

# Snap



# 2020

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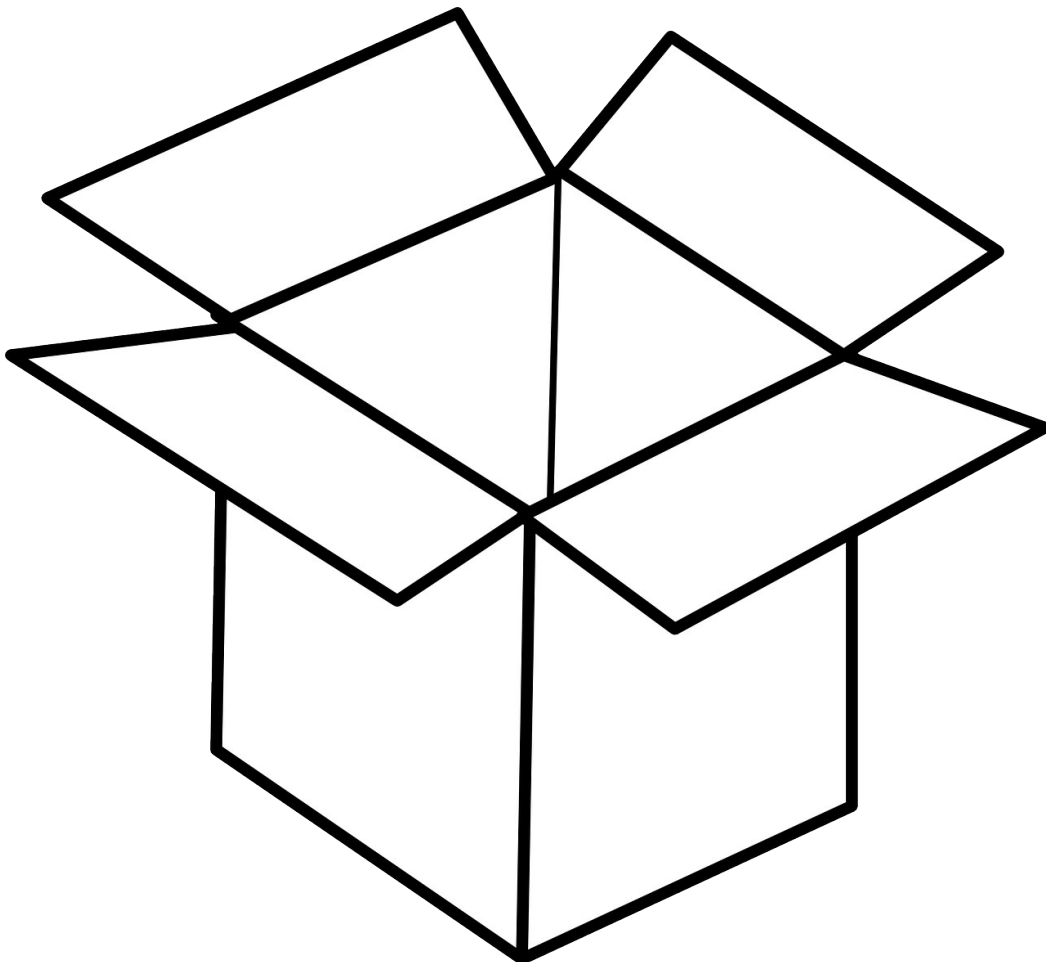
# Introducción

En el transcurso de la historia los repositorios de software significaron un gran avance en el campo de la informática mostrándose inherentes respecto a su evolución con los ordenadores y redes aportando flexibilidad, comodidad, disponibilidad y seguridad a los usuarios gracias a su capacidad para compartir, actualizar e instalar programas sin que fuese necesario un medio físico o instalador.

El objetivo del presente trabajo consiste en informar al lector y aclarar conceptos como dependencia, gestor de paquetes y repositorio.

Una vez explicado este vocablo se procederá profundizando sobre diferentes gestores de paquetes entre estos Snap y se lo diferenciará de conceptos similares como Snapcraft y snapd.

También será una meta del mismo explicar que lo diferencian del resto y cómo lograr instalaciones por medio de la línea de comando en sistemas basados en GNU/Linux.



# Gestor de Paquetes

Un Sistema de Gestión de Paquetes, también conocido como Gestor de Paquetes<sup>1</sup> es una colección de herramientas la cual contiene el registro de software instalado en el ordenador y que a su vez simplifica el proceso de instalación, actualización, configuración y eliminación de paquetes de software.

Su principal tarea radica en interpretar-compile paquetes tanto de repositorios oficiales como no, realizar sumas de verificación<sup>2</sup>, comprobar firmas digitales<sup>3</sup> y resolver dependencias automáticamente, donde una dependencia es aquel paquete requerido con antelación para poder concretar una posterior instalación, dicho de otro modo hay una relación de dependencia entre paquetes basada en una estructura piramidal.

Los paquetes de software se encuentran en los repositorios siendo sitios donde son almacenados y mantenidos.



1 Package Manager.

2 Checksum, es una función que permite proteger la integridad de los datos detectando cambios accidentales y verificando discrepancias en el proceso.

3 Una Firma Digital emplea un ID digital basado en certificado que emite una autoridad de certificación acreditada o un proveedor de servicios de confianza.

# Snap

Snap, conocido informalmente como Snappy es un sistema de despliegue y manejo de paquetes desarrollado y mantenido por Canonical. El mismo está programado con C, GO y Python para sistemas operativos basados en GNU/Linux y su principal protagonismo se sostiene en los paquetes llamados *Snaps* los cuales son seguros, autónomos, multiplataforma, fáciles de instalar y libres de dependencias.

Estos paquetes pueden ser conseguidos mediante la línea de comandos o Snap Store App también considerando que Gnome Software Center y KDE Discover<sup>4</sup> pueden proporcionar soporte nativo de Snap.

Es de suma importancia diferenciar *snap*, *snappy* y *snappyd* donde *snap* es el comando que invoca a *snappyd*, el mismo es un demonio<sup>5</sup> que administra y mantiene snaps. A su vez *snappyd* es un comando y un framework empleado para desarrollar Snaps y publicarlas en la Snap Store.

## ¿Qué lo distingue?

El uso de *Snaps* representa un cambio de paradigma, son paquetes de aplicaciones autónomas comprimidas de SquashFS<sup>6</sup> con una extensión *.snap* que contiene todos los activos necesarios para una aplicación.

Dado que los Snaps son aplicaciones independientes, las mismas se descomprimen y montan en un *loop-device*<sup>7</sup> de sólo lectura, también es creada un área privada de escritura en el directorio de inicio del usuario<sup>8</sup>.

```
Archivo Editar Ver Buscar Terminal Ayuda
c05m4r@c05m4r:~$ df -Th
S. ficheros      Tipo      Tamaño Usados  Disp  Uso% Montado en
udev            devtmpfs  1,9G    0      1,9G   0% /dev
tmpfs           tmpfs     378M    1,7M   376M   1% /run
/dev/sda5       ext4      521G    65G    430G   14% /
tmpfs           tmpfs     1,9G    73M    1,8G   4% /dev/shm
tmpfs           tmpfs     5,0M    4,0K   5,0M   1% /run/lock
tmpfs           tmpfs     1,9G    0      1,9G   0% /sys/fs/cgroup
/dev/loop1      squashfs  92M     92M    0      100% /snap/core/8689
/dev/loop8      squashfs  256K    256K   0      100% /snap/gtk2-common-themes/9
/dev/loop5      squashfs  121M    121M   0      100% /snap/telegram-desktop/1388
/dev/loop2      squashfs  68M     68M    0      100% /snap/sublime-text/85
/dev/loop3      squashfs  416M    416M   0      100% /snap/libreoffice/175
/dev/loop11     squashfs  29M     29M    0      100% /snap/chromium-ffmpeg/15
/dev/loop4      squashfs  203M    203M   0      100% /snap/vlc/1397
/dev/loop12     squashfs  143M    143M   0      100% /snap/opera/68
/dev/loop7      squashfs  50M     50M    0      100% /snap/walcal/1
/dev/loop16     squashfs  278M    278M   0      100% /snap/retroarch/375
/dev/loop18     squashfs  205M    205M   0      100% /snap/firefox/330
/dev/loop9      squashfs  164M    164M   0      100% /snap/spotify/41
/dev/loop13     squashfs  55M     55M    0      100% /snap/core18/1668
/dev/loop10     squashfs  218M    218M   0      100% /snap/atom/248
/dev/loop15     squashfs  45M     45M    0      100% /snap/gtk-common-themes/1440
/dev/loop6      squashfs  102M    102M   0      100% /snap/thunderbird/48
/dev/loop17     squashfs  161M    161M   0      100% /snap/gnome-3-28-1804/116
/dev/loop21     squashfs  197M    197M   0      100% /snap/octave/22
/dev/loop20     squashfs  43M     43M    0      100% /snap/snap-store/209
/dev/loop19     squashfs  102M    102M   0      100% /snap/p7zip-desktop/220
/dev/loop14     squashfs  58M     58M    0      100% /snap/jdownloader2/3
```

- 4 Tanto Gnome Software Center como KDE Discover son administradores de paquetes, ambos están dotados de interfaz gráfica.
- 5 En sistemas POSIX son un servicio que carece de interfaz.
- 6 Sistema de archivos libre empleado para comprimir, el mismo soporta tamaños por bloque de hasta 1 MB y es de solo lectura.
- 7 Comúnmente confundido con loopback, loop-device es un pseudo-dispositivo que permite acceder a ficheros como un dispositivo de bloques. Se lo identifica como */dev/loop/* en LINUX.
- 8 Bajo la ruta: */home/usuario/*



Entre las ventajas que es posible encontrar en Snap una de ellas son las actualizaciones automáticas, volviéndose un factor importante para la seguridad y comodidad del usuario, donde también es posible configurar a este para que las mismas sean manuales.

Además de automáticas, las actualizaciones son transaccionales y atómicas, lo que significa que si una actualización está expuesta a un error, esta se descartará sin afectar al funcionamiento y ejecución del programa.

Una de las ventajas de este tipo de tecnología en relación con los gestores de paquetes convencionales es que estos últimos tienen inconvenientes al compartir bibliotecas dando lugar a roturas o regresión en los paquetes, y pueden existir problemas al instalar programas de distintas versiones. En Snap es posible realizar instalaciones en paralelo y tener diferentes o una misma versión de un paquete sin problema alguno.

Snap consta de cuatro categorías de versionado de software conocidas como *Channels*. Estas son:

- **stable**: es el canal más estable, empleado para producción y el asignado por defecto al realizar una instalación.
- **candidate**: el mismo posee un gran estabilidad dado que se han realizado las revisiones y controles de calidad necesarias para ser probadas por usuarios candidatos antes de ser subidos a stable.
- **beta**: es el primer nivel hacia las estabilización, puede que hayan pasado controles y revisiones pero aún existe el riesgo.
- **edge**: para desarrolladores. Usualmente carecen de controles y quedan pendientes revisiones, gran parte de las veces son generados automáticamente.

También existen subdivisiones de canales llamadas *Branches*, que son pequeñas secuencias de Snaps demandadas por desarrolladores para pruebas experimentales.

Dentro de la gran gama de virtudes que es posible encontrar en Snap una es el *confinamiento* de paquetes donde este es el grado de aislamiento que se posee ante sistema:

- **strict**: en este nivel de confinamiento los snaps se ejecutan en completo aislamiento y para acceder a archivos, red, procesos o cualquier otro recurso se requiere aprobar una solicitud por medio de una interfaz. Los paquetes son instalados por defecto con este confinamiento y se emplean características del Kernel de Linux como AppArmor<sup>9</sup>, seccomp<sup>10</sup> y namespaces<sup>11</sup> para prevenir accesos no autorizados a los recursos del sistema.

9 Módulo de seguridad mantenido por Canonical para Linux el cual proporciona *control de acceso obligatorio (MAC)* complementando al *control de acceso discrecional (DAC)* de Unix.

10 Es una facilidad en el Kernel de Linux que evita que un proceso realice determinadas llamadas al sistema.

11 Recursos globales son visibles para procesos con un mismo espacio de nombres e invisibles para aquellos con uno diferente.

- **classic:** permite el acceso a los recursos de la computadora. La publicación de un Classic Snap requiere aprobación manual y un argumento en la línea de comandos.
- **devmode:** no se pueden liberar en el canal Stable y no se actualizan automáticamente. El mismo es empleado por desarrolladores y permite el acceso total a los recursos del sistema, además produce una salida de depuración en la que identifica interfaces<sup>12</sup> no especificadas.

Otra característica latente en Snap es las capacidad de realizar Snapshots donde estas son una copia del usuario, sistema y configuración almacenada en un paquete llevada a cabo por *snapt*. Son generadas de forma automática cuando un snap será removido y retenidas por 31 días antes de ser eliminadas. Una snapshot contiene la siguiente información en un archivo *.zip* estando almacenada en el directorio<sup>13</sup> */var/lib/snapt/snapshots/*

- **meta.json:** se almacena el contenido del snap, su configuración y checksum.
- **archive.tgz:** contiene datos del sistema.
- **user/<username>.tgz:** contiene datos del usuario.

```

root@c05m4r: /var/lib/snapt/snapshots# pwd
/var/lib/snapt/snapshots
root@c05m4r: /var/lib/snapt/snapshots# ls -l
total 184188
-rw----- 1 root root    1156 mar 14 20:52 1_atom_
-rw----- 1 root root 188597418 mar 17 14:00 2_retro
-rw----- 1 root root    1151 mar 21 01:39 3_subli
root@c05m4r: /var/lib/snapt/snapshots# unzip 3_sublime

```

12 El desarrollador es el encargado de seleccionar el acceso a un recurso por medio de una interfaz.

13 En Debian y derivados.



# Instalación

✓ Para Debian:

(1) **\$ sudo apt update**

(2) **\$ sudo apt install snapd**

✓ Para Arch:

(1) **\$ sudo pacman -S snapd**

(2) **\$ sudo systemctl enable --now snapd.socket**

✓ Para Fedora:

(1) **\$ sudo dnf install snapd**

Una vez realizada la instalación de *snapd* se procederá instalando la tienda que posee interfaz gráfica con la siguiente línea:

**\$ sudo snap install snap-store**

# Snap Básico

✓ Instalar:

• **\$ sudo snap install <paquete>**

✓ Buscar:

• **\$ snap find <paquete>**

✓ Información:

• **\$ snap info <paquete>**

✓ Listar (instalado):

• **\$ snap list**

✓ Versión (snap):

• **\$ snap version**

✓ Actualizar (manual):

• **\$ sudo snap refresh <paquete>**

✓ Eliminar:

• **\$ sudo snap remove <paquete>**

✓ Ayuda:

• **\$ snap help --all**

• **\$ snap help <comando>**

# Snap Avanzado

- ✓ Instalación por canal:
  - **\$ sudo snap install --channel=<stable/candidate/beta/edge> <paquete>**
- ✓ Cambio de canal<sup>14</sup>:
  - **\$ sudo snap switch --channel=<stable/candidate/beta/edge> <paquete>**
  - **\$ sudo snap refresh --channel=<stable/candidate/beta/edge> <paquete>**
- ✓ Información detallada:
  - **\$ snap info --verbose <paquete>**
- ✓ Información de las conexiones<sup>15</sup>:
  - **\$ snap connections <paquete>**
- ✓ Información de las interfaces<sup>16</sup>:
  - **\$ snap interface <interfaz>**
- ✓ Conexión de interfaces manual<sup>17</sup>:
  - **\$ snap <connect/disconnect> <paquete>:<plug> <paquete>:<slot>**
- ✓ Forzar apertura de snap (paquete):
  - **\$ which <paquete>**
  - **\$ /snap/bin/<paquete>**
- ✓ Revertir actualización:
  - **\$ sudo snap revert <paquete>**
- ✓ Activar/Desactivar snap (paquete):
  - **\$ sudo snap <enable/disable> <paquete>**
- ✓ Listar servicios:
  - **\$ sudo snap services <paquete>**
- ✓ Registros:
  - **\$ snap logs <paquete>**
  - **\$ snap logs <servicio>**
- ✓ Reiniciar servicio:
  - **\$ sudo snap restart <paquete>**
  - **\$ sudo snap restart <servicio>**
- ✓ Iniciar/Detener servicio<sup>18</sup>:
  - **\$ sudo snap <start/stop> <servicio>**

14 **refresh** en lugar de **switch** fuerza la actualización del cambio de canal.

15 Figuran las interfaces empleadas por un paquetes.

16 Figuran los paquetes e información extra por interfaz.

17 Interfaces(Consumidor (*plug*) – Proveedor (*slot*)).

18 Para <activar/desactivar> el inicio automático de un servicio añadir el atributo **--enable** o **--disable** según corresponda antes que el servicio.

- ✓ Listar snapshots:
  - **\$ *snap saved***
- ✓ Crear snapshot<sup>19</sup>:
  - **\$ *sudo snap save <paquete>***
- ✓ Restaurar snapshot:
  - **\$ *sudo snap restore <ID>***
- ✓ Borrar snapshot:
  - **\$ *sudo snap forget <ID>***
- ✓ Desactivar snapshots automáticas:
  - **\$ *sudo snap set system snapshots.automatic.retention=no***
- ✓ Desactivar actualizaciones automáticas:
  - **\$ *sudo snap set system refresh.metered=hold***

19 Para realizar snapshots a todos los paquetes instalados invocar a ***sudo snap save***. Es posible establecer un ID manualmente con el atributo ***--id=<ID>***.

## Conclusión

Cómodo y seguro para el usuario que es un factor importante, es agradable y fluido, tienen la ventaja la relación con los gestores de paquetes convencionales.

Tiene una instalación sencilla y ligera con actualizaciones automáticas.

Los paquetes snap permiten a los desarrolladores traer versiones mucho más nuevas de KDE, GNOME, el navegador, etc.

Facilita el empaquetado de las aplicaciones y las dependencias.

Su desventaja es que es de inicio lento, y hay ciertas aplicaciones que no se pueden encontrar.

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