netstudent

GNU/Linux Course
Lesson 1

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http://netstudent.polito.it

Netstudent is an students volunteer association within the Politecnico di Torino.

Is build of different people and students or past student from the tech branch that belives in a common sense of “free knoledge”.

powered by: LINUX®

Anchors of this course

http://netstudent.polito.it/

follow → Gnu/Linux Course

What is GNU/Linux

Linux is a Unix-like computer operating system assembled under the model of free and open source software development and distribution.
...

Linux was originally developed as a free operating system for Intel x86-based personal computers. It has since been ported to more computer hardware platforms than any other operating system.

It is a leading operating system on servers and other big iron systems such as mainframe computers and supercomputers: more than 90% of today's top 500 supercomputers run some variant of Linux, including the 10 fastest

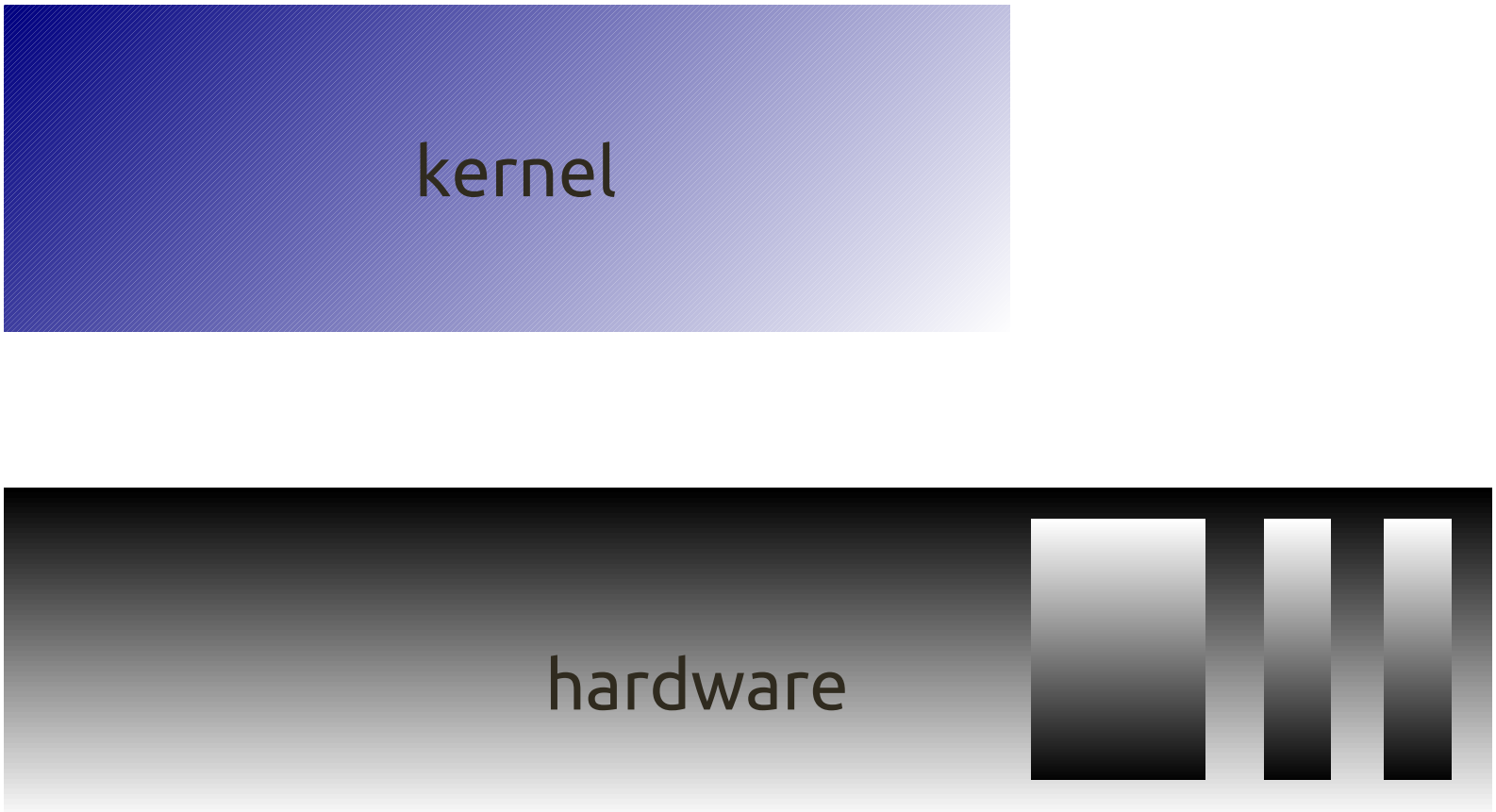
http://en.wikipedia.org/wiki/Linux

What is GNU/Linux

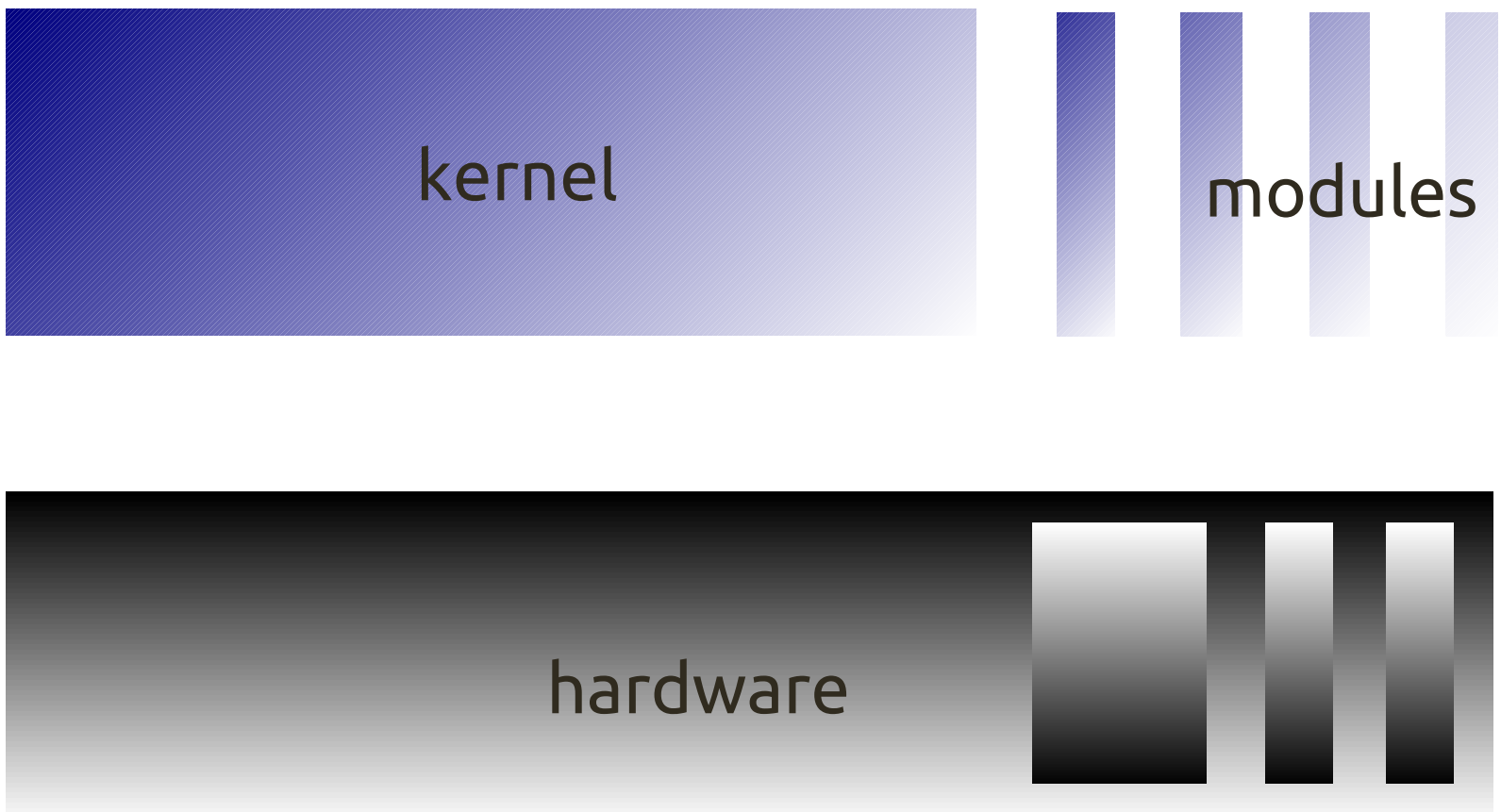
hardware

What is GNU/Linux

kernel: In computing, the kernel is the central component of most computer operating systems; it is a bridge between applications and the actual data processing, done at the hardware level

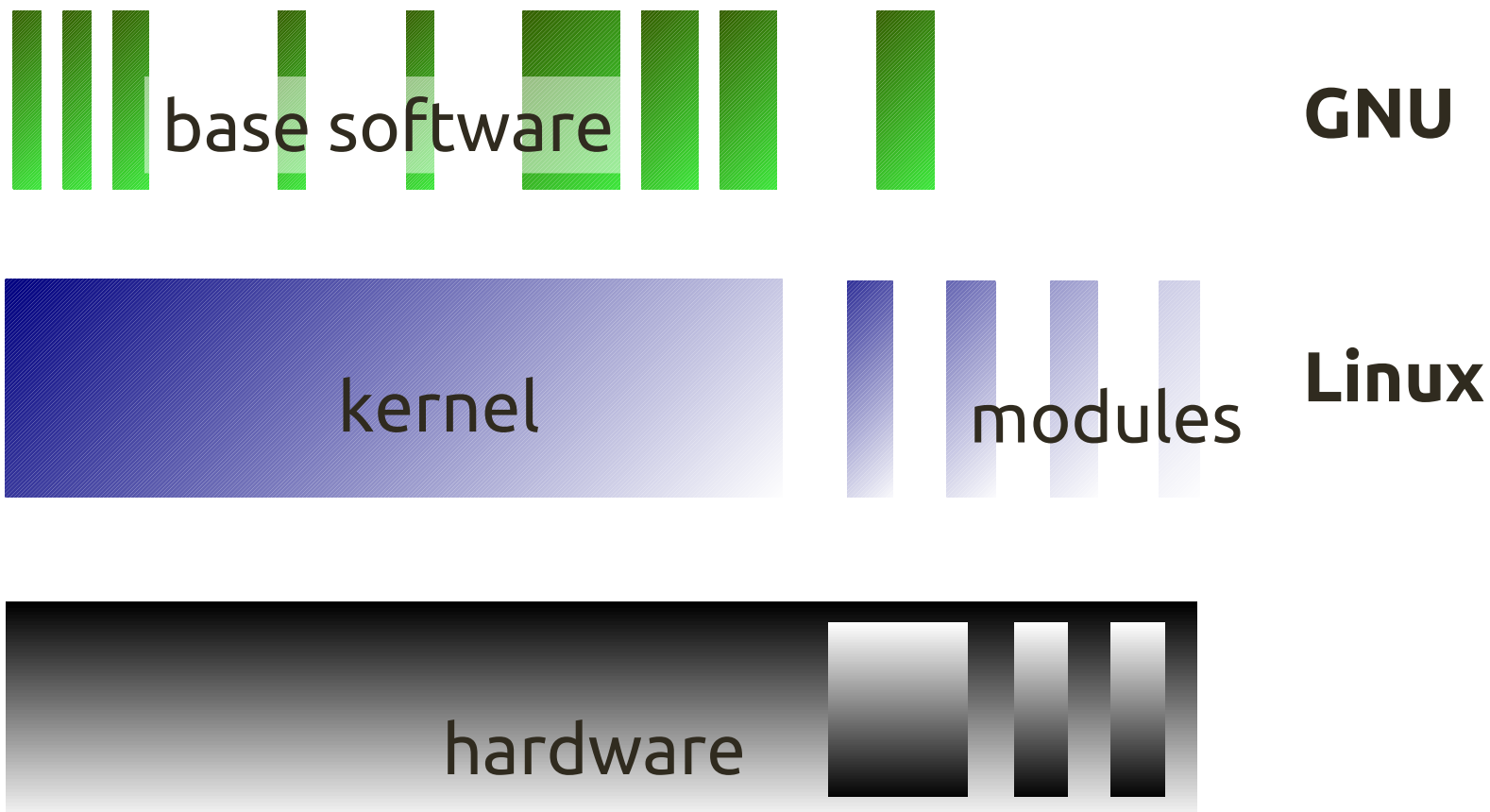


What is GNU/Linux



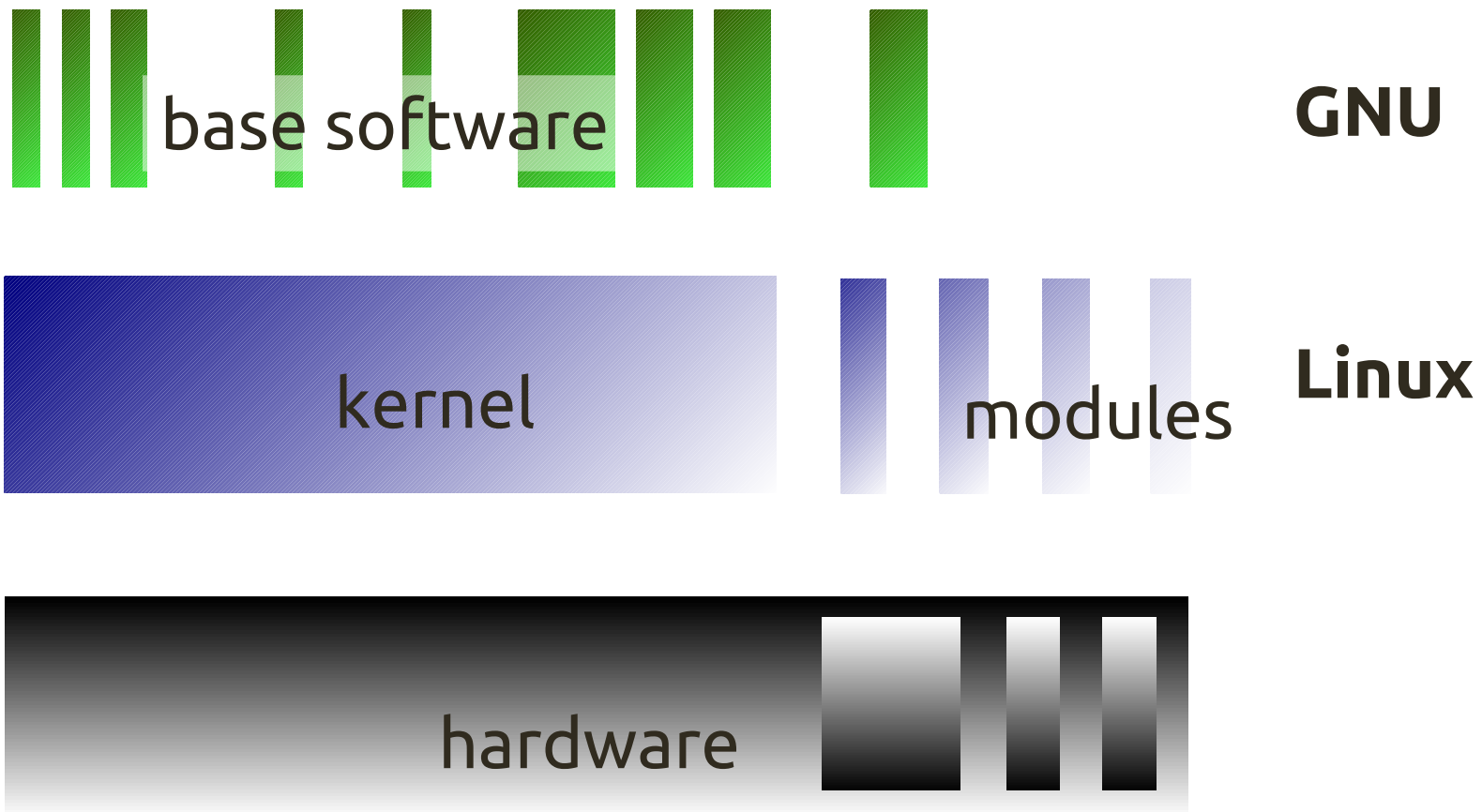
What is GNU/Linux

GNU: gcc, glibc, bash, ecc.



What is GNU/Linux

GNU/Linux OS



Pinguins, GNU and other smart animals

The command shell

In the beginning was *man*

ls and his friends

File inside

Identity crisis

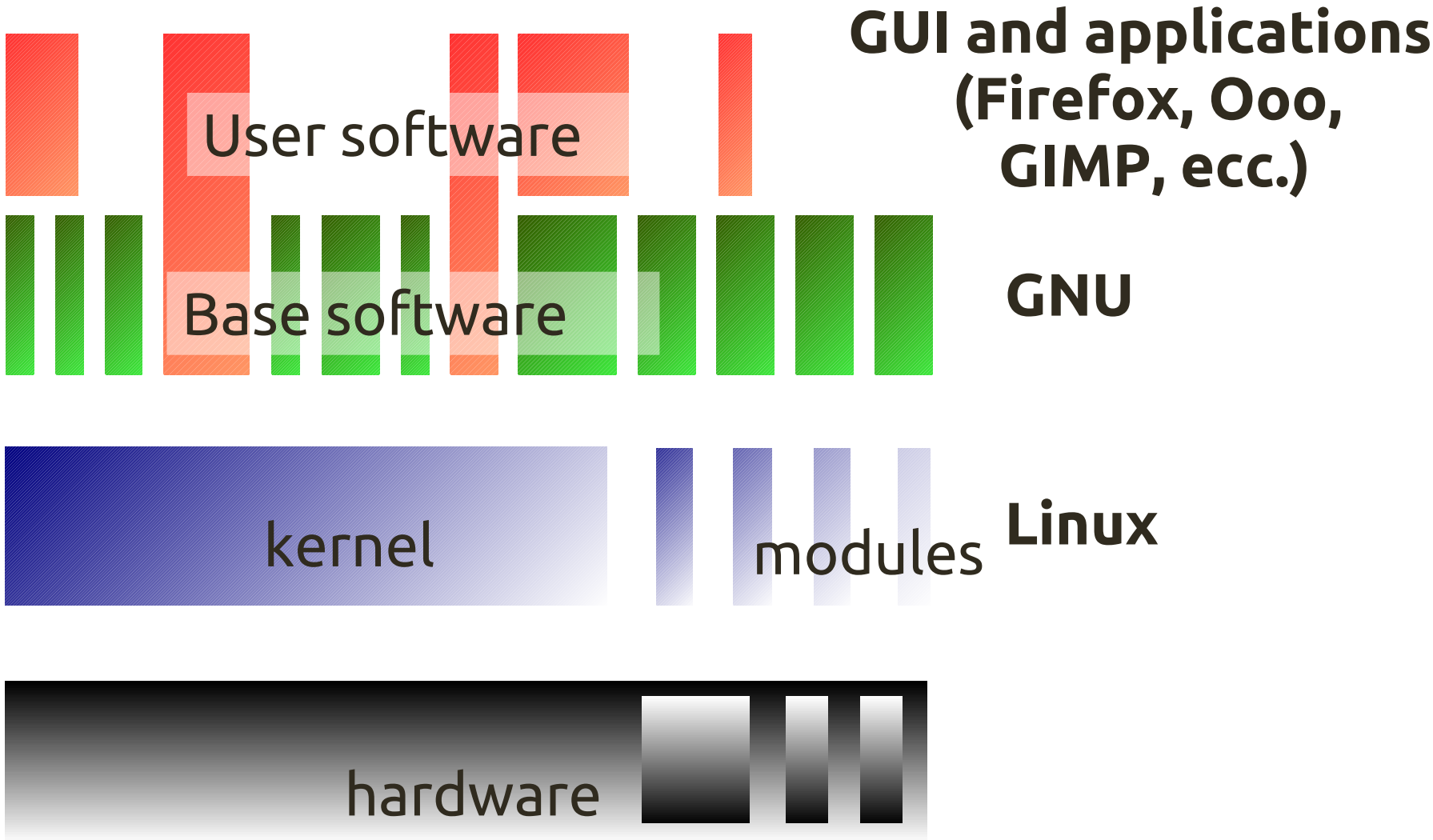
Linux Distributions

http://www.levenez.com/unix/

http://en.wikipedia.org/wiki/Linux_distribution

Penguins, GNU...

A complete real example



Penguins, GNU...

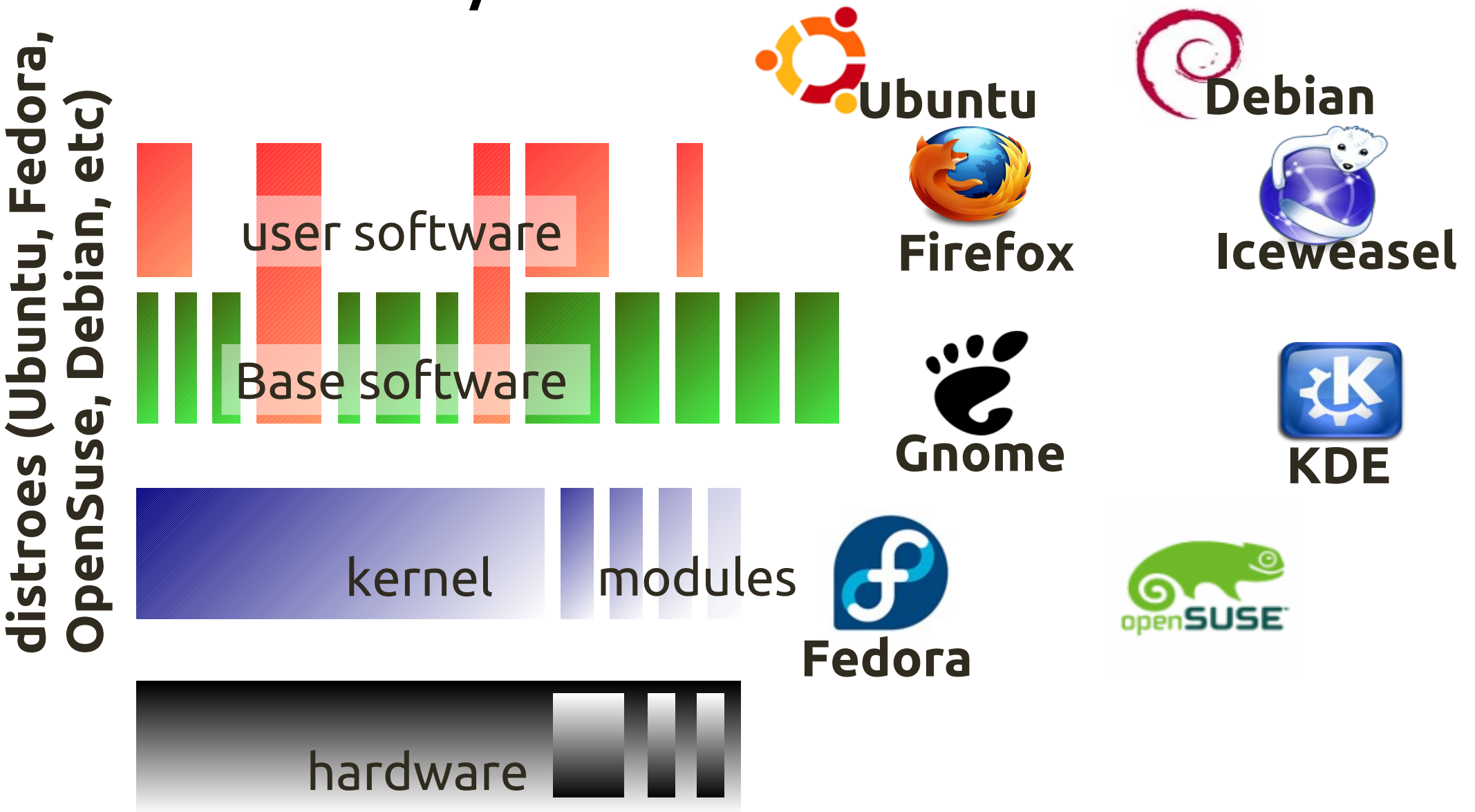
GNU/Linux, MacOS, FreeBSD...




GNOME KDE ...	AQUA	GNOME KDE ...
GNU	Darwin	Userland BSD
Linux	XNU Mach + KernelBSD	Kernel BSD

Pinguins, GNU...

GNU/Linux Distributions



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The command Shell

The graphical interface (GUI) in GNU/Linux is considered as a normal application

The basic interaction with the kernel and the system takes place historically through text commands, this one is called Command Line Interface (CLI)

The term 'shell' generally means a text program that allows you to communicate with the kernel and more generally with the system

The DOS command.com is in part similar to the shell

The command Shell

There are several implementations of the shell, including a basic one always shipped with the kernel:

sh, ksh, bash, csh, tcsh

From a shell you can run applications for any purpose

Each shell also has some 'natives' commands, that let you interact with the system (eg 'cd' or 'echo')

There are other basic commands additional

The basic commands are hundreds but they are standardized and the same in all distros

It is important to know a subset because these commands allow you to completely manage the system

The command Shell

General syntax of a command

<command> <options> <parameter> <parameter> ...

One or more spaces are used to separate and identify the <command> <qualifiers> and <parameters>

For instance the `*echo*` command allows to print on video a text string:

eg. ***echo 'ciao'***

Bash **completion**: paths and commands

Command history:

- reuse/edit an already input command

- ***history*** command

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In the beginning was *man*

How to learn more about GNU/Linux commands?

- search Google
- ***man*** the easier and fastest way to know the syntax and the options, conf files, functions and examples
- ***info*** is a GNU reader for hypertext. Many programmers releaser documentation in this format
- ***whatis*** this searches the whatis database for the specified keyword (contains a brief description of all commands in the system). Equivalent to *man -f*
- ***apropos*** is like whatis, but does search also for non complete words and string so you can find something more in the boilerplate (: Equivalent to *man -k*

Usually you will also find some more documentation in **/usr/share/doc** and **/usr/doc** directories divided for specific programs in different formats (txt, html, pdf etc. ..)

Basic Commands

https://help.ubuntu.com/community/UsingTheTerminal

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The command shell

In the beginning was *man*

ls and his friends

File inside

Identity crisis

ls and his friends

ls allows you to view files and directories on the filesystem

Issued without arguments shows the files in current directory

Launched as ***ls path*** lists the files in the specified directory

There are countless options to present additional information

ls -lha lists all files with an indication of the size, specify if it is a directory and all the permissions

ls and his friends

The command ***pwd*** informs on the current working directory

The command ***cd*** is used to change the current directory

When run without arguments moves us to the user directory (also called home) produces the same effect as the 'cd ~', ~ it is a quick way to identify the user directory

cd path brings us to the named directory

cd - return to previous directory

cd .. moves to the parent directory

ls and his friends

With the ***mv*** command we can rename or move a file

mv original_file destination_file

The source and target file can be specified with the path

The command ***cp*** allows you to copy a file

cp original_file destination_file

In either is possible to use wildcard characters ******* and ***?***,
Which replace string or any single character

ls and his friends

The command ***cp -r*** is recursive and copies all files or sub-directories to the destination directory

rm is used to delete a file (but not directories)

rmdir allows you to delete a directory usually and empty one

The command ***rm -r*** is used to recursively delete all files and subdirectories

ls and his friends

mkdir allows the creation of a directory

mkdir -p to create at once a directory hierarchy

touch filename create an empty file

If the file exists, do not change and update the date of last access

> filename creates an empty file

If the file exists, it empties its contents

Pinguins GNU and other smart animals

The command shell

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File inside

Identity crisis

File inside

When a process performs an operation attempts to access an abstraction process known as I/O stream (standard input, standard output and standard error). Normally the standard input is the keyboard while output and error are terminal, but you can change these settings with redirections.

Input redirection (<):

This operator allows you to read the input of a command from the keyboard but not directly from a file.

File inside

Redirecting output (>):

This operator redirects the standard output of a command to a file. If the file does not exists a new file will be created. If the file exists the data will be wiped out

Concatenation (>>):

It performs the same functions as **>** but if the file already exists simply appends the data

File inside

Queuing (|) or pipe:

Used to use the output of one command as input of another command. It 'can be used multiple times within the same series of commands:

com1 | com2 | 3 com

& Operator:

Redirects also the standard error to a file. Is used a lot on unattended servers and not controlled, where you want it to keep the logs even if an error occurs.

Usually is used in the form ***2>&1*** which indicates that the standard error (**2**) is redirected to standard output (**1**).

File inside

The command **file** shows us the file type with which we deal: *file filename*

Replaces the information provided by the extension in DOS and Windows

cat is used to concatenate files *cat file1 file2> file3*

Using ***cat filename*** it prints out the full content of the file

more or ***less*** is most comfortable when you want to read the contents of the file on the shell

File inside

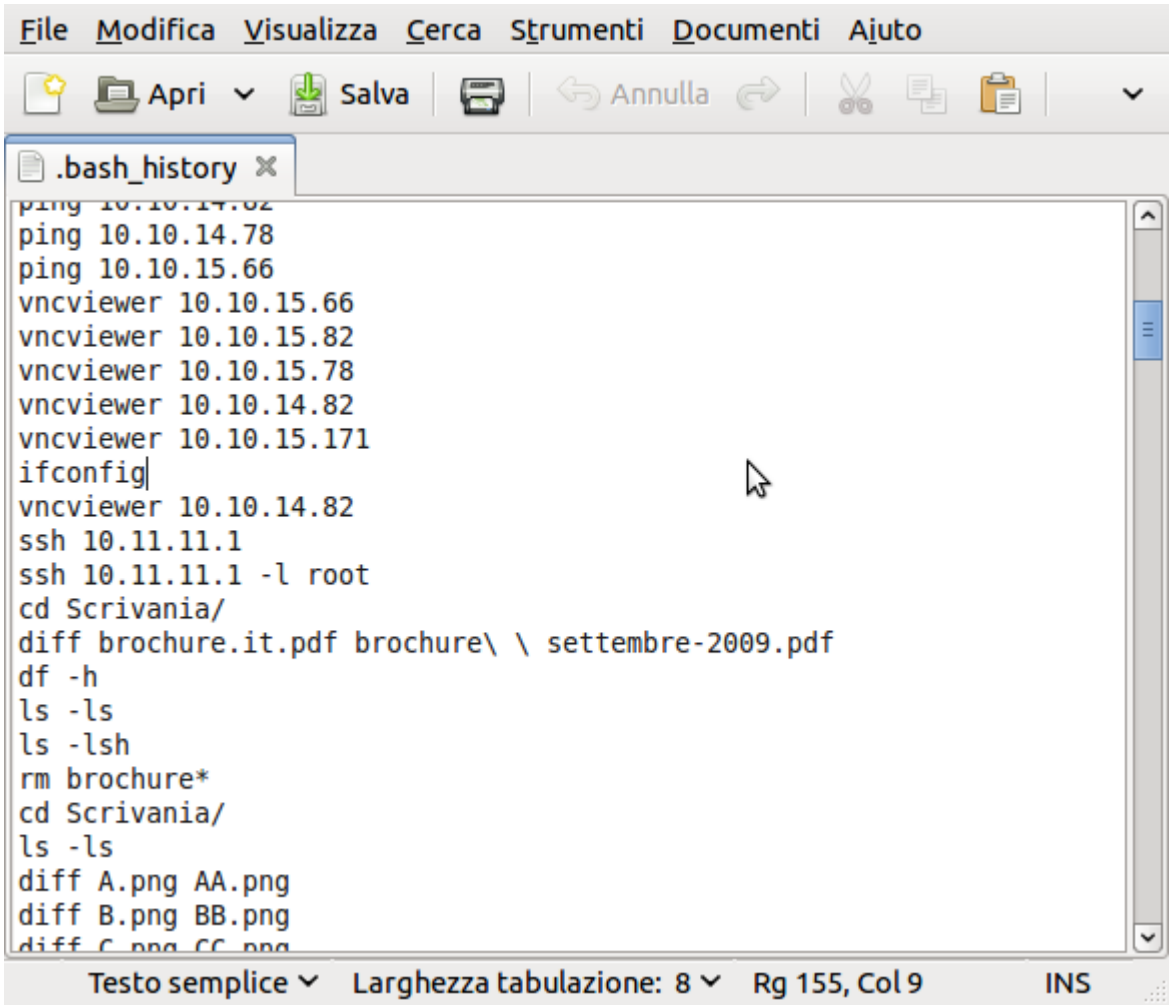
head displays the beginning of a file, the default 10 lines

tail displays the end of a file

tail -f filename allows you to see the contents of the file as any changes to the file

less is a program similar to 'more' but not native, which allows greater flexibility in viewing the file

File inside


File Modifica Visualizza Cerca Strumenti Documenti Aiuto
Apri
Salva
Annulla
.bash_history
ping 10.10.14.78
ping 10.10.15.66
vncviewer 10.10.15.66
vncviewer 10.10.15.82
vncviewer 10.10.15.78
vncviewer 10.10.14.82
vncviewer 10.10.15.171
ifconfig
vncviewer 10.10.14.82
ssh 10.11.11.1
ssh 10.11.11.1 -l root
cd Scrivania/
diff brochure.it.pdf brochure\ \ settembre-2009.pdf
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ls -ls
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diff A.png AA.png
diff B.png BB.png
Testo semplice
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Rg 155, Col 9
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Pinguins GNU and other smart animals

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File inside

Identity crisis

Identity crisis?

The command ***whoami*** or ***id*** contains information about the current

The command ***who*** lists the users currently on your system

last shows the list of users who previously have access to the system

Crisi d'identità

su allows you to switch users without login/logout

Without an indication of the user you want it switches to root user

With the option ***su -*** forces to update the environment variables

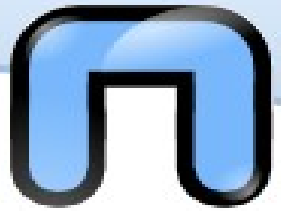
sudo allows you to run a command as if it were another person to do so

In Ubuntu ***sudo -i*** is used to open a shell with root user

Other stuff...

DESKTOP ENVIRONMENT (DE)

Could vary depending on the distribution (or by your preferences)



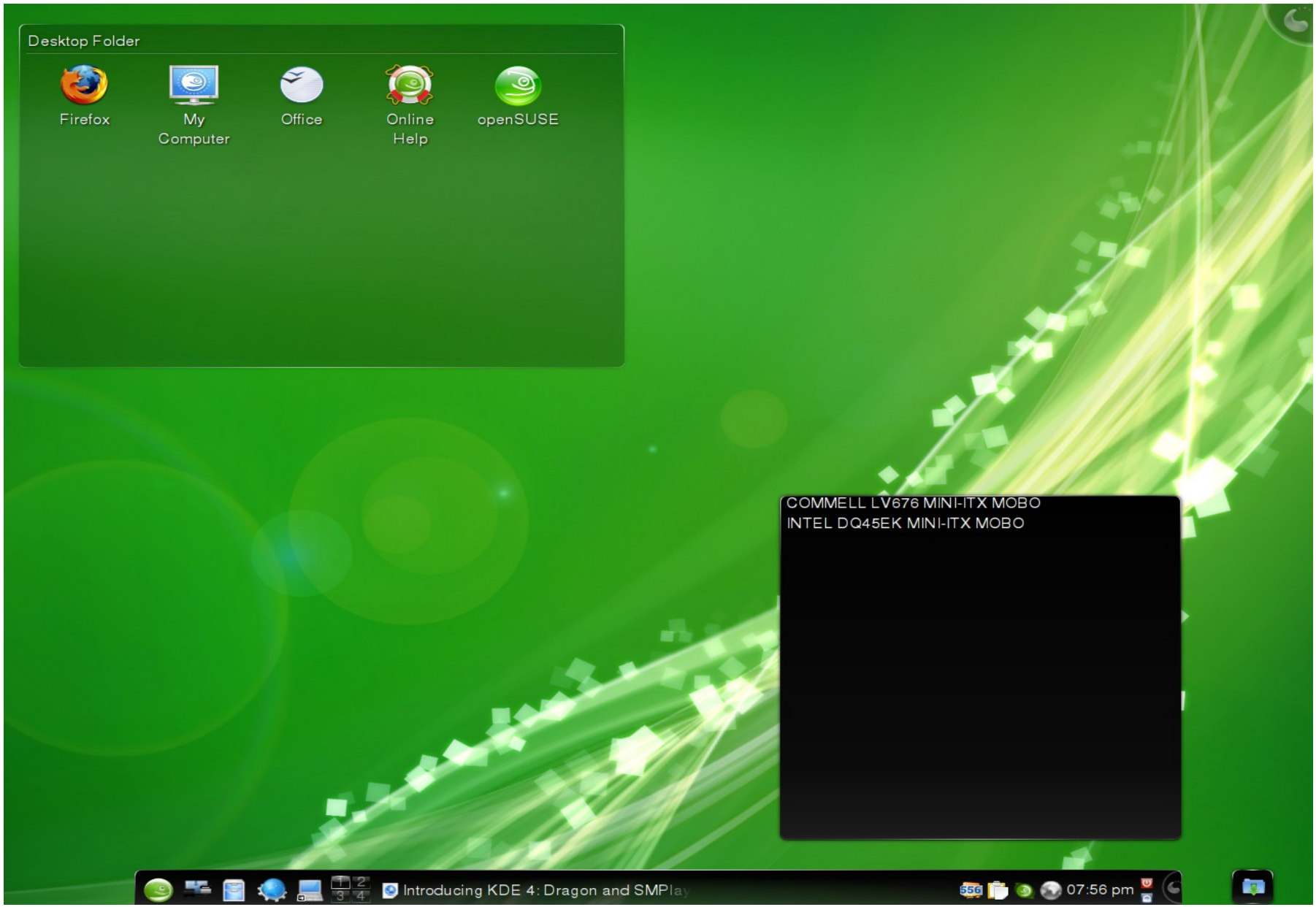
Other stuff...

Some examples

GNOME,
KDE,
XFCE,
LXDE,
ENLIGHTMENT,
OPENBOX,
FLUXBOX,
FVWM,
ICEWM,
WINDOWMAKER...

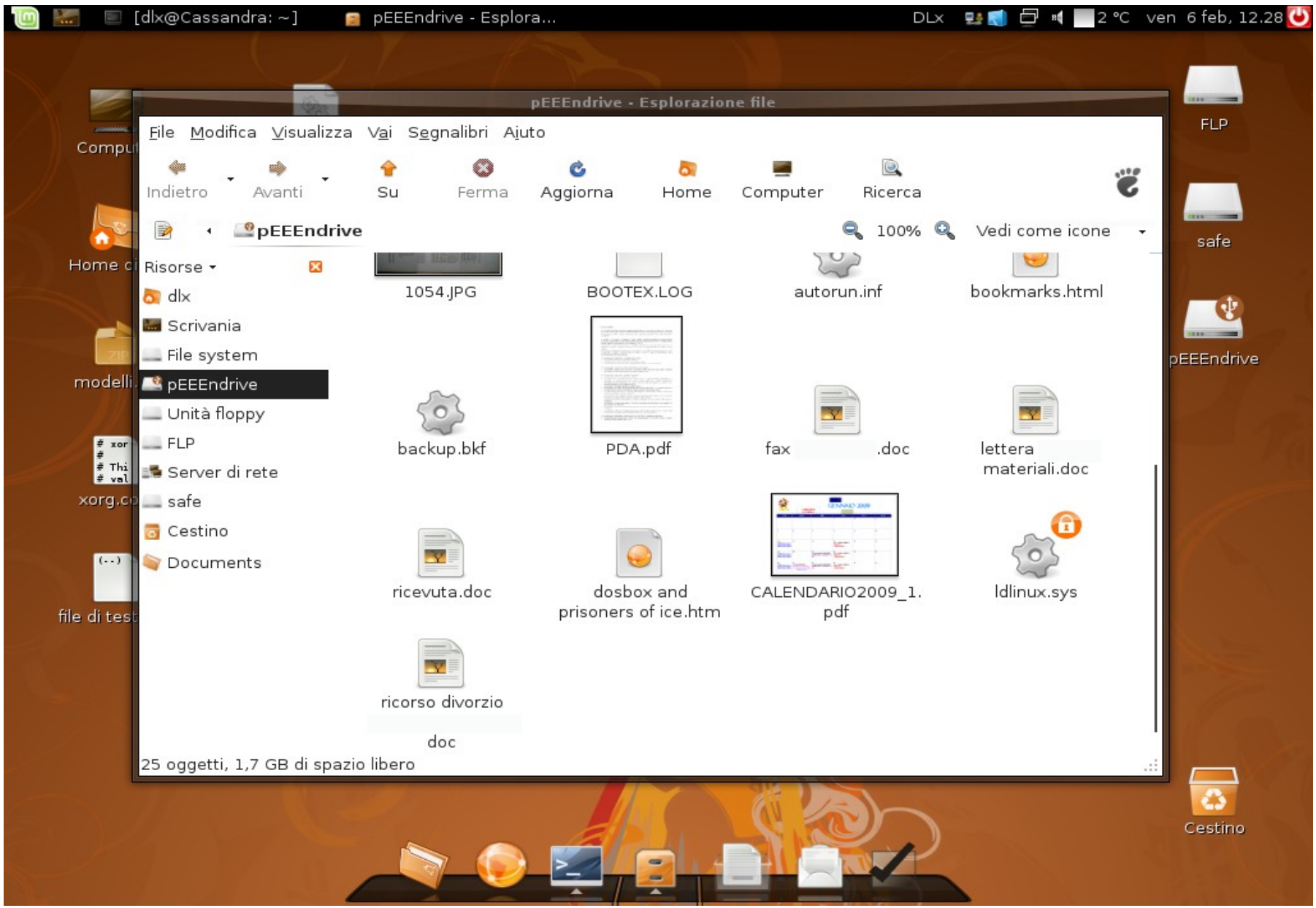
Other stuff...

KDE4



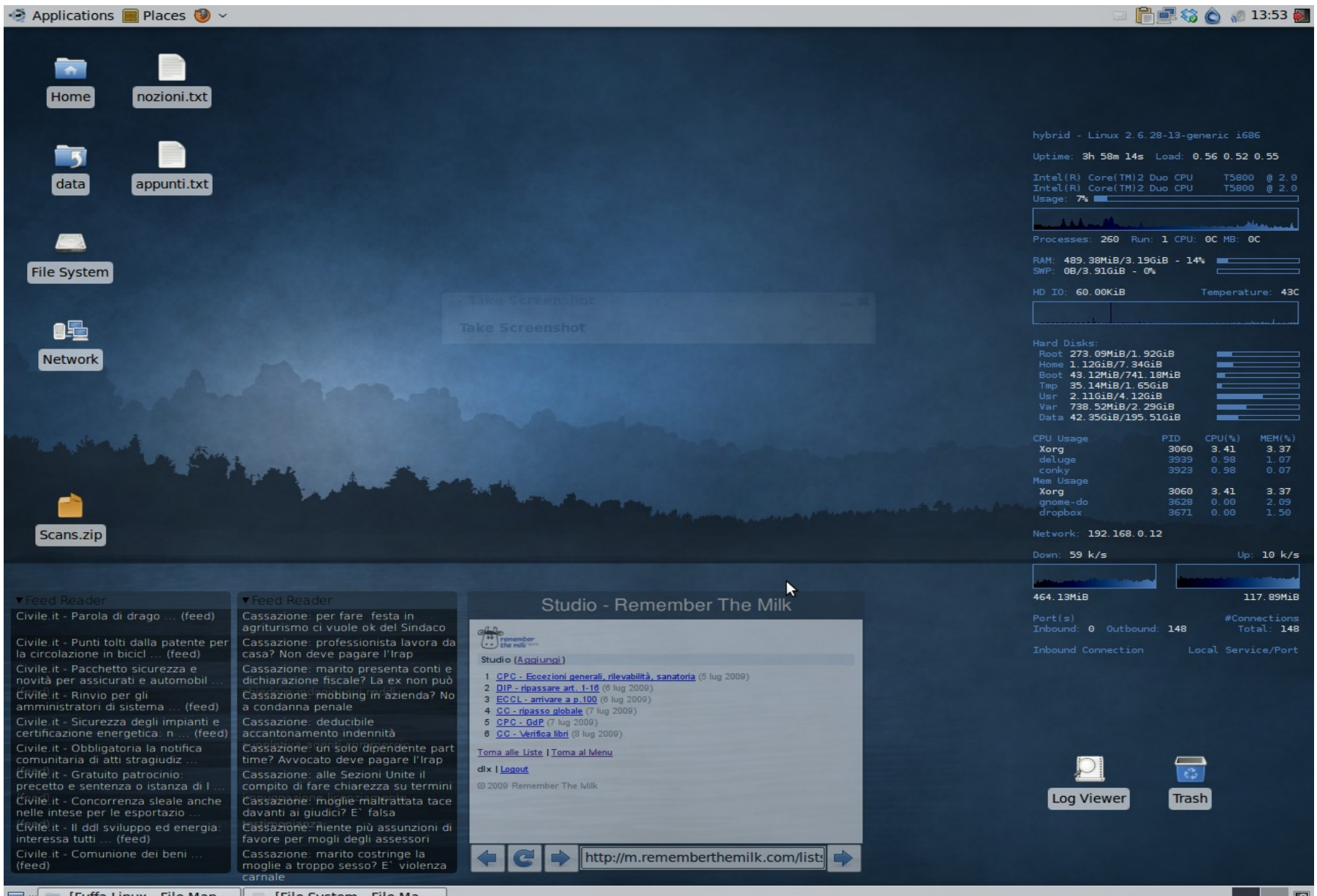
Other stuff...

GNOME



Other stuff...

XFCE



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