



## UD 07.

# LINUX: APPLICATIONS AND SERVICES

Computer Systems  
CFGS DAW

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## Nomenclature

Throughout this unit different symbols will be used to distinguish important elements within the content. These symbols are:

 Important

 Attention

 Interesting

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## UT 07. LINUX: APPLICATIONS AND SERVICES

Usually in software, a service is a program that runs in the background, without any interactive control or management by any user. Usually, they lack an interface although sometimes they can be managed through an external graphical or command line interface. This in order to provide even more security, because some of these services are crucial for the operation of the operating system.

Obviously, you can develop (and probably will) new services, that can be installed and run in operating systems. An application can be installed as a regular one or as a service if it's the way it was developed.

### 1. SERVICES AND DAEMONS

As we defined a service, is a program running in the background. In linux specifically, each service can consist on different processes (like httpd for a web-service) that make an specific task.

Usually, those services are called daemons, but that's a misunderstanding. A service usually consists of one or multiple processes but a daemon is only one and single long-term process running in the background. That "long-term" adjective is because daemons run and exist regardless of any user being logged into the system. They continue making their tasks without taking into account any input from the user, besides having their process killed.

Sometimes the name of these services or daemons ends with the letter d. For example, sshd is the name of the service that handles SSH. There are services for tons of things, from graphical management, web servers running, to check newly connected devices, etc. There will be lots of services that come with the operating system itself.

⚡ Remember to not confuse daemon with demon, which is pretty different in english

### 2. MANAGE SERVICES

To manage services, systemctl is going to be your best friend. For instance, to list all services in Linux you can use this command:

```
systemctl list-unit-files --type service --all
```

That command will list all services installed in the system. As you will see with the output of the command, there's a column called "state". That state has a set of possible options for its value, which are the next ones:

- **enabled**: services currently running, without issues
- **disabled**: services not running but that can be activated any time
- **masked**: services that are not running and won't be able to unless we take off the mask from them
- **static**: these services will only run if other service makes use of them
- **alias**: it's an alias for another service
- **generated**: it's a generated service by systemd

There are some other statuses for services, but those ones are the most important one.

You can also use `systemctl` to start, stop, enable/disable and/or check the status of specific services:

```
systemctl start [service_name]
systemctl stop [service_name]
systemctl enable [service_name]
systemctl disable [service_name]
systemctl status [service_name]
```

## 3. IMPORTANT SERVICES IN LINUX

### 3.1 Init

The single most important service in a UNIX system is provided by `init`. It is started as the first process of every UNIX system, as the last thing the kernel does when it boots. When `init` starts, it continues the boot process by doing various startup chores (checking and mounting filesystems, starting daemons, etc).

Usually, you will see the sentence "init comes first" when speaking about it, quoting religious sayings. Keeping with the religious context, without `init` there would be nothing and nothing would end.

The tasks that `init` is responsible for differ in different distributions and their flavors, but usually they are:

- During the bootup:
  - Ensure that `getty` is running so users can login
  - Start all the processes that are configured to run on startup

- Adopt all orphan processes that got their parent process killed
- During shutdown:
  - Kill all processes
  - Unmount all filesystems
  - Stop the processor
  - Extra tasks configured during shutdown

So init is a pretty important service, since it starts and stops all the things that should be during startup/shutdown process.

Also as said, you can configure programs that should be executed on startup, so they run as the system is plugged in. And the other way around, tasks that should be executed on shutdown, like cleaning operations for instance.

### 3.2 Login

Users can login to Linux distribution since it's a multiuser operating system. That login can be performed through a command line interface or through a graphical interface. Both accesses are provided by **getty**, which reads the user and password and checks if they are correct.

If they are, **login** runs the shell so the user can perform its operations.

### 3.3 Cron

Although cron it's not a super critical service for the regular operation with a Linux operating system, it's pretty useful for regular users and specially important for system administrators.

The task that the cron service performs is simple: execute scheduled tasks periodically. There's a crontab where the commands to execute are listed and the times they should be executed, together with the periodicity.

This is extremely useful for maintenance tasks, for instance. Imagine a system administrator that wants to clean the /tmp files so no disk storage is used. A cron task can be scheduled for it, so from time to time those files are deleted and the space is freed.