Linux Administration

Managing services

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What is a service?

- In general, a service is an application running on a dedicated system (a server) that is used by various other systems (the clients).
- This doesn’t apply to all services; some services are running in the background on a system (not necessarily a server) just to provide a specific functionality.

Historical context

- Originally, a service running in the background was called a *daemon*.
- This translates into the fact that many services have their main program name ending with the letter ‘d'.
  For instance, the program for the secure shell (SSH) service is */usr/bin/sshd*.

Services components

Beyond the application itself, a service will usually include the following:

- a management script
- one or more configuration files
- a process ID file (PID)
- some log files

Network access

- If a service is listening on the network on a port below 1024 it needs root privileges.
- The modern approach is to have the service starting as root to use the appropriate port, then dropping high privileges for all other operations.

systemd

[● ◀] systemd

- Initially, all services were started independently by the init process, using an architecture called “System V”, in reference to the original UNIX system.
- In 2010, Lennart Poettering started working on a replacement to manage all services and system functions once the system has booted.
  That application is called *systemd*.
- systemd is now the main initialization system for most Linux distributions.

Managing a service

- Once a service application is installed via a package, it should be integrated with systemd.
- The main operations are to start, stop, enable or disable the service, and check on its status when needed.

systemctl commands

The systemd systemctl command will let you manage any service:

- systemctl start <service>
- systemctl stop <service>
- systemctl enable <service>
- systemctl disable <service>
- systemctl status <service>

systemctl status

- The basic command *systemctl status* will give you an overview of all services running on the system.
- The *systemctl list-unit-files* will summarize the status and state of all services.
- When checking on a specific service, you will find the name of the unit configuration file and the most recent lines from the service log file.

Unit configuration files

- Default unit configuration files are usually located in */usr/lib/systemd/system*.
- Additional unit configuration files specific to the system can be found in */etc/systemd/system*.
- When modifying those files, you must use the *systemctl daemon-reload* command for any change to be effective.

journalctl

- *journalctl* can display the content of the journal, starting with the oldest event (use the *-r* option to start with the most recent one).
- To check on the logs of a specific service, use the *-u* option with the name of the service:

  journalctl -u sshd

PID file

- The PID file is usually used to track the main process for a service.
- It’s also used as a lock: if the service is already running with a valid PID, the program will not launch a second instance.
- The PID can be used for monitoring that a service is running properly.

syslog

- All log messages from the kernel and applications can be recorded to the proper log files using the syslog protocol.
- Each message is assigned a facility code (source) and a severity. Based on those, the messages will be sent to a proper destination, either a local file or a remote destination.
- A dedicated service (usually rsyslog or syslog-ng) will handle the whole process.

logrotate

- To limit the disk space used by log files, the logrotate utility is used to remove the oldest ones and keep only a limited number of entries (often in a compressed format).
- logrotate is generally configured to run once a week (via cron); this can be adjusted as needed.