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# TBD

## ¿Cómo ejecutar juegos de Windows en Linux?

Una presentación sobre Proton y capas de compatibilidad

Muñoz Tamés María Ángel y Tafolla Rosales Esteban

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# Ideas:

# Paleta?

¿Qué son compatibility layers?

¿En qué se diferencian de una máquina virtual ? (o un emulador?)

Que es wine? (breve historia?)

DXVK

Que es Proton?

(breve historia?)

Comó funciona

Qué hacer si quieren usarlo

protonDB

Otras opciones

Otras compatibility layers

Juegos nativos de linux

Maquina virtual

Jugar desde la nube

Compatibilidad  
en general?



```
17 string sInput;  
18 int iLength, iN;  
19 double dblTemp;  
20 bool again = true;  
21  
22 while (again) {  
23     iN = -1;  
24     again = false;  
25     getline(cin, sInput);  
26     system("cls");  
27     stringstream(sInput) >> dblTemp;  
28     iLength = sInput.length();  
29     if (iLength < 4) {  
30         again = true;  
31         continue;  
32     } else if (sInput[iLength - 3] != '.') {  
33         again = true;  
34         continue;  
35     } while (++iN < iLength) {  
36         if (isdigit(sInput[iN])) {  
37             continue;  
38         } else if (iN == (iLength - 3)) {  
39             continue;  
40         }  
41     }  
42 }
```

¿Qué son  
compatibility  
layers?

# ¿Qué son?

Las capas de compatibilidad en software son interfaces que permiten que los archivos binarios de un sistema diferente se ejecuten en el sistema destino.



```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 18 18:18
drwxr-xr-x. 23 root root 4096 Sep 23 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
drwxr-xr-x. 11 root root 4096 Jul 11 18:18
drwxr-xr-x. 3 root root 4096 Mar 3 18:18
drwxr-xr-x. 3 root root 4096 Mar 3 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
drwxrwx--T. 2 root gdm 4096 Jul 2 18:18
drwxr-xr-x. 38 root root 4096 Mar 38 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
lrwxrwxrwx. 1 root root 11 Mar 1 18:18
drwxr-xr-x. 14 root root 4096 Sep 14 18:18
lrwxrwxrwx. 1 root root 10 Jul 1 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
drwxr-xr-x. 2 root root 4096 Jul 2 18:18
lrwxrwxrwx. 1 root root 6 Mar 1 18:18
drwxr-xr-x. 14 root root 4096 Mar 14 18:18
drwxrwxrwt. 4 root root 4096 Sep 4 18:18
drwxr-xr-x. 2 root root 4096 Mar 2 18:18
[root@localhost var]# yum search
Loaded plugins: langpacks, presto,
rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

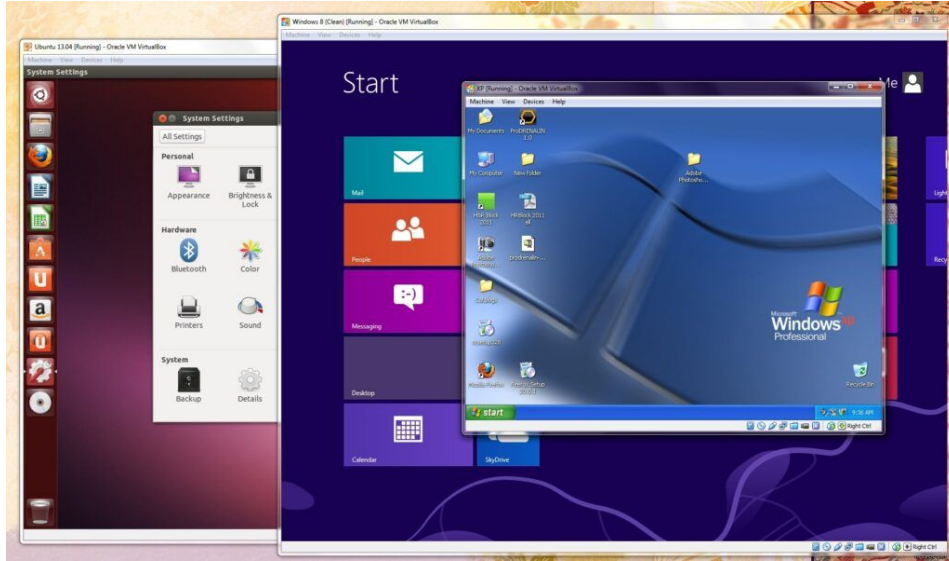
¿En qué se  
diferencian de una  
máquina virtual? (o  
un emulador?)

```
62 kB/s | 2.7 kB 00:00
| 206 kB 00:04
| 2.7 kB 00:00
| 5.9 kB 00:00
| 4.7 kB 00:00
62 kB/s | 2.6 MB 00:15 ETA
```

# Compatibility layer vs Maquina virtual

Las máquinas virtuales emulan y crean una copia del entorno el cual se desea virtualizar para así poder ejecutar el software en el mismo

Las compatibility Layers ejecutan programas hechos para un sistema operativo en otro





```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received, 0% packet loss, time 0.000ms
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 14 12:12 .
drwxr-xr-x. 23 root root 4096 Sep 11 12:12 ..
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 backups
drwxr-xr-x. 11 root root 4096 Jul 14 12:12 boot
drwxr-xr-x.  3 root root 4096 Mar 14 12:12 cache
drwxr-xr-x.  3 root root 4096 Mar 14 12:12 crash
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports
drwxrwx--T.  2 root gdm  4096 Jul 14 12:12 crashreports.0
drwxr-xr-x. 38 root root 4096 Mar 14 12:12 crashreports.1
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports.2
lrwxrwxrwx.  1 root root    11 Mar 14 12:12 crashreports.3 -> /var/crashreports.4
drwxr-xr-x. 14 root root 4096 Sep 11 12:12 crashreports.5
lrwxrwxrwx.  1 root root    10 Jul 14 12:12 crashreports.6 -> /var/crashreports.7
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports.8
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports.9
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports.10
drwxr-xr-x.  2 root root 4096 Jul 14 12:12 crashreports.11
lrwxrwxrwx.  1 root root     6 Mar 14 12:12 crashreports.12 -> /var/crashreports.13
drwxr-xr-x. 14 root root 4096 Mar 14 12:12 crashreports.14
drwxrwxrwt.  4 root root 4096 Sep 11 12:12 crashreports.15
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports.16
[root@localhost var]# yum search
Loaded plugins: langpacks, presto, refresh
rpmfusion-free-updates                               | 2.7 kB      00:00
rpmfusion-free-updates/primary_db                    | 206 kB      00:04
rpmfusion-nonfree-updates                             | 2.7 kB      00:00
updates/metalink                                     | 5.9 kB      00:00
updates                                                | 4.7 kB      00:00
Updates/primary_db                                    | 62 kB/s    2.6 MB      00:15 ETA
```

¿Qué es wine?



# Wine

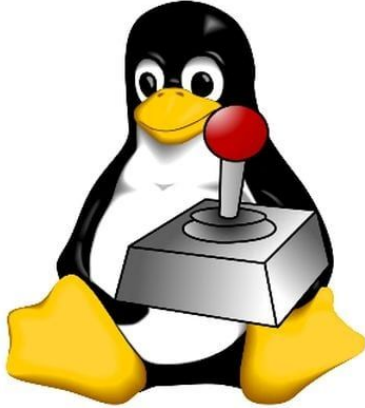
**Es una reimplementación de la interfaz de programación de aplicaciones de Win16 y Win32 para sistemas operativos basados en Unix. Permite la ejecución de programas diseñados para MS-DOS, y las versiones de Microsoft Windows 3.11, 95, 98, Me, NT, 2000, XP, Vista, 7, 8 y 10.**



```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 18 12:12 .
drwxr-xr-x. 23 root root 4096 Sep 16 12:12 ..
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 backups
drwxr-xr-x. 11 root root 4096 Jul 18 12:12 boot
drwxr-xr-x.  3 root root 4096 Mar 18 12:12 cache
drwxr-xr-x.  3 root root 4096 Mar 18 12:12 crash
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 crashreports
drwxrwx--T.  2 root gdm  4096 Jul 18 12:12 crashreports.0
drwxr-xr-x. 38 root root 4096 Mar 18 12:12 crashreports.1
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 crashreports.2
lrwxrwxrwx.  1 root root    11 Mar 18 12:12 crashreports.3 -> /var/crashreports.4
drwxr-xr-x. 14 root root 4096 Sep 16 12:12 crashreports.5
lrwxrwxrwx.  1 root root    10 Jul 18 12:12 crashreports.6 -> /var/crashreports.7
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 crashreports.8
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 crashreports.9
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 crashreports.10
drwxr-xr-x.  2 root root 4096 Jul 18 12:12 crashreports.11
lrwxrwxrwx.  1 root root     6 Mar 18 12:12 crashreports.12 -> /var/crashreports.13
drwxr-xr-x. 14 root root 4096 Mar 18 12:12 crashreports.14
drwxrwxrwt.  4 root root 4096 Sep 16 12:12 crashreports.15
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 crashreports.16
[root@localhost var]# yum search
Loaded plugins: langpacks, presto,
rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

# ¿Qué es DXVK?

	2.7 kB	00:00
	206 kB	00:04
	2.7 kB	00:00
	5.9 kB	00:00
	4.7 kB	00:00
62 kB/s	2.6 MB	00:15 ETA



Una de las principales razones por las cuales no es posible jugar dentro de linux es que la gran mayoría de los juegos de computadora están programados usando la API de DirectX.



Microsoft DirectX\* (DX) es un conjunto de interfaces de programación de aplicaciones (API) desarrolladas por Microsoft para el manejo de tareas relacionadas con los multimedia, especialmente la programación y el video juegos, en las plataformas de Microsoft.

**DX es propiedad de y es sostenido por Microsoft.**



Vulkan es una API multiplataforma creada para dar vida a programas 3D, así como videojuegos y diversas aplicaciones. Al igual que DirectX, Vulkan proporciona las herramientas necesarias para que los desarrolladores programen los videojuegos y aplicaciones 3D.



doitsujin/dxvk

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About

Vulkan-based implementation of D3D9, D3D10 and D3D11 for Linux / Wine

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No packages published

Contributors 115

Bliss01 and K0blain [aut] Set Black Mesa custom/Vendorid to Nvidia	✓ wtrc124 yesterday	5,157 commits
.github	[meta] Add CI for native builds in Steam Runtime Sniper	last month
include	[meta] Update Vulkan headers to 1.3.231	24 days ago
src	[aut] Set Black Mesa custom/Vendorid to Nvidia	yesterday
gitmodules	[meta] Use SPIRV-Headers repository as a submodule	3 months ago
LICENSE	[meta] Delete 2020	2 years ago
README.md	[meta] Explicitly use meson setup command	7 days ago
RELEASE	[meta] Release 2.0	7 days ago
VP_DXVK_requirements.json	[meta] Factorize history and contributors sections using schema 0.8.1	last month
build-win32.bat	Don't hardcode windres location	17 months ago
build-win64.bat	Don't hardcode windres location	17 months ago
dxvk.conf	[dxvk] Add a config option for D3D4 -> D3D2	2 months ago
meson.build	[meta] Release 2.0	7 days ago
meson_options.txt	[test] Remove D3D9 tests	3 months ago
package-native.sh	[meta] Explicitly use meson setup command	7 days ago
package-release.sh	[meta] Explicitly use meson setup command	7 days ago

DXVK es una librería de wine diseñada para traducir todas las llamadas realizadas a la API de DX a vulkan (base de proton).

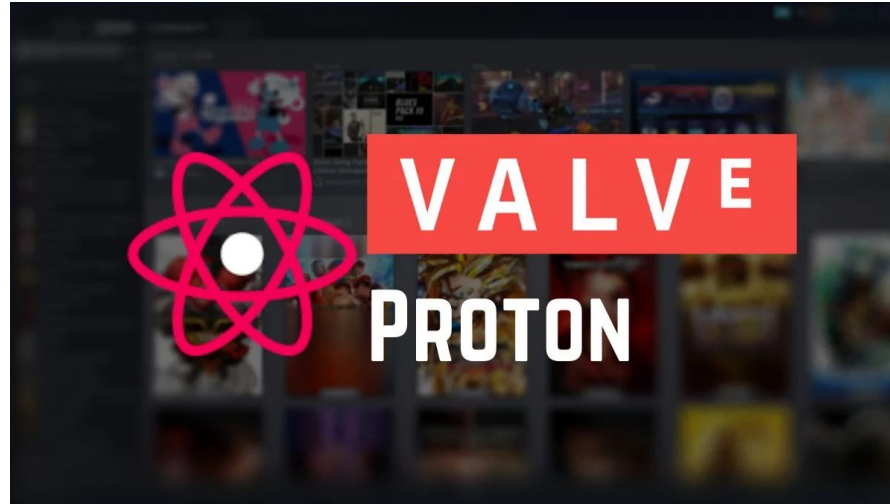
<https://github.com/doitsujin/dxvk/releases>

```
string sInput;  
int iLength, iN;  
double dblTemp;  
bool again = true;
```

```
while (again) {  
    iN = -1;  
    again = false;  
    getline(cin, sInput);  
    system("cls");  
    stringstream(sInput) >> dblTemp;  
    iLength = sInput.length();  
    if (iLength < 4) {  
        again = true;  
        continue;  
    } else if (sInput[iLength - 3] != '.') {  
        again = true;  
        continue;  
    } while (++iN < iLength) {  
        if (isdigit(sInput[iN])) {  
            continue;  
        } else if (iN == (iLength - 3)) {  
            continue;  
        }  
    }  
}
```

# ¿Qué es Proton?

Es una colección de software y bibliotecas combinadas con un versión parcheada de Wine para mejorar el rendimiento y la compatibilidad con los juegos de Windows.



```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received, 0% packet loss, time 0.000ms
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 14 12:12 .
drwxr-xr-x. 23 root root 4096 Sep 11 12:12 ..
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 acronyms
drwxr-xr-x. 11 root root 4096 Jul 14 12:12 annotations
drwxr-xr-x.  3 root root 4096 Mar 14 12:12 applications
drwxr-xr-x.  3 root root 4096 Mar 14 12:12 architecture
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 audio
drwxrwx--T.  2 root gdm  4096 Jul 14 12:12 boot
drwxr-xr-x. 38 root root 4096 Mar 14 12:12 cache
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crash
lrwxrwxrwx.  1 root root   11 Mar 14 12:12 crashreports -> /var/crash
drwxr-xr-x. 14 root root 4096 Sep 11 12:12 cron
lrwxrwxrwx.  1 root root   10 Jul 14 12:12 crashreports -> /var/crash
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports
drwxr-xr-x.  2 root root 4096 Jul 14 12:12 crashreports
lrwxrwxrwx.  1 root root    6 Mar 14 12:12 crashreports -> /var/crash
drwxr-xr-x. 14 root root 4096 Mar 14 12:12 crashreports
drwxrwxrwt.  4 root root 4096 Sep 11 12:12 crashreports
drwxr-xr-x.  2 root root 4096 Mar 14 12:12 crashreports
[root@localhost var]# yum search
Loaded plugins: langpacks, presto, rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

# Un poco de historia...

	2.7 kB	00:00
	206 kB	00:04
	2.7 kB	00:00
	5.9 kB	00:00
	4.7 kB	00:00
62 kB/s	2.6 MB	00:15 ETA





Proton es una nueva herramienta publicada por Valve Software que ha sido integrada con Steam Play para hacer que jugando juegos de Windows en Linux sea tan simple como pulsar el botón de Jugar dentro de Steam.

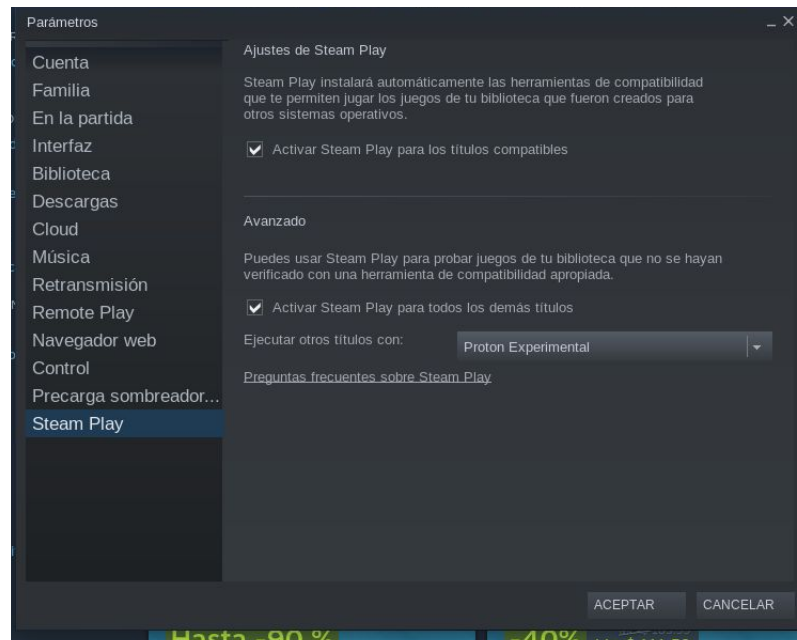
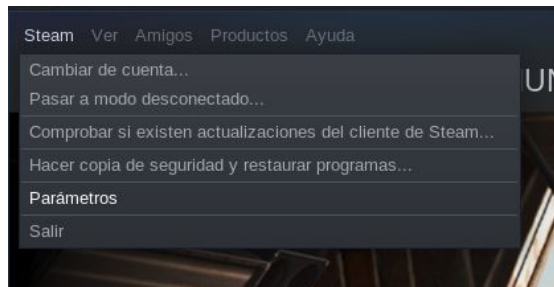
Proton abarca otras herramientas populares como Wine y DXVK, que un jugador tendría que instalar y mantener por el mismo.

```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 18 12:12 .
drwxr-xr-x. 23 root root 4096 Sep 18 12:12 ..
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x. 11 root root 4096 Jul 18 12:12 Ju
drwxr-xr-x.  3 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x.  3 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
drwxrwx--T.  2 root gdm  4096 Jul 18 12:12 Ju
drwxr-xr-x. 38 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
lrwxrwxrwx.  1 root root    11 Mar 18 12:12 Ma
drwxr-xr-x. 14 root root 4096 Sep 18 12:12 Sep
lrwxrwxrwx.  1 root root    10 Jul 18 12:12 Ju
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
drwxr-xr-x.  2 root root 4096 Jul 18 12:12 Ju
lrwxrwxrwx.  1 root root     6 Mar 18 12:12 Ma
drwxr-xr-x. 14 root root 4096 Mar 18 12:12 Ma
drwxrwxrwt.  4 root root 4096 Sep 18 12:12 Sep
drwxr-xr-x.  2 root root 4096 Mar 18 12:12 Ma
[root@localhost var]# yum search
Loaded plugins: langpacks, presto,
rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

¿Qué hacer si  
quiero usarlo?

	2.7 kB	00:00
	206 kB	00:04
	2.7 kB	00:00
	5.9 kB	00:00
	4.7 kB	00:00
62 kB/s	2.6 MB	00:15 ETA

Proton está diseñado para integrarse en el cliente Steam como "Steam Play".



```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
```

```
--- text.pmtpa.wikimedia.org ping:
1 packets transmitted, 1 received, 0% packet loss, time 0.000ms
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528ms
[root@localhost ~]# pwd
/root
```

```
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
```

```
drwxr-xr-x. 18 root root 4096 Jul 14 12:00 .
drwxr-xr-x. 23 root root 4096 Sep 16 12:00 ..
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 acronyms
drwxr-xr-x. 11 root root 4096 Jul 14 12:00 annotations
drwxr-xr-x.  3 root root 4096 Mar 14 12:00 applications
drwxr-xr-x.  3 root root 4096 Mar 14 12:00 architecture
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 audio
drwxrwx--T.  2 root gdm  4096 Jul 14 12:00 cache
drwxr-xr-x. 38 root root 4096 Mar 14 12:00 categories
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 common
lrwxrwxrwx.  1 root root    11 Mar 14 12:00 common-locale
drwxr-xr-x. 14 root root 4096 Sep 16 12:00 common-locale-en
lrwxrwxrwx.  1 root root    10 Jul 14 12:00 common-locale-en-us
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 common-locale-es
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 common-locale-es-es
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 common-locale-es-es-es
drwxr-xr-x.  2 root root 4096 Jul 14 12:00 common-locale-es-es-es-es
lrwxrwxrwx.  1 root root     6 Mar 14 12:00 common-locale-es-es-es-es-es
drwxr-xr-x. 14 root root 4096 Mar 14 12:00 common-locale-es-es-es-es-es-es
drwxrwxrwt.  4 root root 4096 Sep 16 12:00 common-locale-es-es-es-es-es-es-es
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 common-locale-es-es-es-es-es-es-es-es
```

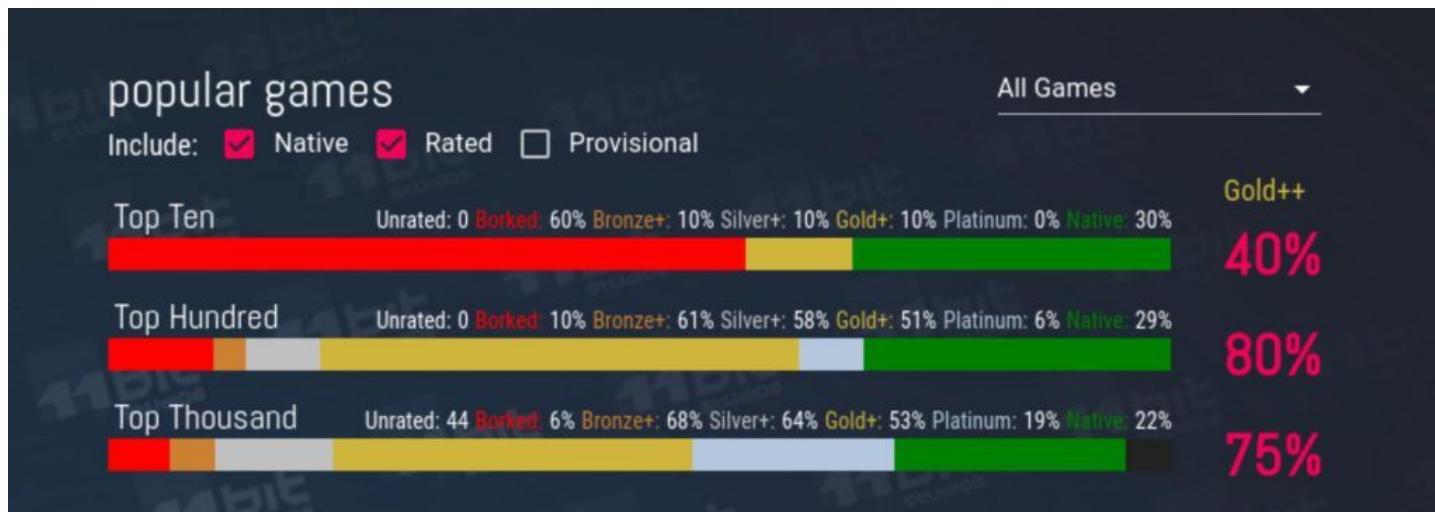
```
[root@localhost var]# yum search
Loaded plugins: langpacks, presto, rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

¿ProtonDB?

	2.7 kB	00:00
	206 kB	00:04
	2.7 kB	00:00
	5.9 kB	00:00
	4.7 kB	00:00
62 kB/s	2.6 MB	00:15 ETA



ProtonDB es un sitio web comunitario que recopila y muestra datos de que describen la compatibilidad de un título determinado con Proton, en una escala de calificación de "Broked" a "Platinum"



```
17 string sInput;  
18 int iLength, iN;  
19 double dblTemp;  
20 bool again = true;
```

```
21 while (again) {  
22     iN = -1;  
23     again = false;  
24     getline(cin, sInput);  
25     system("cls");  
26     stringstream(sInput) >> dblTemp;  
27     iLength = sInput.length();  
28     if (iLength < 4) {  
29         again = true;  
30         continue;  
31     } else if (sInput[iLength - 3] != '.') {  
32         again = true;  
33         continue;  
34     } while (++iN < iLength) {  
35         if (isdigit(sInput[iN])) {  
36             continue;  
37         } else if (iN == (iLength - 3)) {  
38             continue;  
39         }
```

# Otras opciones

```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
```

```
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
```

```
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
```

```
total 72
drwxr-xr-x. 18 root root 4096 Jul 14 12:00 .
drwxr-xr-x. 23 root root 4096 Sep 11 12:00 ..
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x. 11 root root 4096 Jul 14 12:00 Ju
drwxr-xr-x.  3 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x.  3 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
drwxrwx--T.  2 root gdm  4096 Jul 14 12:00 Ju
drwxr-xr-x. 38 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
lrwxrwxrwx.  1 root root    11 Mar 14 12:00 Ma
drwxr-xr-x. 14 root root 4096 Sep 11 12:00 Sep
lrwxrwxrwx.  1 root root    10 Jul 14 12:00 Ju
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
drwxr-xr-x.  2 root root 4096 Jul 14 12:00 Ju
lrwxrwxrwx.  1 root root     6 Mar 14 12:00 Ma
drwxr-xr-x. 14 root root 4096 Mar 14 12:00 Ma
drwxrwxrwt.  4 root root 4096 Sep 11 12:00 Sep
drwxr-xr-x.  2 root root 4096 Mar 14 12:00 Ma
```

```
[root@localhost var]# yum search
Loaded plugins: langpacks, presto,
rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

# Lutris

	2.7 kB	00:00
	206 kB	00:04
	2.7 kB	00:00
	5.9 kB	00:00
	4.7 kB	00:00
62 kB/s	2.6 MB	00:15 ETA

Lutris es desarrollado y mantenido por Mathieu Comandon y la comunidad. Lutris tiene disponible la instalación con un clic para centenares de juegos en su sitio web, y también se integra con el sitio web de Steam.



```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jun 10 12:11 .
drwxr-xr-x. 23 root root 4096 Sep 11 12:11 ..
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 ac
drwxr-xr-x. 11 root root 4096 Jun 10 12:11 an
drwxr-xr-x.  3 root root 4096 Mar 10 12:11 arch
drwxr-xr-x.  3 root root 4096 Mar 10 12:11 audio
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 boot
drwxrwx--T.  2 root gdm  4096 Jun 10 12:11 cache
drwxr-xr-x. 38 root root 4096 Mar 10 12:11 crash
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 cpio
lrwxrwxrwx.  1 root root    11 Mar 10 12:11 crash
drwxr-xr-x. 14 root root 4096 Sep 11 12:11 crash
lrwxrwxrwx.  1 root root    10 Jun 10 12:11 crash
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 crash
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 crash
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 crash
drwxr-xr-x.  2 root root 4096 Jun 10 12:11 crash
lrwxrwxrwx.  1 root root     6 Mar 10 12:11 crash
drwxr-xr-x. 14 root root 4096 Mar 10 12:11 crash
drwxrwxrwt.  4 root root 4096 Sep 11 12:11 crash
drwxr-xr-x.  2 root root 4096 Mar 10 12:11 crash
[root@localhost var]# yum search
Loaded plugins: langpacks, presto,
rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

# Juegos nativos de Linux

	2.7 kB	00:00
	206 kB	00:04
	2.7 kB	00:00
	5.9 kB	00:00
	4.7 kB	00:00
62 kB/s	2.6 MB	00:15 ETA



Existen videojuegos que pueden ejecutarse dentro de linux sin la necesidad de hacer uso de un compatibility layers



- Supertuxkart
- Nexuiz
- Warzone 2100



```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2)
^C
--- text.pmtpa.wikimedia.org ping
1 packets transmitted, 1 received
rtt min/avg/max/mdev = 540.528/540.528/540.528/540.528
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 18 18:18
drwxr-xr-x. 23 root root 4096 Sep 23 18:23
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
drwxr-xr-x. 11 root root 4096 Jul 11 18:11
drwxr-xr-x. 3 root root 4096 Mar 3 18:03
drwxr-xr-x. 3 root root 4096 Mar 3 18:03
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
drwxrwx--T. 2 root gdm 4096 Jul 2 18:02
drwxr-xr-x. 38 root root 4096 Mar 38 18:38
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
lrwxrwxrwx. 1 root root 11 Mar 1 18:01
drwxr-xr-x. 14 root root 4096 Sep 14 18:14
lrwxrwxrwx. 1 root root 10 Jul 1 18:01
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
drwxr-xr-x. 2 root root 4096 Jul 2 18:02
lrwxrwxrwx. 1 root root 6 Mar 1 18:01
drwxr-xr-x. 14 root root 4096 Mar 14 18:14
drwxrwxrwt. 4 root root 4096 Sep 4 18:04
drwxr-xr-x. 2 root root 4096 Mar 2 18:02
[root@localhost var]# yum search
Loaded plugins: langpacks, presto,
rpmfusion-free-updates
rpmfusion-free-updates/primary_db
rpmfusion-nonfree-updates
updates/metalink
updates
Updates/primary_db
```

# Jugar desde la nube

2.7 kB	00:00
206 kB	00:04
2.7 kB	00:00
5.9 kB	00:00
4.7 kB	00:00
62 kB/s   2.6 MB	00:15 ETA

Los servicios de juegos en la nube le permiten jugar en cualquier dispositivo que se conecte a Internet y venga con una pantalla. Su hardware de gama baja no afectará al rendimiento del videojuego

- Google Stadia
- NVIDIA GeForce Now
- Shadow

