Configurazione e Uso Avanzato di SSH

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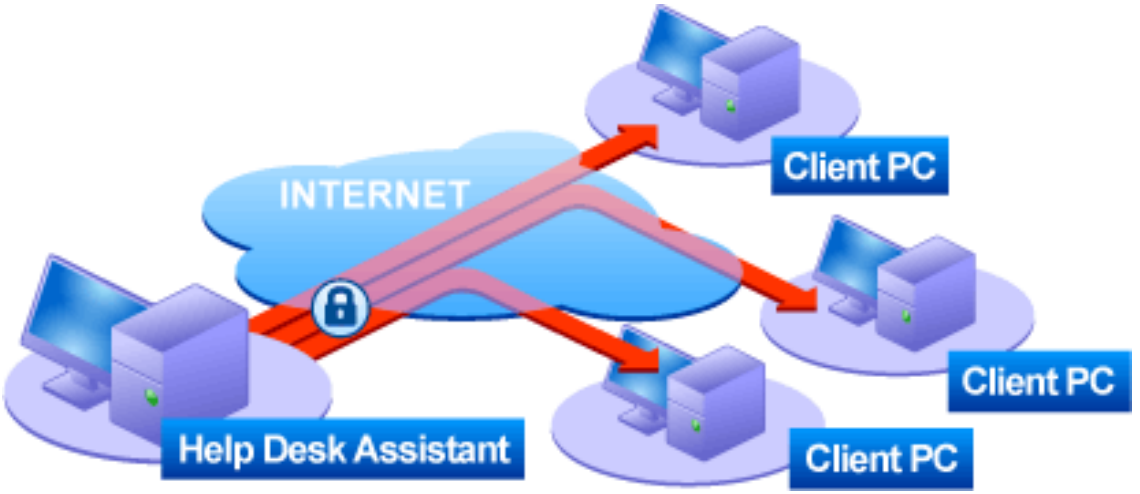
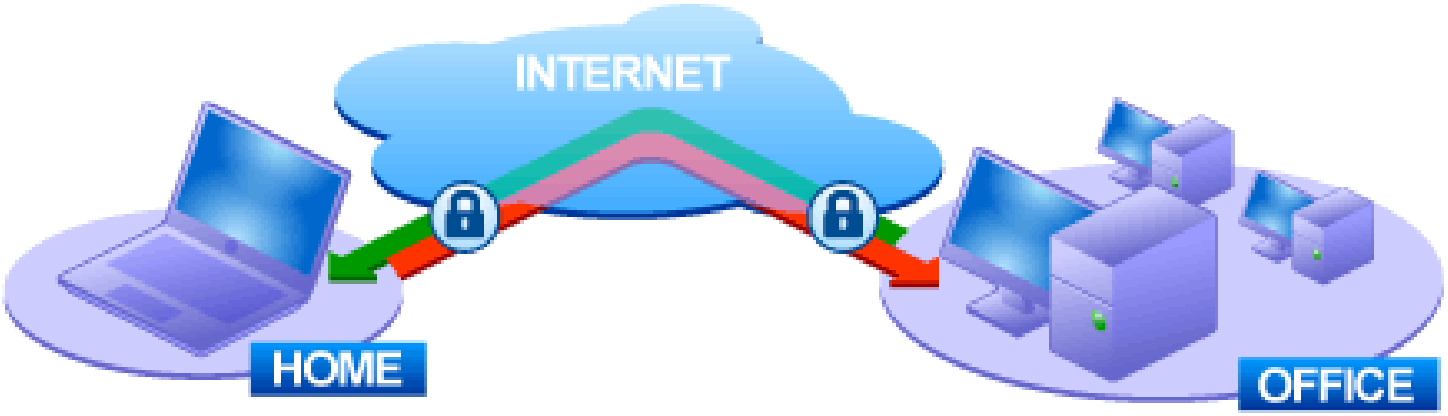
Gestione remota





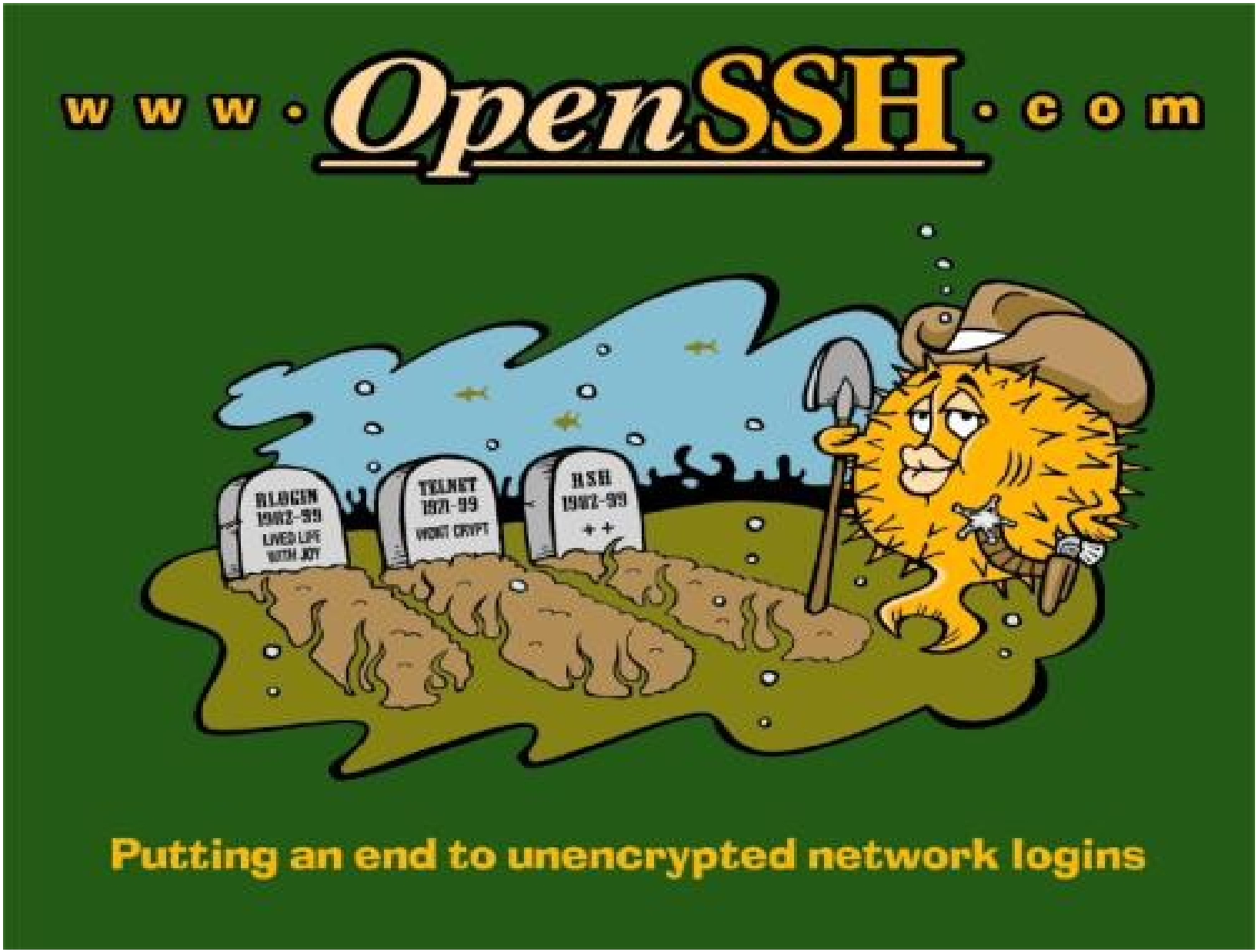
Implementazione standard

- Protocollo definito negli RFC 4251/4256, a opera del gruppo di lavoro IETF “secsh”
- L'implementazione più diffusa è quella curata dal team OpenBSD
- Rilasciata sotto licenza (perlopiù) *BSD 2-clause* e reperibile presso www.openssh.org

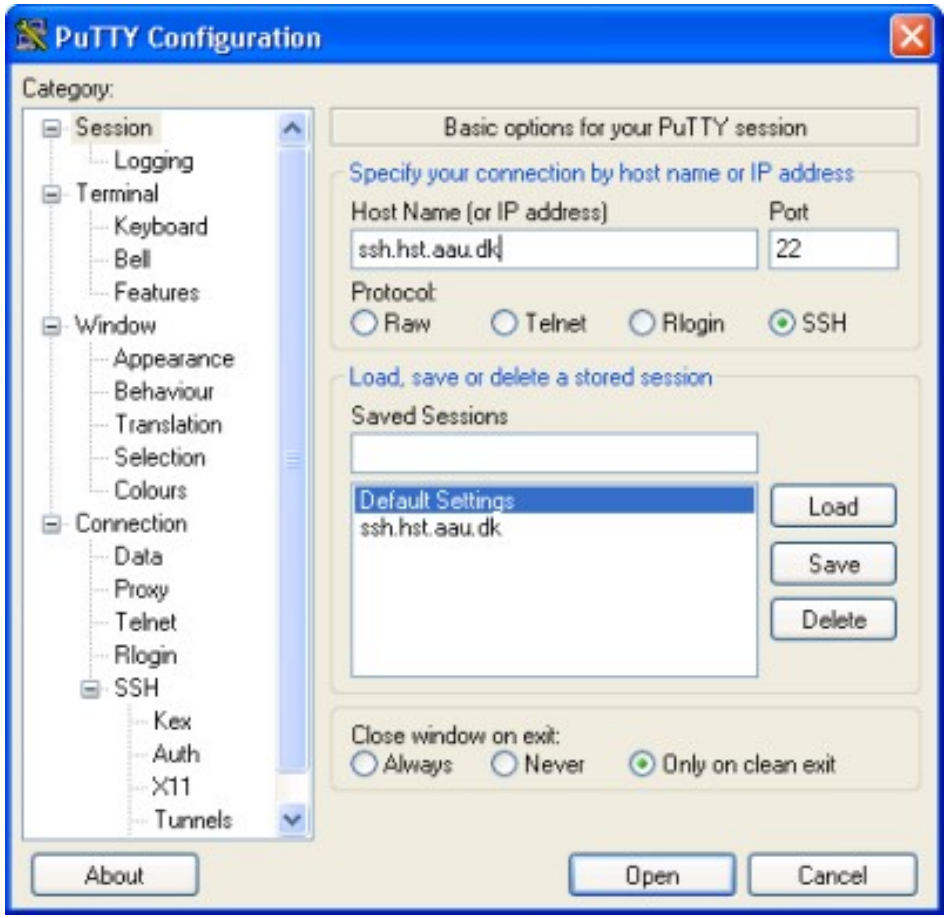
Portable e patch

- Lo stesso team cura il branch **portable** per SO diversi da OpenBSD
- Il nostro riferimento contiene patch di terze parti, reperibili presso http://diff.debian.net/package/openssh
- Downstream diversi possono fornire pacchetti frammisti con codice GPL

Advertising



Altre interfacce



- *Grafiche*
  - Hotssh
  - Putty
  - Secpanel
  - Grcm
- *Parallele/clusterizzate*
  - Dish
  - Pssh
  - Clusterssh
- *Embedded/minimali*
  - Dropbear
  - Lssh

Uso base: login remoto

```
lucab@thetis:~$ ssh lucab@io.debian.net

lucab@io:~$ uname -a
GNU/kFreeBSD io.debian.net 7.1-1-686
lucab@io:~$ ssh lucab@albeniz.debian.org

lucab@albeniz:~$ uname -a
GNU/Linux albeniz 2.6.26-1-alpha-generic
 alpha
```

Uso base: copia remota

```
lucab@thetis:~$ scp luca@inkscape.org:
  /etc/gentoo-release .
gentoo-release    100%   37     0.0KB/s

lucab@thetis:~$ cat gentoo-release
Gentoo Base System release 1.12.11.1
```

Uso base: ftp remoto

```
lucab@thetis:~$ sftp people.debian.org
Connecting to people.debian.org...
sftp> pwd
Remote working directory:
  /home/lucab
sftp> dir
public_html
sftp> help
Available commands:
        [...]
```

Uso base: single-hit remoto

```
$ ssh crest.debian.net \
    'cat /proc/cpuinfo; uptime'

CPU:    68060
MMU:    68060
FPU:    68060
Clocking: 49.5MHz
BogoMips: 99.12
Calibration:  495616 loops

21:41:30 up 153 days,  4:55,  0 users,
   load average: 0.85, 0.26, 0.21
```

Uso base: azioni ripetute

```
$ cat ./macchine
   people.debian.org
   unstable.it

$ parallel-ssh -P -h ./macchine  \
      'hostname'
unstable.it: katana
[1] 23:29:41 [SUCCESS] unstable.it 22

people.debian.org: ravel
[2] 23:29:43 [SUCCESS]
    people.debian.org 22
```

Comincia il viaggio

Riferimenti (RTFM):

- *man ssh*
- *man sshd*

- *man ssh_config*
- *man sshd_config*

Tuning lato client

Configurazione tramite file

- **~/.ssh/config**
- **/etc/ssh/ssh_config**

Equivalentemente, opzioni specificabili da linea di comando:

$ ssh -C -6 -p 18288 -o “VisualHostKey=yes” ::1

Opzioni host-specifiche

*Host **

GSSAPIAuthentication=no
CompressionLevel=9
ServerAliveInterval=30

*Host *.unstable.it*

ForwardAgent=yes

Host piano2

Hostname 172.19.172.19
User admin.big

Host dynamic

Hostname foo.dyndns.org
CheckHostIP no
Port=22000

Host muletto.local

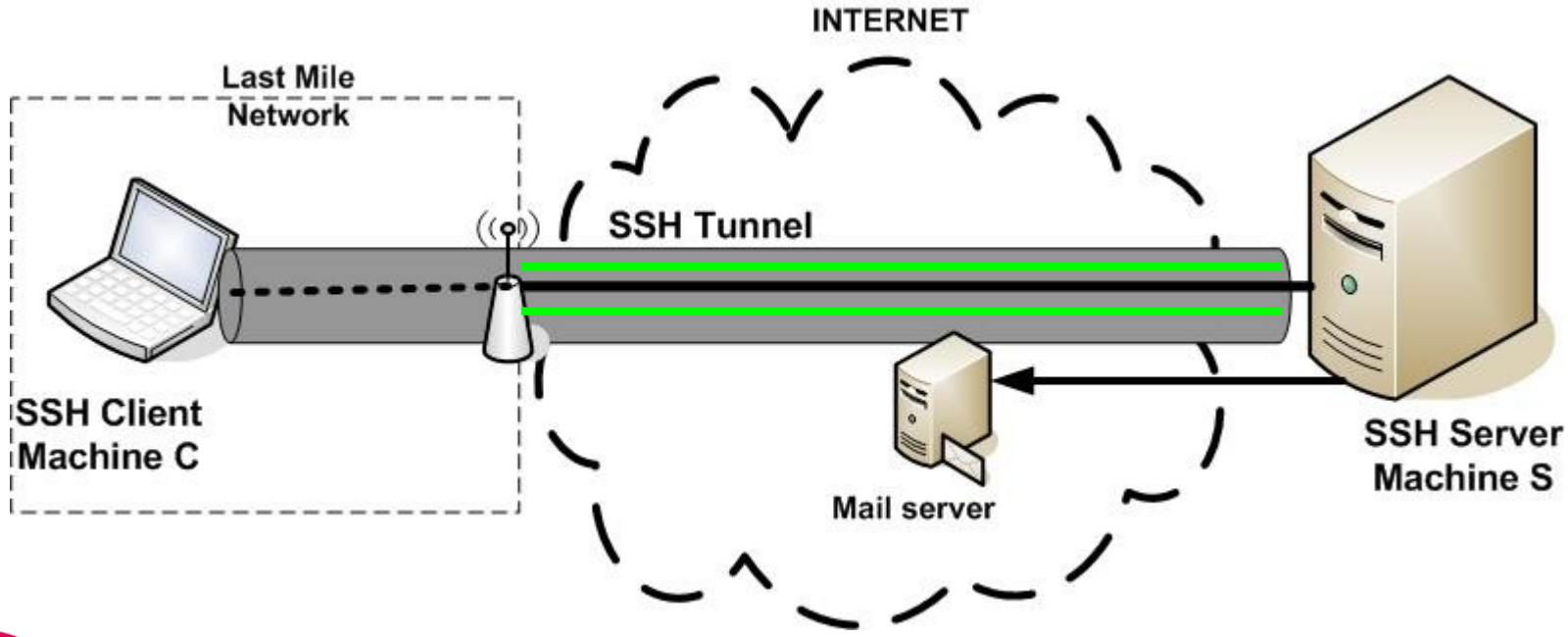
UserKnownHostsFile /dev/null
StrictHostKeyChecking no

Singolo Canale

Host *

ControlPath ~/.ssh/sock/%r@%h:%p

ControlMaster auto



Ssh console escaping

Ssh possiede una console, raggiungibile tramite **<ENTER> ~** (nessun risconto visuale).

Sequenze di escape supportate:

- *~?* *help ed elenco di comandi*
- *~.* *termina connessione*
- *~B* *manda un BREAK al sistema remoto*
- *~C* *apre la linea di comando*
- *~R* *richiede un rekey (solo SSHv2)*
- *~^Z* *sospende ssh*
- *~#* *elenca le connessioni attivi*
- *~&* *manda in background ssh*
- *~~* *escape letterale di ~*

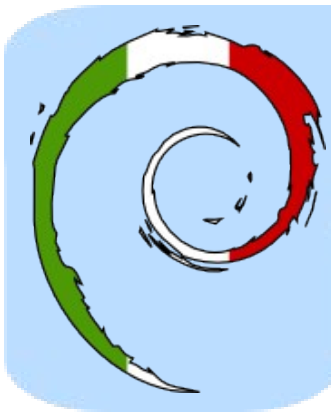
Tuning lato server

Configurazione tramite file

- ***/etc/ssh/sshd_config***

Equivalentemente, opzioni specificabili da linea di comando:

$ sshd -f /dev/null -6 -D -p 18288 -o "DenyUsers=test pippo foo"



Restrizioni mirate

```
Match User ups
    PasswordAuthentication no
    RSAAuthentication yes
    PubkeyAuthentication yes
    ForceCommand 'foobar'
    AuthorizedKeysFile      \
            .ssh/authorized_keys_ups

Match Address 192.168.0.0/16
    PermitRootLogin=yes
```

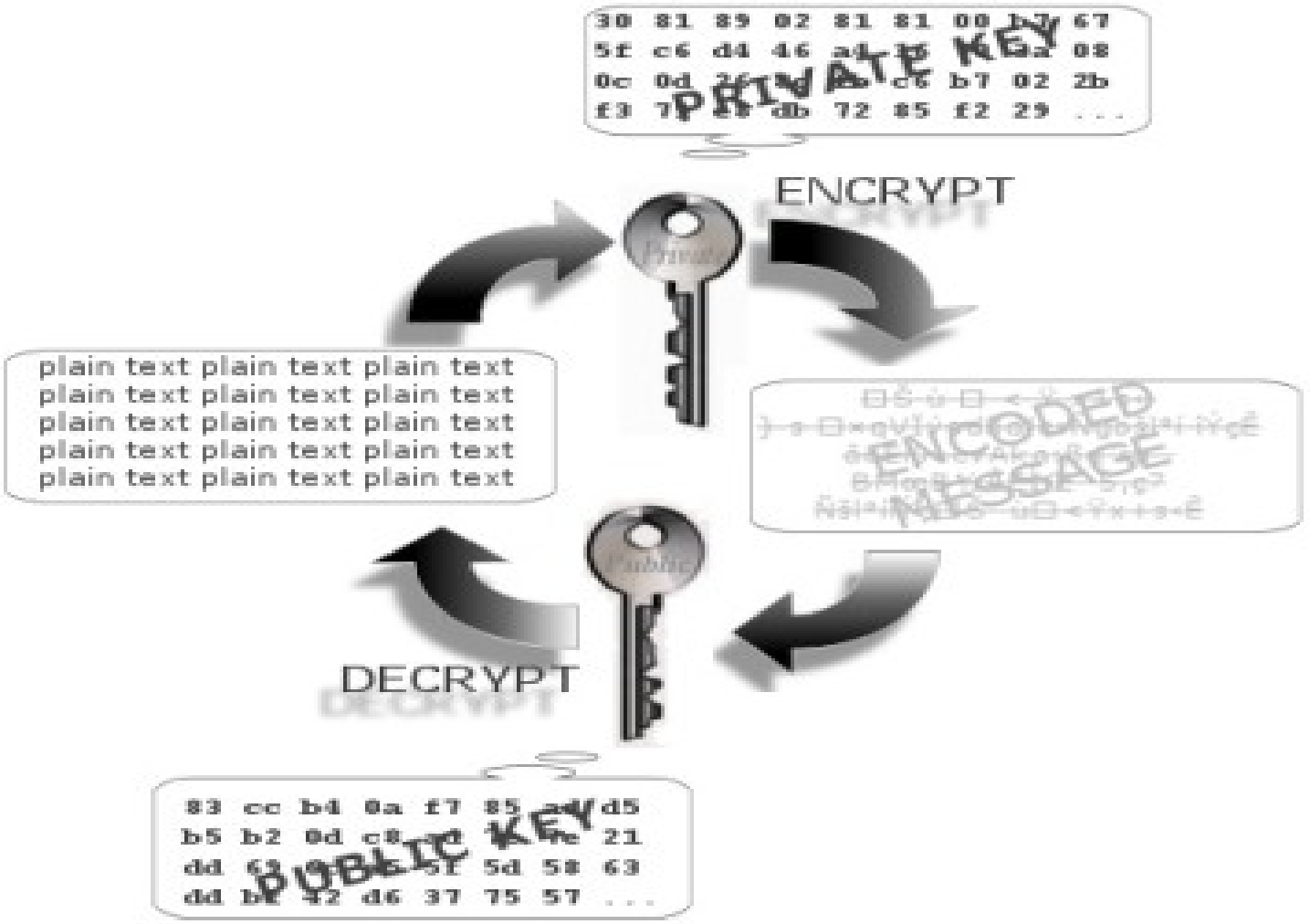
È un mondo difficile

Pratiche già viste, usate (abusate?) in giro per il mondo

- Port-knocking
- Cambio di porta
- fail2ban, denyhosts
- iptables mirroring/reflecting

Se non assolutamente necessarie, creano quasi più fastidio del problema che dovrebbero risolvere...

Chiavi private e pubbliche



Generazione chiavi

$ ssh-keygen

Generating **public/private rsa key pair**.
Enter file in which to save the key
(~/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your **identification** has been saved in
~/.ssh/id_rsa.
Your **public key** has been saved in
~/.ssh/id_rsa.pub.

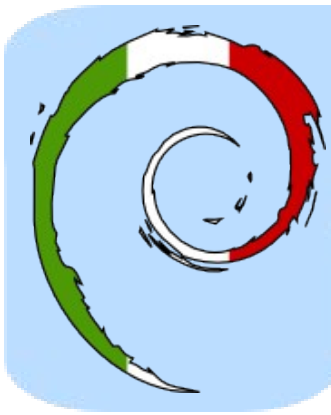
The key **fingerprint** is:
3e:c0:62:ab:38:3b:7a:77:62:6d:2e:38:9e:d8:d4:d2 lucab@thetis

Parte pubblica

$ ssh-keygen -lvf ~/.ssh/id_rsa.pub
1024 c0:0c:ec:83:42:e9:b1:a8:10:a6:94:4a:62:20:84:44
.ssh/id_rsa.pub (RSA)

```
+--[RSA 1024]----+
|Oeo..           |
|=X  .+          |
|%.oo  +         |
|*o. o  .        |
|o.   .  S       |
|.               |
|                |
|                |
|                |
+-----------------+
```

ssh-copy-id -i ~/.ssh/id_rsa.pub s123456@cclix2.polito.it



Parte privata

$ file ~/.ssh/id_rsa
~/.ssh/id_rsa: **PEM RSA private key**

$ ssh-keygen -e -f ~/.ssh/id_rsa
---- BEGIN SSH2 PUBLIC KEY ----
Comment: "1024-bit RSA, converted from OpenSSH by lucab@thetis"
[...]
---- END SSH2 PUBLIC KEY ----

Restrizione di chiavi

$ cat .ssh/backup_rsa.pub

no-port-forwarding,**no-X11-forwarding**,**no-agent-forwarding**, **no-pty**, **command**=”/usr/local/bin/foobar” ssh-rsa *[keydata]* backup@example.org

In questa maniera si possono realizzare **trigger** sicuri!

Net hardcore \m/_

Tunneling, port forwarding,
encrypted proxying, host jumping

ovvero

come sopravvivere se la vostra
rete vi rende claustrofobici...

SOCKSv5 forwarding

$ ssh -N -f -D localhost:4444 unstable.it

$ cat ~/.tsocks.conf

```
server = 127.0.0.1
server_type = 5
server_port = 4444
```

Vedi ***DynamicForward*** dal man, nonchè il pacchetto indipendente *tsocks*

Local Forwarding

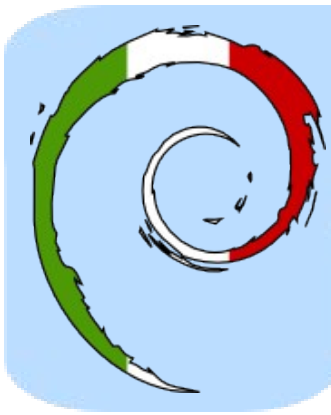
*$ ssh -L 10080:polito.it:80 *
lucab@example.org

Ogni connessione a localhost:10080 verrà inoltrata sul canale sicuro a example.org e di qui alla destinazione polito.it:80

Remote Forwarding

*$ ssh -R 2222:localhost:22 \
lucab@example.org*

Ogni connessione alla porta 2222 della macchina remota verrà inoltrata sul canale sicuro alla macchina locale e di qui alla destinazione localhost:22



Tun Forwarding

Ssh consente la creazione di tunnel Layer 2 e 3.

$ ssh -f -w 0:0 root@example.org
'*ifconfig tun0 10.0.50.1 pointopoint 10.0.50.2*'

 # ifconfig tun0 10.0.50.2 pointopoint 10.0.50.1

Richiede il server configurato con **PermitTunnel yes** (default no)

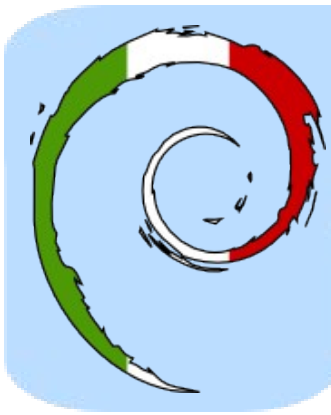
X11 Forwarding

```
$ ssh -X example.org

example.org:$ printenv DISPLAY
localhost:10.0

example.org:$ gui-app
```

L'applicazione grafica gui-app verrà eseguita sul server remoto, ma mostrerà l'ouput sul server X locale.



Agent Forwarding

```
$ ssh-agent bash
$ ssh-add ~/.ssh/id_rsa
$ env | grep -i ssh
SSH_AGENT_PID=3599

$ ssh -A example1.org
example1.org:~$ ssh example2.org
```

La connessione a example2.org farà uso dell'agent locale, inoltrato su example1.org

Host jumping

Host foo.gl bar.gl
ProxyCommand ssh -q -a -p 443 -x
gluck.debian.org 'nc -w1 $
(basename %h .gl) 22'

Tips and tricks

RFC 4255

Using DNS to Securely Publish Secure Shell (SSH) Key Fingerprints

$ dig +short -t sshfp prime.gushi.org
1 1 931BA3F63CB4BF9C9E7[...]

Tips and tricks

Escaping e port forwarding al volo

```
user@remote:~$ <ENTER>~C
ssh> help
Commands:
      -L[bind_address:]port:host:hostport
         Request local forward
      -R[bind_address:]port:host:hostport
         Request remote forward
      -KR[bind_address:]port
         Cancel remote forward
```