

Laboratorio reti AA 2006/2007

Dott. Matteo Roffilli

roffilli@csr.unibo.it

<http://www.cs.unibo.it/people/phd-students/roffilli/csr.html>

**Ricevimento solo in laboratorio
15 minuti prima e dopo la lezione**

Laboratorio reti AA 2006/2007

Per esercitarvi fate SSH su:

alfa.csr.unibo.it

si-tux00.csr.unibo.it

....

si-tux15.csr.unibo.it

Eventuali variazioni di orario/giorno verranno comunicate in anticipo via mail e sul sito web di CSR

Laboratorio reti AA 2006/2007

- **Marzo**
- **6 Intro,SSH,VI/VIM,GCC base**
- 13 Richiami di C e Compilazione

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Open Source Initiative (OSI) is a non-profit corporation dedicated to managing and promoting the Open Source Definition for the good of the community, specifically through the OSI Certified Open Source Software certification mark and program. You can read about successful software products that have these properties, and about our certification mark and program, which allow you to be confident that software really is "Open Source." We also make copies of approved open source licenses [here](#).



"Free software" is a matter of liberty, not price. To understand the concept, you should think of "free" as in "free speech," not as in "free beer."

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

The freedom to run the program, for any purpose (freedom 0).

The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this.


The freedom to redistribute copies so you can help your neighbor (freedom 2).

The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.



Linux is a clone of the operating system Unix, written from scratch by Linus Torvalds with assistance from a loosely-knit team of hackers across the Net. It aims towards POSIX and Single UNIX Specification compliance.

The Open Source Definition



open source

The Open Source Definition

Version 1.9

*The indented, italicized sections below appear as annotations to the Open Source Definition (OSD) and are **not** a part of the OSD.*

Introduction

Open source doesn't just mean access to the source code. The distribution terms of open-source software must comply with the following criteria:

1. Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.




Rationale: *By constraining the license to require free redistribution, we eliminate the temptation to throw away many long-term gains in order to make a few short-term sales dollars. If we didn't do this, there would be lots of pressure for cooperators to defect.*

2. Source Code


The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost—preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

Rationale: *We require access to un-obfuscated source code because you can't evolve programs without modifying them. Since our purpose is to make evolution easy, we require that modification be made easy.*

Free Software Foundation

http://www.fsf.org/

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Ultime notizie

 FSF aims for partnership with hardware manufacturers
2007-03-01

 China: Support Bill Xu's campaign opposing proprietary banking requirements
2007-02-05


 Encourage the EU to improve public access to scientific works
2007-01-26


 BadVista.org: FSF launches campaign against Microsoft Windows Vista
2006-12-15


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The Free Software Foundation



Free software is a matter of liberty not price.

The Free Software Foundation (FSF), established in 1985, is dedicated to promoting computer users' rights to use, study, copy, modify, and redistribute computer programs. The FSF promotes the development and use of [free software](#), particularly the GNU operating system, used widely in its GNU/Linux variant.

- Read more about free software in our [essays](#) section and in the [philosophy section of gnu.org](#).

Here are the FSF's current projects.

[GPLv3.fsf.org](#)

The first and [second drafts](#) of the revised GNU General Public License have been released for [comment](#). This project will bring together organizations, software developers, and software users from around the globe during 2006 and 2007 to update the world's most popular free software license.






[GNU](#)

FSF remains the primary sponsor of the GNU Project. In addition to the services provided by Savannah for GNU projects, FSF provides development systems for GNU software maintainers, including full email and shell services. We are committed to furthering the development of the GNU Operating System and enabling volunteers to easily contribute to that work.



[Free Software Licensing and Compliance Lab](#)

The commencement of the GNU project in 1984, with its goal to give users freedom, required the establishment of new distribution

How You Can Help

-  [Volunteer](#)
-  [Make a donation](#)
-  [Become a member](#)
-  [Become a corporate patron](#)
-  [Buy books and t-shirts](#)

You can also help by working on the development and documentation of free software programs. Please see [our list of high priority projects](#) for information on how to contribute to important projects like:

-  [Free software 3D video drivers](#)
-  [Develop a free compatible client](#)

The Linux Kernel Archives



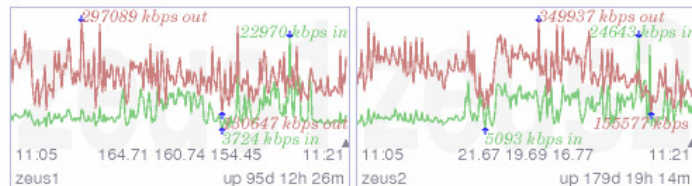
The Linux Kernel Archives

Welcome to the Linux Kernel Archives. This is the primary site for the Linux kernel source, but it has much more than just Linux kernels.

Protocol	Location
HTTP	http://www.kernel.org/pub/
FTP	ftp://ftp.kernel.org/pub/
RSYNC	rsync://rsync.kernel.org/pub/

The latest stable version of the Linux kernel is:	2.6.20.1	2007-02-20 06:49 UTC	F V	C Changelog
The latest prepatch for the stable Linux kernel tree is:	2.6.21-rc2	2007-02-28 05:14 UTC	B V VI	C Changelog
The latest snapshot for the stable Linux kernel tree is:	2.6.21-rc2-git3	2007-03-03 07:01 UTC	B V	C
The latest 2.4 version of the Linux kernel is:	2.4.34.1	2007-02-03 19:51 UTC	F V	C Changelog
The latest prepatch for the 2.4 Linux kernel tree is:	2.4.35-pre1	2007-02-10 16:50 UTC	B V	C Changelog
The latest 2.2 version of the Linux kernel is:	2.2.26	2004-02-25 00:28 UTC	F V	C Changelog
The latest prepatch for the 2.2 Linux kernel tree is:	2.2.27-rc2	2005-01-12 23:55 UTC	B V VI	C Changelog
The latest -mm patch to the stable Linux kernels is:	2.6.21-rc2-mm1	2007-03-02 10:32 UTC	B V	C Changelog

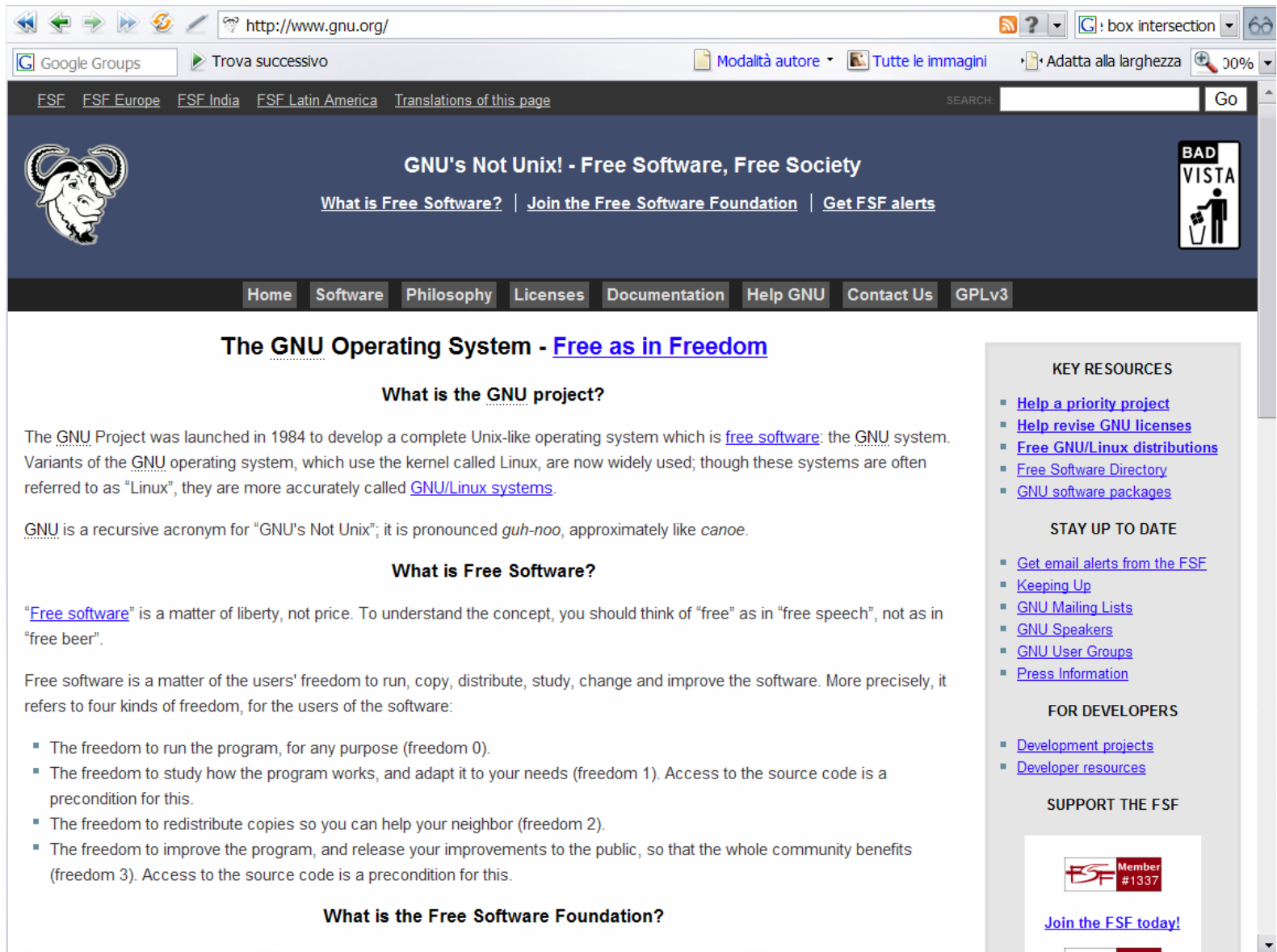
F = full source, B = patch baseline, V = view patch, VI = view incremental, C = current [changesets](#).
Changelogs are provided by the kernel authors directly. Please don't write the webmaster about them.
[Customize the patch viewer](#)



Site News

Mar 1, 2007: We now have a [dedicated git server](#). This is the same HP DL380G2 which used to be our sole main server between 2001 and 2005.

The GNU Operating System




The screenshot shows the GNU.org website in a web browser. The browser's address bar displays 'http://www.gnu.org/'. The page features a dark blue header with the GNU logo (a ram's head) on the left and the text 'GNU's Not Unix! - Free Software, Free Society' in the center. Below this, there are links for 'What is Free Software?', 'Join the Free Software Foundation', and 'Get FSF alerts'. A search bar is located on the right side of the header. The main content area is white and contains the title 'The GNU Operating System - [Free as in Freedom](#)'. Underneath, there are sections titled 'What is the GNU project?', 'What is Free Software?', and 'What is the Free Software Foundation?'. The 'What is Free Software?' section includes a paragraph about the GNU Project and a list of four freedoms. The right sidebar contains sections for 'KEY RESOURCES', 'STAY UP TO DATE', 'FOR DEVELOPERS', and 'SUPPORT THE FSF', each with a list of links. At the bottom of the sidebar, there is a 'Join the FSF today!' link and a small FSF Member logo.

http://www.gnu.org/

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 GNU's Not Unix! - Free Software, Free Society

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The GNU Operating System - [Free as in Freedom](#)

What is the GNU project?

The GNU Project was launched in 1984 to develop a complete Unix-like operating system which is [free software](#): the GNU system. Variants of the GNU operating system, which use the kernel called Linux, are now widely used; though these systems are often referred to as "Linux", they are more accurately called [GNU/Linux systems](#).

GNU is a recursive acronym for "GNU's Not Unix"; it is pronounced *guh-noo*, approximately like *canoe*.

What is Free Software?

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- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.

What is the Free Software Foundation?

KEY RESOURCES

- [Help a priority project](#)
- [Help revise GNU licenses](#)
- [Free GNU/Linux distributions](#)
- [Free Software Directory](#)
- [GNU software packages](#)


STAY UP TO DATE

- [Get email alerts from the FSF](#)
- [Keeping Up](#)
- [GNU Mailing Lists](#)
- [GNU Speakers](#)
- [GNU User Groups](#)
- [Press Information](#)

FOR DEVELOPERS

- [Development projects](#)
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Linux and the GNU Project

http://www.gnu.org/gnu/linux-and-gnu.htmlbox intersection

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GNU's Not Unix! - Free Software, Free Society

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Linux and the GNU Project

by [Richard Stallman](#)

Many computer users run a modified version of [the GNU system](#) every day, without realizing it. Through a peculiar turn of events, the version of GNU which is widely used today is more often known as "Linux", and many users are not aware of the extent of its connection with the [GNU Project](#).

There really is a Linux, and these people are using it, but it is not the operating system. Linux is the kernel: the program in the system that allocates the machine's resources to the other programs that you run. The kernel is an essential part of an operating system, but useless by itself; it can only function in the context of a complete operating system. Linux is normally used in a combination with the GNU operating system: the whole system is basically GNU, with Linux functioning as its kernel.

Many users are not fully aware of the distinction between the kernel, which is Linux, and the whole system, which they also call "Linux". The ambiguous use of the name doesn't promote understanding. These users often think that Linus Torvalds developed the whole operating system in 1991, with a bit of help.

Programmers generally know that Linux is a kernel. But since they have generally heard the whole system called "Linux" as well, they often envisage a history that would justify naming the whole system after the kernel. For example, many believe that once Linus Torvalds finished writing Linux, the kernel, its users looked around for other free software to go with it, and found that (for no particular reason) most everything necessary to make a Unix-like system was already available.

What they found was no accident—it was the not-quite-complete GNU system. The available [free software](#) added up to a complete

To learn more about this issue, you can also read our [GNU/Linux FAQ](#) and our page on [GNU Users Who Have Never Heard of GNU](#).

KEY RESOURCES

- [Help a priority project](#)
- [Help revise GNU licenses](#)
- [Free GNU/Linux distributions](#)
- [Free Software Directory](#)
- [GNU software packages](#)

STAY UP TO DATE

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Linux distributions

From Wikipedia, the free encyclopedia

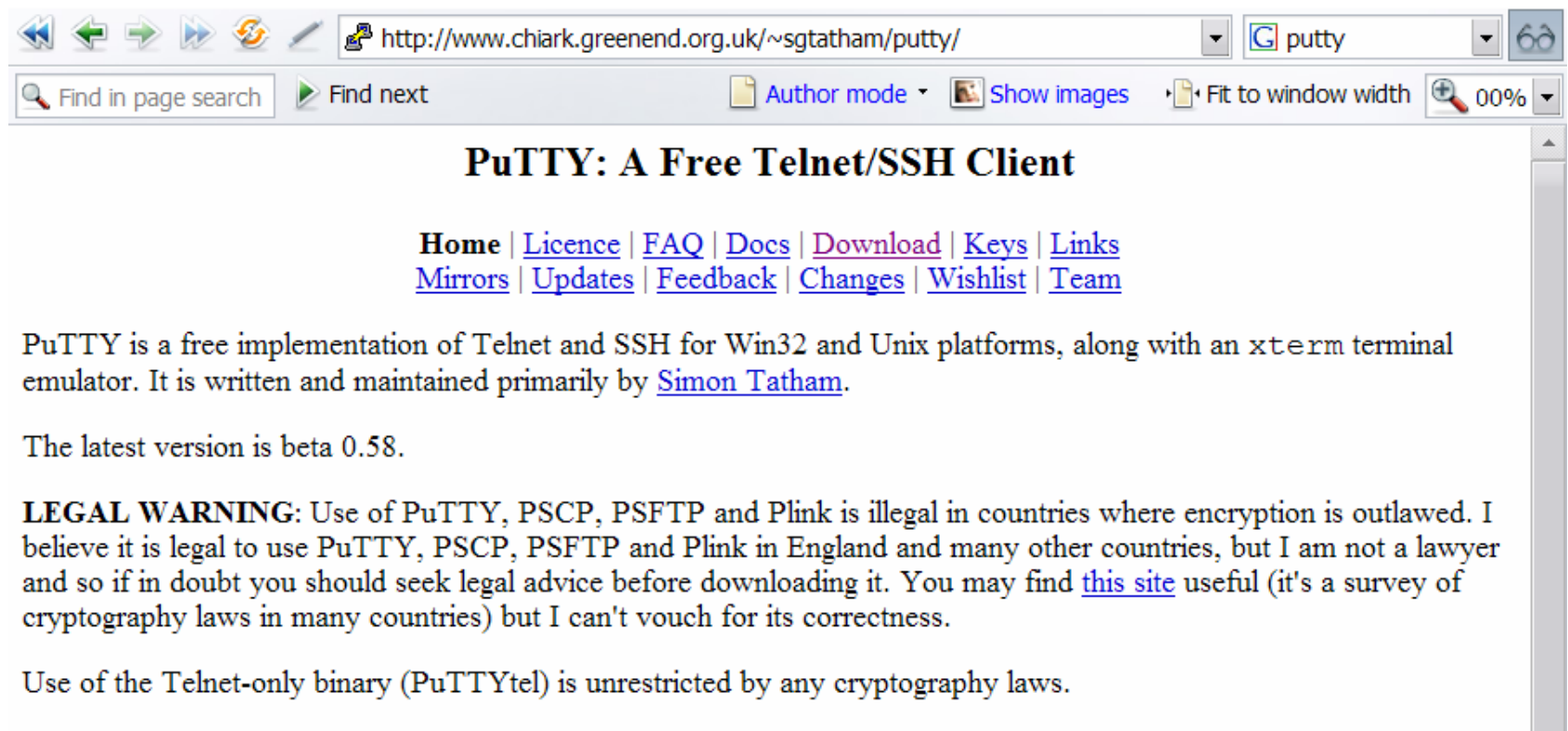
A Linux distribution, often simply distribution or distro, is a member of the Linux family of Unix-like operating systems comprised of the Linux kernel, the non-kernel parts of the GNU operating system, and assorted other software. Linux distributions take a variety of forms, from fully-featured desktop and server operating systems to minimal environments (typically for use in embedded systems, or for booting from a floppy).

To provide a Unix-like environment, Linux distributions contain a set of Unix-like utilities and the libraries needed to support them. In full-featured distributions these are generally taken from the GNU operating system. Distributions optimized for size tend to use more compact alternatives like busybox and uclibc.

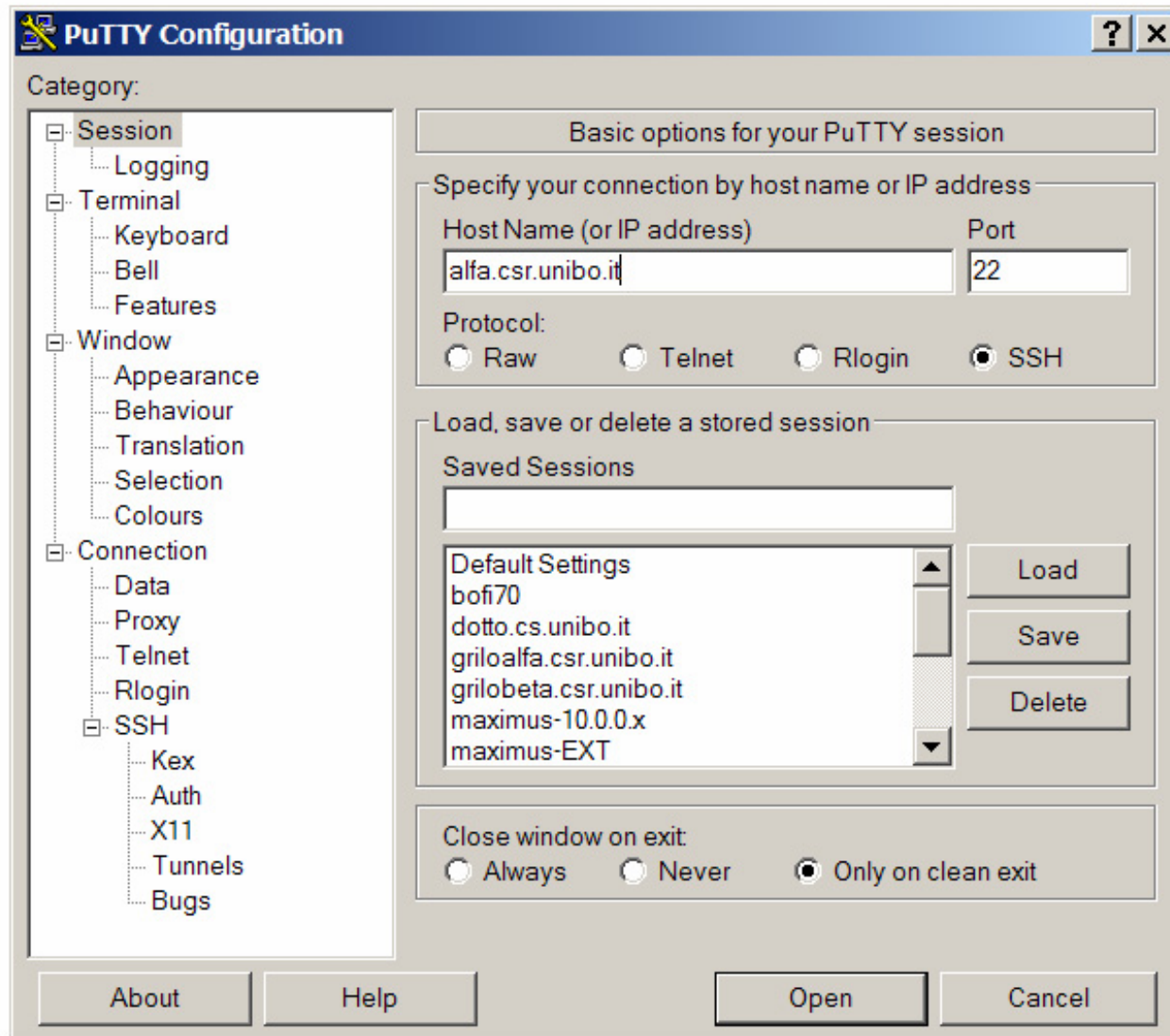
There are currently over three hundred Linux distribution projects in active development, constantly revising and improving their respective distributions. One can distinguish between commercially-backed distributions, such as Fedora Core (Red Hat), SUSE Linux (Novell), Ubuntu (Canonical Ltd.) and Mandriva Linux and community distributions such as Debian and Gentoo. Usually, the procedures for assembling and testing a distribution prior to release are more elaborate the bigger the user base for the distribution is.

SSH

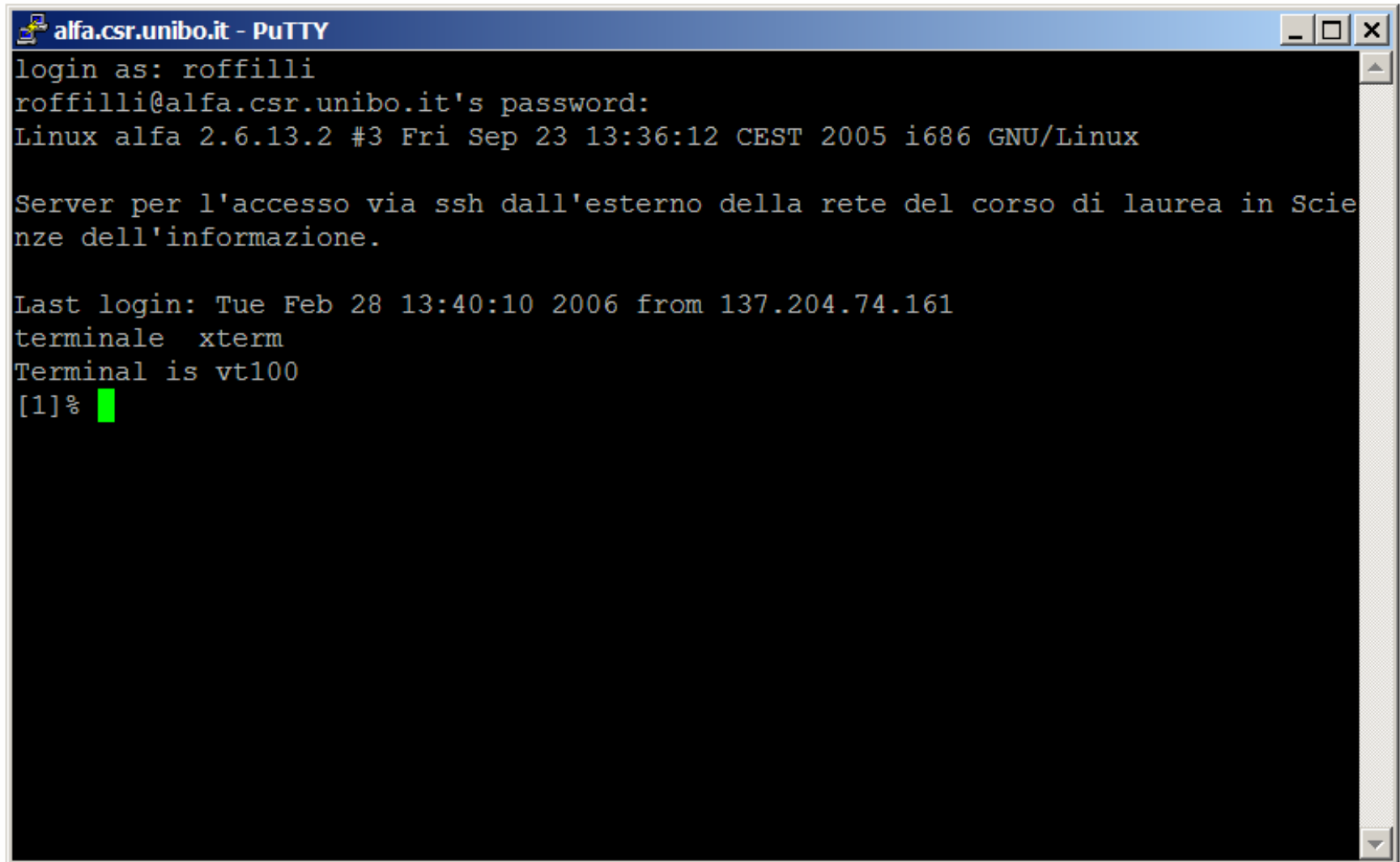
Connettersi a macchine GNU/Linux da macchine Windows



SSH 2



SSH 3



The image shows a PuTTY terminal window titled "alfa.csr.unibo.it - PuTTY". The terminal displays the following text:

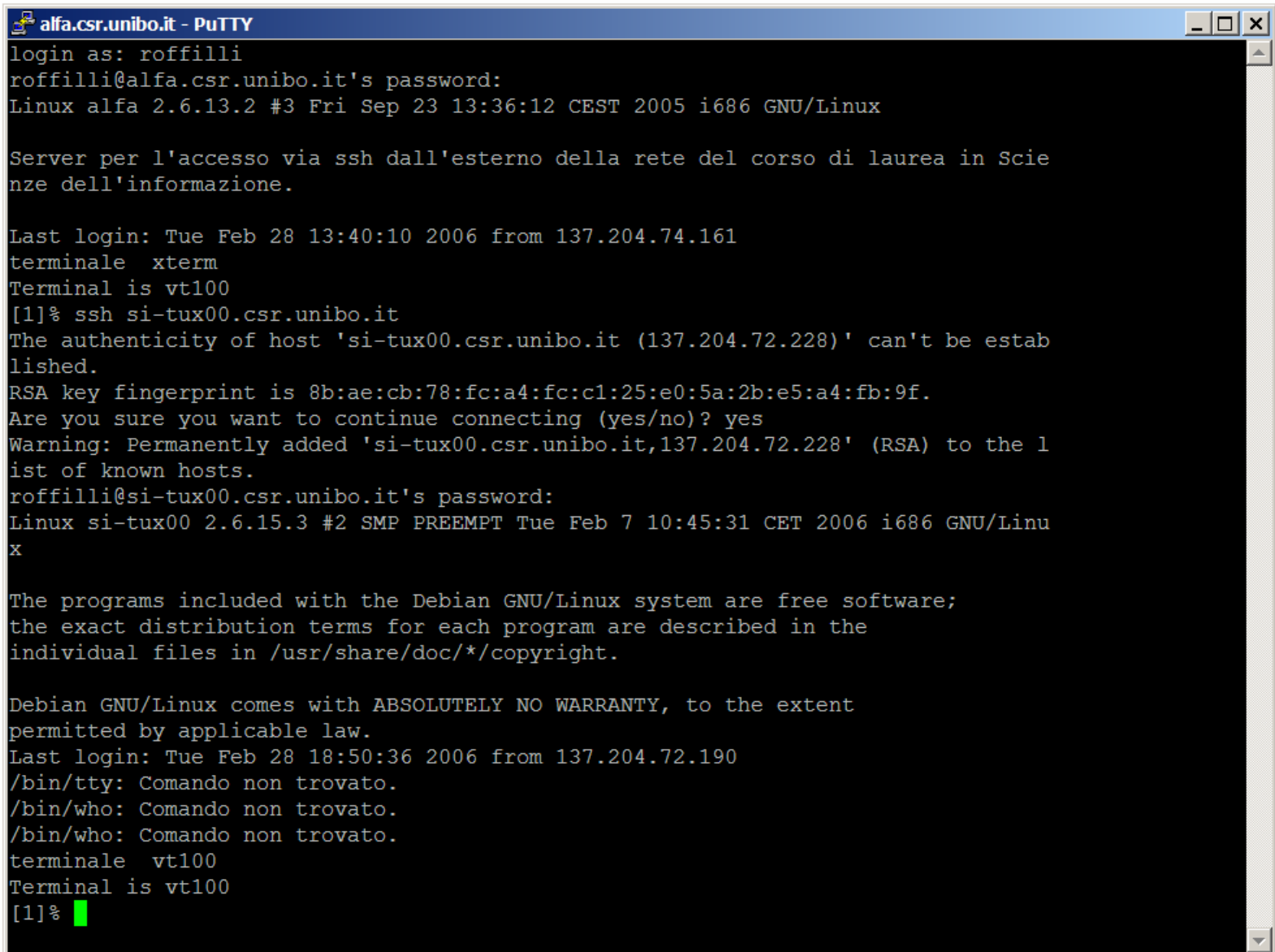
```
login as: roffilli
roffilli@alfa.csr.unibo.it's password:
Linux alfa 2.6.13.2 #3 Fri Sep 23 13:36:12 CEST 2005 i686 GNU/Linux

Server per l'accesso via ssh dall'esterno della rete del corso di laurea in Scienze dell'informazione.

Last login: Tue Feb 28 13:40:10 2006 from 137.204.74.161
terminale xterm
Terminal is vt100
[1]%
```

The terminal window has a blue title bar with standard window controls (minimize, maximize, close) on the right. The text is displayed in a monospaced font on a black background. A green cursor is visible at the end of the prompt "[1]%".

SSH 4



```
alfa.csr.unibo.it - PuTTY
login as: roffilli
roffilli@alfa.csr.unibo.it's password:
Linux alfa 2.6.13.2 #3 Fri Sep 23 13:36:12 CEST 2005 i686 GNU/Linux

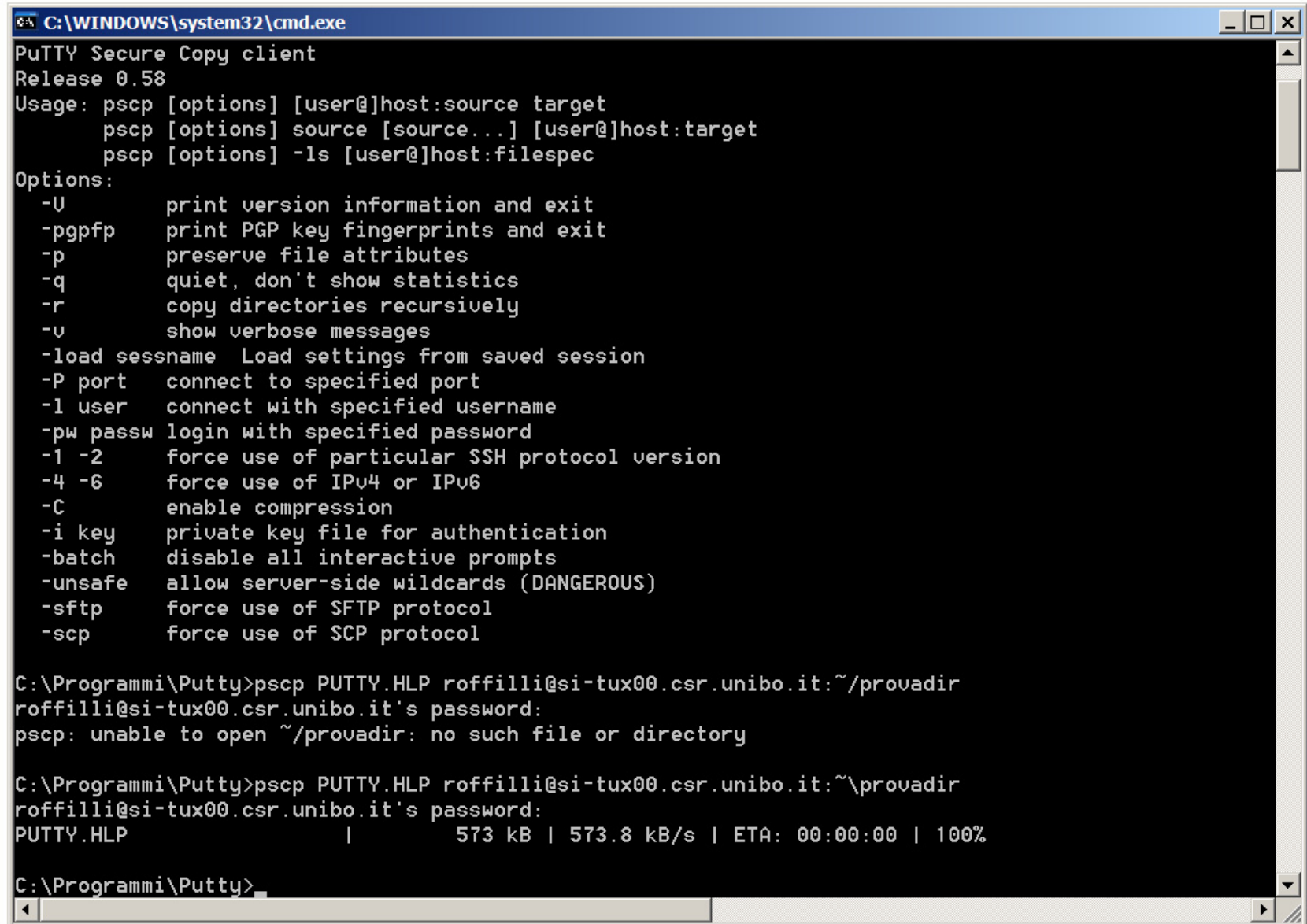
Server per l'accesso via ssh dall'esterno della rete del corso di laurea in Scie
nze dell'informazione.

Last login: Tue Feb 28 13:40:10 2006 from 137.204.74.161
terminale xterm
Terminal is vt100
[1]% ssh si-tux00.csr.unibo.it
The authenticity of host 'si-tux00.csr.unibo.it (137.204.72.228)' can't be estab
lished.
RSA key fingerprint is 8b:ae:cb:78:fc:a4:fc:c1:25:e0:5a:2b:e5:a4:fb:9f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'si-tux00.csr.unibo.it,137.204.72.228' (RSA) to the l
ist of known hosts.
roffilli@si-tux00.csr.unibo.it's password:
Linux si-tux00 2.6.15.3 #2 SMP PREEMPT Tue Feb 7 10:45:31 CET 2006 i686 GNU/Linu
x

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Feb 28 18:50:36 2006 from 137.204.72.190
/bin/tty: Comando non trovato.
/bin/who: Comando non trovato.
/bin/who: Comando non trovato.
terminale vt100
Terminal is vt100
[1]% █
```

SSH – copiare file con PSCP



```
C:\WINDOWS\system32\cmd.exe
PuTTY Secure Copy client
Release 0.58
Usage: pscp [options] [user@]host:source target
       pscp [options] source [source...] [user@]host:target
       pscp [options] -ls [user@]host:filespec
Options:
  -U          print version information and exit
  -pgpfp      print PGP key fingerprints and exit
  -p          preserve file attributes
  -q          quiet, don't show statistics
  -r          copy directories recursively
  -v          show verbose messages
  -load sessname Load settings from saved session
  -P port      connect to specified port
  -l user      connect with specified username
  -pw passw    login with specified password
  -1 -2        force use of particular SSH protocol version
  -4 -6        force use of IPv4 or IPv6
  -C          enable compression
  -i key       private key file for authentication
  -batch       disable all interactive prompts
  -unsafe      allow server-side wildcards (DANGEROUS)
  -sftp        force use of SFTP protocol
  -scp         force use of SCP protocol

C:\Programmi\Putty>pscp PUTTY.HLP roffilli@si-tux00.csr.unibo.it:~/provadir
roffilli@si-tux00.csr.unibo.it's password:
pscp: unable to open ~/provadir: no such file or directory

C:\Programmi\Putty>pscp PUTTY.HLP roffilli@si-tux00.csr.unibo.it:~\provadir
roffilli@si-tux00.csr.unibo.it's password:
PUTTY.HLP          |          573 kB | 573.8 kB/s | ETA: 00:00:00 | 100%

C:\Programmi\Putty>
```


SSH – esercizio

- 1) Provate a connettervi ad una macchina linux a scelta tra quelle elencate prima
- 2) Ora provate a connettervi dalla macchina linux ad un'altra macchina linux

NOTA: Se avete problemi con l'account è il momento di risolverli!!!

GNU/Linux comandi base

ls

cat

cd

mkdir

rmdir

rm

ps

VI / VIM

- **Vim** e` una versione potenziata, e un po' piu` user-friendly, di uno dei due editor standard dei sistemi Unix, **vi** (l'altro è Emacs).
- Vim è l'ideale per modificare rapidamente file di testo, cosa necessaria per l'amministrazione di sistema; personalmente consiglio di usare sempre vim come editor per GNU/Linux.
- All'inizio vi sembrerà un po' ostico, ma l'ubiquità degli editor in “stile vi” nei sistemi Unix, e la velocità con cui editerete, vi ricompenseranno dei vostri sforzi.

VI / VIM distribuzioni

Unix, MS-DOS, Windows, and OS/2

This overview is not frequently updated! You should check for newer versions.

	Unix and/or source	MS-DOS	Windows 3.x	Windows 9x/2k/NT/XP	OS/2
VIM ¹	vim-6.3.tar.bz2	vim63d16.zip	<i>Use MS-DOS</i>	gvim63.zip	vim63os2.zip
Elvis ²	elvis-2.2_0.tar.gz	elvis-2.2_0-msdos.tar.gz	<i>Not available</i>	elvis-2.2_0-win32.tar.gz	elvis-2.2_0-os2.tar.gz
VILE	vile.tar.gz	vile-dos.zip	<i>Not available</i>	vile-w32.zip	vile-os2.zip
Lemmy	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	lemmy42.exe	<i>Not available</i>
Nvi	nvi-1.79.tar.gz	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
Stevie	<i>Not available</i>	stevie69s.zip ³	<i>Not available</i>	<i>Not available</i>	stvi369g.zip
WinVi	wvsrc294.zip	<i>Not available</i>	winvi16.zip	winvi32.zip	<i>Not available</i>
xvi	xvi2.47.tgz	xviexe.zip	<i>Not available</i>	xvi.zip	<i>Not available</i>
Pvic	<i>Not available</i>	pvic_dos.zip	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
Calvin	<i>Not available</i>	calvin23.zip	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
Bvi	bvi-1.3.2.src.tar.gz	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
ex-vi	ex-040605.tar.gz	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
levee	levee-current.tar.gz	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
BusyBox's vi	busybox-1.00.tar.gz	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>

Macintosh, Atari, Amiga and OpenVMS

	Macintosh	Atari	Amiga	OpenVMS/Alpha	OpenVMS/VAX
VIM	vim5.6.full.fat.sit	vim-4.6.mint.bin.tgz	vim56bin.tgz	vim-56-alpha.zip	vim-56-vax.zip
VILE	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>	vile-9.2	vile-9.2
Stevie	stevie3.69+.sit.hqx	stevie.lzh ⁴	Stevie.lha	<i>Not available</i>	<i>Not available</i>

VI / VIM startup

Per lanciare vi è sufficiente eseguire

vi [nome file]

A questo punto compare l'interfaccia di vi. Essa è composta dall'area per editare il testo e da uno o due righe in basso. Esse segnalano le informazioni sullo stato attuale e mostrano i comandi quando vengono immessi. Su alcune distribuzioni Linux può essere utile lanciare **vim** invece di **vi**, poiché così si ha un comportamento non standard, ma più intuitivo.

Esistono due modalità di funzionamento per vi:

1. modalità comandi: permette di inserire comandi e scegliere quale azione compiere.

Questa modalità è suddivisa a sua volta in due sottogruppi:

- a) comandi immediati: sono formati da un numero limitato di caratteri.
- b) comandi a linea: sono iniziati premendo i due punti(:) e terminati da INVIO

2. modalità editing: permette di inserire e cancellare il testo. Funziona più o meno come un editor di testo quale blocco note o kate. Va notato che essendo un programma testuale alcune cose non sono fatte nel modo usuale.

Riassunto comandi

esc	Passa alla modalita` comandi
i	Passa in modalita` inserimento nel punto in cui si trova il cursore
o	Apri in inserimento una nuova linea sotto la posizione corrente
x	Cancella un carattere
r*	Sostituisce con * il carattere su cui si trova il cursore
dd	Taglia una riga (vale come selezione)
3dd	Taglia 3 righe (vale come selezione)
yy	Copia una riga
3yy	Copia 3 righe
p	Incolla la selezione nella riga sotto il cursore
/pippo	Cerca le occorrenze di "pippo" nel file
n	Si posiziona sull'occorrenza successiva
N	Si posiziona sull'occorrenza precedente
:s/pippo/pluto/g	Sostituisce "pippo" con "pluto" nella riga corrente
:%s/pippo/pluto/g	Sostituisce "pippo" con "pluto" in tutto il file
:q	Esce (solo se non si sono fatte modifiche)
:w	Salva
:wq	Salva ed esce
:q!	Esce senza salvare

VI – esercizio

- 1) Connettetevi ad una macchina linux a scelta tra quelle elencate prima
- 2) Aprite un file con VI/VIM ed editatelo
- 3) Salvate il file
- 4) Riaprite il file, modificatelo e salvatelo di nuovo