# systemctl 命令完全指南-技术◆学习|Linux

Systemctl是一个systemd工具，主要负责控制systemd系统和服务管理器。

Systemd是一个系统管理守护进程、工具和库的集合，用于取代System V初始进程。Systemd的功能是用于集中管理和配置类UNIX系统。

在Linux生态系统中，Systemd被部署到了大多数的标准Linux发行版中，只有为数不多的几个发行版尚未部署。Systemd通常是所有其它守护进程的父进程，但并非总是如此。

TecMint.com
redhat
CentOS
fedora
Manage 'Systemd' Services and Units
Using 'Systemctl' Command in Linux

Manage Linux Services Using Systemctl

使用Systemctl管理Linux服务

本文旨在阐明在运行systemd的系统上“如何控制系统和服务”。

## Systemd初体验和Systemctl基础

```
#systemctl--version
systemd215
+PAM +AUDIT +SELINUX +IMA +SYSVINIT +LIBCRYPTSETUP +GCRYPT +ACL +XZ -SECCOMP -APPARMOR
```

上例中很清楚地表明，我们安装了215版本的systemd。

```
#whereissystemd
systemd:/usr/lib/systemd/etc/systemd/usr/share/systemd/usr/share/man/man1/systemd.1.gz
#whereissystemctl
systemctl:/usr/bin/systemctl/usr/share/man/man1/systemctl.1.gz
```

```
#ps-eaf |grep[s]ystemd
root         10016:27?00:00:00/usr/lib/systemd/systemd--switched-root --system --deserialize 23
root       4441016:27?00:00:00/usr/lib/systemd/systemd-journald
root       4691016:27?00:00:00/usr/lib/systemd/systemd-udevd
root        5551016:27?00:00:00/usr/lib/systemd/systemd-logind
dbus        5561016:27?00:00:00/bin/dbus-daemon --system --address=systemd:--nofork --nopidfile --systemd-activation
```

注意：systemd是作为父进程（PID=1）运行的。在上面带（-e）参数的ps命令输出中，选择所有进程，（-a）选择除会话前导外的所有进程，并使用（-f）参数输出完整格式列表（即 -eaf）。

也请注意上例中后随的方括号和例子中剩余部分。方括号表达式是grep的字符类表达式的一部分。

```
#systemd-analyze
Startup finished in487ms(kernel)+2.776s(initrd)+20.229s(userspace)=23.493s
```

```
#systemd-analyze blame
8.565s mariadb.service
7.991s webmin.service
6.095s postfix.service
4.311s httpd.service
3.926s firewalld.service
3.780s kdump.service
3.238s tuned.service
1.712s network.service
1.394s lvm2-monitor.service
1.126ssystemd-logind.service
....
```

```
#systemd-analyze critical-chain
Thetime after the unit is active or started is printed after the "@" character.
Thetime the unit takes to start is printed after the "+" character.
multi-user.target @20.222s
└─mariadb.service @11.657s+8.565s
└─network.target @11.168s
└─network.service @9.456s+1.712s
└─NetworkManager.service @8.858s+596ms
└─firewalld.service @4.931s+3.926s
└─basic.target @4.916s
└─sockets.target @4.916s
└─dbus.socket @4.916s
└─sysinit.target @4.905s
└─systemd-update-utmp.service @4.864s+39ms
└─auditd.service @4.563s+301ms
└─systemd-tmpfiles-setup.service @4.485s+69ms
└─rhel-import-state.service @4.342s+142ms
└─local-fs.target @4.324s
└─boot.mount@4.286s+31ms
└─systemd-fsck@dev-disk-
```

```
by\x2duuid-79f594ad\x2da332\x2d4730\x2dbb5f\x2d85d19608096
└─dev-disk-by\x2duuid-79f594ad\x2da332\x2d4730\x2dbb5f\x2d85d196080964.device@4
```

重要：Systemctl接受服务（.service），挂载点（.mount），套接口（.socket）和设备（.device）作为单元。

```
#systemctllist-unit-files
UNIT FILE                                      STATE
proc-sys-fs-binfmt_misc.automount              static
dev-hugepages.mountstatic
dev-mqueue.mountstatic
proc-sys-fs-binfmt_misc.mountstatic
sys-fs-fuse-connections.mountstatic
sys-kernel-config.mountstatic
sys-kernel-debug.mountstatic
tmp.mount                                      disabled
brandbot.path                                  disabled
.....
```

```
#systemctllist-units
UNIT                                           LOAD   ACTIVE SUB     DESCRIPTION
proc-sys-fs-binfmt_misc.automount              loaded active waiting ArbitraryExecutableFileFormatsFileSyste
sys-devices-pc...0-1:0:0:0-block-sr0.device loaded active plugged   VBOX_CD-ROM
sys-devices-pc...:00:03.0-net-enp0s3.device loaded active plugged   PRO/1000 MT DesktopAdapter
sys-devices-pc...00:05.0-sound-card0.device loaded active plugged   82801AA AC'97 Audio Controller
sys-devices-pc...:0:0-block-sda-sda1.device loaded active plugged   VBOX_HARDDISK
sys-devices-pc...:0:0-block-sda-sda2.device loaded active plugged   LVM PV Qzyo3l-qYaL-uRUa-Cjuk-pljo-qKtX-VgBQ8
sys-devices-pc...0-2:0:0:0-block-sda.device loaded active plugged   VBOX_HARDDISK
sys-devices-pl...erial8250-tty-ttyS0.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS0
sys-devices-pl...erial8250-tty-ttyS1.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS1
sys-devices-pl...erial8250-tty-ttyS2.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS2
sys-devices-pl...erial8250-tty-ttyS3.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS3
sys-devices-virtual-block-dm\x2d0.device    loaded active plugged
```

```
/sys/devices/virtual/block/dm-0
sys-devices-virtual-block-dm\x2d1.device    loaded active plugged
/sys/devices/virtual/block/dm-1
sys-module-configfs.device                  loaded active plugged
/sys/module/configfs
...
```

```
#systemctl--failed
UNIT          LOAD   ACTIVE SUB    DESCRIPTION
kdump.service loaded failed failed Crash recovery kernel arming
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.
1 loaded units listed.Pass--all to see loaded but inactive units, too.
To show all installed unit files use'systemctl list-unit-files'.
```

```
#systemctlis-enabled crond.service
enabled
```

```
#systemctl status firewalld.service
firewalld.service - firewalld - dynamic firewall daemon
Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled)
Active: active (running) since Tue2015-04-2816:27:55 IST;34min ago
Main PID:549(firewalld)
CGroup:/system.slice/firewalld.service
└─549/usr/bin/python -Es/usr/sbin/firewalld --nofork --nopid
Apr2816:27:51 tecmint systemd[1]:Starting firewalld - dynamic firewall
daemon...
Apr2816:27:55 tecmint systemd[1]:Started firewalld - dynamic firewall
daemon.
```

## 使用Systemctl控制并管理服务

```
#systemctllist-unit-files --type=service
UNIT FILE                                   STATE
arp-ethers.service                          disabled
auditd.service                              enabled
autovt@.service                             disabled
blk-availability.service                    disabled
brandbot.service                            static
collectd.service                            disabled
console-getty.service                       disabled
console-shell.service                       disabled
```

```
cpupower.service                           disabled
crond.service                              enabled
dbus-org.fedoraproject.FirewallD1.service  enabled
....
```

```
#systemctl start httpd.service
#systemctl restart httpd.service
#systemctl stop httpd.service
#systemctl reload httpd.service
#systemctl status httpd.service
httpd.service -TheApache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled)
Active: active (running) since Tue2015-04-2817:21:30 IST;6s ago
Process:2876ExecStop=/bin/kill-WINCH ${MAINPID}(code=exited, status=0/SUCCESS)
Main PID:2881(httpd)
Status:"Processing requests..."
CGroup:/system.slice/httpd.service
├─2881/usr/sbin/httpd -DFOREGROUND
├─2884/usr/sbin/httpd -DFOREGROUND
├─2885/usr/sbin/httpd -DFOREGROUND
├─2886/usr/sbin/httpd -DFOREGROUND
├─2887/usr/sbin/httpd -DFOREGROUND
└─2888/usr/sbin/httpd -DFOREGROUND
Apr2817:21:30 tecmint systemd[1]:StartingTheApache HTTP Server...
Apr2817:21:30 tecmint httpd[2881]: AH00558: httpd:Couldnot reliably determine the server's fully q...ssage
Apr 28 17:21:30 tecmint systemd[1]: Started The Apache HTTP Server.
Hint: Some lines were ellipsized, use -l to show in full.
```

注意：当我们使用systemctl的start，restart，stop和reload命令时，我们不会从终端获取到任何输出内容，只有status命令可以打印输出。

```
#systemctlis-active httpd.service
#systemctl enable httpd.service
#systemctl disable httpd.service
```

```
#systemctl mask httpd.service
ln-s '/dev/null''/etc/systemd/system/httpd.service'
#systemctl unmask httpd.service
rm'/etc/systemd/system/httpd.service'
```

```
#systemctlkill httpd
#systemctl status httpd
httpd.service -TheApache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled)
Active: failed (Result:exit-code) since Tue2015-04-2818:01:42 IST;28min ago
Main PID:2881(code=exited, status=0/SUCCESS)
Status:"Total requests: 0; Current requests/sec: 0; Current traffic:   0 B/sec"
Apr2817:37:29 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:29 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:39 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:39 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:49 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:49 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:59 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2817:37:59 tecmint systemd[1]: httpd.service:Got notification message from PID 2881, but recepti...bled.
Apr2818:01:42 tecmint systemd[1]: httpd.service: control process exited, code=exited status=226
Apr2818:01:42 tecmint systemd[1]:Unit httpd.service entered failed state.
Hint:Some lines were ellipsized,use-l to show in full.
```

## 使用Systemctl控制并管理挂载点

```
#systemctllist-unit-files --type=mount
UNIT FILE                    STATE
dev-hugepages.mountstatic
dev-mqueue.mountstatic
proc-sys-fs-binfmt_misc.mountstatic
sys-fs-fuse-connections.mountstatic
sys-kernel-config.mountstatic
sys-kernel-debug.mountstatic
tmp.mount                    disabled
```

```
#systemctl start tmp.mount
#systemctl stop tmp.mount
#systemctl restart tmp.mount
#systemctl reload tmp.mount
#systemctl status tmp.mount
```

```
tmp.mount-TemporaryDirectory
Loaded: loaded (/usr/lib/systemd/system/tmp.mount; disabled)
Active: active (mounted) since Tue2015-04-2817:46:06 IST;2min48s ago
Where:/tmp
What: tmpfs
Docs:man:hier(7)
http://www.freedesktop.org/wiki/Software/systemd/APIFileSystems
Process:3908ExecMount=/bin/mount tmpfs /tmp -t tmpfs -o mode=1777,strictatime (code=exited, status=0/SUCCESS)
Apr2817:46:06 tecmint systemd[1]:MountingTemporaryDirectory...
Apr2817:46:06 tecmint systemd[1]: tmp.mount:Directory/tmp to mount over isnotempty, mounting anyway.
Apr2817:46:06 tecmint systemd[1]:MountedTemporaryDirectory.
```

```
#systemctlis-active tmp.mount
#systemctl enable tmp.mount
#systemctl disable  tmp.mount
```

```
#systemctl mask tmp.mount
ln-s '/dev/null''/etc/systemd/system/tmp.mount'
#systemctl unmask tmp.mount
rm'/etc/systemd/system/tmp.mount'
```

# 使用Systemctl控制并管理套接口

```
#systemctllist-unit-files --type=socket
UNIT FILE                        STATE
dbus.socket                      static
dm-event.socket                  enabled
lvm2-lvmetad.socket              enabled
rsyncd.socket                    disabled
sshd.socket                      disabled
syslog.socket                    static
systemd-initctl.socket           static
systemd-journald.socket          static
systemd-shutdownd.socket         static
systemd-udevd-control.socket     static
systemd-udevd-kernel.socket      static
11 unit files listed.
```

```
#systemctl start cups.socket
#systemctl restart cups.socket
#systemctl stop cups.socket
```

```
#systemctl reload cups.socket
#systemctl status cups.socket
cups.socket - CUPS PrintingServiceSockets
Loaded: loaded (/usr/lib/systemd/system/cups.socket; enabled)
Active: active (listening) since Tue2015-04-2818:10:59 IST;8s ago
Listen:/var/run/cups/cups.sock (Stream)
Apr2818:10:59 tecmint systemd[1]:Starting CUPS PrintingServiceSockets.
Apr2818:10:59 tecmint systemd[1]:Listening on CUPS PrintingServiceSockets.
```

```
#systemctlis-active cups.socket
#systemctl enable cups.socket
#systemctl disable cups.socket
```

```
#systemctl mask cups.socket
ln-s '/dev/null''/etc/systemd/system/cups.socket'
#systemctl unmask cups.socket
rm'/etc/systemd/system/cups.socket'
```

## 服务的CPU利用率（分配额）

```
#systemctl show -p CPUShares httpd.service
CPUShares=1024
```

注意：各个服务的默认CPU分配份额=1024，你可以增加/减少某个进程的CPU分配份额。

```
#systemctlset-property httpd.service CPUShares=2000
#systemctl show -p CPUShares httpd.service
CPUShares=2000
```

注意：当你为某个服务设置CPUShares，会自动创建一个以服务名命名的目录（如 httpd.service），里面包含了一个名为90-CPUShares.conf的文件，该文件含有CPUShare限制信息，你可以通过以下方式查看该文件：

```
#vi/etc/systemd/system/httpd.service.d/90-CPUShares.conf
[Service]
CPUShares=2000
```

```
#systemctl show httpd
Id=httpd.service
Names=httpd.service
Requires=basic.target
Wants=system.slice
WantedBy=multi-user.target
```

```
Conflicts=shutdown.target
Before=shutdown.target multi-user.target
After=network.target remote-fs.target nss-lookup.target systemd-journald.socket basic.target system.slice
Description=TheApache HTTP Server
LoadState=loaded
ActiveState=active
SubState=running
FragmentPath=/usr/lib/systemd/system/httpd.service
....
```

```
#systemd-analyze critical-chain httpd.service
Thetime after the unit is active or started is printed after the "@" character.
Thetime the unit takes to start is printed after the "+" character.
httpd.service +142ms
└─network.target @11.168s
└─network.service @9.456s+1.712s
└─NetworkManager.service @8.858s+596ms
└─firewalld.service @4.931s+3.926s
└─basic.target @4.916s
└─sockets.target @4.916s
└─dbus.socket @4.916s
└─sysinit.target @4.905s
└─systemd-update-utmp.service @4.864s+39ms
└─auditd.service @4.563s+301ms
└─systemd-tmpfiles-setup.service @4.485s+69ms
└─rhel-import-state.service @4.342s+142ms
└─local-fs.target @4.324s
└─boot.mount@4.286s+31ms
└─systemd-fsck@dev-disk-by\x2duuid-79f594ad\x2da332\x2d4730\x2dbb5f\x2d85d196080964.service@4.092s+149ms
└─dev-disk-by\x2duuid-79f594ad\x2da332\x2d4730\x2dbb5f\x2d85d196080964.device@4.092s
```

```
#systemctllist-dependencies httpd.service
httpd.service
├─system.slice
└─basic.target
├─firewalld.service
├─microcode.service
├─rhel-autorelabel-mark.service
├─rhel-autorelabel.service
├─rhel-configure.service
```

```
├─rhel-dmesg.service
├─rhel-loadmodules.service
├─paths.target
├─slices.target
│├─-.slice
│└─system.slice
├─sockets.target
│├─dbus.socket
....
```

```
#systemd-cgls
├─1/usr/lib/systemd/systemd--switched-root --system --deserialize 23
├─user.slice
│└─user-0.slice
│└─session-1.scope
│├─2498sshd: root@pts/0
│├─2500-bash
│├─4521systemd-cgls
│└─4522systemd-cgls
└─system.slice
├─httpd.service
│├─4440/usr/sbin/httpd -DFOREGROUND
│├─4442/usr/sbin/httpd -DFOREGROUND
│├─4443/usr/sbin/httpd -DFOREGROUND
│├─4444/usr/sbin/httpd -DFOREGROUND
│├─4445/usr/sbin/httpd -DFOREGROUND
│└─4446/usr/sbin/httpd -DFOREGROUND
├─polkit.service
│└─721/usr/lib/polkit-1/polkitd --no-debug
....
```

```
#systemd-cgtop
PathTasks%CPU   MemoryInput/s Output/s
/831.0437.8M--
/system.slice                                                    -0.1---
/system.slice/mariadb.service                                    20.1---
/system.slice/tuned.service                                      10.0---
/system.slice/httpd.service                                      60.0---
/system.slice/NetworkManager.service                             1----
/system.slice/atop.service                                       1----
/system.slice/atopacct.service                                   1----
```

```
/system.slice/auditd.service                                          1----
/system.slice/crond.service                                           1----
/system.slice/dbus.service                                            1----
/system.slice/firewalld.service                                       1----
/system.slice/lvm2-lvmetad.service                                    1----
/system.slice/polkit.service                                          1----
/system.slice/postfix.service                                         3----
/system.slice/rsyslog.service                                         1----
/system.slice/system-getty.slice/getty@tty1.service                   1----
/system.slice/systemd-journald.service                                1----
/system.slice/systemd-logind.service                                  1----
/system.slice/systemd-udevd.service                                   1----
/system.slice/webmin.service                                          1----
/user.slice/user-0.slice/session-1.scope3----
```

## 控制系统运行等级

```
#systemctlrescue
Broadcast message from root@tecmint on pts/0(Wed2015-04-2911:31:18 IST):
The system is going down to rescue mode NOW!
```

```
#systemctl emergency
Welcome to emergency mode!After logging in, type "journalctl -xb" to view
system logs,"systemctl reboot" to reboot,"systemctl default" to try again
to boot into default mode.
```

```
#systemctlget-default
multi-user.target
```

```
#systemctl isolate runlevel5.target
或
#systemctl isolate graphical.target
```

```
#systemctl isolate runlevel3.target
或
#systemctl isolate multiuser.target
```

```
#systemctlset-default runlevel3.target
#systemctlset-default runlevel5.target
```

```
#systemctlreboot
#systemctlhalt
#systemctl suspend
#systemctl hibernate
#systemctl hybrid-sleep
```

对于不知运行等级为何物的人，说明如下。

- Runlevel 0 : 关闭系统
- Runlevel 1 : 救援？维护模式
- Runlevel 3 : 多用户，无图形系统
- Runlevel 4 : 多用户，无图形系统
- Runlevel 5 : 多用户，图形化系统
- Runlevel 6 : 关闭并重启机器

到此为止吧。保持连线，进行评论。别忘了在下面的评论中为我们提供一些有价值的反馈哦。喜欢我们、与我们分享，求扩散。

via: http://www.tecmint.com/manage-services-using-systemd-and-systemctl-in-linux/

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