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NEW TECHNOLOGIES SIG
TOM SHEPHERD

NEW TECH SIG UPDATE

NEW TECH SIG

WE NEED IDEAS

ALL YOU HAVE TO DO IS SEND ME AN EMAIL ABOUT SOMETHING YOU WOULD LIKE TO LEARN MORE ABOUT AT

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NEW TECHNOLOGIES SIG

MEETING EVERY MONTH
3RD THURSDAY 3:30

A forum for the open discussion of technologically advanced ideas and experiences

Contact Tom Shepherd for additional information at

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Future SIG Meetings

ON BREAK
UNTIL SEPTEMBER

THURSDAY SEPT 16- 3:30PM
TOPIC - TBD

Today's Topic

LINUX
WHAT IS IT GOOD FOR ?

AGENDA

What is Linux ?

Where did it come from?

What makes it different ?

Who "owns" Linux ?

Where does Linux run ?

Q&A

AGENDA

What is Linux ?

Where did it come from?

What makes it different ?
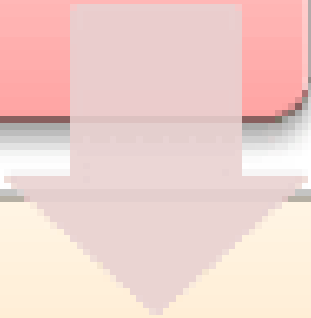
Who "owns" Linux ?

Where does Linux run ?

Q&A

What is Linux?
LINUX is an operating system or a kernel distributed under an open-source license. Its functionality list is quite like UNIX. The kernel is a program at the heart of the Linux operating system that takes care of fundamental stuff, like letting hardware communicate with software.

Who created Linux?

Linux is an operating system or a kernel which germinated as an idea in the mind of young and bright Linus Torvalds when he was a computer science student. He used to work on the UNIX OS (proprietary software) and thought that it needed improvements.

However, when his suggestions were rejected by the designers of UNIX, he thought of launching an OS which will be receptive to changes, modifications suggested by its users.

So Linus devised a Kernel named Linux in 1991

Sounds like Linux was based on UNIX?

Yes !

This means the look and feel of Linux is similar to UNIX

Before we go any further, what was/is UNIX ?

Wikipedia
The Free Encyclopedia

| Article | Talk | | Read | Edit | V |

Unix

From Wikipedia, the free encyclopedia

Unix (/ˈjuːnɪks/; trademarked as **UNIX**) is a family of multitasking, multiuser computer operating systems that derive from the original AT&T Unix, whose development started in the 1970s at the Bell Labs research center by Ken Thompson, Dennis Ritchie, and others.[3]

Initially intended for use inside the Bell System, AT&T licensed Unix to outside parties in the late 1970s, leading to a variety of both academic and commercial Unix variants from vendors including University of California, Berkeley (BSD), Microsoft (Xenix), Sun Microsystems (SunOS/Solaris), HP/HPE (HP-UX), and IBM (AIX). In the early 1990s, AT&T sold its rights in Unix to Novell, which then sold its Unix business to the Santa Cruz Operation (SCO) in 1995.[4] The UNIX trademark passed to The Open Group, an industry consortium founded in 1996, which allows the use of the mark for certified operating systems that comply with the Single UNIX Specification (SUS). However, Novell continues to own the Unix copyrights, which the SCO Group, Inc. v. Novell, Inc. court case (2010) confirmed.

So what is different between UNIX and Linux?

UNIX evolved throughout the 70s and 80s

Several different companies, including AT&T, IBM, SUN, HP
developed their own proprietary versions of UNIX

For example, IBM's version , called AIX
ran only on IBM hardware

If a customer changed from IBM hardware to HP hardware,
they had to accommodate to a different form of UNIX

So what is different between UNIX and Linux?

Having several proprietary versions of UNIX also meant each vendor wrote , supported and <u>sold</u> that version

Customers had to buy that UNIX version and also pay for it's support from that vendor

Being proprietary, users had little ability to influence UNIX development

What evolved with LINUX that was unique?

Unlike other operating systems, not only UNIX, but also
Windows, MacOS, etc. , Linus had
the idea from Day One that Linux would be
available to any user in source code
And
It would be free

This meant that users could download the source code for
free, see how it worked , find bugs, and make
enhancements to it

What evolved with LINUX that was unique?

Linux enhancements could then be made available to everyone, for free

The Linux "community" evolved into a set of highly motivated, bright folks, who loved adding these new features to Linux

Originally these folks did this mostly on their own time, for free

Why did they do it ?

Number 1 – they are geeks and love this sort of thing
Number 2 - they also feed off of the peer recognition

What evolved with **LINUX** that was **unique**?

And ultimately Linus Torvalds, unlike Steve Jobs or Bill Gates, never commercialized Linux or made much money on it

He did what he did for idealistic reasons: to promote high quality software , for anyone to use

A true idealist

What evolved with LINUX that was unique?

Well with this kind of disorganized approach , who monitors that these enhancements are good, are stable, and who coordinates them into Linux ?

The Linux community now has a hierarchy of gurus , a set of committees, and a voting structure

This structure evaluates potential enhancements, decides if they get "approved" or not, and then coordinates them into future releases of Linux

Technically Linus Torvalds is the top Guru and has the ultimate Yea or Nay

How has Linux evolved since these early days?

Today, most of the experts who enhance Linux work for companies

These companies include Red Hat, IBM, Intel, Google, etc.

These companies want to

Continue to see Linux grow and evolve
but in a way that accommodates
or encourages their own products

Guess Who Contributed the Most to Linux Kernel 5.10 Development? It's Huawei (and Intel)

Huawei and Intel seem to be leading the code contribution ranking for Linux Kernel 5.10 development. Here's more about that.

by **Ankush Das**
January 5, 2021

Most active 5.10 employers

By changesets			By lines changed		
Huawei Technologies	1434	8.9%	Intel	96976	12.6%
Intel	1297	8.0%	Huawei Technologies	41049	5.3%
(Unknown)	1075	6.6%	(Unknown)	40948	5.3%
(None)	954	5.9%	Google	39160	5.1%
Red Hat	915	5.7%	NXP Semiconductors	35898	4.7%
Google	848	5.2%	(None)	30998	4.0%
AMD	698	4.3%	Red Hat	30467	3.9%
Linaro	670	4.1%	Code Aurora Forum	29615	3.8%
Samsung	570	3.5%	Linaro	29384	3.8%
IBM	521	3.2%	Facebook	27479	3.6%
NXP Semiconductors	439	2.7%	BayLibre	24159	3.1%
Facebook	422	2.6%	AMD	23343	3.0%
Oracle	414	2.6%	(Consultant)	19905	2.6%
SUSE	410	2.5%	IBM	18312	2.4%
(Consultant)	404	2.5%	MediaTek	15893	2.1%
Code Aurora Forum	313	1.9%	Arm	13390	1.7%
Arm	307	1.9%	Texas Instruments	11814	1.5%
Renesas Electronics	283	1.7%	SUSE	11063	1.4%
NVIDIA	262	1.6%	Oracle	10542	1.4%

Who "Owns" Linux?

It should be obvious by now that no one person or company own's Linux

It is a prime example of what is called Open Source software

Other examples include:

Apache Web Server
Android
Firefox
Python

Open source
Linux is also distributed under an open source license. Open source follows these key tenants:

The freedom to run the program, for any purpose.

The freedom to study how the program works, and change it to make it do what you wish.

The freedom to redistribute copies so you can help your neighbor.

The freedom to distribute copies of your modified versions to others.

This brings up a question –

How can such a seemingly haphazard system can be as stable or "bullet proof" as something from Microsoft or Apple ?

The answer is that in cases, this open source model works better than proprietary

You have more people analyzing Linux, checking for flaws and issues, making changes, keeping it more up to date

Where would I find Linux ?
Just about everywhere

LiNUX.COM

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What Is Linux?

From smartphones to cars, supercomputers and home appliances, home desktops to enterprise servers, the Linux operating system is everywhere.

Linux has been around since the mid-1990s and has since reached a user-base that spans the globe. Linux is actually everywhere: It?s in your phones, your thermostats, in your cars, refrigerators, Roku devices, and televisions. It also runs most of the Internet, all of the world's top 500 supercomputers, and the world's stock exchanges.

But besides being the platform of choice to run desktops, servers, and embedded systems across the globe, Linux is one of the most reliable, secure and worry-free operating systems available.

What is a "distribution?"

Linux has a number of different versions to suit any type of user. From new users to hard-core users, you'll find a "flavor" of Linux to match your needs.

These versions are called distributions (or, in the short form, "distros").

Nearly every distribution of Linux can be downloaded for free, burned onto disk (or USB thumb drive), and installed (on as many machines as you like).

What is in a "distribution?"

The most important part is the Linux kernel
The distributor takes the Linux kernel from the open source
And
Adds a bunch of bells and whistles to make that distribution unique
Such as
System management tools, user interfaces, languages,

We also refer to Linux distributions as simply "Linux." However, [Linux distributions aren't just the Linux kernel](.).

They contain many other pieces of software, such as the GNU shell utilities, Xorg graphical server, GNOME desktop, Firefox web browser, and so on.

That's why some people think the term GNU/Linux should be used for "Linux distributions" like Ubuntu, Mint, Debian, Fedora, Arch, openSUSE, and others.

Popular Linux distributions include:

- DEBIAN
- UBUNTU
- ANTERGOS
- SOLUS
- FEDORA
- ELEMENTARY OS
- OPENSUSE

These Linux distributions are for large scale servers:

- Red Hat Enterprise Linux
- Ubuntu Server
- Centos
- SUSE Enterprise Linux

You mentioned Android in relation to Linux what's going on with that?

Android may be based on Linux, but it's not based on the type of Linux system you may have used on your PC. You can't run Android apps on typical Linux distributions and you can't run the Linux programs you're familiar with on Android.

Linux makes up the core part of Android, but Google hasn't added all the typical software and libraries you'd find on a Linux distribution like Ubuntu. This makes all the difference.

Android uses the Linux kernel under the hood. Because Linux is open-source, Google's Android developers could modify the Linux kernel to fit their needs.

Linux gives the Android developers a pre-built, already maintained operating system kernel to start with so they don't have to write their own kernel.

This is the way many different devices are built — for example, the PlayStation 4 uses the open-source FreeBSD kernel, while the Xbox One uses the Windows NT kernel found in modern versions of Windows.

QUESTIONS ?