



2017 Architecture

# Project – Environment Setting



# Outline

- ▣ Workstation setting : MobaXterm
- ▣ Makefile

# Outline

- ▣ Workstation setting : MobaXterm
- ▣ Makefile

# MobaXterm Download

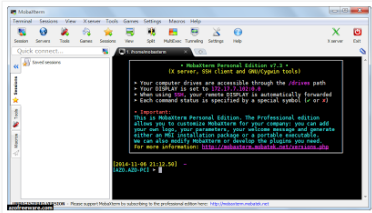
## Download the free version of MobaXterm

- <http://www.azofreeware.com/2014/11/mobaxterm-portable.html>

2016-07-06

### MobaXterm 9.1 免安裝版 - 好用的Telnet軟體

15 萬 按讚支持阿榮福利味! [訂閱本站] [通知新版] [通知無法下載] [軟體推薦]



好用的Telnet軟體 - MobaXterm, Windows終端機連線軟體加強版, 支援X11 Server, 具有多分頁的介面, 支援RDP、VNC、SSH、telnet、rsh、FTP、SFTP、XDMCP通訊協定連線, 內建X-Window, 可以製作巨集、有密碼儲存記憶功能。 (阿榮) (下載) (購買)

官方網站: Mobatek

軟體性質: 免費軟體 (有付費版)

介面語言: 英文

系統需求: Windows 10/8.1/8/7/Vista/XP (32及64位元)

關鍵字: MobaXterm Home, MobaXterm Professional

MobaXterm is an enhanced terminal for Windows with an X11 server, a tabbed SSH client and several other network tools for remote computing (VNC, RDP, telnet, rlogin). MobaXterm brings all the essential Unix commands to Windows desktop, in a single portable exe file which works out of the box.

※阿榮福利味商店街已販售此軟體之付費版, 歡迎參觀選購!  
(2014.11.07)

下載連結: [\[按此下載免安裝版\]](#) 1

軟體下載說明 (檔案解壓縮密碼: azo)

步驟一、請點選「按此下載」連結前往阿榮推薦的主力載點頁面。

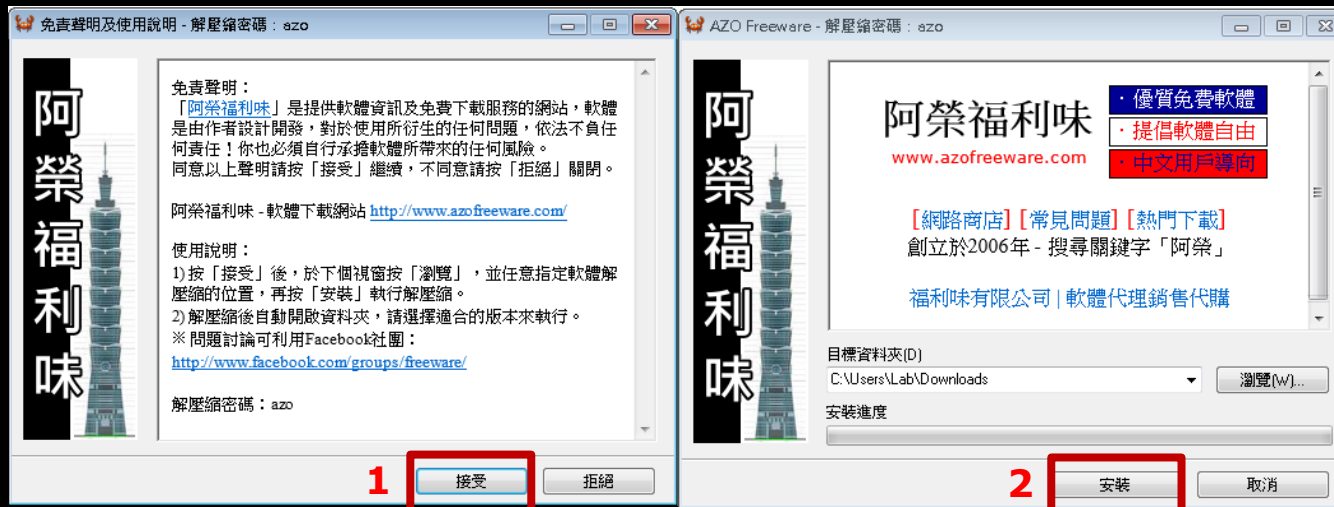
步驟二、點選進入載點頁面後, 依照教學指示即可完成下載。

[按此下載](#) → 27.2 MB (28,571,751 位元組) 2

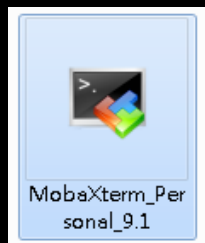
備用載點: [\[中華電信\]](#) [\[pCloud\]](#) [\[sendspace\]](#) [\[MEGA\]](#)

# MobaXterm Installation

## Installation

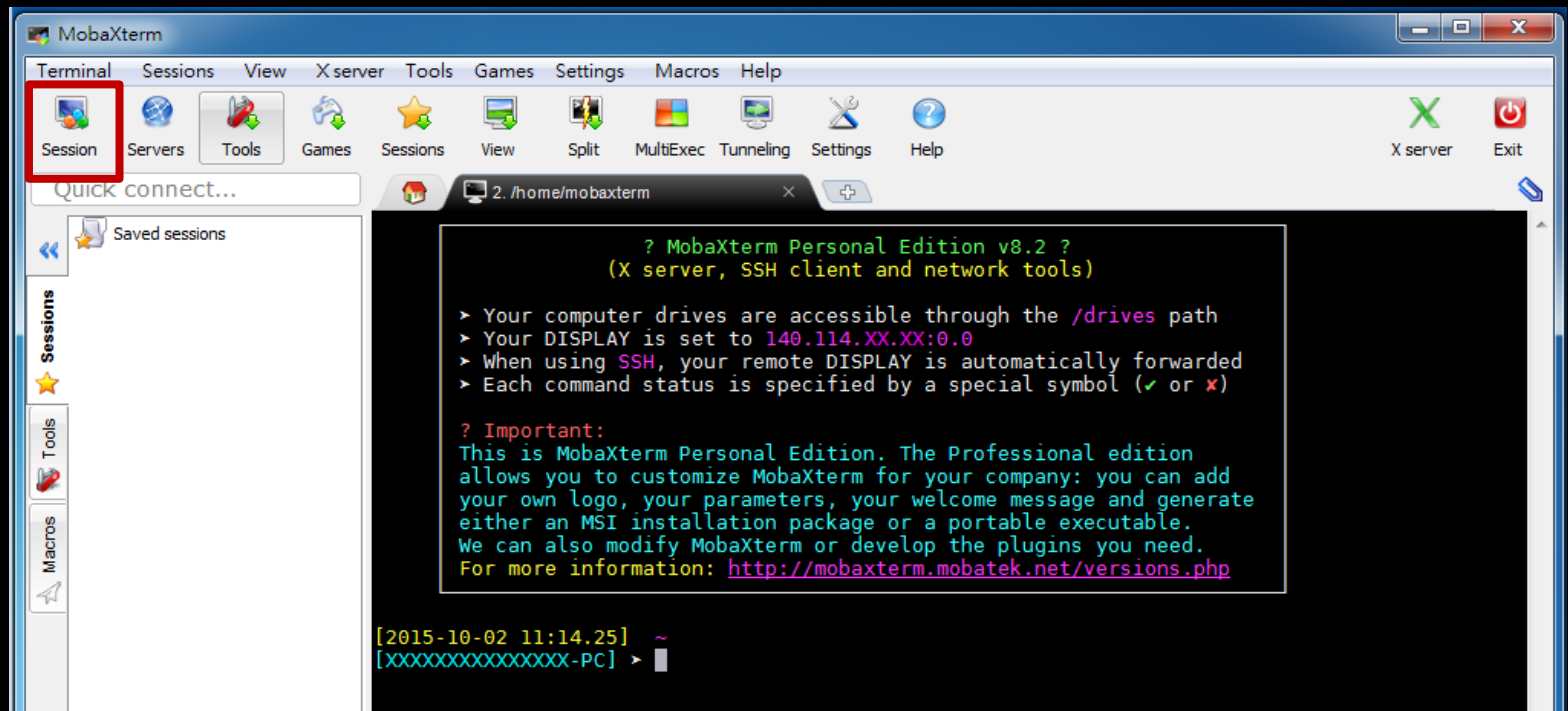


## Click the icon in the folder



# Workstation Setup

1.

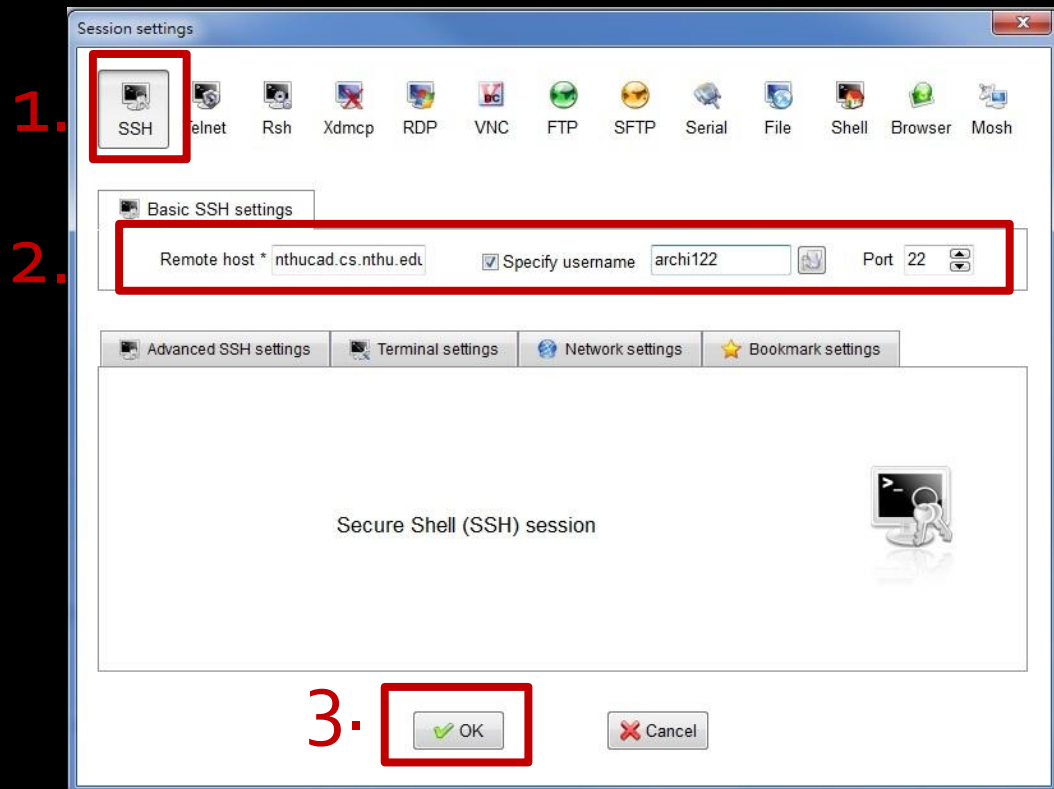


# Workstation Setup (Cont.)

■ Enter the following blank

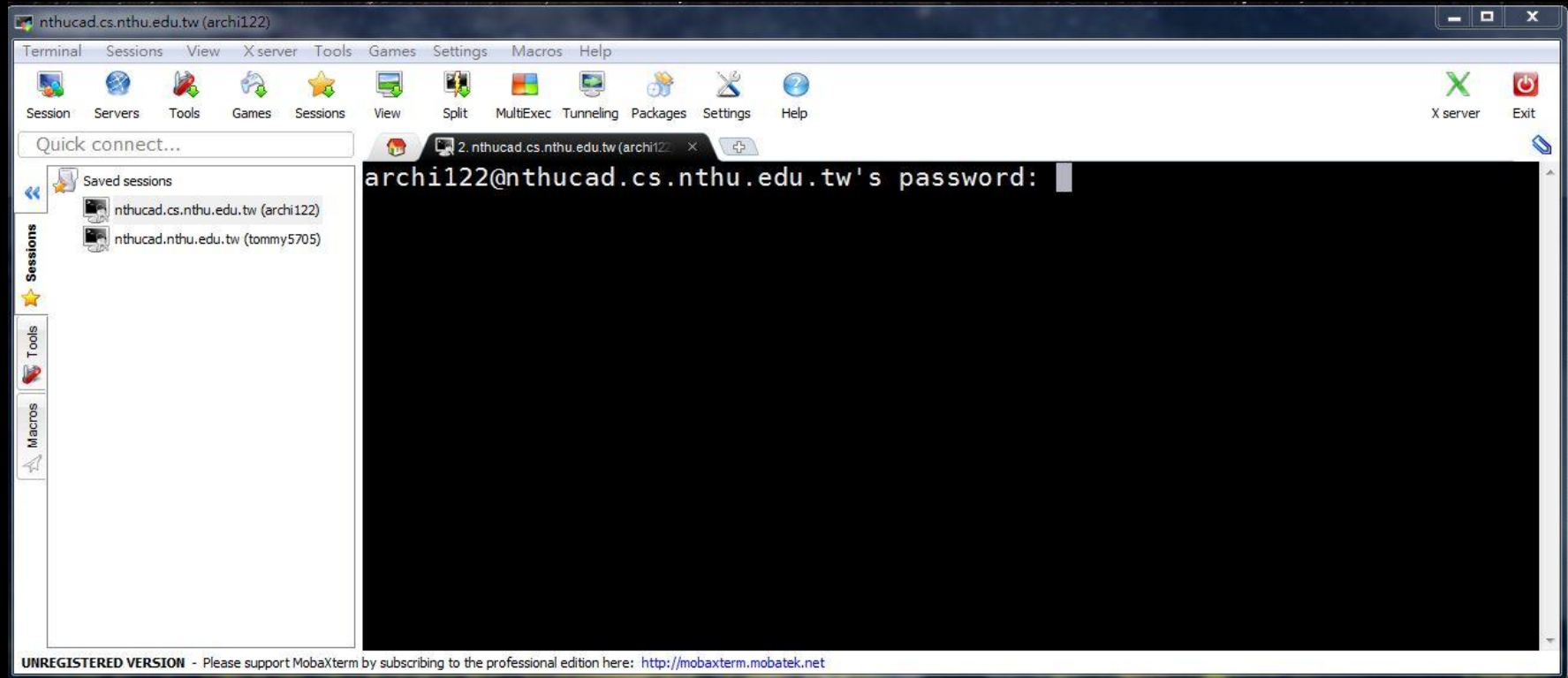
- Remote host : nthucad.cs.nthu.edu.tw
- Specify username : archXX (your account)
- Port : 22

■ Click “OK”



# Login at the First Time

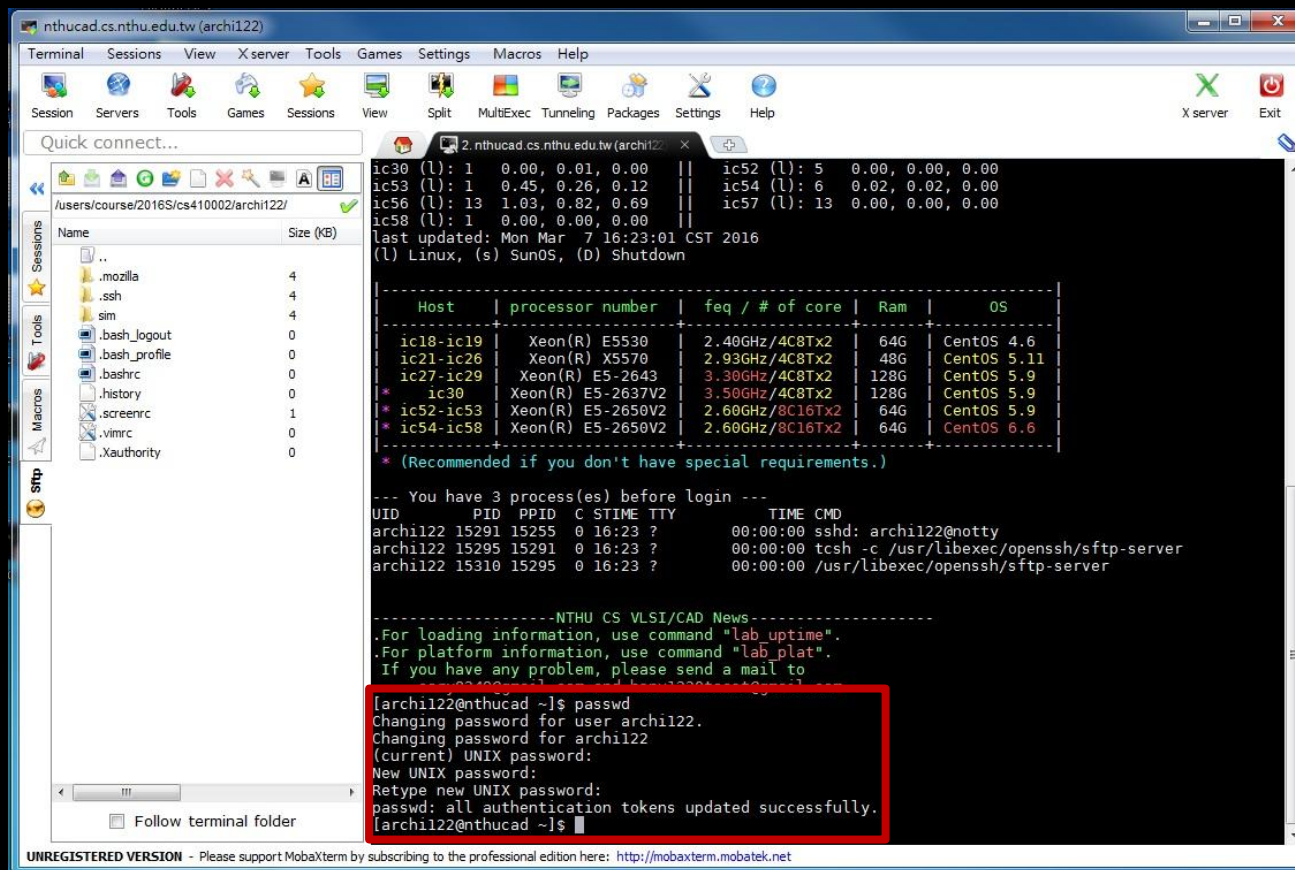
□ Key in your **initial password** from e-mail





# Change Your Password

■ Type “passwd” to change your password



```
nthucad.cs.nthu.edu.tw (archil22)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/users/course/2016S/cs410002/archil22/
Name Size (KB)
.. 4
.mozilla 4
.ssh 4
sim 4
.bash_logout 0
.bash_profile 0
.bashrc 0
.history 0
.screenrc 1
.vimrc 0
.Xauthority 0
Follow terminal folder

ic30 (l): 1 0.00, 0.01, 0.00 || ic52 (l): 5 0.00, 0.00, 0.00
ic53 (l): 1 0.45, 0.26, 0.12 || ic54 (l): 6 0.02, 0.02, 0.00
ic56 (l): 13 1.03, 0.82, 0.69 || ic57 (l): 13 0.00, 0.00, 0.00
ic58 (l): 1 0.00, 0.00, 0.00
Last updated: Mon Mar 7 16:23:01 CST 2016
(l) Linux, (s) SunOS, (D) Shutdown

Host | processor number | freq / # of core | Ram | OS
-----|-----|-----|-----|-----
ic18-ic19 | Xeon(R) E5530 | 2.40GHz/4C8Tx2 | 64G | CentOS 4.6
ic21-ic26 | Xeon(R) X5570 | 2.93GHz/4C8Tx2 | 48G | CentOS 5.11
ic27-ic29 | Xeon(R) E5-2643 | 3.30GHz/4C8Tx2 | 128G | CentOS 5.9
* ic30 | Xeon(R) E5-2637V2 | 3.50GHz/4C8Tx2 | 128G | CentOS 5.9
* ic52-ic53 | Xeon(R) E5-2650V2 | 2.60GHz/8C16Tx2 | 64G | CentOS 5.9
* ic54-ic58 | Xeon(R) E5-2650V2 | 2.60GHz/8C16Tx2 | 64G | CentOS 6.6
* (Recommended if you don't have special requirements.)

--- You have 3 process(es) before login ---
UID PID PPID C STIME TTY TIME CMD
archil22 15291 15255 0 16:23 ? 00:00:00 sshd: archil22@notty
archil22 15295 15291 0 16:23 ? 00:00:00 tcsh -c /usr/libexec/openssh/sftp-server
archil22 15310 15295 0 16:23 ? 00:00:00 /usr/libexec/openssh/sftp-server

-----NTHU CS VLSI/CAD News-----
.For loading information, use command "lab_uptime".
.For platform information, use command "lab_plat".
.If you have any problem, please send a mail to
nny02100@mail.nthu.edu.tw or hny02200@mail.nthu.edu.tw

[archil22@nthucad ~]$ passwd
Changing password for user archil22.
Changing password for archil22
(current) UNIX password:
New UNIX password:
Retype new UNIX password:
passwd: all authentication tokens updated successfully.
[archil22@nthucad ~]$
```

# Connecting to Workstation

- You can only choose on workstation from **ic21 ~ ic29**
- Find a workstation with **less user**

```
2. /home/mobaxterm 9. nthucad.cs.nthu.edu.tw
Last login: Fri Oct 2 12:07:19 2015 from cad62.cs.nthu.edu.tw

      NTHU
    VLSI/CAD

-----users---load average-----users---load average---
ic4 (s): 0 0.00, 0.00, 0.00 || ic5 (l): 0 0.00, 0.01, 0.05
ic18 (l): 2 0.00, 0.00, 0.00 || ic19 (l): 1 0.00, 0.00, 0.00
ic21 (l): 4 0.11, 0.04, 0.01 || ic22 (l): 4 0.00, 0.01, 0.00
ic23 (l): 0 0.00, 0.00, 0.00 || ic24 (l): 1 0.02, 0.01, 0.00
ic25 (l): 1 0.03, 0.04, 0.00 || ic26 (l): 0 0.99, 0.98, 0.96
ic27 (l): 11 1.02, 1.04, 1.05 || ic28 (l): 1 1.00, 1.00, 1.00
ic29 (l): 0 1.09, 1.03, 1.01 || ic30 (l): 0 0.00, 0.00, 0.00
ic52 (l): 9 1.00, 1.00, 1.00 || ic53 (l): 0 2.00, 2.00, 2.00
ic54 (l): 4 0.02, 0.01, 0.00 || ic56 (l): 4 3.01, 2.97, 2.44
ic57 (l): 13 2.00, 1.86, 1.46 || ic58 (l): 4 1.99, 1.94, 1.86
last updated: Fri Oct 2 13:49:01 CST 2015
(l) Linux. (s) SunOS. (d) Shutdown
```

These are the only workstation you can use (ic21~ic29)

# of users on the workstation



# Connecting to Workstation (Cont.)

## ■ Connect to a workstation (Important)

- **ssh -X icXX**

```
1. [archil22@nthucad ~]$ ssh -X ic21
The authenticity of host 'ic21 (192.168.75.51)' can't be established.
RSA key fingerprint is e0:06:4a:9a:6d:b2:a1:c7:f6:49:b0:39:54:8c:7a.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ic21,192.168.75.51' (RSA) to the list of known hosts.
archil22@ic21's password:
-----NTHU CS VLSI/CAD News-----
.For loading information, use command "lab_uptime".
.For platform information, use command "lab_plat".
If you have any problem, please send a mail to
cory8249@gmail.com and hsnul220toast@gmail.com
-----
users load average
ic5 (l): 1 0.00, 0.01, 0.05 || ic18 (l): 3 0.00, 0.00, 0.00
ic19 (l): 3 0.00, 0.00, 0.00 || ic21 (l): 3 0.02, 0.01, 0.00
ic22 (l): 2 0.00, 0.00, 0.00 || ic23 (l): 17 2.03, 1.97, 1.57
ic24 (l): 2 0.00, 0.00, 0.00 || ic25 (l): 1 0.00, 0.00, 0.00
ic26 (l): 3 0.00, 0.00, 0.00 || ic27 (l): 1 0.08, 0.07, 0.02
ic28 (l): 2 0.00, 0.00, 0.00 || ic29 (l): 2 0.01, 0.02, 0.00
ic30 (l): 1 0.00, 0.00, 0.00 || ic52 (l): 5 0.00, 0.03, 0.05
ic53 (l): 1 0.01, 0.09, 0.08 || ic54 (l): 6 0.63, 0.18, 0.05
ic56 (l): 13 1.02, 0.79, 0.74 || ic57 (l): 13 0.00, 0.00, 0.00
ic58 (l): 1 0.00, 0.00, 0.00 ||
Last updated: Mon Mar 7 16:07:01 CST 2016
(l) Linux, (s) SunOS, (D) Shutdown
-----
.NTHU CS VLSI/CAD News
.For loading information, use command "lab_uptime".
.For platform information, use command "lab_plat".
If you have any problem, please send a mail to
cory8249@gmail.com and hsnul220toast@gmail.com
Synopsis licenses have set!
Cadence licenses have set!
[archil22@ic21 ~]$
```

Type "yes"

2. Should be [XXX@icXX ~]\$ after connecting



# Create directory

- Right click to create new directory “*sim*” or by command line “*mkdir sim*”

The screenshot shows the MobaXterm interface with a terminal window and a file explorer. A red box highlights the 'New directory' option in the file explorer's context menu, labeled with a red '1.'. A second red box highlights the 'sim' text entered in the 'Please enter the new directory name' dialog box, labeled with a red '2.'. A third red box highlights the 'OK' button in the same dialog box, labeled with a red '3.'. The terminal window displays system information and a table of host specifications.

Host	processor	number	freq / # of core	Ram	OS
ic18-ic19	Xeon(R) E5530		2.40GHz/4C8Tx2	64G	CentOS 4.6
ic21-ic26	Xeon(R) X5570		2.93GHz/4C8Tx2	48G	CentOS 5.11
ic27-ic29	Xeon(R) E5-2643		3.30GHz/4C8Tx2	128G	CentOS 5.9
ic30	Xeon(R) E5-2637V2		3.50GHz/4C8Tx2	128G	CentOS 5.9
* ic52-ic53	Xeon(R) E5-2650V2		2.60GHz/8C16Tx2	64G	CentOS 5.9
* ic54-ic58	Xeon(R) E5-2650V2		2.60GHz/8C16Tx2	64G	CentOS 6.6

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <http://mobaxterm.mobatek.net>



# Uploading .v Files

## Upload files

- Upload your .v files by dragging them into directory

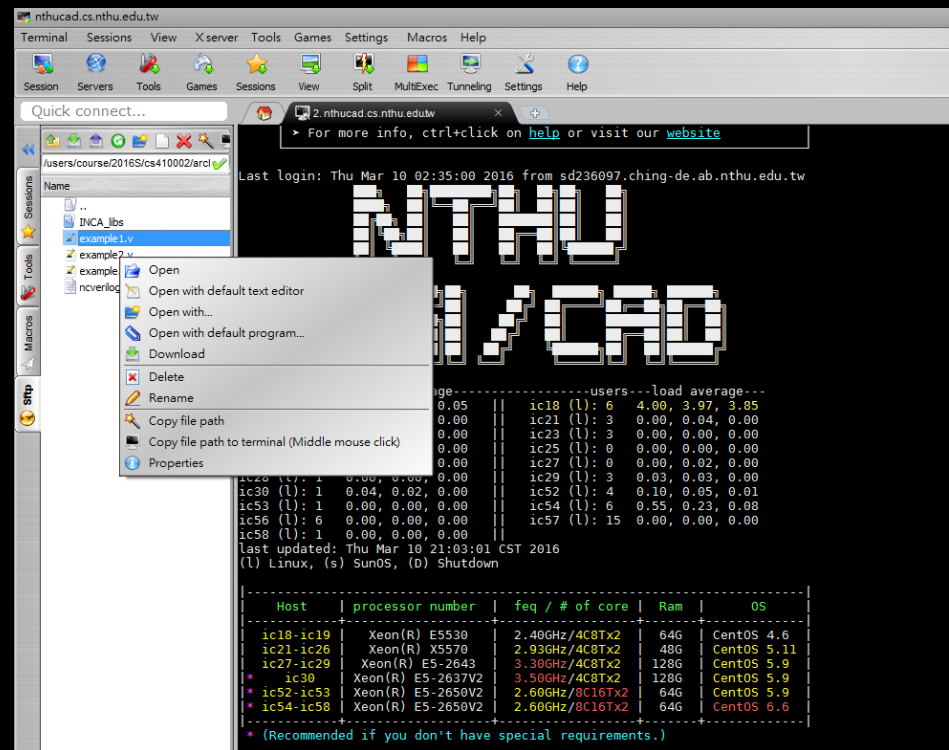
The screenshot illustrates the process of uploading .v files to a remote directory. On the left, a Windows File Explorer window shows a local directory 'Project1' containing three files: 'example1.v', 'example2.v', and 'example3.v'. A red box highlights these files, and a red arrow points from this box to a similar red box in the MobaXterm window. The MobaXterm window shows a terminal session with the 'Quick connect...' dialog open, displaying the path '/users/course/2016S/cs410002/archi122/sim/'. The 'Sessions' list on the left shows the selected session. The terminal output displays system information for a remote host, including a table of host details.

Host	processor number	freq / # of core	Ram	OS
ic18-ic19	Xeon(R) E5530	2.40GHz/4C8Tx2	64G	CentOS 4.6
ic21-ic26	Xeon(R) X5570	2.93GHz/4C8Tx2	48G	CentOS 5.11
ic27-ic29	Xeon(R) E5-2643	3.30GHz/4C8Tx2	128G	CentOS 5.9
* ic30	Xeon(R) E5-2637V2	3.50GHz/4C8Tx2	128G	CentOS 5.9
* ic52-ic53	Xeon(R) E5-2650V2	2.60GHz/8C16Tx2	64G	CentOS 5.9
* ic54-ic58	Xeon(R) E5-2650V2	2.60GHz/8C16Tx2	64G	CentOS 6.6

-----NTHU CS VLSI/CAD News-----  
For loading information, use command "lab\_uptime".  
For platform information, use command "lab\_plat".  
If you have any problem, please send a mail to  
cory8249@gmail.com and hsnul220toast@gmail.com  
[archi122@nthucad ~]\$

# Edit files in workstation

- ❑ Right click → open with mobaXterm's editor
- ❑ Vim is available in workstation
- ❑ You can also edit in Windows then upload it



# Run simulation

- Use “NC verilog” as standard simulation platform
  - Commercial software by Cadence
- You can use any IDE/Editor to program

# Run simulation

- ▣ \$ ncverilog *all .v file you need*
  - i.e. \$ncverilog Simulator.v Test\_Bench.v

```
2. nthu cad.cs.nthu.edu.tw
Initial blocks:      2      2
Pseudo assignments: 1      1
Simulation timescale: 1ps
Writing initial simulation snapshot: worklib.Test_Bench.v
Loading snapshot worklib.Test_Bench.v ..... Done
*Verdi3* Loading libsscore_ius141.so
*Verdi3* : Enable Parallel Dumping.
ncsim> source /usr/cad/cadence/INCISIV/cur/tools/inca/files/ncsimrc
ncsim> run
$0: 0
$1: 0
$2: 0
$3: 0
$4: 0
$5: 0
$6: 0
$7: 0
$8: 0
$9: 0
$10: 0
$11: 0
$12: 0
$13: 0
$14: 0
$15: 0
$16: 0
$17: 0
$18: 0
$19: 0
$20: 0
$21: 0
$22: 0
$23: 0
$24: 0
$25: 0
$26: 0
$27: 0
$28: 0
$29: 0
$30: 0
$31: 0
Simulation complete via $finish(1) at time 2010 NS + 0
./Test_Bench.v:45      #(`CYCLE_TIME*`END_CYCLE) $finish;
ncsim> exit
```



# Outline

- ▣ Workstation setting : MobaXterm
- ▣ **Makefile**

# Makefile - introduction

- A tool helps you compile your program with multiple commands and arguments
- We provide you a simple makefile for the projects in this course
- Put the makefile in your project directory so that it works for you

# Makefile - purpose

- Multiple source files in a project
  - you have to type a lot in a single command
  - i.e. `$ncverilog file1.v file2.v file3.v ..... testbench.v`
- Additional function with any tool/compiler
  - you have to add some parameters at the end
  - i.e. `$ncverilog (all .v files) +access+r +gui`
- **Makefile can do the things above for us !**

# Makefile – simple syntax

```
1 VLOG = ncverilog
2 Test = Test_bench.v
3 CPU = Simulator.v
4
5 all:
6     $(VLOG) $(CPU) $(Test)
```

} Variables

} [target]:  
[TAB][rule]

- **all** is the default target name
  - You can define other targets
- **\$make** or **\$make all**
  - This makefile will do : ncverilog Simulator.v Test\_bench.v
- For detailed and advanced makefile writing skills, please find them online