Working with Systemd – Boot System into Different Targets on RHEL 7

In this article, you will learn about Systemd and how the systemd is taking care of overall services that start in RHEL 7 Versions. And also, you’re going to see how systemd targets are used to assign run the operating system levels.

Before you’re going to read about Systemd. I will strongly recommend you to first understand the Booting process of RHEL 7, so that you can understand what is Systemd.

Suggestable Read: [**Linux Booting Process steps – RHEL/CentOS 7**](https://www.techinformant.in/linux-booting-process-rhelcentos-7/)

Also Read: [**Reset the root password of RHEL/CentOS 7**](https://www.techinformant.in/reset-the-root-password-of-system-running-rhelcentos-7/)

**Let’s start with first questions. What is systemd?**

**Systemd is the new daemon in RHEL 7 versions and it is the first process on while booting the Red hat Enterprise Linux 7 and also the systemd System and Service Manager is responsible for starting all the remaining services and units.**

**Systemd**, init – **systemd ( system and service manager)** is a system and service manager for Linux operating systems. When run as first process on boot (as PID 1), it acts as init system that brings up and maintains userspace services. For compatibility with SysV, if systemd is called as init and a PID that is not 1, it will execute telinit and pass all command line arguments unmodified. That means init and telinit are mostly equivalent when invoked from normal login sessions.

When run as a system instance, systemd interprets the configuration file system.conf and the files in system.conf.d directories.

**Systemd** process is the first process ID (PID 1) to run on Linux 7 systems, it initializes the system and launches all the services that were once started by the traditional init(/etc/init.d) process. Systemd process reads the configuration file of /etc/systemd/system/default.target, then its load the OS in targeted runlevel.target.

This tells systemd to start everything in the /usr/lib/systemd/system/basic.target before starting the other multi-user services.

systemd uses ‘targets’ instead of runlevels. By default, there are two main targets:

**multi-user.target:** analogous to runlevel 3

**graphical.target:** analogous to runlevel 5

Systemctl is the command line utility to interact with your Systemd process. using systemctl commands we can administrate the RHEL/CentOS 7 versions.

**To view current default target, run:**

|  |
| --- |
| [root@techinformant ~]# systemctl get-default |

**To set a default target, run: ex:   systemctl set-default TARGET.target**

|  |
| --- |
| [root@techinformant ~]# systemctl set-default graphical.target |

**Target List in Red Hat Linux 7.**

runlevel0.target -> poweroff.target

runlevel1.target -> rescue.target

runlevel2.target -> multi-user.target

runlevel3.target -> multi-user.target

runlevel4.target -> multi-user.target

runlevel5.target -> graphical.target

runlevel6.target -> reboot.target

**How to Boot systems into different targets manually**

**Target List in Red Hat Linux 7 and compare with Traditional versions.**

| **Traditional Run levels (init)** | **Target Units** | **Description** |
| --- | --- | --- |
| 0 | runlevel0.target, —- poweroff.target | Shut down and power off the system. |
| 1 | runlevel1.target, —- rescue.target | Set up a rescue shell. |
| 2 | runlevel2.target, — multi-user.target | Set up a non-graphical multi-user system. |
| 3 | runlevel3.target, — multi-user.target | Set up a non-graphical multi-user system. |
| 4 | runlevel4.target, — multi-user.target | Set up a non-graphical multi-user system. |
| 5 | runlevel5.target, — graphical.target | Set up a graphical multi-user system. |
| 6 | runlevel6.target, — reboot.target | Shut down and reboot the system. |

**Viewing the Default Target**

To determine which target unit is used by default, run the following command:

[root@techinformant ~]# systemctl get-default

**Viewing the Current Target**

To list all currently loaded target units, type one of the following commands:

[root@techinformant ~]# systemctl list-units –type target

[root@techinformant ~]# systemctl list-units –type target –all

**Changing the Default Target**  
To configure the system to use a different target unit by default use the following command:

[root@techinformant ~]# systemctl set-default name.target

Replace **name** with the name of the target unit you want to use by default.

**Example:**

[root@techinformant ~]# systemctl set-default multi-user.target

Removed symlink /etc/systemd/system/default.target.

Created symlink from /etc/systemd/system/default.target to /usr/lib/systemd/system/multi-user.target.

**Changing the Current Target**

To change to a different target unit in the current session, type the following command:

# systemctl isolate name.target

Replace **name** with the name of the target unit you want  
**Example 1: To turn off the graphical user interface and change to the multi-user.target**

[root@techinformant ~]# systemctl isolate multi-user.target

**Example 2: Changing to Rescue Mode**

[root@techinformant ~]# systemctl isolate rescue.target

Notice here, that we can use other commands to do the same task:

[root@techinformant ~]# systemctl rescue

This command will not send message to currently logged users

[root@techinformant ~]#  systemctl –no-wall rescue

**Example 2: Changing to Emergency Mode**

[root@techinformant ~]# systemctl isolate emergency.target

Notice here, that we can use other commands to do the same task:

[root@techinformant ~]# systemctl emergency

this command will not send message to currently logged users

[root@techinformant ~]#  systemctl –no-wall emergency