





<http://youtu.be/BsM58rADjMI>

<https://bitbucket.org/schwehr/researchtools/src/tip/video/video-20-secure-shell-ssh-sftp-scp.org>



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Cygwin

www.cygwin.com

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# Cygwin

Get that [Linux](#) feeling - on Windows!

## This is the home of the Cygwin project

### What...

<h4>...is it?</h4> <p>Cygwin is:</p> <ul style="list-style-type: none"><li>• a collection of tools which provide a</li></ul>	<h4>...isn't it?</h4> <p>Cygwin is not:</p> <ul style="list-style-type: none"><li>• a way to run native Linux apps on</li></ul>
--	---



researchtools@ubuntu: ~

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```
conch (1) - Conch SSH client
git-shell (1) - Restricted login shell for Git-only SSH access
gnome-ssh-askpass (1) - prompts a user for a passphrase using GNOME
hg-ssh (8) - restricted ssh login shell for Mercurial
Net::DNS::RR::SSHFP (3pm) - DNS SSHFP resource record
rlogin (1) - OpenSSH SSH client (remote login program)
rsh (1) - OpenSSH SSH client (remote login program)
slogin (1) - OpenSSH SSH client (remote login program)
ssh (1) - OpenSSH SSH client (remote login program)
ssh-add (1) - adds private key identities to the authentication agent
ssh-agent (1) - authentication agent
ssh-argv0 (1) - replaces the old ssh command-name as hostname handling
ssh-askpass (1) - prompts a user for a passphrase using GNOME
ssh-copy-id (1) - install your public key in a remote machine's authoriz...
ssh-keygen (1) - authentication key generation, management and conversion
ssh-keyscan (1) - gather ssh public keys
ssh-keysign (8) - ssh helper program for host-based authentication
ssh-pkcs11-helper (8) - ssh-agent helper program for PKCS#11 support
ssh-vulnkey (1) - check blacklist of compromised keys
ssh_config (5) - OpenSSH SSH client configuration files
tkconch (1) - connect to SSH servers graphically
researchtools@ubuntu:~$
```



```
researchtools@ubuntu: ~
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SSH(1) BSD General Commands Manual SSH(1)

NAME
ssh - OpenSSH SSH client (remote login program)

SYNOPSIS
ssh [-1246AaCfGkKMNnqsTtVvXxYy] [-b bind_address] [-c cipher_spec]
[-D [bind_address:]port] [-e escape_char] [-F configfile] [-I pkcs11]
[-i identity_file] [-L [bind_address:]port:host:hostport]
[-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
[-R [bind_address:]port:host:hostport] [-S ctl_path] [-W host:port]
[-w local_tun[:remote_tun]] [user@]hostname [command]

DESCRIPTION
ssh (SSH client) is a program for logging into a remote machine and for
executing commands on a remote machine. It is intended to replace rlogin
and rsh, and provide secure encrypted communications between two
untrusted hosts over an insecure network. X11 connections and arbitrary
TCP ports can also be forwarded over the secure channel.

ssh connects and logs into the specified hostname (with optional user
Manual page ssh(1) line 1
```



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```
ssh-copy-id (1)      - install your public key in a remote machine's authoriz...
ssh-keygen (1)      - authentication key generation, management and conversion
ssh-keyscan (1)     - gather ssh public keys
ssh-keysign (8)     - ssh helper program for host-based authentication
ssh-pkcs11-helper (8) - ssh-agent helper program for PKCS#11 support
ssh-vulnkey (1)    - check blacklist of compromised keys
ssh_config (5)     - OpenSSH SSH client configuration files
tkconch (1)        - connect to SSH servers graphically
```

```
researchtools@ubuntu:~$ man ssh
```

```
researchtools@ubuntu:~$ ls -la | grep ssh
```

```
-rw----- 1 researchtools researchtools 188 2011-12-01 14:06 .lessshst
```

```
researchtools@ubuntu:~$ hostname
```

```
ubuntu
```

```
researchtools@ubuntu:~$ ssh researchtools.ccom.nh
```

```
The authenticity of host 'researchtools.ccom.nh (192.168.2.28)' can't be established.
```

```
ECDSA key fingerprint is 16:c1:64:32:da:23:b9:58:0a:87:06:5b:05:1a:c5:35.
```

```
Are you sure you want to continue connecting (yes/no)? ^C
```

```
researchtools@ubuntu:~$ ssh researchtools.ccom.nh
```

```
The authenticity of host 'researchtools.ccom.nh (192.168.2.28)' can't be established.
```

```
ECDSA key fingerprint is 16:c1:64:32:da:23:b9:58:0a:87:06:5b:05:1a:c5:35.
```

```
Are you sure you want to continue connecting (yes/no)?
```



researchtools@ubuntu: ~

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```
ECDSA key fingerprint is 16:c1:64:32:da:23:b9:58:0a:87:06:5b:05:1a:c5:35.  
Are you sure you want to continue connecting (yes/no)? ^C  
researchtools@ubuntu:~$ ssh researchtools.ccom.nh  
The authenticity of host 'researchtools.ccom.nh (192.168.2.28)' can't be established.  
ECDSA key fingerprint is 16:c1:64:32:da:23:b9:58:0a:87:06:5b:05:1a:c5:35.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added 'researchtools.ccom.nh,192.168.2.28' (ECDSA) to the list of known hosts.  
#####  
**WARNING**WARNING**WARNING**  
  
This is a UNH CCOM computer system. UNH CCOM computer systems are provided for  
the processing of authorized information only. All data contained on UNH CCOM  
computer systems are owned by UNH CCOM and may be monitored, intercepted,  
recorded, read, copied, or captured in any manner and disclosed in any manner  
by authorized personnel. THERE IS NO RIGHT OF PRIVACY IN THIS SYSTEM. System  
personnel may give to law enforcement officials any potential evidence of  
crime found on UNH CCOM computer systems. USE OF THIS SYSTEM BY ANY USER,  
AUTHORIZED OR UNAUTHORIZED, CONSTITUTES CONSENT TO THIS MONITORING,  
INTERCEPTION, RECORDING, READING, COPYING, OR CAPTURING and DISCLOSURE.  
  
**WARNING**WARNING**WARNING**  
researchtools@researchtools.ccom.nh's password:
```



researchtools@researchtools: ~

File Edit View Search Terminal Help

researchtools@researchtools.com.nh's password:  
Welcome to Ubuntu 11.04 (GNU/Linux 2.6.38-8-generic-pae i686)

\* Documentation: <https://help.ubuntu.com/>

System information as of Mon Dec 26 12:51:19 EST 2011

System load:	0.0	Processes:	93
Usage of /home:	1.5% of 21.54GB	Users logged in:	0
Memory usage:	55%	IP address for eth0:	192.168.2.28
Swap usage:	0%		

Graph this data and manage this system at <https://landscape.canonical.com/>  
New release 'oneiric' available.  
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Dec 26 12:00:35 2011 from 192.168.12.103  
researchtools@researchtools:~\$ hostname  
researchtools  
researchtools@researchtools:~\$ who  
researchtools pts/0 2011-12-26 12:51 (192.168.12.104)  
researchtools@researchtools:~\$



researchtools@ubuntu: ~

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Last login: Mon Dec 26 12:00:35 2011 from 192.168.12.103

researchtools@researchtools:~\$ hostname

researchtools

researchtools@researchtools:~\$ who

researchtools pts/0 2011-12-26 12:51 (192.168.12.104)

researchtools@researchtools:~\$ uptime

12:51:45 up 91 days, 21:46, 2 users, load average: 0.00, 0.01, 0.05

researchtools@researchtools:~\$ exit

logout

Connection to researchtools.ccom.nh closed.

researchtools@ubuntu:~\$ hostname

ubuntu

researchtools@ubuntu:~\$ ls -la | grep -i ssh

-rw----- 1 researchtools researchtools 188 2011-12-01 14:06 .lesshst

drwx----- 2 researchtools researchtools 4096 2011-12-26 12:50 .ssh

researchtools@ubuntu:~\$ man chmod

researchtools@ubuntu:~\$ ls -la .ssh

total 12

drwx----- 2 researchtools researchtools 4096 2011-12-26 12:50 .

drwxr-xr-x 41 researchtools researchtools 4096 2011-12-26 12:50 ..

-rw-r--r-- 1 researchtools researchtools 444 2011-12-26 12:50 known\_hosts

researchtools@ubuntu:~\$



researchtools@ubuntu: ~

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```
|1|S/zk35YkjETVjcbFK7TFRl2fkKA=|kj0H1lRuJxNEGzeapa5NSiGfX5c= ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAIbmlzdHAyNTYAAABBBIGCHlJk1hdFT6YFfeZPMZKASZyfKnKeVYb+3DUiGKIqxxjo+MWylRLx6H7p2gFC8ph  
y1kzUVfsGIEtpI613Rjk=  
|1|ckz665cR2kCgvsNi9/16Jl+az+Y=|4VXoYwe13Q6Up9H7G8HwQYBF6G4= ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAIbmlzdHAyNTYAAABBBIGCHlJk1hdFT6YFfeZPMZKASZyfKnKeVYb+3DUiGKIqxxjo+MWylRLx6H7p2gFC8ph  
y1kzUVfsGIEtpI613Rjk=  
.ssh/known_hosts (END)
```



researchtools@ubuntu: ~

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```
researchtools@researchtools:~$ hostname
researchtools
researchtools@researchtools:~$ who
researchtools pts/0      2011-12-26 12:51 (192.168.12.104)
researchtools@researchtools:~$ uptime
 12:51:45 up 91 days, 21:46,  2 users,  load average: 0.00, 0.01, 0.05
researchtools@researchtools:~$ exit
logout
Connection to researchtools.ccom.nh closed.
researchtools@ubuntu:~$ hostname
ubuntu
researchtools@ubuntu:~$ ls -la | grep -i ssh
-rw-----  1 researchtools researchtools  188 2011-12-01 14:06 .lesshst
drwx-----  2 researchtools researchtools 4096 2011-12-26 12:50 .ssh
researchtools@ubuntu:~$ man chmod
researchtools@ubuntu:~$ ls -la .ssh
total 12
drwx-----  2 researchtools researchtools 4096 2011-12-26 12:50 .
drwxr-xr-x 41 researchtools researchtools 4096 2011-12-26 12:50 ..
-rw-r--r--  1 researchtools researchtools  444 2011-12-26 12:50 known_hosts
researchtools@ubuntu:~$ less .ssh/known_hosts
researchtools@ubuntu:~$ man ssh-keygen
```



researchtools@ubuntu: ~

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SSH-KEYGEN(1) BSD General Commands Manual SSH-KEYGEN(1)

**NAME**

**ssh-keygen** – authentication key generation, management and conversion

**SYNOPSIS**

```
ssh-keygen [-q] [-b bits] -t type [-N new_passphrase] [-C comment] [-f output_keyfile]
ssh-keygen -p [-P old_passphrase] [-N new_passphrase] [-f keyfile]
ssh-keygen -i [-m key_format] [-f input_keyfile]
ssh-keygen -e [-m key_format] [-f input_keyfile]
ssh-keygen -y [-f input_keyfile]
ssh-keygen -c [-P passphrase] [-C comment] [-f keyfile]
ssh-keygen -l [-f input_keyfile]
ssh-keygen -B [-f input_keyfile]
ssh-keygen -D pkcs11
ssh-keygen -F hostname [-f known_hosts_file] [-l]
ssh-keygen -H [-f known_hosts_file]
ssh-keygen -R hostname [-f known_hosts_file]
ssh-keygen -r hostname [-f input_keyfile] [-g]
ssh-keygen -G output_file [-v] [-b bits] [-M memory] [-S start_point]
ssh-keygen -T output_file -f input_file [-v] [-a num_trials] [-W generator]
```

Manual page ssh-keygen(1) line 1



researchtools@ubuntu: ~

File Edit View Search Terminal Help

```
researchtools@ubuntu:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/researchtools/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/researchtools/.ssh/id_rsa.
Your public key has been saved in /home/researchtools/.ssh/id_rsa.pub.
The key fingerprint is:
ca:ce:d2:ff:21:59:02:ff:e1:d9:c5:50:b3:c8:f4:77 researchtools@ubuntu
The key's randomart image is:
```

```
+--[ RSA 2048 ]-----+
|           . 0      |
|            0 + 0   |
|             + 0 E  |
|          0   0 ..  |
|           S 0  0   |
|            * + .   |
|         .0 0 = .   |
|        .0.  . .   |
|       .0....     |
+-----+

```

```
researchtools@ubuntu:~$ ls -
```



researchtools@ubuntu: ~

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```
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEA49cZj9ejMNfcs5qWQ0fnyuxN48puBqly0HuKWDwI2RtDyUGN
Nn0ohEeIJx7mt+klGHmchWH0XU873HC8E/nzhJr4VBnnocY3CQyGy796x8evuAc7
Le0rCQovYN++g2ICNoB2oGjuUIhoAmjfzXtNRYGrJWV38ioR2NpTjrDpk+fg0Quv
Lk07QS9FbrLkiQNQqjFmXIbb7iCt9LTMUQww8GvfMqY0t0ePm60hzMkkeuzchDNp
frXh+NUt4tCiux8Vzw0iiYk4Lb/XJeuGqapER9jrNe8mSZYutr5wXjHhw1NlMfhk
fAnqFJTh2uo9vINmVtwYItPBTN/MFMxmH8T2YwIDAQABAoIBAQCnlPMMRg0WTW/b
+vxDCISJUT4JKj+7UaANw3CCbcXkSpWVvk3TokNG6IZQn/37j9TlJ63kvYfYQgs5
nQH5f40KKaI12cfxyaV5Vmlf07vHbizlIwx4P1XEFGW8z1WFtXUD0YIHgqanPW2j
0BhFP0gas8F6hC0xTxhJdGy5K47iZevTXChbfwdMBZ3xKA4U2y3pGsWQ6YTgaI+a
jhZIIhjR99l03Y0s/b5UQzmce0ETbpCN8YDrCfTVjzJ4dAqzsNhYpWC4Poje5Lh2
iTjYBmcnRIOX47j2PrG/yRmJCWb+aMRwUgqeYDiXP5yFM1I5htTdVlafewoDrAEy
4GepE4+BAoGBAPGZCDMH+mWGFncTPidszqtWkflZw2n92ug77ZL1kYFu05Q6gq2
x/FHyjS4nNzfhCUwGjNV4cqqLK16tyjsN18j9A78C/wvTLt0JosyJK4YRmb7poJ3
29+eqMelAgHYqnZYMNWeICWL+Zx3a2UkY7dtWuGp8ZfPpj5gbtg+MLrzAoGBAPFs
Hff0yeibvl/gQcfat0VxNjIG9txj9SDqpnhoAYGgDy+zn1ZHu3FIIXoXe3ctXzg0
WkOKK4ysnE7TxGbh0FiTMLvfvwWII/Klv6Pzn9G5iKdHCx3IM0k0yrTYqU5HJuH
mSXL57veiJmBvxa0QumrZPBBGVf2k11RnoXzG9LRAoGAQTDD+Ycplcn8VBypJNJD
YhdJ8M193T15kd03UaVdCD/7rsI+p011PjH06gz2ptLZQX+dUkTWTGq0I4t9aNl0
h40YE4MHa0EKf3AzDlRveXSrapZ087eL60dS+6wWwpDITm61nq6wVfFTRVkj7YLI
NXKYl1PYEPLDFQnIXylI10kCgYAi1HVSy5eJnoaNsh3tBmmYvIeUGhsdWrJvyEqy
.ssh/id_rsa (file 1 of 2)
```







researchtools@ubuntu: ~

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```
researchtools@ubuntu:~$ scp .ssh/id_rsa.pub researchtools.com.nh:
```

```
#####
```

```
**WARNING**WARNING**WARNING**
```

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```
**WARNING**WARNING**WARNING**
```

```
researchtools@researchtools.com.nh's password:  
Permission denied, please try again.
```

```
researchtools@researchtools.com.nh's password:  
Permission denied, please try again.
```

```
researchtools@researchtools.com.nh's password:
```

```
id_rsa.pub
```

```
100% 402 0.4KB/s 00:00
```

```
researchtools@ubuntu:~$
```



researchtools@researchtools: ~

File Edit View Search Terminal Help

**\*\*WARNING\*\*WARNING\*\*WARNING\*\***

researchtools@researchtools.ccom.nh's password:

Welcome to Ubuntu 11.04 (GNU/Linux 2.6.38-8-generic-pae i686)

\* Documentation: <https://help.ubuntu.com/>

System information as of Mon Dec 26 13:06:17 EST 2011

System load:	0.0	Processes:	95
Usage of /home:	1.5% of 21.54GB	Users logged in:	0
Memory usage:	55%	IP address for eth0:	192.168.2.28
Swap usage:	0%		

Graph this data and manage this system at <https://landscape.canonical.com/>

New release 'oneiric' available.

Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Dec 26 12:51:20 2011 from 192.168.12.104

researchtools@researchtools:~\$ hostname

researchtools

researchtools@researchtools:~\$



researchtools@researchtools: ~

File Edit View Search Terminal Help

```
researchtools@researchtools:~$ ssh localhost
```

```
The authenticity of host 'localhost (127.0.0.1)' can't be established.
```

```
ECDSA key fingerprint is 16:c1:64:32:da:23:b9:58:0a:87:06:5b:05:1a:c5:35.
```

```
Are you sure you want to continue connecting (yes/no)? yes
```

```
Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.
```

```
#####
```

```
**WARNING**WARNING**WARNING**
```

```
This is a UNH CCOM computer system. UNH CCOM computer systems are provided for the processing of authorized information only. All data contained on UNH CCOM computer systems are owned by UNH CCOM and may be monitored, intercepted, recorded, read, copied, or captured in any manner and disclosed in any manner by authorized personnel. THERE IS NO RIGHT OF PRIVACY IN THIS SYSTEM. System personnel may give to law enforcement officials any potential evidence of crime found on UNH CCOM computer systems. USE OF THIS SYSTEM BY ANY USER, AUTHORIZED OR UNAUTHORIZED, CONSTITUTES CONSENT TO THIS MONITORING, INTERCEPTION, RECORDING, READING, COPYING, OR CAPTURING and DISCLOSURE.
```

```
**WARNING**WARNING**WARNING**
```

```
researchtools@localhost's password:
```

```
researchtools@researchtools:~$ █
```



researchtools@researchtools: ~

File Edit View Search Terminal Help

**\*\*WARNING\*\*WARNING\*\*WARNING\*\***

researchtools@localhost's password:

researchtools@researchtools:~\$ ls -la

total 36

```
drwxr-xr-x 4 researchtools researchtools 4096 2011-12-26 13:06 .
drwxr-xr-x 5 root root 4096 2011-12-26 10:29 ..
-rw----- 1 researchtools researchtools 25 2011-12-26 12:51 .bash_history
-rw-r--r-- 1 researchtools researchtools 220 2011-12-26 10:29 .bash_logout
-rw-r--r-- 1 researchtools researchtools 3353 2011-12-26 10:29 .bashrc
drwx----- 2 researchtools researchtools 4096 2011-12-26 10:31 .cache
-rw-r--r-- 1 researchtools researchtools 402 2011-12-26 12:58 id_rsa.pub
-rw-r--r-- 1 researchtools researchtools 675 2011-12-26 10:29 .profile
drwx----- 2 researchtools researchtools 4096 2011-12-26 13:06 .ssh
```

researchtools@researchtools:~\$ #mv id\_rsa.pub .ssh/

researchtools@researchtools:~\$ ls -la .ssh/

total 12

```
drwx----- 2 researchtools researchtools 4096 2011-12-26 13:06 .
drwxr-xr-x 4 researchtools researchtools 4096 2011-12-26 13:06 ..
-rw-r--r-- 1 researchtools researchtools 222 2011-12-26 13:06 known_hosts
```

researchtools@researchtools:~\$ mv id\_rsa.pub .ssh/authorized\_keys

researchtools@researchtools:~\$ ls -la .s



researchtools@ubuntu: ~

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```
# This is the ssh client system-wide configuration file. See
# ssh_config(5) for more information. This file provides defaults for
# users, and the values can be changed in per-user configuration files
# or on the command line.

# Configuration data is parsed as follows:
# 1. command line options
# 2. user-specific file
# 3. system-wide file
# Any configuration value is only changed the first time it is set.
# Thus, host-specific definitions should be at the beginning of the
# configuration file, and defaults at the end.

# Site-wide defaults for some commonly used options. For a comprehensive
# list of available options, their meanings and defaults, please see the
# ssh_config(5) man page.

Host *
# ForwardAgent no
# ForwardX11 no
/etc/ssh/ssh config
```



researchtools@ubuntu: ~

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```
# 1. command line options
# 2. user-specific file
# 3. system-wide file
# Any configuration value is only changed the first time it is set.
# Thus, host-specific definitions should be at the beginning of the
# configuration file, and defaults at the end.

# Site-wide defaults for some commonly used options. For a comprehensive
# list of available options, their meanings and defaults, please see the
# ssh_config(5) man page.

Host *
# ForwardAgent no
# ForwardX11 no
# ForwardX11Trusted yes
# RhostsRSAAuthentication no
# RSAAuthentication yes
# PasswordAuthentication yes
# HostbasedAuthentication no
# GSSAPIAuthentication no
# GSSAPIDelegateCredentials no
:
```



researchtools@ubuntu: ~

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```
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df -h ."
```

```
#####
```

```
**WARNING**WARNING**WARNING**
```

This is a UNH CCOM computer system. UNH CCOM computer systems are provided for the processing of authorized information only. All data contained on UNH CCOM computer systems are owned by UNH CCOM and may be monitored, intercepted, recorded, read, copied, or captured in any manner and disclosed in any manner by authorized personnel. THERE IS NO RIGHT OF PRIVACY IN THIS SYSTEM. System personnel may give to law enforcement officials any potential evidence of crime found on UNH CCOM computer systems. USE OF THIS SYSTEM BY ANY USER, AUTHORIZED OR UNAUTHORIZED, CONSTITUTES CONSENT TO THIS MONITORING, INTERCEPTION, RECORDING, READING, COPYING, OR CAPTURING and DISCLOSURE.

```
**WARNING**WARNING**WARNING**
```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/mapper/home-home					
	22G	336M	21G	2%	/home

```
researchtools@ubuntu:~$ df -h .
```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/sda1	19G	8.3G	9.5G	47%	/

```
researchtools@ubuntu:~$
```



researchtools@ubuntu: ~

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```
researchtools@ubuntu:~$ ls -l /dev/null
crw-rw-rw- 1 root root 1, 3 2011-12-01 18:01 /dev/null
researchtools@ubuntu:~$ echo "hello world" > /dev/null
researchtools@ubuntu:~$ ls -l /dev/null
crw-rw-rw- 1 root root 1, 3 2011-12-01 18:01 /dev/null
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df -h ." 2> /dev/null
Filesystem          Size  Used Avail Use% Mounted on
/dev/mapper/home-home
                    22G  336M   21G   2% /home
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | grep -v mapper
Filesystem          1K-blocks      Used Available Use% Mounted on
                    19206868   2155036 16076168  12% /
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | grep -v 'mapper|Filesystem'
Filesystem          1K-blocks      Used Available Use% Mounted on
/dev/mapper/slash-slash
                    19206868   2155036 16076168  12% /
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem'
                    19206868   2155036 16076168  12% /
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem'
                    19206868   2155036 16076168  12% /
researchtools@ubuntu:~$
```



researchtools@ubuntu: ~

File Edit View Search Terminal Help

```
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | grep -v mapper
Filesystem            1K-blocks      Used Available Use% Mounted on
      19206868    2155036  16076168  12% /
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | grep -v 'mapper|Filesystem'
Filesystem            1K-blocks      Used Available Use% Mounted on
/dev/mapper/slash-slash
      19206868    2155036  16076168  12% /
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem'
      19206868    2155036  16076168  12% /
researchtools@ubuntu:~$ ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem'
      19206868    2155036  16076168  12% /
researchtools@ubuntu:~$ man -k cron
anacrontab (5)      - configuration file for anacron
anacron (8)        - runs commands periodically
cron (8)           - daemon to execute scheduled commands (Vixie Cron)
crontab (1)        - maintain crontab files for individual users (Vixie Cron)
crontab (5)        - tables for driving cron
dh_installcron (1) - install cron scripts into etc/cron.*
wtf (6)           - translates acronyms for you
researchtools@ubuntu:~$ export EDITOR="emacs -nw"
researchtools@ubuntu:~$
```



researchtools@ubuntu: ~

File Edit View Search Terminal Help

CRONTAB(1)

CRONTAB(1)

**NAME**

crontab - maintain crontab files for individual users (Vixie Cron)

**SYNOPSIS**

```
crontab [ -u user ] file
crontab [ -u user ] [ -i ] { -e | -l | -r }
```

**DESCRIPTION**

crontab is the program used to install, deinstall or list the tables used to drive the cron(8) daemon in Vixie Cron. Each user can have their own crontab, and though these are files in /var/spool/cron/crontabs, they are not intended to be edited directly.

If the /etc/cron.allow file exists, then you must be listed (one user per line) therein in order to be allowed to use this command. If the /etc/cron.allow file does not exist but the /etc/cron.deny file does exist, then you must **not** be listed in the /etc/cron.deny file in order to use this command.

If neither of these files exists, then depending on site-dependent configuration parameters, only the super user will be allowed to use this command, or all users will be able to use this command.

Manual page crontab(1) line 1



researchtools@ubuntu: ~

File Edit View Search Terminal Help

(see the last example in EXAMPLE CRON FILE below).

Instead of the first five fields, one of eight special strings may appear:

string	meaning
-----	-----
@reboot	Run once, at startup.
@yearly	Run once a year, "0 0 1 1 *".
@annually	(same as @yearly)
@monthly	Run once a month, "0 0 1 * *".
@weekly	Run once a week, "0 0 * * 0".
@daily	Run once a day, "0 0 * * *".
@midnight	(same as @daily)
@hourly	Run once an hour, "0 * * * *".

**EXAMPLE CRON FILE**

```
# use /bin/bash to run commands, instead of the default /bin/sh
SHELL=/bin/bash
# mail any output to `paul', no matter whose crontab this is
MAILTO=paul
#
```

Manual page crontab(5) line 122



```
Applications Places System [Icons] [Terminal]
researchtools@ubuntu: ~
File Edit View Search Terminal Help
researchtools@ubuntu:~$ date
Mon Dec 26 13:16:58 EST 2011
researchtools@ubuntu:~$ date --utc +%Y%m%dT%H%M%SZ
20111226T181742Z
researchtools@ubuntu:~$ date +%s
1324923485
researchtools@ubuntu:~$ date --utc +%s
1324923488
researchtools@ubuntu:~$ echo -n `date +%s`;
researchtools@ubuntu:~$ echo -n `date +%s`; ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem'
1324923574          19206868   2155036  16076168  12% /
researchtools@ubuntu:~$ echo -n `date +%s`; ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem' >> /home/researchtools/disk.log
researchtools@ubuntu:~$ ubuntu:~$ echo -n `date +%s`; ssh researchtools.ccom.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem' >> /home/researchtools/disk.log
```



```
Applications Places System [Icons] [Terminal]
researchtools@ubuntu: ~
File Edit View Search Terminal Help
researchtools@ubuntu:~$ (echo -n `date +%s`; ssh researchtools.com.nh "df /" 2> /dev/null | egrep -v 'mapper|Filesystem') >> /home/researchtools/disk.log
researchtools@ubuntu:~$ cat disk.log
          19206868    2155036 16076168 12% /
1324923649          19206868    2155036 16076168 12% /
researchtools@ubuntu:~$ rm disk.log
rm: remove regular file `disk.log'? y
researchtools@ubuntu:~$
```







```
Applications Places System [Icons] [Terminal]
researchtools@ubuntu: ~
File Edit [Icons] researchtools@ubuntu: ~
researchtools@ubuntu: ~
File Edit View Search Terminal Help
tem') >> See 'man 7 undocumented' for help when manual pages are not available.
researchtools@ubuntu:~$ man 1 crontab
researchtools@ubuntu:~$ man 5 crontab
13249236 researchtools@ubuntu:~$ crontab -l
researchtools@ubuntu:~$ crontab -l
no crontab for researchtools
rm: remove regular empty file? [y]
researchtools@ubuntu:~$ crontab -e
no crontab for researchtools - using an empty one
crontab: installing new crontab
researchtools@ubuntu:~$ tail -f /var/log/syslog
Dec 26 13:06:40 ubuntu dhclient: DHCPACK of 192.168.240.164 from 192.168.240.254
Dec 26 13:06:40 ubuntu dhclient: bound to 192.168.240.164 -- renewal in 721 seconds.
Dec 26 13:16:01 ubuntu crontab[4623]: (researchtools) LIST (researchtools)
Dec 26 13:16:29 ubuntu crontab[4641]: (researchtools) BEGIN EDIT (researchtools)
Dec 26 13:17:01 ubuntu CRON[4728]: (root) CMD ( cd / && run-parts --report /etc/cron.hourly)
Dec 26 13:18:41 ubuntu dhclient: DHCPREQUEST of 192.168.240.164 on eth0 to 192.168.240.254 port 67
Dec 26 13:18:41 ubuntu dhclient: DHCPACK of 192.168.240.164 from 192.168.240.254
Dec 26 13:18:41 ubuntu dhclient: bound to 192.168.240.164 -- renewal in 827 seconds.
Dec 26 13:22:21 ubuntu crontab[4641]: (researchtools) REPLACE (researchtools)
Dec 26 13:22:21 ubuntu crontab[4641]: (researchtools) END EDIT (researchtools)
```



```
Applications Places System [Icons] [Terminal]
researchtools@ubuntu: ~
File Edit [Icons] researchtools@ubuntu: ~
researchtools@ubuntu:~$ man 5 crontab
13249236 researchtools@ubuntu:~$ crontab -l
researchtools@ubuntu:~$ crontab -e
no crontab for researchtools - using an empty one
total 16 crontab: installing new crontab
drwxr-xr-x researchtools@ubuntu:~$ tail -f /var/log/syslog
drwxr-xr-x Dec 26 13:06:40 ubuntu dhclient: DHCPACK of 192.168.240.164 from 192.168.240.254
drwxr-xr-x Dec 26 13:06:40 ubuntu dhclient: bound to 192.168.240.164 -- renewal in 721 seconds.
drwxr-xr-x Dec 26 13:16:01 ubuntu crontab[4623]: (researchtools) LIST (researchtools)
drwxr-xr-x Dec 26 13:16:29 ubuntu crontab[4641]: (researchtools) BEGIN EDIT (researchtools)
drwxr-xr-x Dec 26 13:17:01 ubuntu CRON[4728]: (root) CMD ( cd / && run-parts --report /etc/cron.hourly)
drwxr-xr-x Dec 26 13:18:41 ubuntu dhclient: DHCPREQUEST of 192.168.240.164 on eth0 to 192.168.240.254 port 67
drwxr-xr-x Dec 26 13:18:41 ubuntu dhclient: DHCPACK of 192.168.240.164 from 192.168.240.254
drwxr-xr-x Dec 26 13:18:41 ubuntu dhclient: bound to 192.168.240.164 -- renewal in 827 seconds.
drwxr-xr-x Dec 26 13:22:21 ubuntu crontab[4641]: (researchtools) REPLACE (researchtools)
researchtools@ubuntu:~$ Dec 26 13:22:21 ubuntu crontab[4641]: (researchtools) END EDIT (researchtools)
Mon Dec 26 13:23:01 ubuntu CRON[4988]: (researchtools) CMD ((echo -n `date +%s`; ssh researchtools.ccom.nh "df /
researchtools@ubuntu:~$ " 2> /dev/null | egrep -v 'mapper|Filesystem') >> /home/researchtools/disk.log)
```



```
drwxr-xr-x  3 researchtools researchtools  4096 2011-10-15 11:04 snippets
drwxr-xr-x 20 researchtools researchtools  4096 2011-12-26 12:44 video
researchtools@ubuntu:~$ date
Mon Dec 26 13:22:54 EST 2011
researchtools@ubuntu:~$ date
Mon Dec 26 13:23:02 EST 2011
researchtools@ubuntu:~$ ls -l
total 108
drwxr-xr-x  2 researchtools researchtools  4096 2011-10-09 10:17 backup
drwxr-xr-x  2 researchtools researchtools  4096 2011-11-29 13:56 challenge
drwxr-xr-x 22 researchtools researchtools  4096 2011-12-01 10:57 class
drwxr-xr-x  4 researchtools researchtools  4096 2011-11-27 22:10 Desktop
-rw-r--r--  1 researchtools researchtools    68 2011-12-26 13:23 disk.log
drwx----- 18 researchtools researchtools  4096 2011-12-26 10:27 Dropbox
drwxr-xr-x  3 researchtools researchtools  4096 2011-09-26 19:40 hw
drwxr-xr-x  2 researchtools researchtools 69632 2011-11-27 22:14 old
drwxr-xr-x  5 researchtools researchtools  4096 2011-11-27 17:51 projects
drwxr-xr-x  3 researchtools researchtools  4096 2011-10-15 11:04 snippets
drwxr-xr-x 20 researchtools researchtools  4096 2011-12-26 12:44 video
researchtools@ubuntu:~$ tail -f disk.log
1324923781          19206868  2155036  16076168  12% /
```





```
Applications Places System [Icons] [Terminal]
researchtools@ubuntu: ~
File Edit [Icons] researchtools@ubuntu: ~
researchtools@ubuntu: ~
File Edit View Search Terminal Help
Mon Dec 10 13:24:23 UTC 2013
researchtools@ubuntu: ~
# daemon's notion of time and timezones.
Mon Dec 10 13:24:23 UTC 2013
#
researchtools@ubuntu: ~
# Output of the crontab jobs (including errors) is sent through
total 10
# email to the user the crontab file belongs to (unless redirected).
drwxr-xr-x
#
drwxr-xr-x
# For example, you can run a backup of all your user accounts
drwxr-xr-x
# at 5 a.m every week with:
drwxr-xr-x
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
-rw-r--r-
#
drwxr-xr-x
# For more information see the manual pages of crontab(5) and cron(8)
drwxr-xr-x
#
drwxr-xr-x
# m h dom mon dow  command
drwxr-xr-x
# 0-59/5 * * * * (echo -n `date +%s`; ssh researchtools.com.nh "df /" 2> /dev/null | egrep -v 'mapper|Files\
drwxr-xr-x
# system') >> /home/researchtools/disk.log
researchtools@ubuntu: ~
13249237
13249238
^C
researchtools@ubuntu: ~
-UU-:***-F1 crontab Bot L23 (Fundamental)-----
```



```
Applications Places System [Icons] [Terminal]
researchtools@ubuntu: ~
File Edit [Terminal] researchtools@ubuntu: ~
researchtools@ubuntu: ~
File Edit View Search Terminal Help
Mon Dec 26 13:06:40 ubuntu dhclient: DHCPACK of 192.168.240.164 from 192.168.240.254
researchtools@ubuntu:~$ tail -f /var/log/syslog
Mon Dec 26 13:06:40 ubuntu dhclient: bound to 192.168.240.164 -- renewal in 721 seconds.
total 16
Dec 26 13:16:01 ubuntu crontab[4623]: (researchtools) LIST (researchtools)
drwxr-xr-x Dec 26 13:16:29 ubuntu crontab[4641]: (researchtools) BEGIN EDIT (researchtools)
drwxr-xr-x Dec 26 13:17:01 ubuntu CRON[4728]: (root) CMD ( cd / && run-parts --report /etc/cron.hourly)
drwxr-xr-x Dec 26 13:18:41 ubuntu dhclient: DHCPREQUEST of 192.168.240.164 on eth0 to 192.168.240.254 port 67
drwxr-xr-x Dec 26 13:18:41 ubuntu dhclient: DHCPACK of 192.168.240.164 from 192.168.240.254
-rw-r--r-- Dec 26 13:18:41 ubuntu dhclient: bound to 192.168.240.164 -- renewal in 827 seconds.
drwxr-xr-x Dec 26 13:22:21 ubuntu crontab[4641]: (researchtools) REPLACE (researchtools)
drwxr-xr-x Dec 26 13:22:21 ubuntu crontab[4641]: (researchtools) END EDIT (researchtools)
drwxr-xr-x
drwxr-xr-x
drwxr-xr-x Dec 26 13:23:01 ubuntu CRON[4988]: (researchtools) CMD ((echo -n `date +%s`; ssh researchtools.ccom.nh "df /
drwxr-xr-x" 2> /dev/null | egrep -v 'mapper|Filesystem') >> /home/researchtools/disk.log)
researchtools@ubuntu:~$ crontab -e
Dec 26 13:24:01 ubuntu CRON[5099]: (researchtools) CMD ((echo -n `date +%s`; ssh researchtools.ccom.nh "df /
13249237" 2> /dev/null | egrep -v 'mapper|Filesystem') >> /home/researchtools/disk.log)
13249238^C
^C
researchtools@ubuntu:~$ crontab -e
researchtools@ubuntu:~$ crontab: installing new crontab
researchtools@ubuntu:~$
```



Applications Places System

researchtools@ubuntu: ~

emacs23@ubuntu

File Edit Options Buffers Tools Minibuf Help

# Emacs

Welcome to [GNU Emacs](#), one component of the [GNU/Linux](#) operating system.

<a href="#">Emacs Tutorial</a>	Learn basic keystroke commands
<a href="#">Emacs Guided Tour</a>	Overview of Emacs features at gnu.org
<a href="#">View Emacs Manual</a>	View the Emacs manual using Info

-U:%%- \*GNU Emacs\* Top L5 (Fundamental)-----

Find file: /ssh:researchtools.com.nh:.



Applications Places System

researchtools@ubuntu: ~

emacs23@ubuntu

File Edit Options Buffers Tools Minibuf Help

```
/ssh:researchtools.com.nh:/home/researchtools:  
total 32  
drwxr-xr-x 4 researchtools researchtools 4096 Dec 26 13:07 .  
drwxr-xr-x 5 root root 4096 Dec 26 10:29 ..  
-rw----- 1 researchtools researchtools 234 Dec 26 13:27 .bash_history  
-rw-r--r-- 1 researchtools researchtools 220 Dec 26 10:29 .bash_logout  
-rw-r--r-- 1 researchtools researchtools 3353 Dec 26 10:29 .bashrc  
drwx----- 2 researchtools researchtools 4096 Dec 26 10:31 .cache  
-rw-r--r-- 1 researchtools researchtools 675 Dec 26 10:29 .profile  
drwx----- 2 researchtools researchtools 4096 Dec 26 13:07 .ssh
```

-U:%%@ researchtools All L5 (Dired by name)-----

Find file: /ssh:researchtools.com.nh:/home/researchtools/helloworld



```
Applications Places System [Icons]
researchtools@ubuntu: ~
researchtools@researchtools: ~
File Edit View Search Terminal Help
* Documentation: https://help.ubuntu.com/
System information as of Mon Dec 26 13:27:47 EST 2011

System load:      0.0          Processes:        98
Usage of /home:  1.5% of 21.54GB    Users logged in: 1
Memory usage:    55%          IP address for eth0: 192.168.2.28
Swap usage:      0%

Graph this data and manage this system at https://landscape.canonical.com/
New release 'oneiric' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Dec 26 13:27:16 2011 from 192.168.12.105
researchtools@researchtools:~$ ls -ltr
total 4
-rw-r--r-- 1 researchtools researchtools 9 2011-12-26 13:27 helloworld.txt
researchtools@researchtools:~$ less helloworld.txt
researchtools@researchtools:~$ hostname
researchtools
researchtools@researchtools:~$
-U:--@ helloworld.txt  All LI (text yas)
Wrote /ssh:researchtools.com.nh:/home/researchtools/helloworld.txt
```



