

# Services, Packages, and Updates

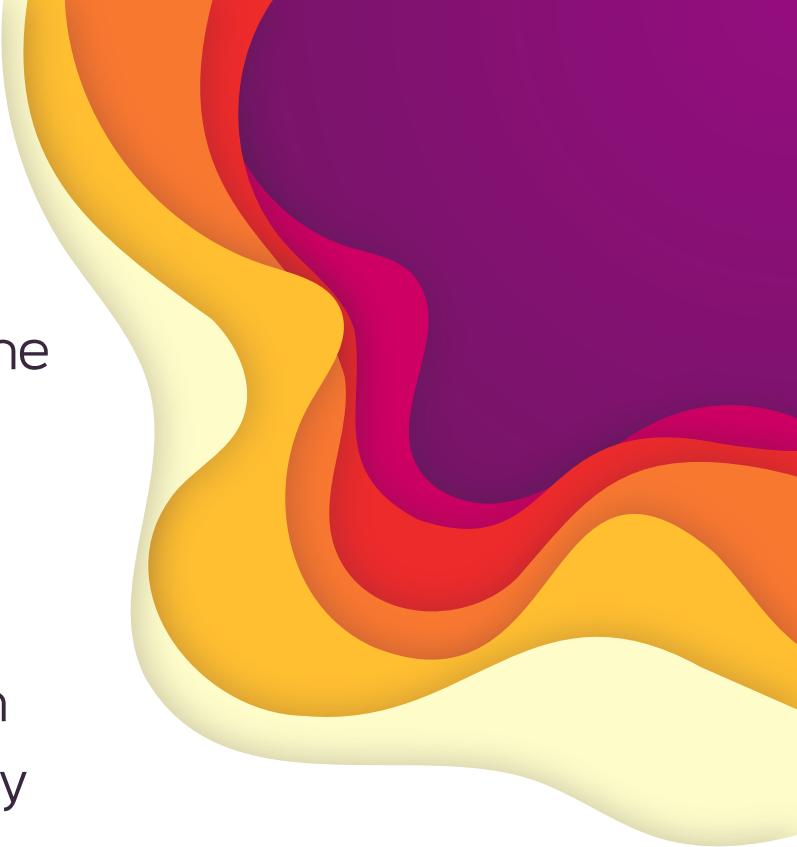


# What is a service?

A service is an application that runs in the background to be used.

- e.g. sshd, apache2

The README will list what services are “critical”. Thus you should leave those on the system and remove any unnecessary ones.



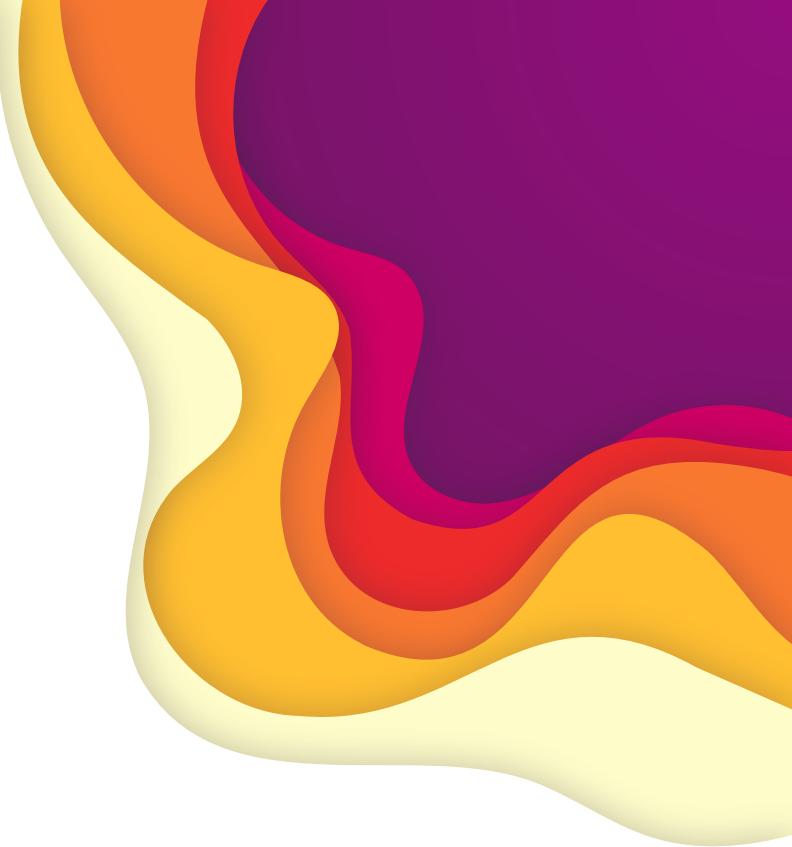
# Basic commands for services

- `service --status-all`
  - lists all services, both active and inactive
- `systemctl status [service]`
  - used to see comprehensive status of a certain service
  - this is optional for you to know, but can be useful if you are looking only for one service



# Service statuses

- [+]: the service is active/running
- [-]: the service is inactive/stopped
- [?]: the service status cannot be determined or is unknown



user@ubuntu:~

```
user@ubuntu:~$ service --status-all
[ + ] acpid
[ + ] alsa-utils
[ - ] anacron
[ - ] apache-htcacheclean
[ - ] apache2
[ + ] apparmor
[ + ] apport
[ + ] avahi-daemon
[ - ] bluetooth
[ - ] bootmisc.sh
[ - ] brltty
[ - ] checkfs.sh
[ - ] checkroot-bootclean.sh
[ - ] checkroot.sh
[ + ] console-setup
[ + ] cron
[ + ] cups
[ + ] cups-browsed
[ + ] dbus
[ - ] dns-clean
[ + ] grub-common
[ - ] hostname.sh
[ - ] hwclock.sh
```

```
user@ubuntu:~
```

```
user@ubuntu:~$ systemctl status cups
● cups.service - CUPS Scheduler
  Loaded: loaded (/lib/systemd/system/cups.service; enabled; vendor preset: ena
  Active: active (running) since Mon 2020-09-28 21:46:19 PDT; 3min 23s ago
    Docs: man:cupsd(8)
 Main PID: 2938 (cupsd)
   CGroup: /system.slice/cups.service
           └─2938 /usr/sbin/cupsd -l
                 ├─2941 /usr/lib/cups/notifier/dbus dbus://
```

```
Sep 28 21:49:16 ubuntu systemd[1]: Started CUPS Scheduler.
Sep 28 21:49:17 ubuntu systemd[1]: Started CUPS Scheduler.
Sep 28 21:49:20 ubuntu systemd[1]: Started CUPS Scheduler.
Sep 28 21:49:22 ubuntu systemd[1]: Started CUPS Scheduler.
Sep 28 21:49:23 ubuntu systemd[1]: Started CUPS Scheduler.
Sep 28 21:49:24 ubuntu systemd[1]: Started CUPS Scheduler.
Sep 28 21:49:28 ubuntu systemd[1]: Started CUPS Scheduler.
```

```
lines 1-19/19 (END)
```

# Service management commands

- service [service] start
  - start a service
- service [service] stop
  - stop a service
- service [service] restart
  - restart a service
  - usually you restart after changing  
the configuration for a service

# What is a package?

A package is a collection of files that form an application that performs a certain function for the user or system.

- e.g. firefox, netcat, nautilus
- Even your commands are packages!



# What is a dependency?

An additional package that is needed by other packages to function properly.

- e.g. if we go to <https://packages.ubuntu.com/xenial/firefox> we can see what dependencies the firefox package has



# What is a library?

A library is a dependency that is usually composed of specific tools or functions.

- dependencies not only include libraries but other packages
- e.g. if we go back to the firefox dependencies list, you can see many libraries used such as libgcc, libgtk
- libraries are usually denoted with “lib” at the beginning of the package name





## Package managers

- APT (Ubuntu/Debian) \*the one we will be most concerned with
- DPKG (Ubuntu/Debian)

Dw abt these

- YUM (Red Hat)
- RPM (Red Hat)
- Pacman (Arch)

# Basic commands for packages

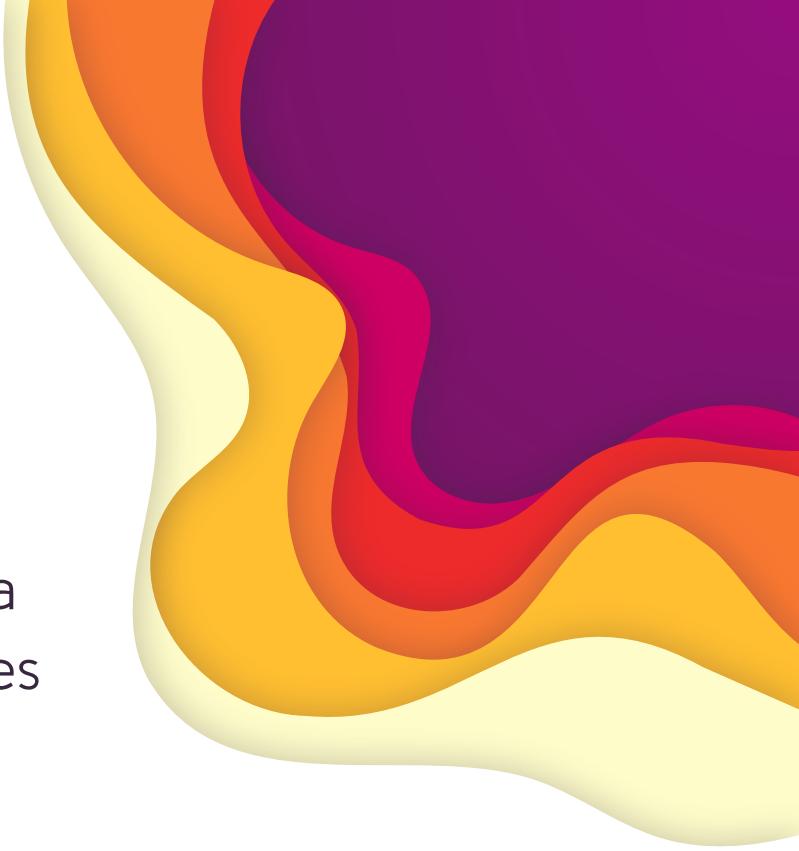
- `dpkg -l`: lists all installed packages on system
  - can pipe into less (`dpkg -l | less`) to see full output
- `sudo apt install [package]`: used to install or update a given package



# Basic commands for packages

- sudo apt remove [package]: used to remove a package (leaves configuration files)
- sudo apt purge [package]: removes a package along with all associated files

\*sudo is used because you need permissions to add or remove packages



# What packages to remove?

You want to remove any packages that compromise your security

- Password crackers
  - John the Ripper (john), Ophcrack
- Network trackers/sniffers
  - Wireshark, Nmap, Kismet
- Remote clients
  - TightVNC, Netcat
- Unnecessary servers installed
  - SSH, FTP, Apache2, PostgreSQL, Bind9



user@ubuntu:~

```
user@ubuntu:~$ sudo apt install firefox
[sudo] password for user:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-4.15.0-45 linux-headers-4.15.0-45-generic linux-image-4.15.0-45-generic
  linux-modules-4.15.0-45-generic linux-modules-extra-4.15.0-45-generic
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  fonts-lyx
The following packages will be upgraded:
  firefox
1 upgraded, 0 newly installed, 0 to remove and 25 not upgraded.
Need to get 0 B/56.9 MB of archives.
After this operation, 2,186 kB of additional disk space will be used.
(Reading database ... 251580 files and directories currently installed.)
Preparing to unpack .../firefox_81.0+build2-0ubuntu0.16.04.1_amd64.deb ...
Unpacking firefox (81.0+build2-0ubuntu0.16.04.1) over (80.0.1+build1-0ubuntu0.16.04.1) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for hicolor-icon-theme (0.15-0ubuntu1.1) ...
Processing triggers for gnome-menus (3.13.3-6ubuntu3.1) ...
Processing triggers for desktop-file-utils (0.22-1ubuntu5.2) ...
Processing triggers for bamfdaemon (0.5.3~bzr0+16.04.20180209-0ubuntu1) ...
Rebuilding /usr/share/applications/bamf-2.index...
Processing triggers for mime-support (3.59ubuntu1) ...
Setting up firefox (81.0+build2-0ubuntu0.16.04.1) ...
Please restart all running instances of firefox, or you will experience problems.
user@ubuntu:~$
```

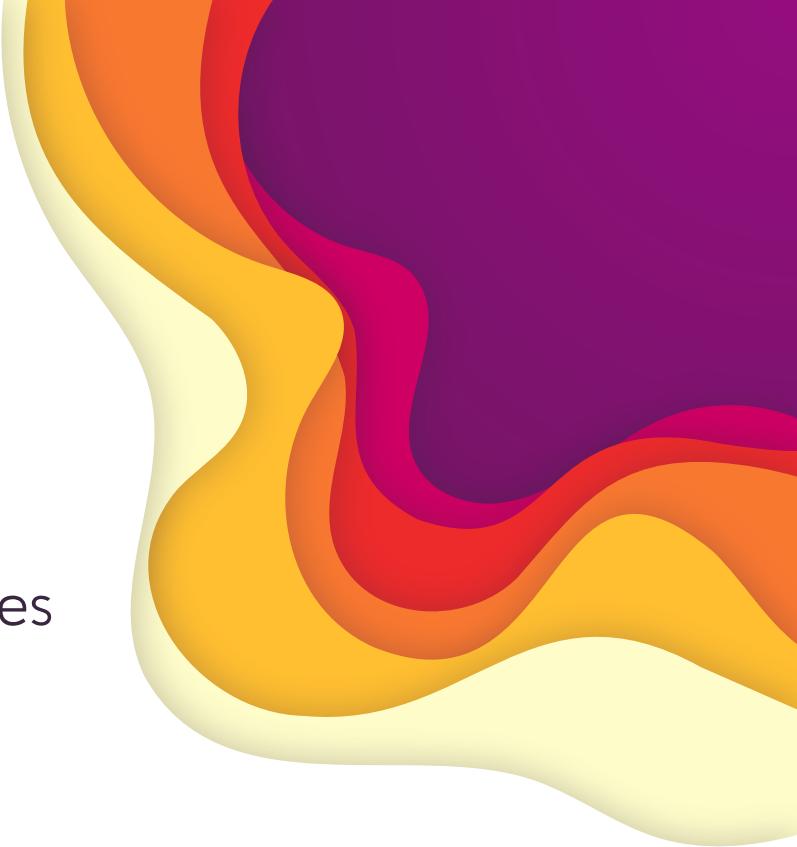
x - user@ubuntu: ~

Desired=Unknown/Install/Remove/Purge/Hold   Status=Not/Inst/Conf-files/Unpacked/half-conf/Half-inst/trig-aWait/Trig-pend   / Err?=(none)/Reinst-required (Status,Err: uppercase=bad)			
	Name	Version	
ture Description		Architec	
ii	a11y-profile-manager-indicator	0.1.10-0ubuntu3	amd64
	Accessibility Profile Manager - Unity desktop indicator		
ii	account-plugin-facebook	0.12+16.04.20160126-0ubuntu1	all
	GNOME Control Center account plugin for single signon - facebook		
ii	account-plugin-flickr	0.12+16.04.20160126-0ubuntu1	all
	GNOME Control Center account plugin for single signon - flickr		
ii	account-plugin-google	0.12+16.04.20160126-0ubuntu1	all
	GNOME Control Center account plugin for single signon		
ii	accounts-service	0.6.40-2ubuntu11.3	amd64
	query and manipulate user account information		
ii	acl	2.2.52-3	amd64
	Access control list utilities		
ii	acpi-support	0.142	amd64
	scripts for handling many ACPI events		
ii	acpid	1:2.0.26-1ubuntu2	amd64
	Advanced Configuration and Power Interface event daemon		
ii	activity-log-manager	0.9.7-0ubuntu23.16.04.1	amd64
	blacklist configuration user interface for Zeitgeist		
ii	adduser	3.113+nmu3ubuntu4	all
	add and remove users and groups		
ii	adium-theme-ubuntu	0.3.4-0ubuntu1.1	all
	Adium message style for Ubuntu		
ii	adwaita-icon-theme	3.18.0-2ubuntu3.1	all
	default icon theme of GNOME (small subset)		
ii	aisleriot	1:3.18.2-1ubuntu1	amd64
	GNOME solitaire card game collection		

# Updates

Updates in Linux are done through two steps:

- 1) Update: refreshes the repository list and makes sure the index of packages is up-to-date
- 2) Upgrade: actually installs the newest packages



# Command to update packages

Single package:

- sudo apt update
- sudo apt install [package]

All packages:

- sudo apt update
- sudo apt upgrade

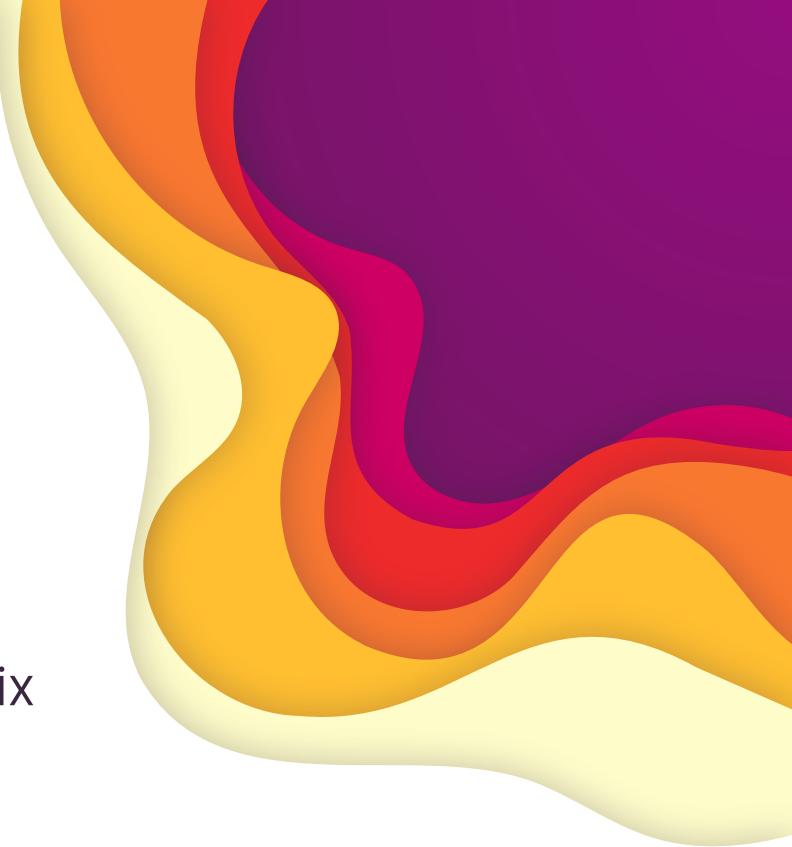
Note: you only need to run the update command once at the beginning of each session



# APT options

There are a few options that may be useful when using apt commands:

- “-y”: this option assumes yes to any prompts
- “-f”: used with install or remove to fix broken dependencies



user@ubuntu: ~

```
user@ubuntu:~$ sudo apt update
Hit:1 http://us.archive.ubuntu.com/ubuntu xenial InRelease
Hit:2 http://us.archive.ubuntu.com/ubuntu xenial-updates InRelease
Hit:3 http://security.ubuntu.com/ubuntu xenial-security InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
25 packages can be upgraded. Run 'apt list --upgradable' to see them.
user@ubuntu:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  linux-headers-4.15.0-45 linux-headers-4.15.0-45-generic linux-image-4.15.0-45-generic
  linux-modules-4.15.0-45-generic linux-modules-extra-4.15.0-45-generic
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  xdg-desktop-portal xdg-desktop-portal-gtk
The following packages will be upgraded:
  aptdaemon aptdaemon-data base-files firefox-locale-en gir1.2-packagekitglib-1.0 grub-common grub-pc
  grub-pc-bin grub2-common libldap-2.4-2 libpackagekit-glib2-16 libpam-systemd libsystemd0 libudev1
  python3-aptdaemon python3-aptdaemon.gtk3widgets python3-aptdaemon.pkcompat snapd systemd
  systemd-sysv ubuntu-core-launcher ubuntu-desktop ubuntu-minimal ubuntu-standard udev
25 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 29.3 MB/30.3 MB of archives.
After this operation, 3,207 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 base-files amd64 9.4ubuntu4.13 [61.
8 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 systemd-sysv amd64 229-4ubuntu21.29
 [12.5 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 libpam-systemd amd64 229-4ubuntu21.
29 [115 kB]
```

# GUI automatic updates

Aside from initiating updates through command line, GUI is used to set automatic updates.

- go to: System Settings -> Software & Updates -> Updates
- use the settings shown on the following slide



## Software & Updates

Ubuntu Software | Other Software | **Updates** | Authentication | Additional Drivers | Developer Options

Install updates from:

- Important security updates (xenial-security)
- Recommended updates (xenial-updates)
- Unsupported updates (xenial-backports)

Automatically check for updates: Daily ▾

When there are security updates: Download and install automatically ▾

When there are other updates: Display immediately ▾

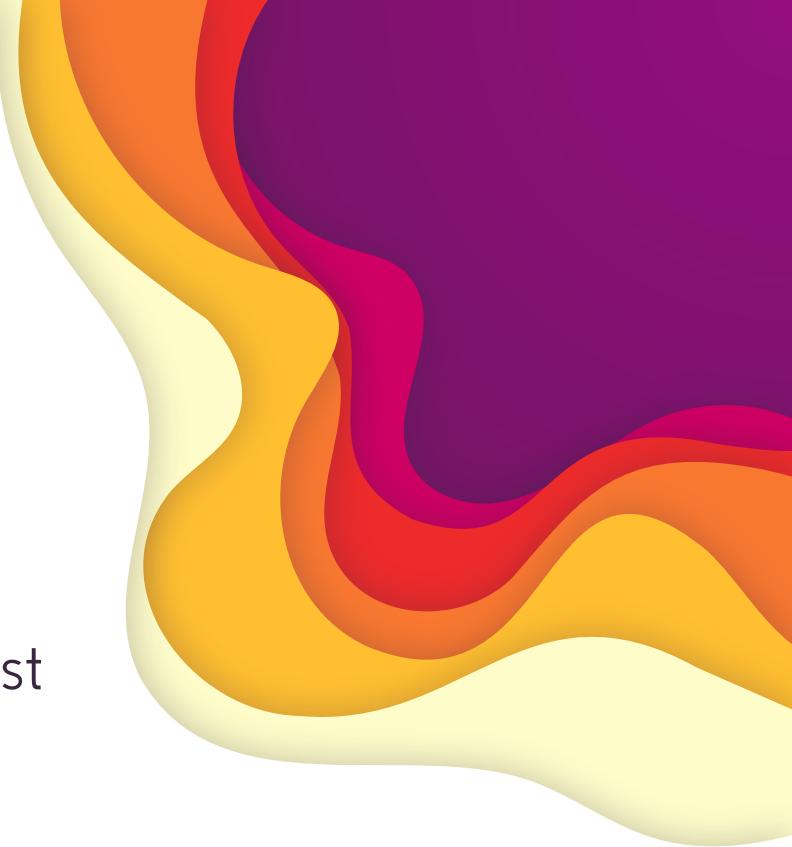
Notify me of a new Ubuntu version: For long-term support versions ▾

Revert

Close

# Update settings

- security and recommended updates are needed
  - we don't want unsupported updates for security reasons
- we want to check for updates as fast as possible and automatically install any security updates



# Unattended upgrades

- instead of using GUI, we can use command line to set up automatic upgrades
- on Ubuntu 18.04, we need to do this because there is no more Upgrades tab in Settings
- uses the unattended-upgrades package



# Unattended upgrades

- sudo apt install unattended-upgrades
- /etc/apt/apt.conf.d/20auto-upgrades
  - config file for automatic updates
  - the following two lines need to be in the file

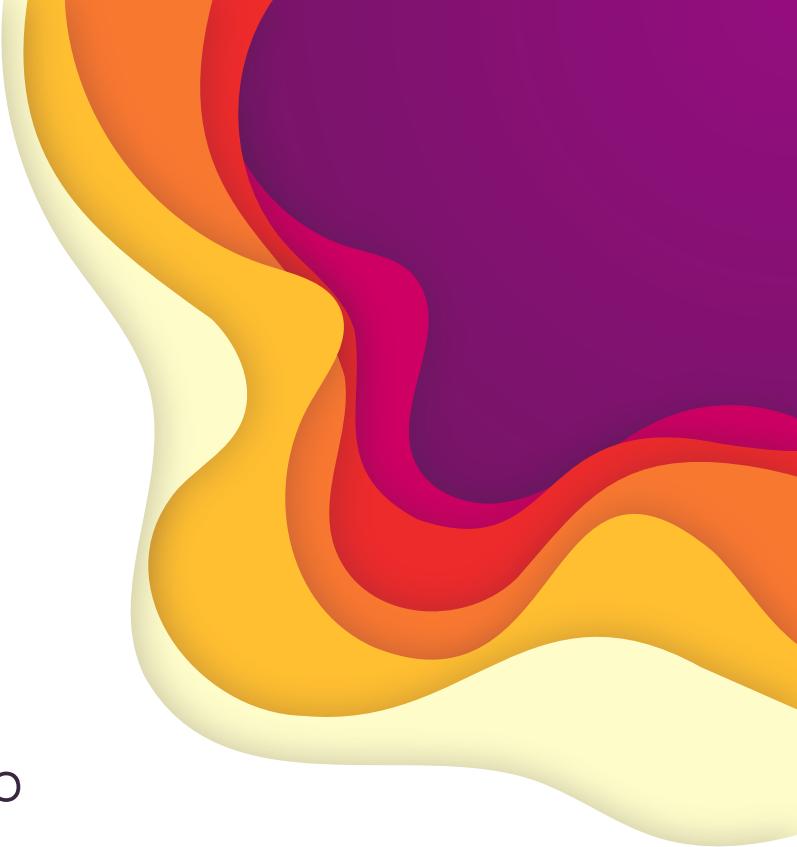
APT::Periodic::Update-Package-Lists "1";

APT::Periodic::Unattended-Upgrade "1";



# Unattended upgrades

- to automatically clean the download archive add the following (optional)  
APT::Periodic::AutocleanInterval "7";
- sudo dpkg-reconfigure  
unattended-upgrades
  - this command is an alternative to changing the config file



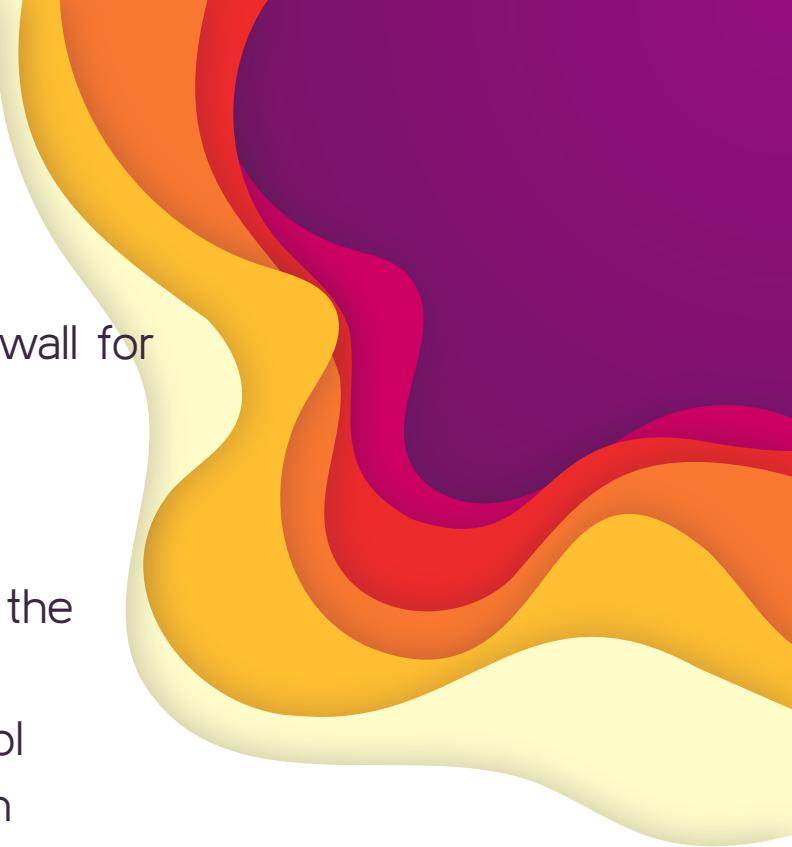
# Unattended Upgrades Config #2

/etc/apt/apt.conf.d/50unattended-upgrades

- Under  
    Unattended-Upgrade::Allowed-Origins {
- Comment out line w/ “security” and  
    “update”
  - Ensures repos will install security  
        updates and regular updates to  
        improve sys functionality

# Firewall is Importante

- ufw (uncomplicated firewall): is the basic firewall for system
  - sudo ufw enable: turns on firewall
  - sudo ufw disable: turns off firewall
  - sudo ufw allow [port]: allows a port for the firewall
    - add /tcp or /udp to specify protocol
  - sudo ufw deny [port]: denies connection
  - sudo ufw reject [port]: denies connection and lets the sender know



# UFW examples

- sudo ufw allow 22
  - allows port 22 (SSH)
- sudo ufw allow 443/tcp
  - allows port 443 (HTTPS) over TCP
- sudo ufw allow 21/udp
  - allows port 21 (FTP) over UDP
- sudo ufw allow ssh
  - uses name instead of port
  - works for select applications



# Important packages to update

- gufw (graphical uncomplicated firewall): GUI interface for configuring firewall
- firefox: web browser
- nautilus: file explorer
- linux-generic: kernel
  - Core app running the system

