (also recent versions of Fedora, etc..) since the move to systemd. We no longer have the /etc/inittab file to change our runlevels at boot, nor does the init command work like it did in systemV.

To check the current runlevel or target, you can still use the runlevel command as it was left intact for backward compatibility:

```
[root@centos7 ~]# runlevel
N 5
```

I prefer to use the new systemd commands as this allows me to get out of old habits, and get used to using systemd. So to check runlevel in systemd, we should use the systemctl command.

Any system using systemd now uses the systemctl command to set the "target" which we used to call the runlevel. In RHEL 7 / CentOS 7 instead of specifying runlevels, we specify targets as previously mentioned since they now use systemd.

To list all currently loaded targets we issue the following command:

```
[root@centos7 ~]# systemctl list-units -t target
UNIT                   LOAD   ACTIVE SUB    DESCRIPTION
basic.target           loaded active active Basic System
cryptsetup.target      loaded active active Encrypted Volumes
getty.target           loaded active active Login Prompts
graphical.target       loaded active active Graphical Interface
local-fs-pre.target    loaded active active Local File Systems (Pre)
local-fs.target        loaded active active Local File Systems
multi-user.target      loaded active active Multi-User System
network.target         loaded active active Network
nfs.target             loaded active active Network File System Server
paths.target           loaded active active Paths
remote-fs.target       loaded active active Remote File Systems
slices.target          loaded active active Slices
sockets.target         loaded active active Sockets
sound.target           loaded active active Sound Card
spice-vdagentd.target loaded active active Agent daemon for Spice guests
swap.target            loaded active active Swap
sysinit.target         loaded active active System Initialization
timers.target          loaded active active Timers

LOAD   = Reflects whether the unit definition was properly loaded.
ACTIVE = The high-level unit activation state, i.e. generalization of SUB.
SUB    = The low-level unit activation state, values depend on unit type.

18 loaded units listed. Pass --all to see loaded but inactive units, too.
To show all installed unit files use 'systemctl list-unit-files'.
```

Currently as displayed above, our system is running in runlevel 5, as we can see above, there are a couple of targets that tell us we are in runlevel 5. Namely:

```
graphical.target      loaded active active Graphical Interface
multi-user.target     loaded active active Multi-User System
```

We can view all available targets by issuing the following command:

```
[root@centos7 ~]# systemctl list-units -t target -a
UNIT                   LOAD   ACTIVE   SUB    DESCRIPTION
basic.target           loaded active   active Basic System
cryptsetup.target      loaded active   active Encrypted Volumes
dbus.target            not-found inactive dead   dbus.target
emergency.target       loaded inactive dead   Emergency Mode
final.target           loaded inactive dead   Final Step
getty.target           loaded active   active Login Prompts
graphical.target       loaded active   active Graphical Interface
local-fs-pre.target    loaded active   active Local File Systems (Pre)
local-fs.target        loaded active   active Local File Systems
multi-user.target      loaded active   active Multi-User System
network-online.target  loaded inactive dead   Network is Online
network.target         loaded active   active Network
nfs.target             loaded active   active Network File System Server
nss-lookup.target      loaded inactive dead   Host and Network Name Lookups
nss-user-lookup.target loaded inactive dead   User and Group Name Lookups
paths.target           loaded active   active Paths
remote-fs-pre.target   loaded inactive dead   Remote File Systems (Pre)
remote-fs.target       loaded active   active Remote File Systems
rescue.target          loaded inactive dead   Rescue Mode
shutdown.target        loaded inactive dead   Shutdown
slices.target          loaded active   active Slices
sockets.target         loaded active   active Sockets
sound.target           loaded active   active Sound Card
spice-vdagentd.target  loaded active   active Agent daemon for Spice guests
swap.target            loaded active   active Swap
sysinit.target         loaded active   active System Initialization
syslog.target          not-found inactive dead   syslog.target
time-sync.target       loaded inactive dead   System Time Synchronized
timers.target          loaded active   active Timers
umount.target          loaded inactive dead   Unmount All Filesystems

LOAD   = Reflects whether the unit definition was properly loaded.
ACTIVE = The high-level unit activation state, i.e. generalization of SUB.
SUB    = The low-level unit activation state, values depend on unit type.

30 loaded units listed.
To show all installed unit files use 'systemctl list-unit-files'.
```

We can drop down to runlevel 3 by isolating the multi-user.target, the following command will drop you right into runlevel 3, but if the system is rebooted, it will return to it's default target, in this case graphical.target or runlevel 5.

```
systemctl isolate multi-user.target
```

To switch to runlevel 3 permanently, even after a reboot, we have to change the default target. Here we change the default target to multi-user.target or runlevel 3. Systemd uses symlinks to point to the default target. First, we delete the current symlink (or default) then create a new one pointing default.target to multi-user.target.

```
rm /etc/systemd/system/default.target
ln -sf /lib/systemd/system/multi-user.target /etc/systemd/system/default.target
```

Now when we reboot, the system will boot into our new default target which is multi-user.target, or what we used to call runlevel 3.

Red Hat 7, and CentOS also offer symlinks named after the runlevels. They are located in /usr/lib/systemd/system. For example, if you wanted to set the default target to graphical (runlevel 5) you can do:

```
rm /etc/systemd/system/default.target
ln -sf /lib/systemd/system/runlevel5.target /etc/systemd/system/default.target
```

Here is a list of runlevel symlinks you can use:

```
[root@centos7 ~]# ls -l /usr/lib/systemd/system | grep runlevel
lrwxrwxrwx. 1 root root   15 Jan 19 23:50 runlevel0.target -> poweroff.target
lrwxrwxrwx. 1 root root   13 Jan 19 23:50 runlevel1.target -> rescue.target
drwxr-xr-x. 2 root root 4096 Jan 19 23:50 runlevel1.target.wants
lrwxrwxrwx. 1 root root   17 Jan 19 23:50 runlevel2.target -> multi-user.target
drwxr-xr-x. 2 root root 4096 Jan 19 23:50 runlevel2.target.wants
lrwxrwxrwx. 1 root root   17 Jan 19 23:50 runlevel3.target -> multi-user.target
drwxr-xr-x. 2 root root 4096 Jan 19 23:50 runlevel3.target.wants
lrwxrwxrwx. 1 root root   17 Jan 19 23:50 runlevel4.target -> multi-user.target
drwxr-xr-x. 2 root root 4096 Jan 19 23:50 runlevel4.target.wants
lrwxrwxrwx. 1 root root   16 Jan 19 23:50 runlevel5.target -> graphical.target
drwxr-xr-x. 2 root root 4096 Jan 19 23:50 runlevel5.target.wants
lrwxrwxrwx. 1 root root   13 Jan 19 23:50 runlevel6.target -> reboot.target
-rw-r--r--. 1 root root  761 Jun 10  2014 systemd-update-utmp-runlevel.service
```