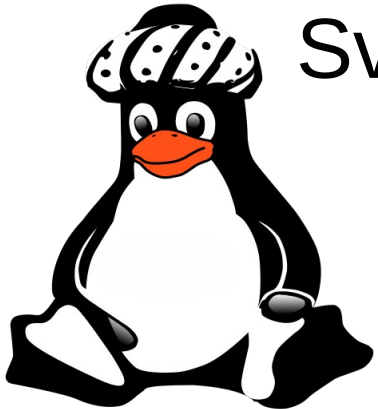


# Dvadeset godina otvorenog koda – GNU/Linux, Mozilla i prijatelji jučer, danas i sutra

dr. sc. Vedran Miletić, Odjel za informatiku  
Sveučilišta u Rijeci, [vedran.miletic.net](http://vedran.miletic.net)



HULK-Ri/InfUniRi OpenClass  
Sveučilišni kampus Trsat, **6.12.18.**



# Meta OpenClass



# OpenClass

- Zajednički projekt
  - Riječke podružnice Hrvatske udruge Linux korisnika
  - Odjela za informatiku Sveučilišta u Rijeci (ResearchClass, BusinessClass, StudentClass)
- Cilj: održavanje redovitih seminara o slobodnom softveru otvorenog koda



# OpenClass jučer i danas

- 2009. započeo, 2010. dobio ime
- Predavanja ili događaji **svakih dva tjedna**
- Teme: Fedora, Ubuntu, OpenStreetMap, NumPy, InstallFestovi, obilježavanja Dana slobode dokumenata 2015, 2013, 2012, 2011, LibreOffice 3.3 release party, ...



# Vedran Miletić

- Diplomirao matematiku i informatiku (UniRi)
- Doktorirao računarstvo, računalne mreže (FER)
- Postdoc računalna kemija (Heidelberg, DE)
- Interesi: superračunala, grafički procesori, računalne simulacije, slobodni softver otvorenog koda



# Snimanje predavanja

- „Best effort” snimanje i objava
- Ranije snimke
  - Savršena oluja (2014.)
  - Ratovi web preglednika (2015.)
  - Dan slobode dokumenata 2015.



Kraj meta OpenClass



Richard M. Stallman, 1983.





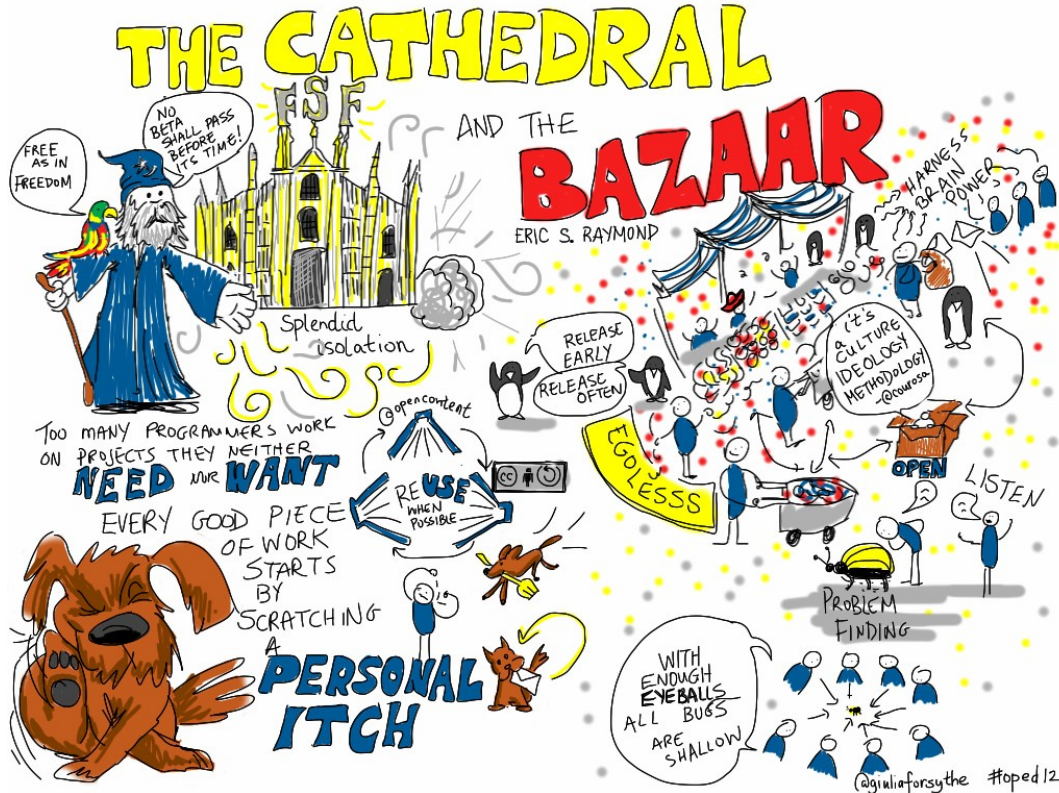
# Linus Torvalds, 1991.



```
Ending NFS recovery on filesystem: dm-0 (dev: dm-0)
kjournald starting. Commit interval 5 seconds
EXT3 FS on hda3, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
hdq: dma_timer_expiry: dma status == 0x61
sh-2.05b# Unable to handle kernel NULL pointer dereference at virtual address 00000038
printing eip:
*pde = 00000000
Oops: 0000 [!1]
PREEMPT
Modules linked in: xfs dm_mod sd_mod sata_sil libata scsi_mod uhci_hcd usbcore
CPU: 0
EIP: 0060:[c02569e6] Not tainted ULI
EFLAGS: 00010002 (2.6.9)
EIP is at ide_dma_timeout_retry+0x56/0xe0
eax: c12716e0 ebx: 00000000 ecx: 00000005 edx: 0000101a
esi: c04127a4 edi: 00000000 ebp: c025db00 esp: c03d5ec0
ds: 007b es: 007b ss: 0068
Process swapper (pid: 0, threadinfo-c03d4000 task-c0350a80)
Stack: c0412850 c032d6cf 00000051 c0412850 c12716e0 c03d4000 c0256ad9 c0412850
ffffff 00000000 c04127a4 ffffffff 00000292 c12716e0 c0256970 c03d4000
c03d5f18 c01256ec c12716e0 c03d4000 c0114a17 c03d4000 c03d5f18 c03d5f18
Call Trace:
[c0256ad9] ide_timer_expiry+0x169/0x230
[c0256970] ide_timer_expiry+0x0/0x230
[c01256ec] run_timer_softirq+0xcc/0x1b0
[c0114a17] smp_local_timer_interrupt+0x17/0x70
[c0121585] __do_softirq+0x85/0x90
[c01215b7] do_softirq+0x27/0x30
[c0108066] do_IRQ+0x10c/0x140
[c0103030] default_idle+0x0/0x40
[c0105c38] common_interrupt+0x18/0x20
[c0103030] default_idle+0x0/0x40
[c020e2aa] acpi_processor_idle+0x13a/0x1c7
[c0103030] default_idle+0x0/0x40
[c0103030] default_idle+0x0/0x40
[c01030f3] cpu_idle+0x43/0x60
[c03d67e4] start_kernel+0x154/0x170
[c03d63b0] unknown_hootoption+0x0/0x1a0
Code: 96 ac 04 00 00 fe 83 8f 00 00 00 c6 83 90 00 00 01 89 1c 24 ff 96 94 04 00 00 8b 43 70 8b 40 08 8b 58 20 c7 40 20 00 00 00
00 (b) 4b 38 e7 43 4c 00 00 00 00 8b 01 8b 51 04 89 43 0c 89 53 10
()kernel panic - not syncing: Fatal exception in interrupt
```



# Eric S. Raymond, 1997.





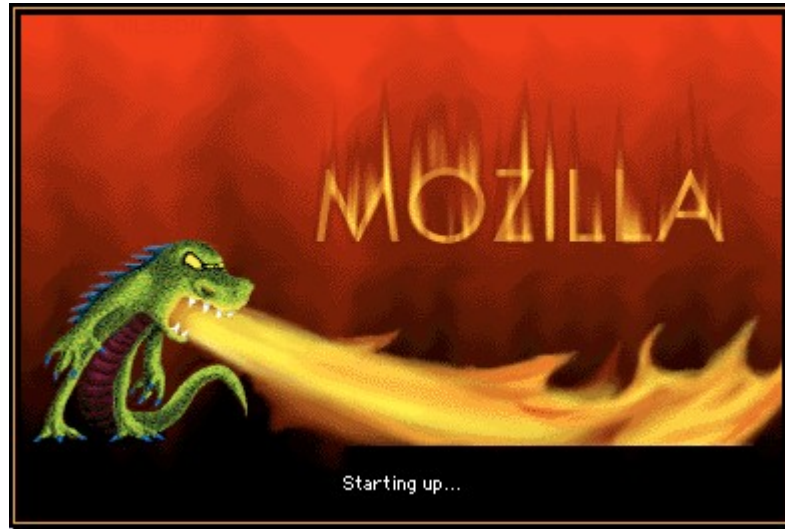
# Naziv open source



- Netscape najavljuje da će dati Communicator besplatno svima na korištenje i da će i njegov kod biti slobodno dostupan, siječanj 1998.
- Palo Alto, Kalifornija, 3. veljače 1998.
  - Free software (Stallmanov filozofski i politički naziv)  
=> open source (pragmatičan i poslovni naziv)
  - Christine Peterson; Eric Raymond i Michael Tiemann, Open Source Initiative (OSI)



# Mozilla, 31. ožujka 1998.



# Halloween documents, 1998.

- Povjerljivi Microsoftovi memorandumi o slobodnom softveru otvorenog koda
  - Open Source Software: A (New?) Development Methodology
  - Linux OS Competitive Analysis: The Next Java VM?
  - Untitled statement

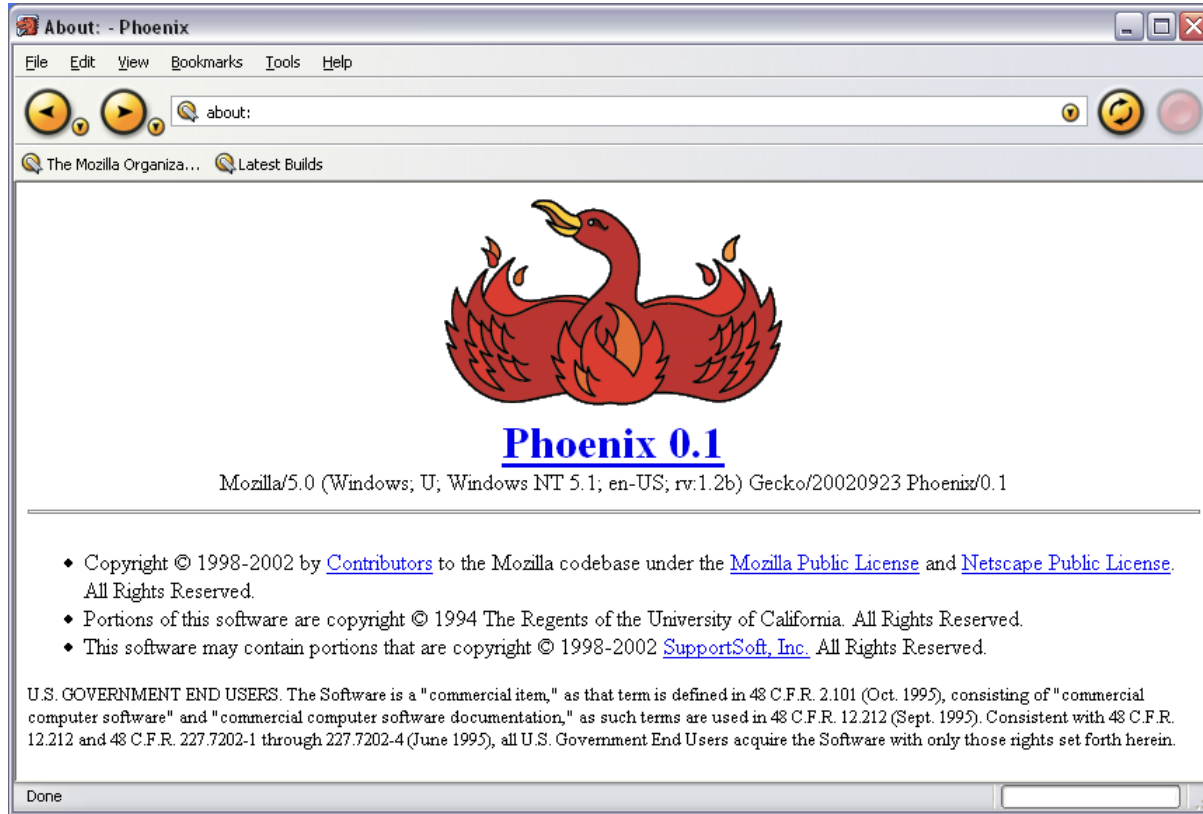


# Eric S. Raymond odgovara

- When Software Things Were Rotten, 1998.
- The FUD Begins, 1999.
- The Fatal Anniversary, 1999.
- Slična razmjena internih dokumenata i odgovora u vremenu 2002 – 2004.



# Firefox

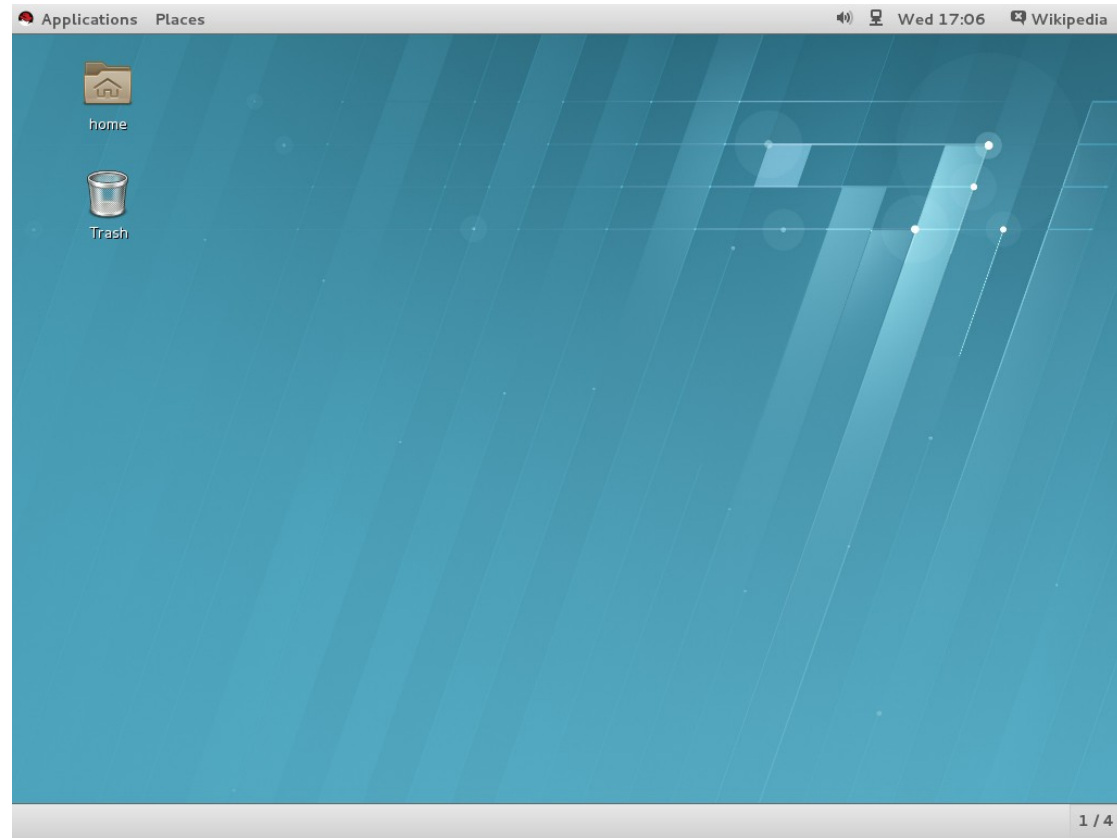


# OpenOffice/LibreOffice

- Srpanj 2000. najavljen, listopad 2000. izbačen
- „To create, as a **community**, the leading **international** office suite that will **run on all major platforms** and provide access to all functionality and data through **open**-component based APIs and an **XML**-based file format.”



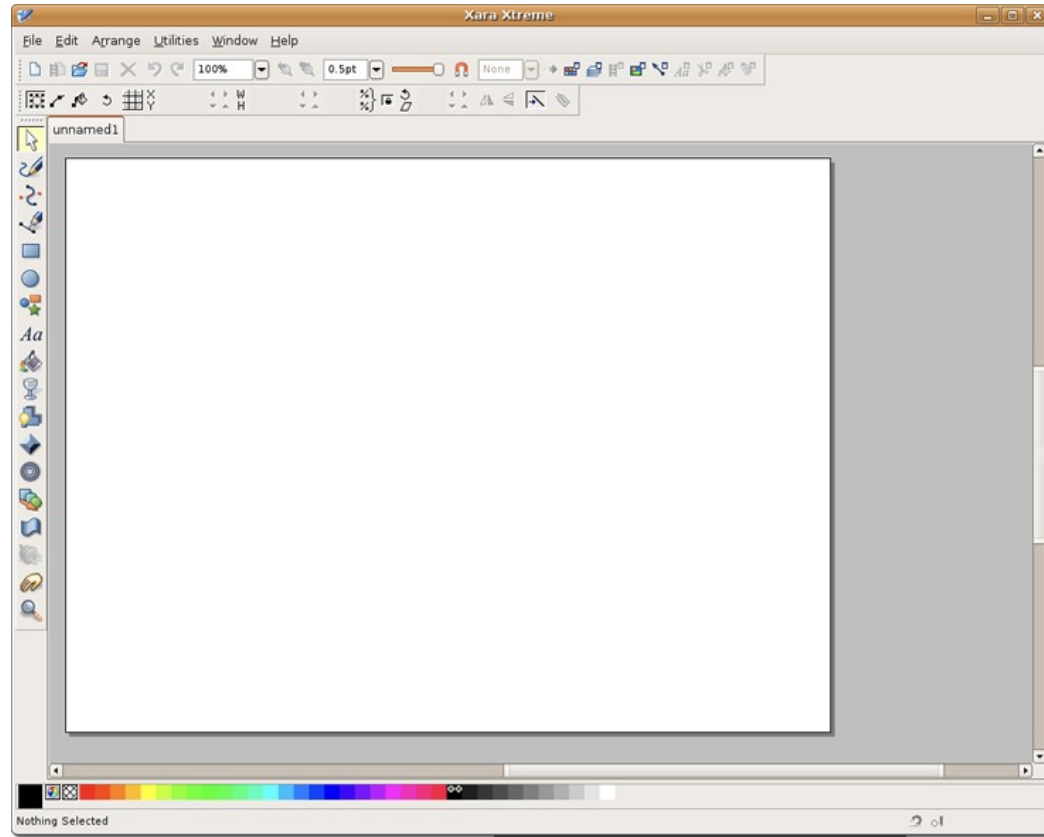
# Red Hat Enterprise Linux, 2002.



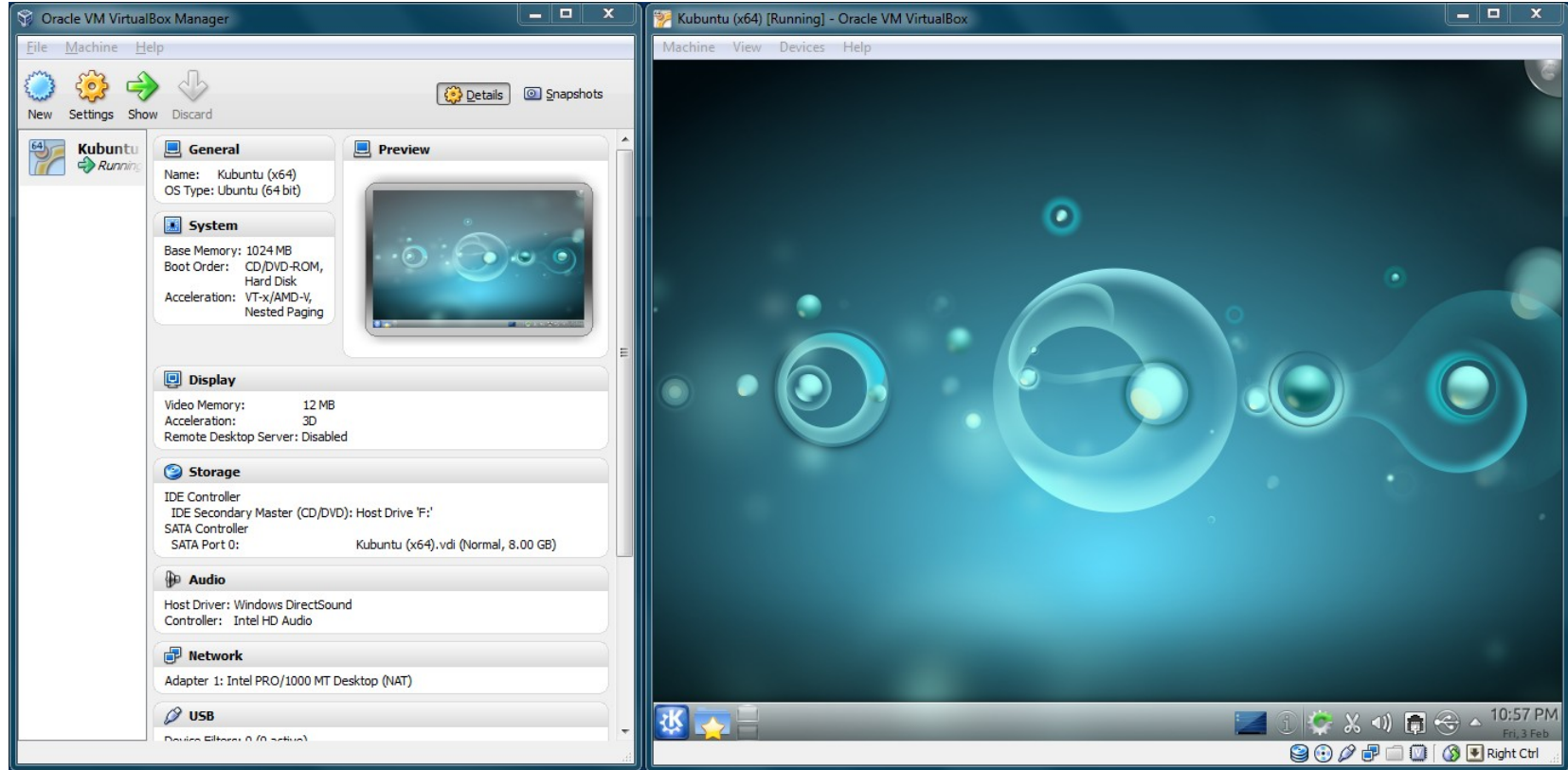
# Sun OpenSolaris, 2005.



# Xara Xtreme, 2006.



# InnoTek VirtualBox, 2007.



# Jesmo li pobijedili?



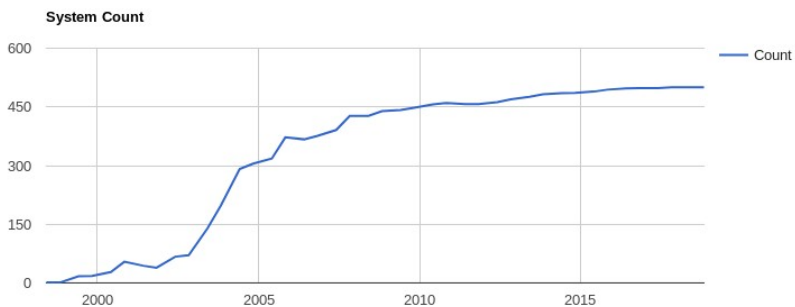
# Top lista 500 najjačih superračunala



HOME NEWS ▾ LISTS ▾ STATISTICS ▾ RESOURCES ▾ ABOUT ▾ MEDIA KIT GREEN500

Home / Lists / Statistics / Operating system Family / Linux

## OPERATING SYSTEM FAMILY / LINUX



List	Count	System Share (%)	Rmax (GFlops)	Rpeak (GFlops)	Cores
stu 2018	500	100	1,414,955,582	2,213,309,357	59,086,318
lip 2018	500	100	1,210,914,864	1,921,664,802	58,055,634

TOP500 LIST

25 YEARS ANNIVERSARY

NEWSLETTER SIGN UP

intel XEON PLATINUM SIMPLIFY AI AND HPC CONVERGENCE One HPC platform

Tweets by @top500supercomp



## DATA CENTER EXPLORER

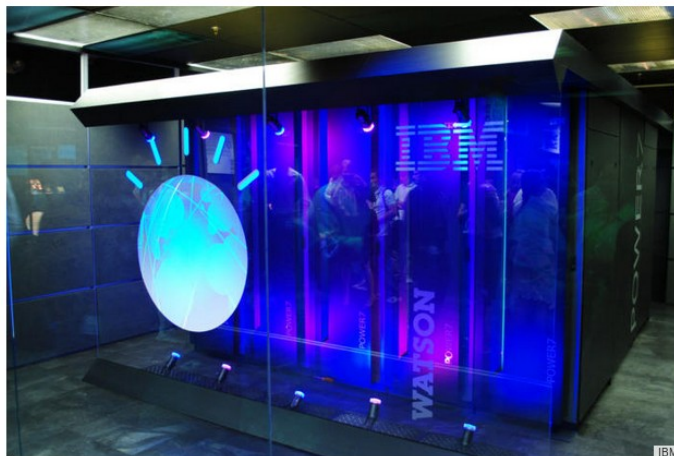
By Andy Patrizio, Network World | NOV 27, 2017 5:29 AM PT

### About

Andy Patrizio is a freelance technology writer based in Orange County, California. He's written for a variety of publications, ranging from Tom's Guide to Wired to Dr. Dobbs Journal.

# How did Linux come to dominate supercomputing?

All 500 machines on the TOP500 supercomputer list run Linux. Here's how the little OS that could, did.



### RELATED

Unix turns 40: The past, present and future of the OS

Unix turns 40: The past, present and future of a revolutionary OS

In their own words: Unix pioneers remember the good times



#### VIDEO

Stress test: Cisco Nexus 9516 data center core switch

# Budućnost Top 500?

- Student Cluster Competition na SC18: „Of the 15 teams participating, 11 of them are running their clusters on **CentOS**. There are 2 running **Ubuntu**, one running **Debian**, and one running **Fedora**.”
- **15 of them are running Linux**





# Steam



# Steam

STEAM -

Datei Anzeige Spiele Hilfe

Store Community **Meine Spiele** Meine Medien Tools

Spiele Status ↑ Besucherpässe Update Metascore Entwickler

- MEINE FAVORITEN

- Counter-Strike: Source 100 % - Fertig [News](#) **88** [Valve](#)
- Natural Selection 100 % - Fremdmodifikation [Unknown Worlds](#)

- INSTALLIERT

- Deus Ex: Game of the Year Edition 100 % - Fertig **90** [Eidos](#)
- Geometry Wars 100 % - Fertig [News](#) **76** [Bizarre Creations](#)
- Half-Life 100 % - Fertig [News](#) **96** [Valve](#)
- Half-Life 2: Deathmatch 100 % - Fertig [News](#) [Valve](#)
- Peggle Deluxe Demo 100 % - Fertig **86** [PopCap](#)
- The Longest Journey 100 % - Fertig [News](#) **91** [Funcom](#)
- Fortress Forever 100 % - Fremdmodifikation [Fortress Forever Team](#)
- MINERVA: Metastasis 100 % - Fremdmodifikation [Adam Foster](#)
- The Ship 100 % - Fertig [News](#) **76** [Outerlight](#)
- Half-Life 2 Update angehalten [News](#) **96** [Valve](#)
- Opposing Force Update angehalten [News](#) [Gearbox](#)
- Psychonauts Update angehalten [News](#) **87** [Double Fine](#)


+ NICHT INSTALLIERT

Steam-fremdes Spiel hinzufügen Ein Produkt bei Steam aktivieren [Eigenschaften](#) [Starten](#)

News **NEW** Freunde Server Einstellungen Support

# GamingOnLinux, 2010.

You can sign up to get a daily email of our articles, see [the Mailing List page!](#) ✕

Support us on [Patreon](#) to keep GamingOnLinux alive. This ensures we have no timed articles and no paywalls. Just good, fresh content! Alternatively, you  can donate through [Paypal](#), [Flattr](#) and [Liberapay](#)!

## Category: Editorial

Pick categories (CTRL+click for multiple):

- DRM
- DRM Free
- Dungeon Crawler
- Early Access
- Editorial**

- Match any  
 Match all tags



## The Steam for Linux limited beta was six years ago tomorrow, where's the cake?

[liamdawe](#), 27 days ago 26

Six years ago tomorrow (yes really!) Valve announced the Steam for Linux beta for a limited amount of interested gamers.

## Sales

Bundles: 3

Games: 436

[Visit sales page](#)

## Livestreams & Videos

Community Livestreams

Tac Tics: „Crookz - The Big Heist“

Date: 00 days 21:03:09

[See more!](#)

[View all scheduled streams](#)

## Popular this week

[Artifact](#) is an exciting and addicting card game from Valve, out now

# Steam for Linux, 2012.

The screenshot shows the Steam website interface. At the top, there is a navigation bar with the Steam logo, the word "STEAM", and links for "STORE", "COMMUNITY", "ABOUT", and "SUPPORT". On the right side of the top bar, there is a green "Install Steam" button, and links for "login" and "language". Below the navigation bar is a secondary menu with categories: "Your Store", "Games", "Software", "Hardware", "Videos", and "News". A search bar is located on the right of this menu with the placeholder text "search the store".

The main content area features a breadcrumb trail "All Products > News" and a large heading "Steam for Linux Beta Now Available". Below the heading, the text reads: "Press Releases - Valve" and "6 Nov, 2012". The main body of the news item starts with: "Nov 6, 2012--Valve, creators of best-selling game franchises (such as Counter-Strike and Team Fortress) and leading technologies (such as Steam and Source), today announced the launch of a limited access beta for its new Steam for Linux client." This is followed by a paragraph: "The Steam for Linux Beta client supports the free-to-play game Team Fortress 2. Approximately two dozen additional Steam titles are now also available for play on Linux systems. Additionally, the Steam for Linux Beta client includes Big Picture, the mode of Steam designed for use with a TV and controller, also currently in beta." A quote from Gabe Newell follows: "This is a huge milestone in the development of PC gaming," according to Gabe Newell, Valve President and co-founder. "Steam users have been asking us to support gaming on Linux. We're happy to bring rich forms of entertainment and our community of users to this open, customer-friendly platform."

On the right side of the news item, there is a "Channels" sidebar with a list of links: "All News" (highlighted), "Announcements", "Client Updates", "Press Releases", "Product Releases", "Product Updates", and "Steam Blog". Below the sidebar, the word "SYNDICATED" is visible.



# Steam Play i Proton, 2018.



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## Some thoughts on Valve's new Steam Play feature and what it means for Linux gaming

Posted by [liamdawe](#), 24 August 2018 at 9:52 am UTC | Views: 27,725

Share    

With the dust settling on the absolute bomb that Valve dropped with the new [Steam Play](#) feature, I've had a little time now to think about the broader implications. It's obviously a lot to process and these are just my own personal thoughts.

In the short time Proton has been live, the Linux gaming community has come together in a way that I've not seen in all the years I've been doing this. Looking at the [GitHub page](#) for Proton, there's already masses of people submitting issues, mentioning games that work perfectly to add to Valve's whitelist of games, people submitting code to help the project along and so on. There's also a [massive document on Google Docs](#), with people submitting their findings on how games run. Seems like it's off to a rather good start!



**Sales**

Bundles: 3

Games: 436

[Visit sales page](#)

**Livestreams & Videos**

Community Livestreams

Tac Tics: „Crookz - The Big Heist“

Date: 00 days 20:54:53

[See more!](#)

[View all scheduled streams](#)

**Popular this week**

Artifact is an exciting and addicting card game from Valve, out now

SC Controller, the driver and UI for the Steam Controller is being rewritten to be more portable

Some underappreciated gems going cheaper in the current sales, ends tomorrow

An update on the cross-platform Civilization VI patch for Linux and the recently announced expansion

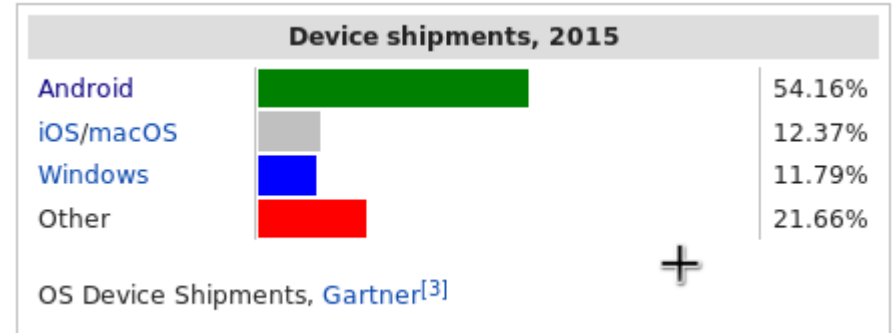
**View by Category**

Pick One

# Android

Worldwide device shipments by operating system

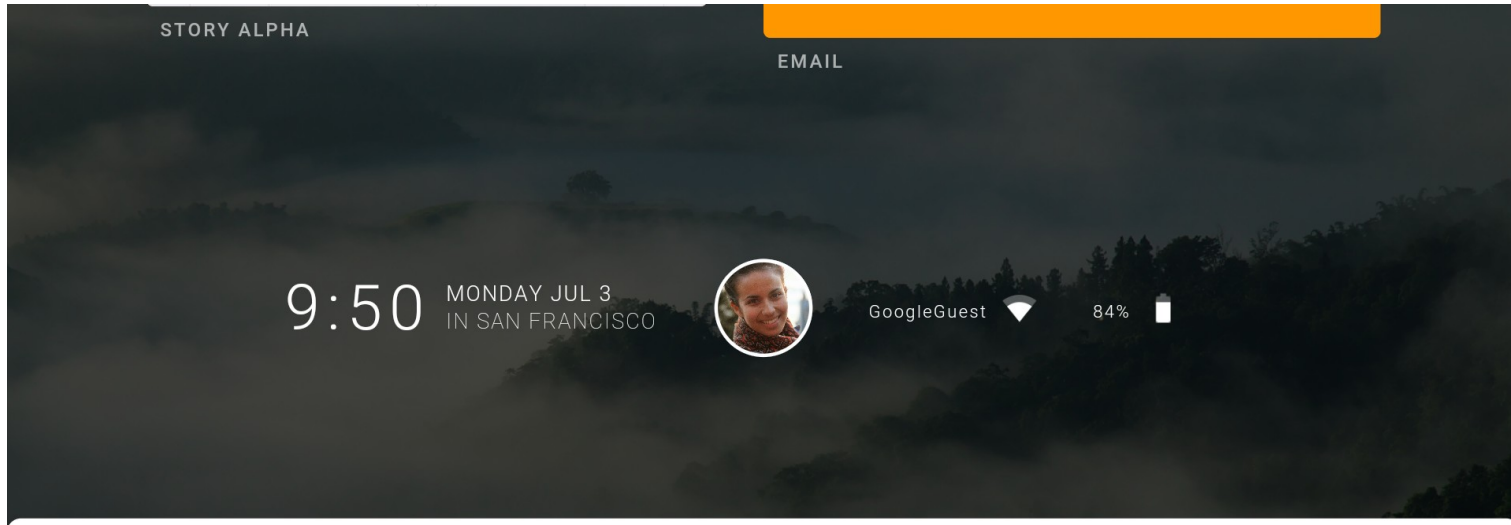
Source	Year	Android	iOS/macOS	Windows	Others
Gartner <sup>[3]</sup>	2015	54.16%	12.37% macOS = 1%	11.79%	21.66%
Gartner <sup>[4]</sup>	2014	48.61%	11.04%	14.0%	26.34%
Gartner <sup>[5]</sup>	2013	38.51%	10.12%	13.98%	37.41%
Gartner <sup>[6]</sup>	2012	22.8%	9.6%	15.62%	51.98%




Source	Date	Microsoft Windows (kernel): ▼36.84%							Apple XNU: ▲18.46%		Linux kernel: ▲40.41%			Others <sup>[a]</sup>
		10	8/8.1	7	Vista	XP	WP&RT	Other	macOS	iOS	Linux	Android	Other	
StatCounter Global Stats <sup>[45]</sup>	Mar 2017	▲12.98%	▼4.57%	▼17.84%	▼0.41%	▼2.07%	0%	▼0.06%	▲5.17%	▲13.09%	▼0.75%	▲37.93%	—0.76%	▲7.21%
StatCounter Global Stats <sup>[45]</sup>	Dec 2016	▲12.5%	▼4.79%	▼18%	▼0.46%	▼2.24%	▼0.64%	▲0.09%	▼4.92%	▲12.71%	—0.86%	▲37.8%	▲0.72%	▼4.61%
StatCounter Global Stats <sup>[46]</sup>	Oct 2016	▲12.08%	▼5.21%	▼18.97%	▼0.6%	▼2.44%	▼0.7%	▲0.05%	▲5.3%	▲12.04%	▼0.85%	▲34.46%	▼0.63%	▼6.67%
StatCounter Global Stats <sup>[47]</sup>	May 2016	▲10.27%	▼6.68%	▼22.25%	▼0.73%	▼3.44%	▲0.83%	▼0.8%	▼5.05%	▲11.38%	▼0.91%	▲31.6%	▲0.64%	▲6.15%
StatCounter Global Stats <sup>[47]</sup>	Dec 2015	▲6.67%	▼8.5%	▼26.66%	▼1.0%	▼4.75%	▲0.92%	▲0.2%	▲5.51%	▲10.82%	▲1.03%	▲27.01%	—0.36%	▲6.57%



# Fuchsia/Zircon?

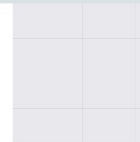


 Ask for anything

Suggestion Ichi



Suggestion Ni



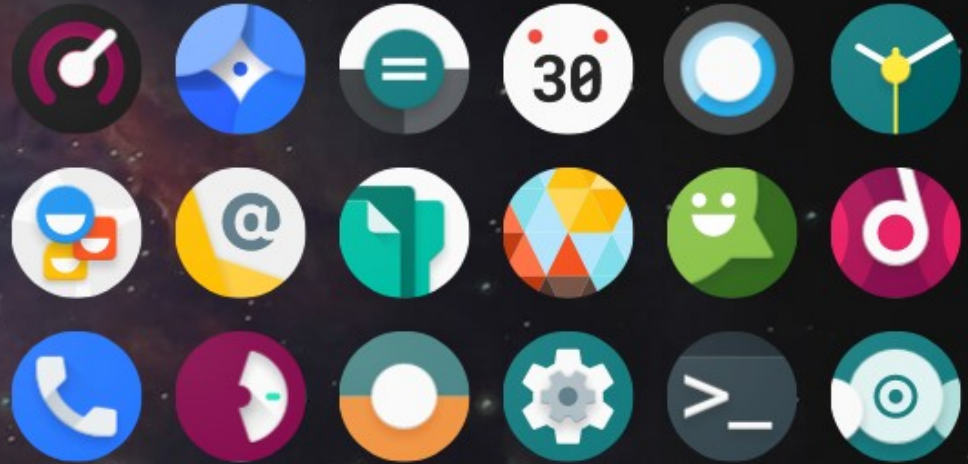
# LineageOS

## Power to you

Our open-source apps are here to help you get through the day.

Want to do more with your device? Power users will enjoy Unix command-line utilities.

Android developers will turn any device into the perfect device for apps development thanks to enhanced tools and [exclusive APIs](#).





# Ubuntu OTA-6



**SOFTPEDIA® NEWS**    REVIEWS    APPLE    MICROSOFT    MOBILE    LINUX & OSS    SECURITY    WEAR

☰ Softpedia > News > Linux

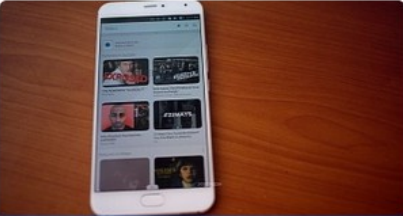
## Ubuntu Touch OTA-6 Update for Ubuntu Phones Slated for Release on December 7th

UBports has put out a call for testing for all users

Nov 27, 2018 22:17 GMT · By Marius Nestor    [Twitter](#) · [Comment](#) · [Share](#):    [Twitter](#)    [Reddit](#)    [Facebook](#)    [G+](#)    [Print](#)

**UBports is currently working on the sixth OTA (Over-the-Air) update to their Ubuntu Touch port for Ubuntu Phone devices, and they recently put out a call for testing.**

Coming only two months after [the OTA-5 update](#), which finally rebased the mobile OS on the [Ubuntu 16.04 LTS \(Xenial Xerus\)](#) operating system series, the Ubuntu Touch OTA-6 release is expected to introduce more improvements like support for passwords that contain special characters for Nextcloud accounts.



Meizu PRO 5 Ubuntu Phone

+

The new Morph web browser received various improvements like support for restoring the previous browsing session at startup, ReCaptcha support, the ability to stop the media when closing a tab, themed scrollbars, better tabbed browsing experience, and support for web apps to access locally stored content on the device.



# VR i AR

- Na PC-u: Oculus Rift i HTC/Valve Vive
- OpenVR/SteamVR
- Daljnja standardizacija Khronos OpenXR



# Unreal Engine

Vizualni demo:

[www.unrealengine.com](http://www.unrealengine.com)

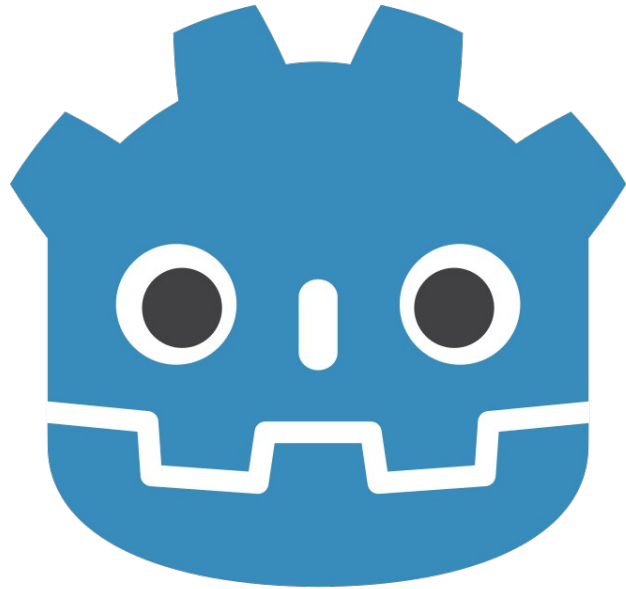


AR?

<https://www.unrealengine.com/vr>



# Godot Engine



**GODOT**

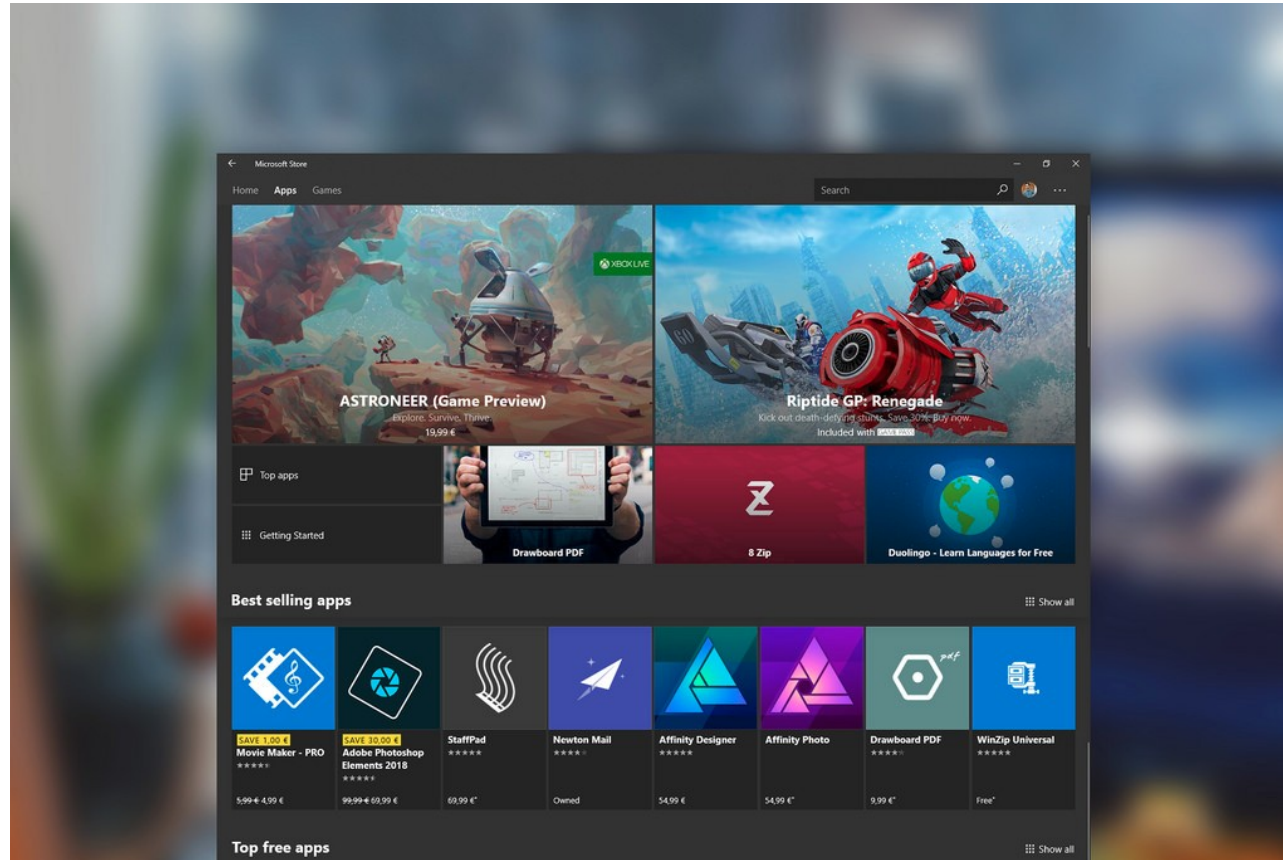
Game engine



Nismo zasad pobijedili, ali  
idemo prema tome, zar ne?



# Windows 10 S... mode



Nije problem, uvijek  
možemo koristiti Linux...





# Secure Boot

- Ograničava pokretanje operacijskog sustava samo na one u koje ima povjerenja
- Standard razvijen na inicijativu Microsofta
- Ugradbeni softver kod pokretanja provjerava potpis
  - Ako je potpis dobar, predaje kontrolu nad računalom
  - Ako potpis nije dobar ili ne postoji, ne pokreće ništa



# Microsoftova kontrola nad ekosustavom Secure Boota

- Microsoft Windows Production PCA 2011
  - Ključ za potpisivanje Windowsa
- Microsoft Corporation UEFI CA 2011
  - Ključ za potpisivanje svih ostalih OS-ova
  - (Zasad) potpisani Fedora, Ubuntu, openSUSE
  - **Opcionalan ključ**



Nije problem, uvijek možemo  
koristiti Coreboot...



# Coreboot

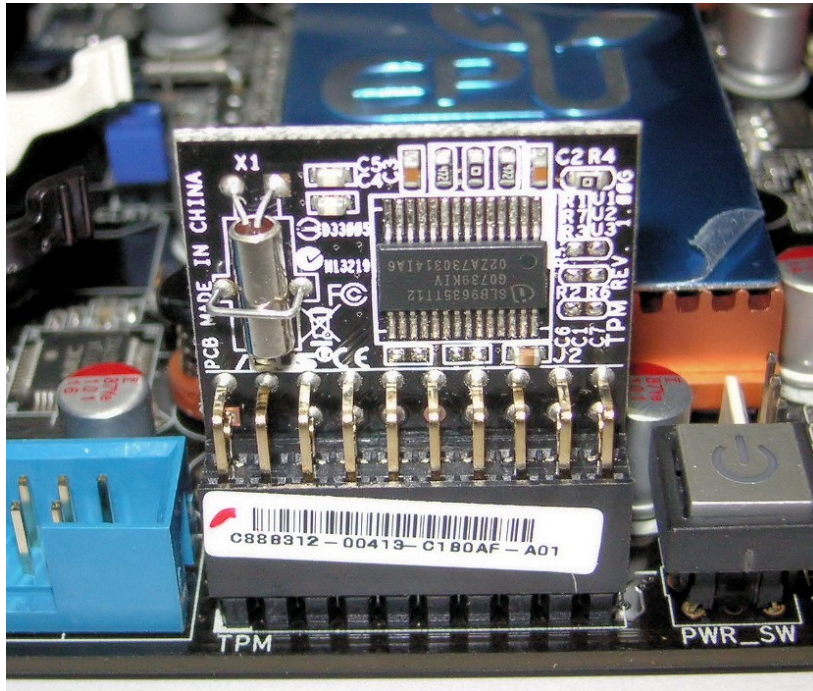


**coreboot**

- Zamjena otvorenog koda za BIOS i UEFI
- Podrška za brojna postojeća računala

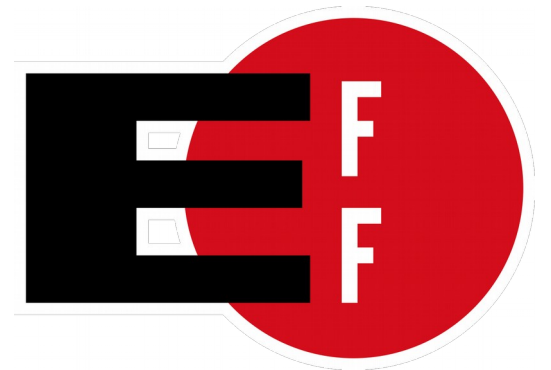


# Trusted Platform Module



- **Intel Boot Guard** koristi TPM da ograniči zamjenu UEFI firmwarea na sustavu

„Rat protiv računarstva  
opće namjene”  
-- Cory Doctorow, EFF



# OpenClass sutra

- 20. prosinca 2018. Proslava **Dana slobode računalne grafike i računanja na grafičkim procesorima** (više na [www.freedomday.club](http://www.freedomday.club) i [www.gamingonlinux.com](http://www.gamingonlinux.com), lokalna najava na [www.ri.linux.hr](http://www.ri.linux.hr))
- 17. siječnja ?

