



UNIVERSIDADE
VILA VELHA
ESPÍRITO SANTO

Linux

Prof. Jean-Rémi Bourguet

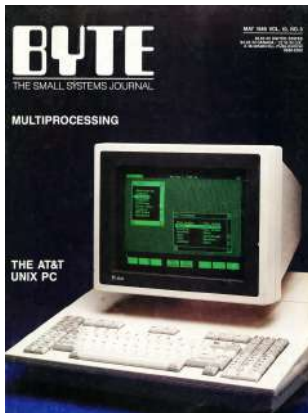
Sistemas Operacionais

Minix

- ▶ Até a **versão 6** do **UNIX** (1976), o seu código-fonte estava disponível.
- ▶ Disponível para as universidades, sob uma **licença da AT&T**.



- ▶ Em 1978, a AT&T lançou a **versão VII** do **UNIX**.
- ▶ A licença estabelecia que **UNIX não poderia** mais ser **estudado!**



THE NEW COMPUTERS FROM AT&T. FLEXIBLE. RELIABLE. AND VERY COMPATIBLE.

They're new in every sense of the word. New in conception, new in design, new in their ability to deliver unprecedented levels of computer performance. After over 40 years of designing and manufacturing computers, AT&T is proud to introduce a whole new line of executive computers for business...AT&T Computers.

MEET THE FAMILY

The 3B2, 3B3, and the AT&T Personal Computer make up the new AT&T family of flexible business computers.

The AT&T 3B2 is one of the most advanced super microcomputers you can buy today. It packs all the power of a much larger system in a size small enough to sit on your desk top. The UNIX® System V-based multi-user, multi-tasking computer can accommodate up to 18 terminals.

For larger family gatherings, the AT&T 3B3 makes company.

make great tools, because they can accommodate up to 90 users. And meet the new AT&T Personal Computer. What makes it special is its ability to combine high performance with excellent

UNIX

graphics capabilities, an adjustable display monitor, and two glass screens. Its flexibility allows it to operate as a stand alone unit or as part of an integrated computer network. And its compatibility allows it to run most popular business software, including most available MS-DOS™ applications.

THE FAMILY THAT WORKS TOGETHER

One big advantage of AT&T Computers is that when there's work to be done, everyone pitches in. Each family member works together in a coordinated system, making tasks easier

and users more productive. AT&T Computers are based on our Information Systems Architecture, an open, communications-based structure that can accommodate and integrate not only our products, but also those of other mainframe manufacturers.

Another reason



AT&T family members work so well together in our unique PC interface. It bridges the MS-DOS and UNIX Operating Systems, allowing you to use your PC as part of a larger 3B network. Several PC

users can then share peripherals and files stored on the central 3B2 machine.

Yet another reason AT&T Computers are such a close-knit family is our UNIX System V Operating System, developed by AT&T Bell Laboratories. It's an operating system so flexible, it's rapidly becoming an industry standard. And because UNIX software is generally compatible, 3B2 software can run on 3B3 computers, thus protecting your investment and eliminating costly and time-consuming reprogramming.

THEY GET ALONG HANDSOMELY WITH MOST EVERYONE

AT&T Computers get along so well with each other, they can't help but get along with just about everyone else. The AT&T Information Systems Network links AT&T Computers with those of other mainframe factories. It's a flexible, cost-efficient link

between terminals, workstations, and computers of all sizes. This local area network allows you to connect departments, buildings, industrial parks, or even companies. And gives you fast response time and centralized administration and control.

Regardless of the equipment you might own or



acquire, with AT&T Computers it will be like one big happy family.

BUILT-IN RELIABILITY AND SERVICE

Joining by the way they're made and cared for, this family will be around for generations. AT&T Computers meet the toughest design standards and meet rigorous testing procedures.

And should you ever require service, we offer around-the-clock maintenance, and one of the industry's largest service forces.

For more information call your AT&T Information Systems Account Executive or 1 (800) 267-1212. Then make arrangements to meet the family: the 3B2, 3B3 and the AT&T Personal Computer. When it comes to meeting your needs, AT&T Computers couldn't be more compatible.

AT&T INFORMATION SYSTEMS. WHEN YOU'RE GOT TO BE BUILT.



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Minix

- ▶ Em **1986**, **Andy Tanenbaum** fez um **OS similar ao UNIX** em C.
- ▶ Estudantes **dissecava** o Mini-Unix para ver como um **OS funciona**.



- ▶ Em 1988, **POSIX** (**P**ortable **O**perating **S**ystem **I**nterface): **norma IEEE**.
- ▶ **Regras**: **como** um **OS** deve **funcionar** para **ser um UNIX** (software).



"It has been said
that POSIX is the
worst system except
all the others that
have been tried"

- Winston Churchill

O Kernel Linux

- ▶ Em **1991**, **Linus Torvalds** (**21 anos**) era aluno da **Univ de Helsinque**.
- ▶ Postou no **newsgroup** `comp.os.minix` falando de um projeto...



O Kernel Linux

- ▶ Considerada a **mensagem oficial** de **lançamento** do **Kernel LINUX!**
- ▶ Por isso, o seu **aniversário** é comemorado em **05 de outubro**.



Linus Benedict Torvalds



Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones. This has been brewing since april, and is starting to get ready. I'd like any feedback on things people like/dislike in minix, as my OS resembles it somewhat (same physical layout of the file-system (due to practical reasons) among other things).

I've currently ported bash(1.08) and gcc(1.40), and things seem to work. This implies that I'll get something practical within a few months, and I'd like to know what features most people would want. Any suggestions are welcome, but I won't promise I'll implement them :-)

Linus (torv...@kruuna.helsinki.fi)

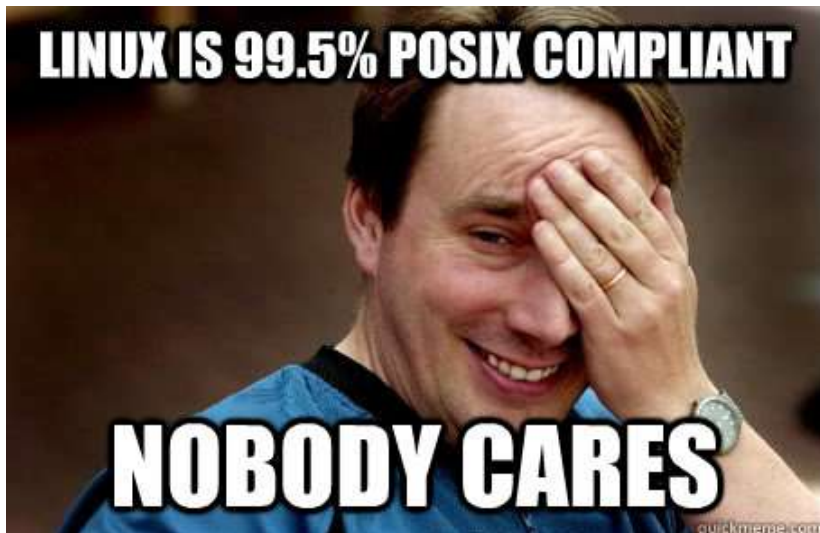
PS. Yes - it's free of any minix code, and it has a multi-threaded fs. It is NOT protable (uses 386 task switching etc), and it probably never will support anything other than AT-harddisks, as that's all I have :-).



<https://www.youtube.com/watch?v=Nayw37i8T2M> (em casa)

O Kernel Linux

- ▶ O **nome original** escolhido por Linus foi **Freix** (Free Unix).



O Kernel Linux

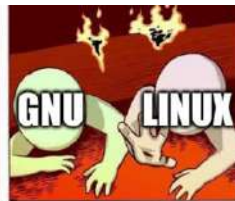
- ▶ FSF começou GNU pelos aplicativos mas não terminou o kernel.
- ▶ Linus começou pelo kernel mas nunca chegou aos aplicativos.



<https://www.youtube.com/watch?v=s7u7jBwIocU>

O sistema operacional GNU/Linux

- ▶ **LINUX** é apenas um **kernel** (<http://www.kernel.org>).
- ▶ O **sistema operacional** conhecido como um **Linux** é um **GNU/Linux**.



O sistema operacional GNU/Linux

- ▶ **Componentes GNU** é a maior parte do OS, cerca de **28% do código**.
- ▶ O **próprio Linux** representa de **cerca de 3%**.
- ▶ "Se for **escolher um nome** para o sistema com base nisso **seria GNU!**"



Giving the Linus Torvalds Award to the Free Software Foundation is a bit like giving the Han Solo Award to the Rebel Alliance.

— *Richard Stallman* —

AZ QUOTES

O sistema operacional GNU/Linux

- ▶ **GNU/Linux** é justificável se você fizer uma **distro GNU do Linux**.
- ▶ Da mesma forma que **Red Hat Linux**, **SUSE Linux** ou **Debian Linux**!

GNU/Linux



<https://www.youtube.com/watch?v=kZlOCHYu1Vk>

O sistema operacional GNU/Linux

- ▶ O **kernel Linux** possui um **logotipo** nomeado **Tux** (**T**orvalds+**u**nix).
- ▶ **Linus pediu** um **pingüim** um **pouco gordo** durante um concurso.



1996 - now



2005 - 2008



2008 - now



* Larry Ewing o desenhou no **GIMP**: GNU Image Manipulation Program.

 <https://www.youtube.com/watch?v=9dfWzp7rYR4>

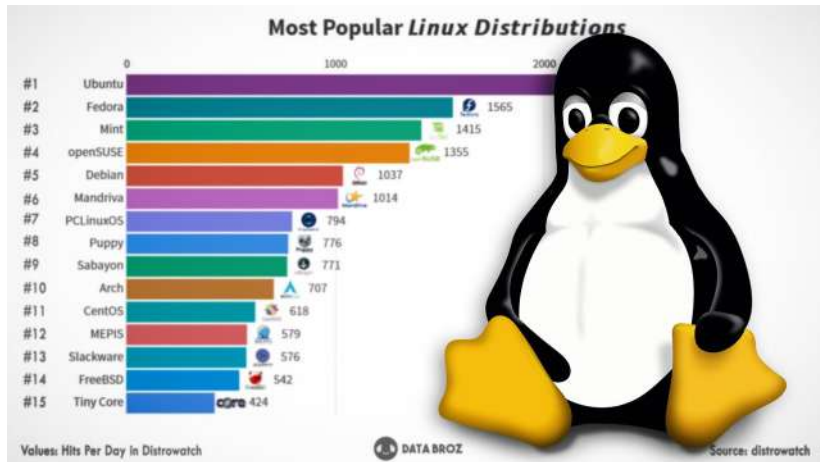
Distribuições GNU/Linux

- Juntando **Kernel** com **compiladores** e **aplicativos**, temos uma **distro**.



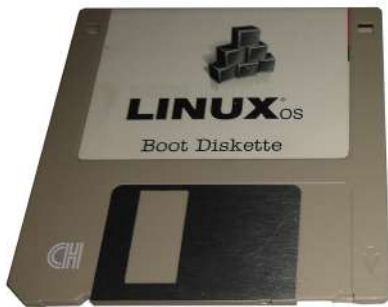
Distribuições GNU/Linux

- ▶ Há + de 350 distribuições GNU/Linux com **foco** e **objetivo** próprio.



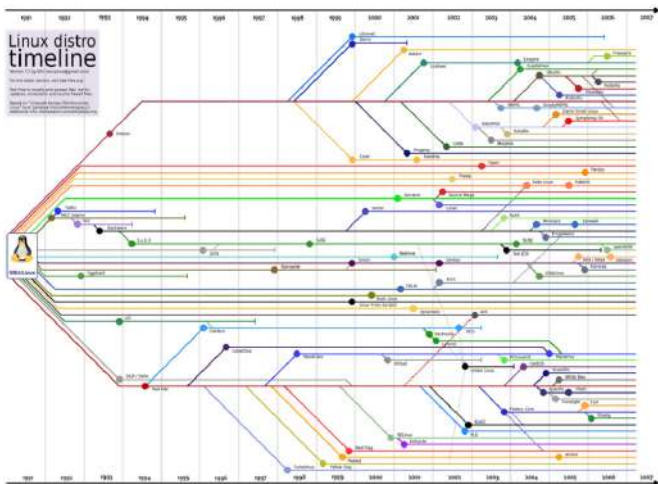
Distribuições GNU/Linux

- ▶ **MCC Interim Linux** (de Owen Le Blanc): a primeira a partir de 1992! Sem ambiente gráfico, lançada pelo **Manchester Computing Centre**.
- ▶ **SLS** (**S**oftlanding **L**inux **S**ystem): Foi produzida por **Softlanding**. Deu origem à **distribuição Slackware**, existente até hoje.
- ▶ **TAMU** (**T**exas **A**&**M** **U**niversity)

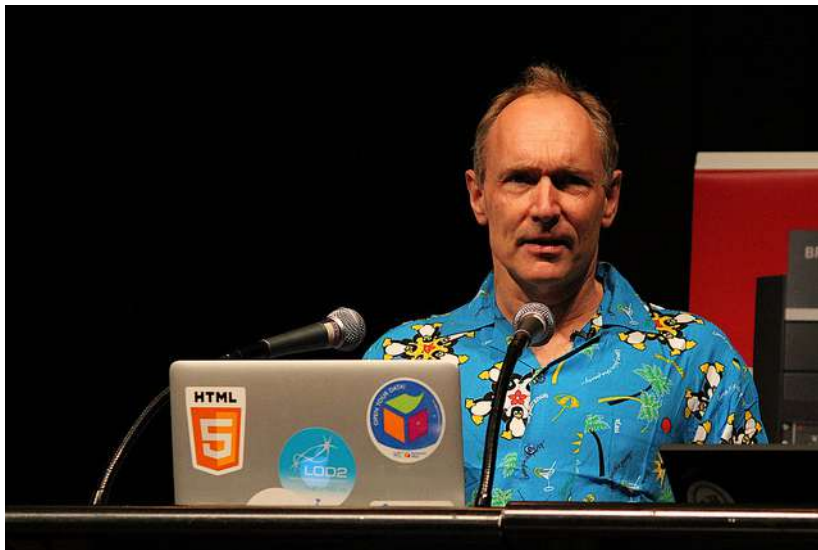


Distribuições GNU/Linux

- ▶ Há **distros** baseadas em outras: **Fedora Core** é baseada na **RedHat**.
- ▶ Já as distribuições **Debian e RedHat** são chamadas de **puras**.



Distribuições GNU/Linux



<https://www.youtube.com/watch?v=CP8CNp-vksc>

Instituições do Linux

- ▶ A **Linux International** (EUA) é uma instituição **sem fins lucrativos**.
- ▶ Fundada em 1995, com **Jon "Maddog" Hall** em **presidente**.



- ▶ Fundada em **2000**, a **Linux Foundation (LF)** é sem fins lucrativos.
- ▶ O principal projeto mantido pela Linux Foundation é o **Kernel Linux**.



Instituições do Linux

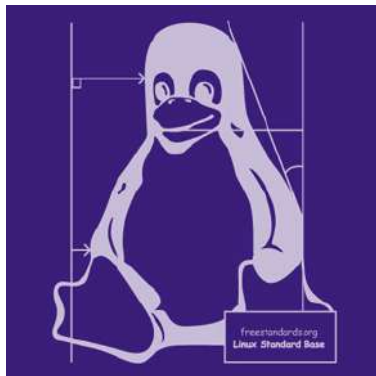
- ▶ A Linux Foundation **promove, protege, e padroniza Linux**.



- ▶ Apoiada por **empresas parceiras** (Platinum members):
Red Hat, Google, Intel, AMD, Petrobras, Samsung, IBM, Adobe.

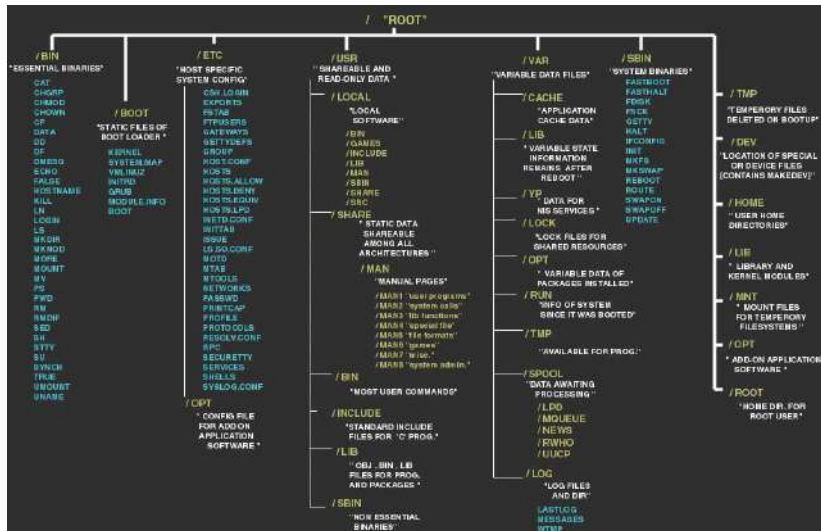
Instituições do Linux

- ▶ **Linux Standard Base** (<http://www.linuxbase.org>): projeto da LF.
- ▶ **Divulgar padrões** para portabilidade dos **softs** feito para **GNU/Linux**:



<https://www.youtube.com/watch?v=ifVvhz0gSFA> (opt)

- **Filesystem Hierarchy Standard**: padrão da hierarquia de diretórios.



UNIX ruled the world!

- ▶ No Linux, as **permissões** tornam difícil a **execução de vírus**.
- ▶ Instala-se programas dos **repositórios oficiais** e não da Internet.



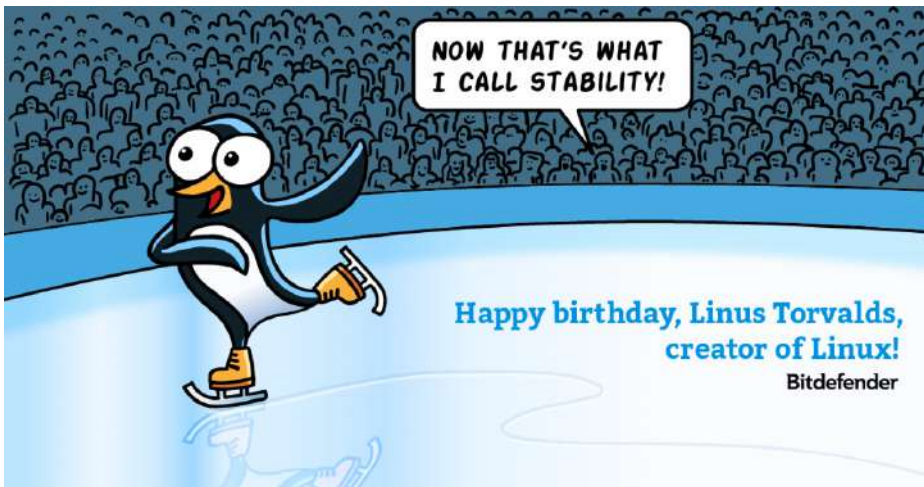
https://www.youtube.com/watch?v=Kfli_e923o4 (opt)

UNIX ruled the world!

- ▶ **LINUX** criado por **Linus** numa base **UNIX** (**Ken** e **Dennis**).
- ▶ Os **aplicativos** são da **FSF** no quadro do projeto **GNU** (**Richard**).



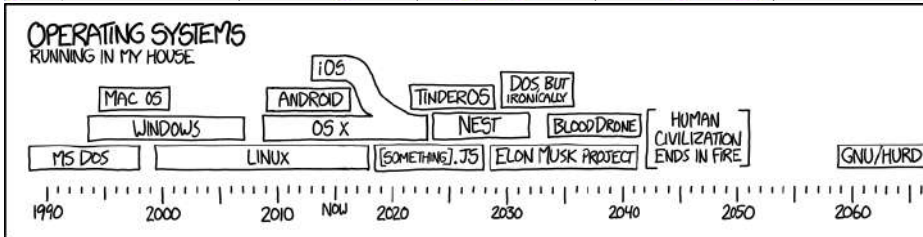
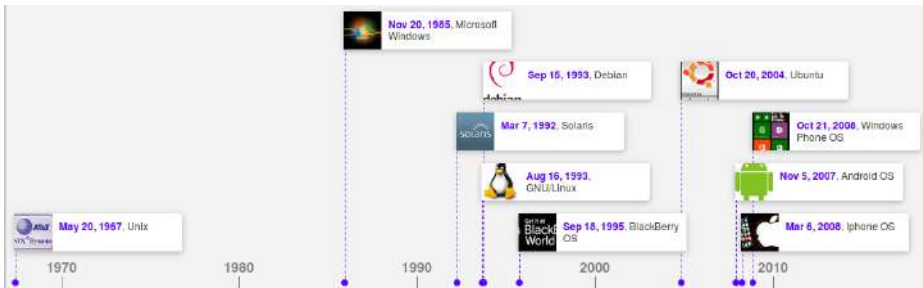
UNIX ruled the world!



▶ Revolution OS <https://www.youtube.com/watch?v=plMxWpXhqig>
▶ https://www.youtube.com/watch?v=5ocq6_3-nEw

UNIX ruled the world!

Mais de **90%** dos OS atuais foram **influenciados pelo UNIX**.



UNIX ruled the world!

UNIX introduziu **conceitos** muito **importantes** para a computação:

- ▶ **portabilidade**
- ▶ **multi-tarefas**
- ▶ **multi-usuário**
- ▶ **compartilhamento de tarefas**



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