systemd Services and logs

CONCEPTS

A unit is anything systemd manages: a service, timer, socket, target or mount. The .service suffix is optional on the command line.

Unit file /etc/systemd/system
↓ `daemon-reload`
Loaded known to systemd
↓ `start`
Active running
↓ `enable`
Boot target starts at boot

enable only controls start at boot; start only controls now. Use enable --now for both.

CONTROL SERVICES

`systemctl start <unit>`
Start a unit now

`systemctl stop <unit>`
Stop a unit

`systemctl restart <unit>`
Stop and start again

`systemctl reload <unit>`
Re-read config without restart

`systemctl reload-or-restart <unit>`
Reload, else restart

`systemctl reset-failed <unit>`
Clear the failed state

`systemctl --user <command>`
Manage your own user units

INSPECT

`systemctl status <unit>`
State, PID and last log lines

`systemctl is-active <unit>`
Print active state, exit code reflects it

`systemctl is-enabled <unit>`
Will it start at boot?

`systemctl list-units --type=service`
Loaded services

`systemctl --failed`
List failed units

`systemctl list-unit-files`
All installed unit files with state

INSPECT (cont.)

`systemctl cat <unit>`
Show unit file plus drop-ins

`systemctl list-dependencies <unit>`
Tree of required units

BOOT AND UNIT FILES

`systemctl enable <unit>`
Start at boot

`systemctl disable <unit>`
Do not start at boot

`systemctl enable --now <unit>`
Enable and start in one go

`systemctl disable --now <unit>`
Disable and stop in one go

`systemctl mask <unit>`
Block a unit from starting at all

`systemctl unmask <unit>`
Undo mask

`systemctl daemon-reload`
Re-read changed unit files

`systemctl edit <unit>`
Override settings in a drop-in

`systemctl reboot`
Restart the machine

LOGS (JOURNALCTL)

`journalctl -u <unit>`
Logs of one unit

`journalctl -u <unit> -f`
Follow new lines

`journalctl -n 100`
Last 100 entries

`journalctl -b`
Current boot only

`journalctl -b -1`
Previous boot

`journalctl -p err`
Errors and worse

`journalctl --since "<date>" --until "<date>"`
Time window

`journalctl -g <regex>`
Filter messages by pattern

`journalctl -k`
Kernel messages

UNIT FILE BASICS

Minimal service

```
# /etc/systemd/system/
myapp.service
[Unit]
Description=My app
After=network-online.target
Wants=network-online.target

[Service]
ExecStart=/usr/local/bin/myapp --
serve
Restart=on-failure
User=myapp

[Install]
WantedBy=multi-user.target
```

Common directives

Directive	Meaning
`ExecStart=`	Command to run (absolute path)
`Restart=`	on-failure, always, no
`After= / Before=`	Ordering only
`Wants= / Requires=`	Pull in other units (weak / hard)
`WantedBy=`	Target that enables it
`Environment=`	Set VAR=value
`WorkingDirectory=`	Start directory
`Type=`	simple, exec, forking, oneshot, notify

`systemd-analyze verify <file>`
Lint a unit file

TIMERS AND ONE-OFFS

`systemctl list-timers`
Timers and next/last run

`systemd-analyze calendar "<expr>"`
Check an OnCalendar expression

`systemd-run --user --on-active=<time> <cmd>`
Run a command later, once

Enable the .timer, not the .service. A timer starts the same-named service unless Unit= says otherwise.

BOOT ANALYSIS

`systemd-analyze`
Total boot time

`systemd-analyze blame`
Slowest units at boot