

Lesson Module Checklist

- Slides
- WB
- Flash cards
- Page numbers
- 1st minute quiz
- Web Calendar summary
- Web book pages
- Commands
- Practice test uploaded
- Backup slides, CCC info, handouts on flash drive
- Check that backup room headset is charged
- Spare 9v battery for mic

Introductions and Credits



Jim Griffin

- Created this Linux course
- Created Opus and the CIS VLab
- Jim's site: <http://cabrillo.edu/~jgriffin/>



Rich Simms

- HP Alumnus
- Started teaching this course in 2008 when Jim went on sabbatical
- Rich's site: <http://simms-teach.com>

And thanks to:

- John Govsky for many teaching best practices: e.g. the First Minute quizzes, the online forum, and the point grading system (<http://teacherjohn.com/>)



Daniel



Riley



Solomon



Instructor: **Rich Simms**
Dial-in: **888-450-4821**
Passcode: **761867**



Roger



Dillon



Pam



Aarron



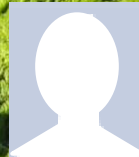
Liz



Gabe



MJ



Liam



Michael L.



Ryan



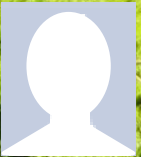
Ben L.



Andrew



Ariana



Ryan



Rich



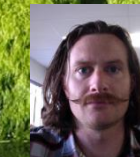
Natalia



Perky



Samantha



Paul S.



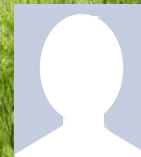
Hilario



Tyrone



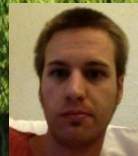
Ben C.



Justin



Jordan



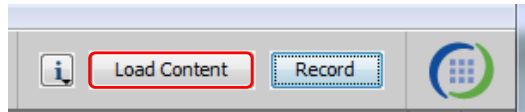
Mark



Jay

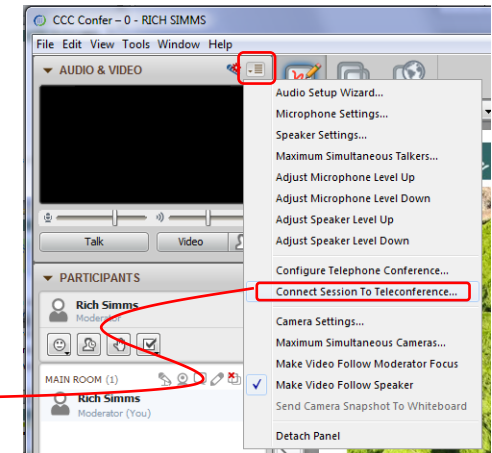
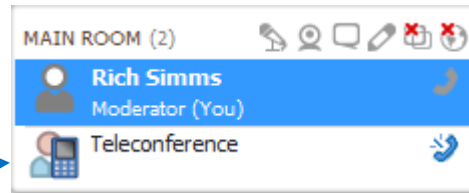


[] Preload White Board with *cis*lesson??*-WB*

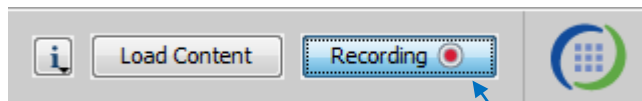


[] Connect session to Teleconference

Session now connected to teleconference



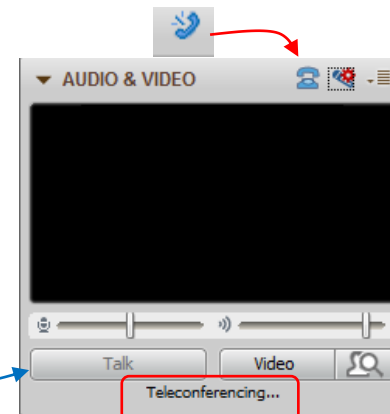
[] Is recording on?



Red dot means recording

[] Use teleconferencing, not mic

Should be greyed out





- [] Video (webcam) optional
- [] layout and share apps

The screenshot displays a Windows desktop environment with several applications open. On the left is the "CCC Confer" application window, showing a video feed of a person and a list of participants. In the center is a "Foxit Reader" window displaying a PDF document titled "cis90lesson07.pdf". To the right is a "Chrome" browser window showing a webpage from "simms-teach.com" with flashcard questions. Below the browser is a "vSphere Client" window showing a list of virtual machines. In the foreground, a "Putty" terminal window is open, displaying a login prompt and a list of files. Red arrows point from the labels "foxit for slides", "chrome", and "vSphere Client" to their respective windows. The "Putty" window shows a terminal session with the following text:

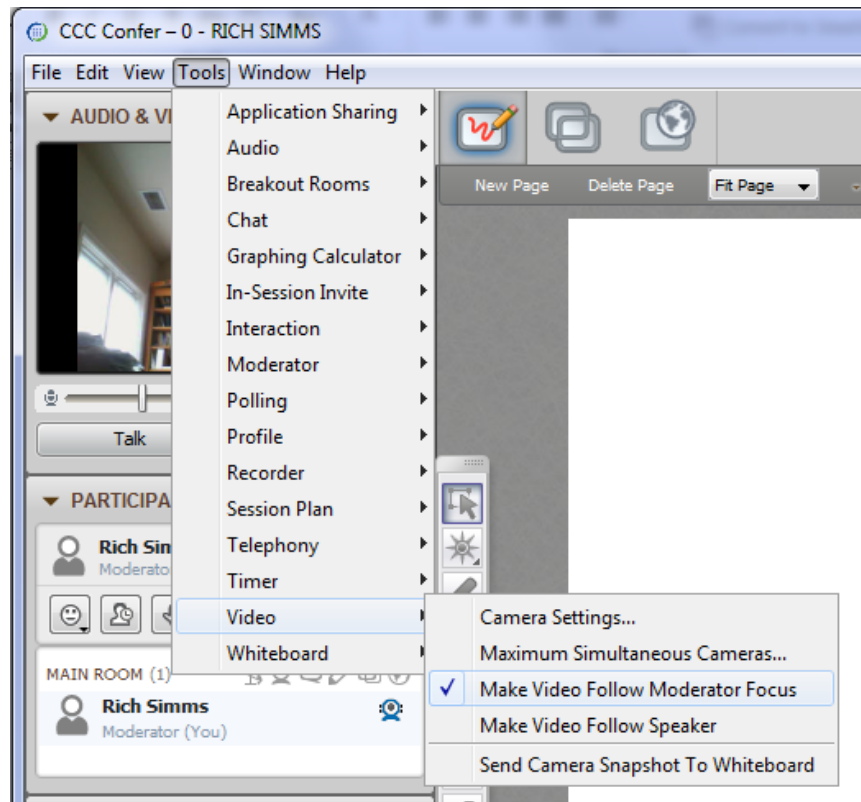
```
simben90@oslab:~  
login as: simben90  
simben90@oslab.cabrillo.edu's password:  
Access denied  
simben90@oslab.cabrillo.edu's password:  
Last login: Mon Oct 8 18:58:43 2012 from  
d.com  
  
Current directory  
source  
destination  
  
What command copies th  
  
Terminal type? [xterm]  
Terminal type is xterm.  
/home/cis90/simben $
```



[] Video (webcam) optional

[] Follow moderator

[] Double-click on postages stamps



Universal Fix for CCC Confer:

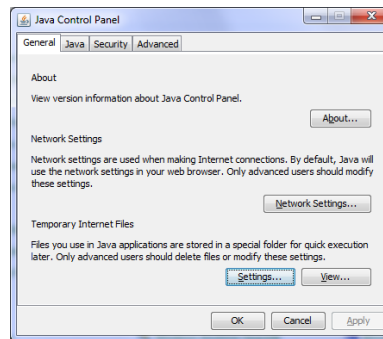
- 1) Shrink (500 MB) and delete Java cache
- 2) Uninstall and reinstall latest Java runtime



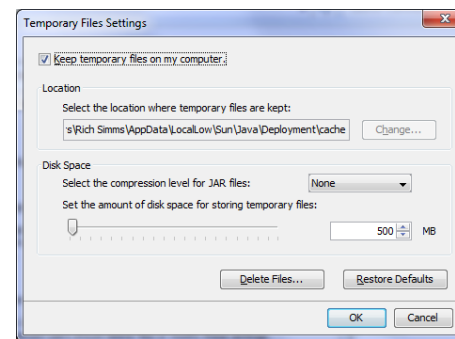
Control Panel (small icons)



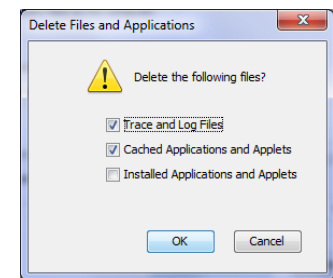
General Tab > Settings...



500MB cache size



Delete these



Google Java download



Quiz

**No Quiz
Today !**



File Transfer and Review

Objectives	Agenda
<ul style="list-style-type: none">• Transfer project files to Windows and Linux systems• Prepare for final exam	<ul style="list-style-type: none">• No Quiz• Questions from last week• File transfer continued• Practice Test #3• Project Workshop (optional)



Questions



Questions?

Lesson material?

Labs? Tests?

How this course works?

- Graded work in home directories
- Answers in /home/cis90/answers

Who questions much, shall learn much, and retain much.

- Francis Bacon

If you don't ask, you don't get.

- Mahatma Gandhi

Chinese
Proverb

他問一個問題，五分鐘是個傻子，他不問一個問題仍然是一個傻瓜永遠。

He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever.



Housekeeping

Due 11:59 PM tonight:

- Final Project submittal

Due 11:59 PM June 6:

- Five forum posts
- Extra credit labs

Next week is **Cabrillo Finals Week**

- Our final exam is Test #3 (30 points)
- Time: 1:00PM - 3:50PM
- Date: Thu June 6
- Place: Room 2501

The final exam:

- *must be taken in Room 2501 (no CCC Confer)*
- *it must be submitted on Opus by the end of the exam period (no grace extension period)*
- *no makeups*

Points earned

Thu May 30 09:19:48 PDT 2013:

adaldrida: 91% (413 of 450 points)
 anborn: 100% (451 of 450 points)
 arador: 56% (256 of 450 points)
 balrog: 0% (0 of 450 points)
 bilbo: 84% (382 of 450 points)
 celebrian: 76% (346 of 450 points)
 cirdan: 54% (246 of 450 points)
 durin: 89% (402 of 450 points)
 dwalin: 99% (449 of 450 points)
 elrond: 110% (498 of 450 points)
 eomer: 108% (488 of 450 points)
 faramir: 105% (473 of 450 points)
 frodo: 105% (474 of 450 points)
 gimli: 69% (314 of 450 points)
 goldberry: 87% (393 of 450 points)
 gwaihir: 71% (323 of 450 points)
 haldir: 66% (297 of 450 points)
 ingold: 91% (413 of 450 points)
 ioreth: 95% (429 of 450 points)
 legolas: 108% (488 of 450 points)
 marhari: 91% (411 of 450 points)
 quickbeam: 60% (271 of 450 points)
 samwise: 100% (453 of 450 points)
 sauron: 99% (446 of 450 points)
 shadowfax: 76% (345 of 450 points)
 strider: 104% (471 of 450 points)
 theoden: 105% (473 of 450 points)
 treebeard: 93% (422 of 450 points)
 tulkas: 101% (456 of 450 points)

Remaining points to earn:

Forum-4 20
 Test-3 30
 Project 60
 Extra credit 0-90

Percentage	Total Points	Letter Grade	Pass/No Pass
90% or higher	504 or higher	A	Pass
80% to 89.9%	448 to 503	B	Pass
70% to 79.9%	392 to 447	C	Pass
60% to 69.9%	336 to 391	D	No pass
0% to 59.9%	0 to 335	F	No pass

*Contact the instructor
if you have questions*

Possible Points	Requirements
30	Implementing all five tasks (6 points each): <ul style="list-style-type: none"> Requirements for each task: <ul style="list-style-type: none"> Minimum of 10 "original" script command lines Has one or more non-generic comments to explain what it is doing Has user interaction
25	You don't have to do all of these but do at least five: <ul style="list-style-type: none"> Redirecting stdin (5 points) Redirecting stdout (5 points) Redirecting stderr (5 points) Use of permissions (5 points) Use of filename expansion characters (5 points) Use of absolute path (5 points) Use of relative path (5 points) Use of a PID (5 points) Use of inodes (5 points) Use of links (5 points) Use of scheduling (5 points) Use of a GID or group (5 points) Use of a UID or user (5 points) Use of a /dev/tty device (5 points) Use of a signal (5 points) Use of piping (5 points) Use of an environment variable (5 points) Use of /bin/mail (5 points) Use of a conditional (5 points) <p>The maximum for this section is 25 points.</p>
5	Present your script to the class
Points lost	
-15	Fails to run from allscripts
-15	Other students in the class are unable to read and execute your script.
-15	Error messages are displayed when running one or more tasks
-up to 90	No credit for any task which contains unoriginal script code that: <ul style="list-style-type: none"> Doesn't give full credit to the original author Doesn't indicate where the code was obtained from Doesn't include licensing terms Violates copyright or licensing terms
Extra credit	
30	Up to three additional tasks (10 points each)

This is how the final project will be graded

Project Stats

```
rsimms@oslab:~$ /home/cis90/bin/checkmyscripts
-rwxr-x---. 1 simben90 cis90 10512 May  9 10:21 /home/cis90/simben/bin/myscript
-rwxr-x---. 1 milhom90 cis90 4679 May 23 09:40 /home/cis90/milhom/bin/myscript
-rwxr-x---. 1 rodduk90 cis90 546 May 16 08:51 /home/cis90/rodduk/bin/myscript
ls: cannot access /home/cis90/blodan/bin/myscript: No such file or directory
-rwxrw----. 1 braril90 cis90 3337 May 25 19:51 /home/cis90/braril/bin/myscript
-rwxr-x---. 1 bunsol90 cis90 39 May 17 02:01 /home/cis90/bunsol/bin/myscript
-rwxr-x---. 1 deddil90 cis90 4362 May 30 01:58 /home/cis90/deddil/bin/myscript
-rwxr-x---. 1 diapam90 cis90 4005 May 29 07:16 /home/cis90/diapam/bin/myscript
-rwxr-x---. 1 dusaar90 cis90 706 May  9 14:26 /home/cis90/dusaar/bin/myscript
-rwxr-x---. 1 fareli90 cis90 4861 May 24 15:09 /home/cis90/fareli/bin/myscript
-rwxr-x---. 1 gilgab90 cis90 15821 May 30 03:58 /home/cis90/gilgab/bin/myscript
-rwxr-x---. 1 joylia90 cis90 7716 May 29 22:47 /home/cis90/joylia/bin/myscript
-rwxr-x---. 1 lejmic90 cis90 6397 May 30 06:44 /home/cis90/lejmic/bin/myscript
-rwxr-x---. 1 lemrya90 cis90 1116 May 29 10:45 /home/cis90/lemrya/bin/myscript
-rwxr-x---. 1 lovben90 cis90 3856 May 30 01:42 /home/cis90/lovben/bin/myscript
ls: cannot access /home/cis90/marrog/bin/myscript: No such file or directory
-rwxr-x---. 1 mazari90 cis90 6618 May 29 22:33 /home/cis90/mazari/bin/myscript
-rwxr-x---. 1 mennat90 cis90 6050 May 30 02:21 /home/cis90/mennat/bin/myscript
-rwxr-x--x. 1 perste90 cis90 923 May 16 17:12 /home/cis90/perste/bin/myscript
-rwxr-x---. 1 rutsam90 cis90 1223 May 27 16:40 /home/cis90/rutsam/bin/myscript
-rwxr-x---. 1 shepau90 cis90 1110 May 23 20:18 /home/cis90/shepau/bin/myscript
-rwxr-x---. 1 vashil90 cis90 2071 May 28 16:10 /home/cis90/vashil/bin/myscript
-rwxr-x---. 1 wiltyr90 cis90 1222 May 29 23:35 /home/cis90/wiltyr/bin/myscript
-rwxr-x---. 1 cruben90 cis90 2518 May 30 05:50 /home/cis90/cruben/bin/myscript
-rwxr-x--x. 1 valjus90 cis90 546 May  9 14:34 /home/cis90/valjus/bin/myscript
-rwxr-x---. 1 marand90 cis90 4806 May 30 05:35 /home/cis90/marand/bin/myscript
-rwxr-xr-x. 1 goljor90 cis90 4019 May 29 02:22 /home/cis90/goljor/bin/myscript
-rwxr-x---. 1 wismar90 cis90 5591 May 29 21:42 /home/cis90/wismar/bin/myscript
-rwxr-x---. 1 schrya90 cis90 9446 May 29 19:51 /home/cis90/schrya/bin/myscript
-rwxr-x---. 1 davmic90 cis90 4143 May 29 21:28 /home/cis90/davmic/bin/myscript
-rwxr-x---. 1 paljay90 cis90 764 May 14 23:59 /home/cis90/paljay/bin/myscript
-rwxr-x---. 1 berric90 cis90 4032 May 29 19:32 /home/cis90/berric/bin/myscript
rsimms@oslab ~$
```

Additional Cabrillo College Linux courses:

CIS 98 - Linux/UNIX Shell Programming

CIS 191 - Linux/UNIX System Administration

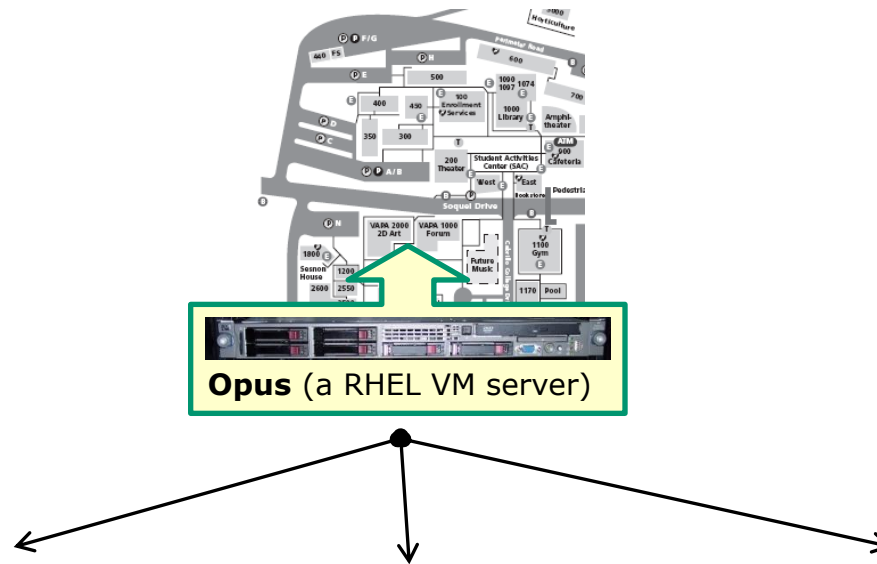
CIS 192 - Linux/UNIX Network Administration

CIS 193 - Linux/UNIX Security Administration

File Transfer

File Transfer

Downloading your Opus files to your home computer



Windows



Mac



Linux

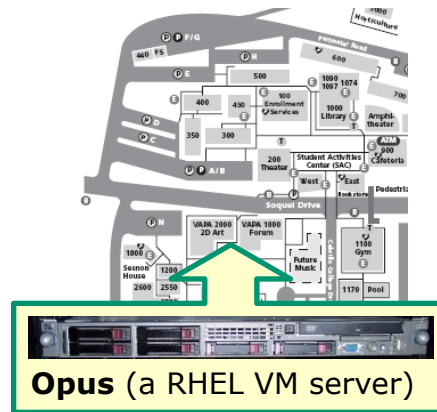
Many ways to transfer files:

- Between Linux and Windows
 - Filezilla or related applications
 - Putty SCP (PSCP)
- Between Linux and Linux/Mac
 - Filezilla or related applications
 - scp command

File Transfer Windows Filezilla

File Transfer

Downloading your Opus files to your home computer



Windows

*For Windows you can use the pscp
(Putty scp) program or a file transfer
utility like Filezilla*

File Transfer

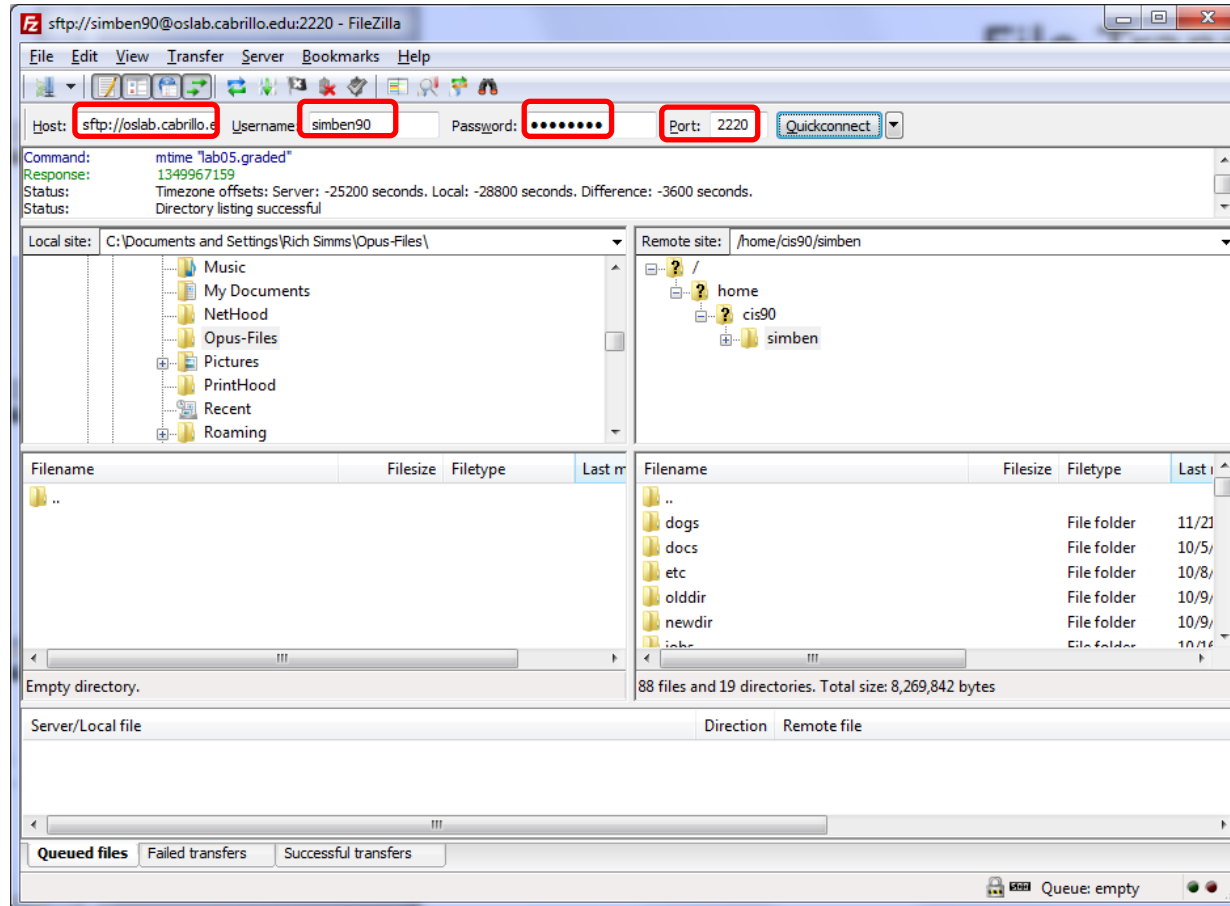
Downloading your Opus files to Windows using Filezilla

<http://filezilla-project.org>



Filezilla

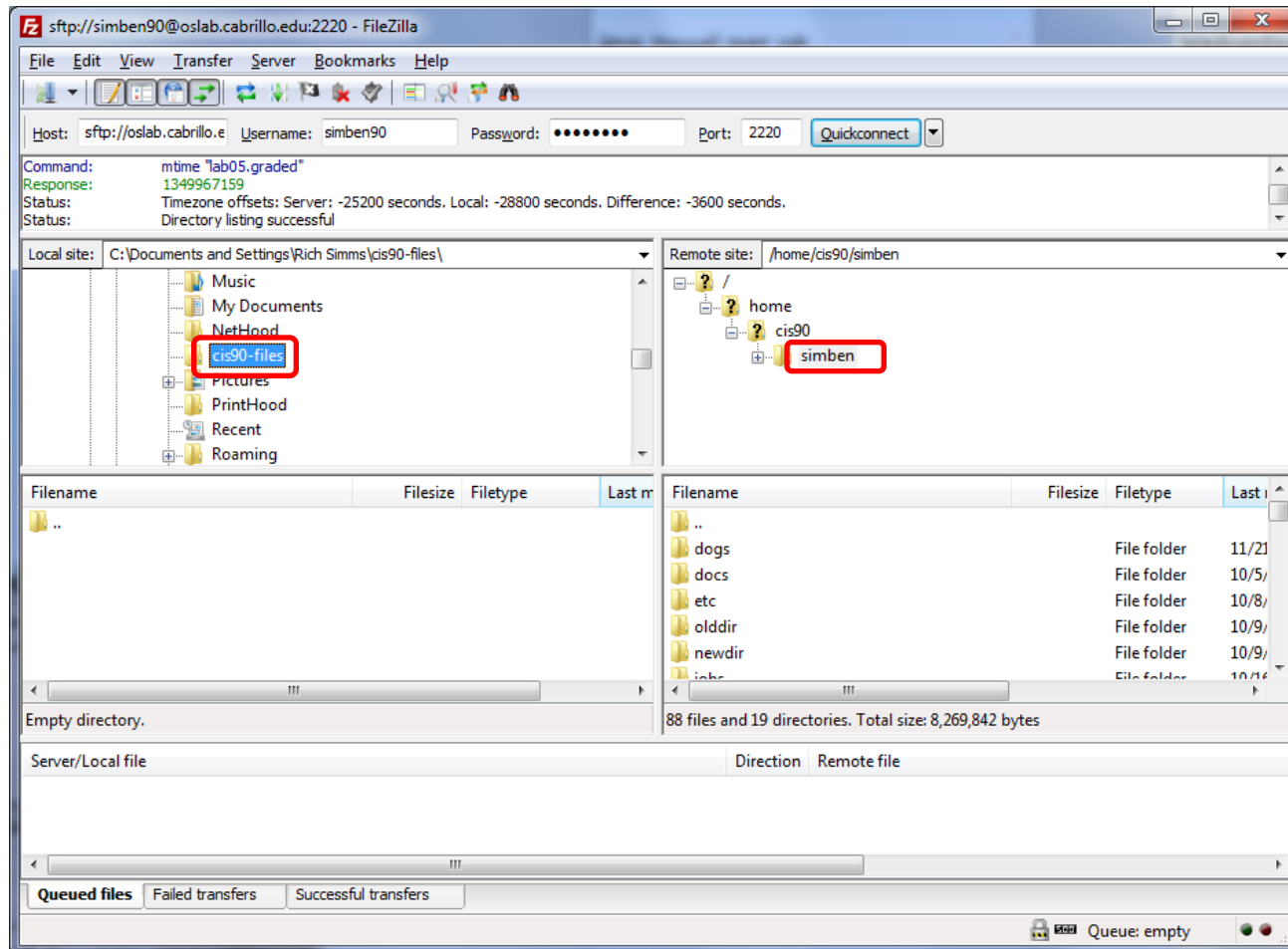
Connect to your Opus account



*Specify
sftp://oslab.cabrillo.edu
as the host with your Opus
username, password and
port 2220 then click
Quickconnect*

Filezilla

Select source and target directories

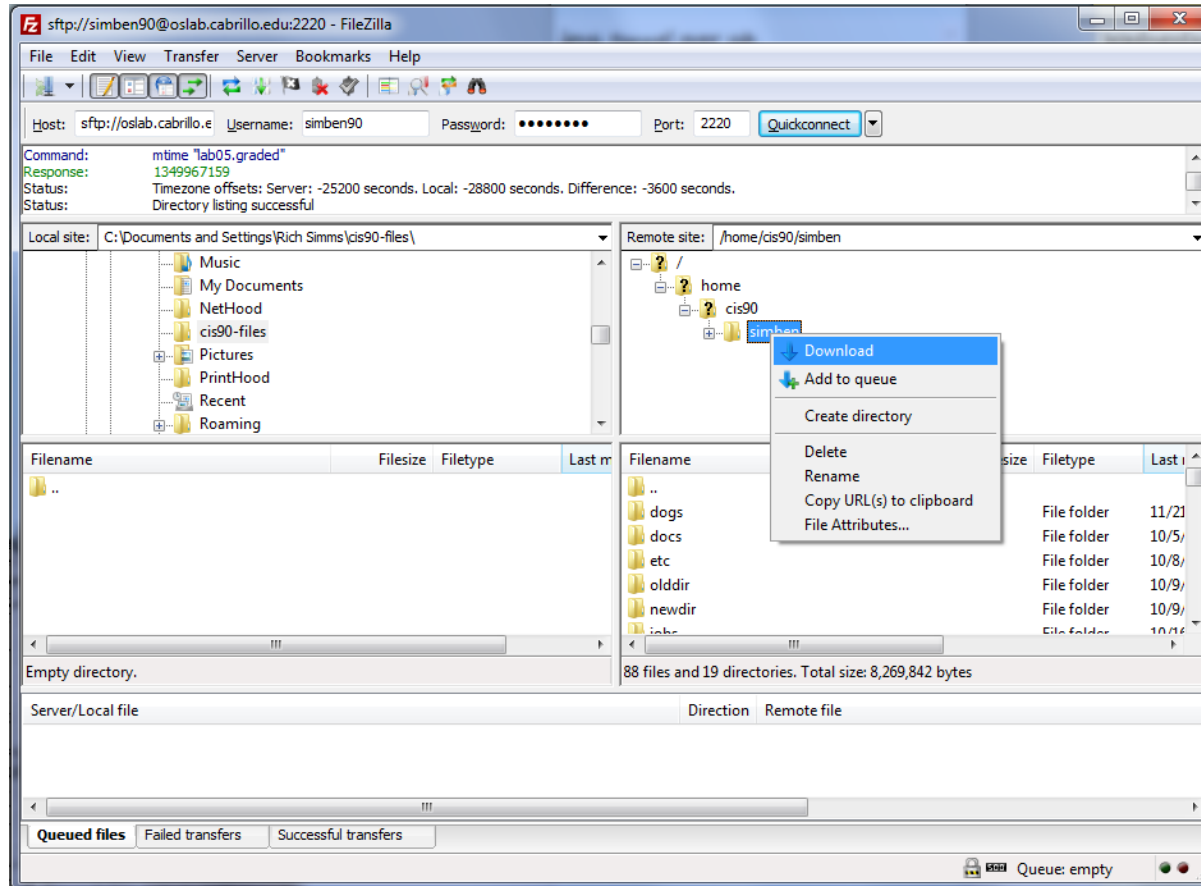


Select local folder to download files into

Select directory on Opus to download

Filezilla

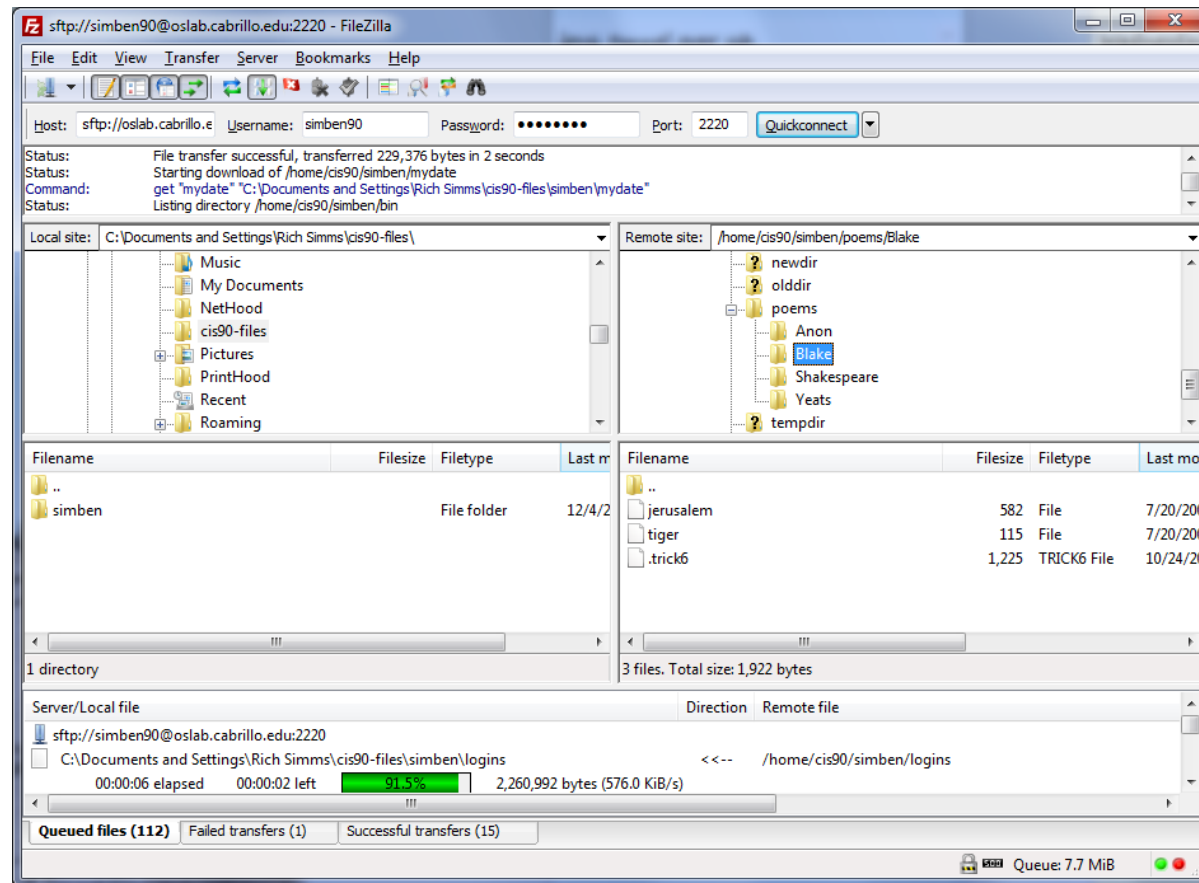
Initiate the download



Right-click on the Opus directory and select Download

Filezilla

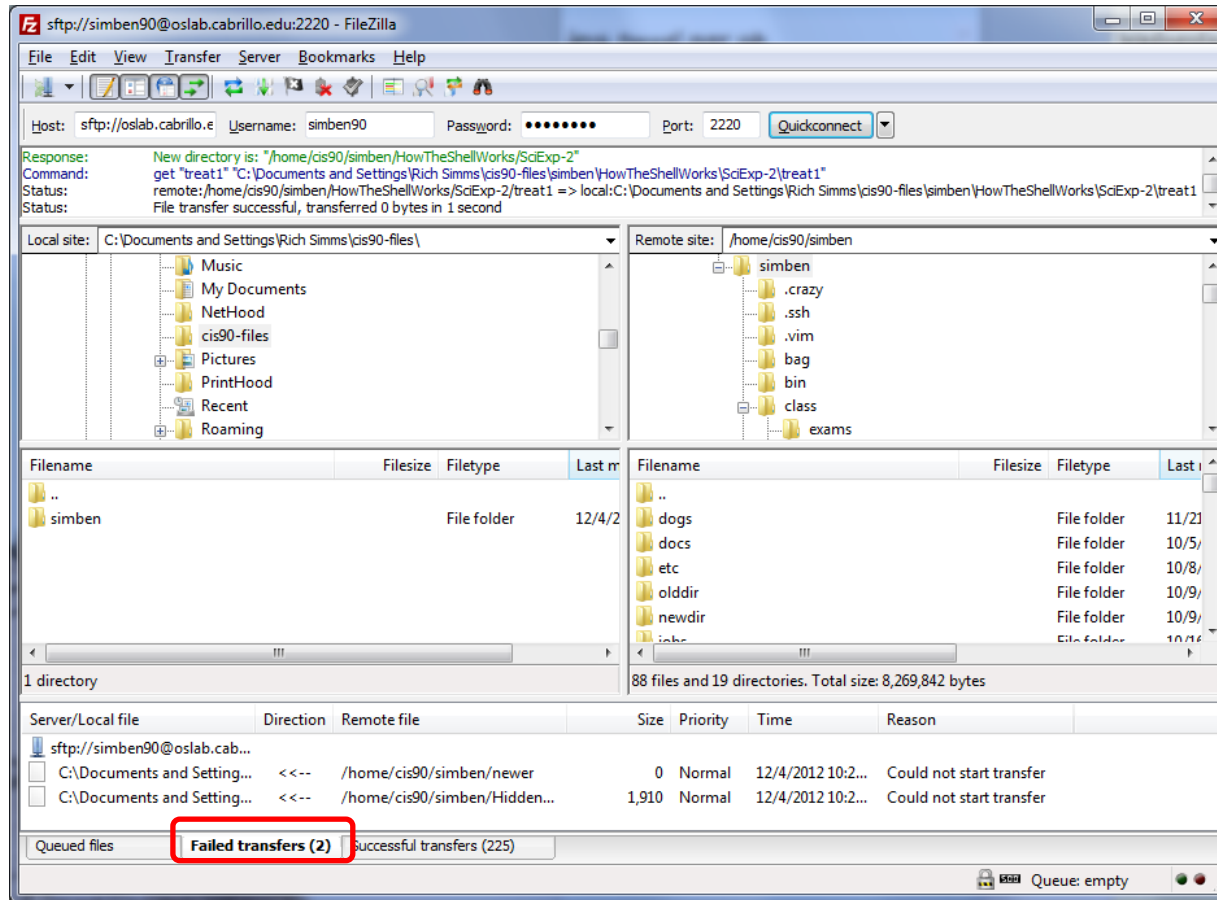
Monitor progress



And away it goes downloading every file and directory it finds in the Opus directory you selected to your local folder

Filezilla

Failed Transfers



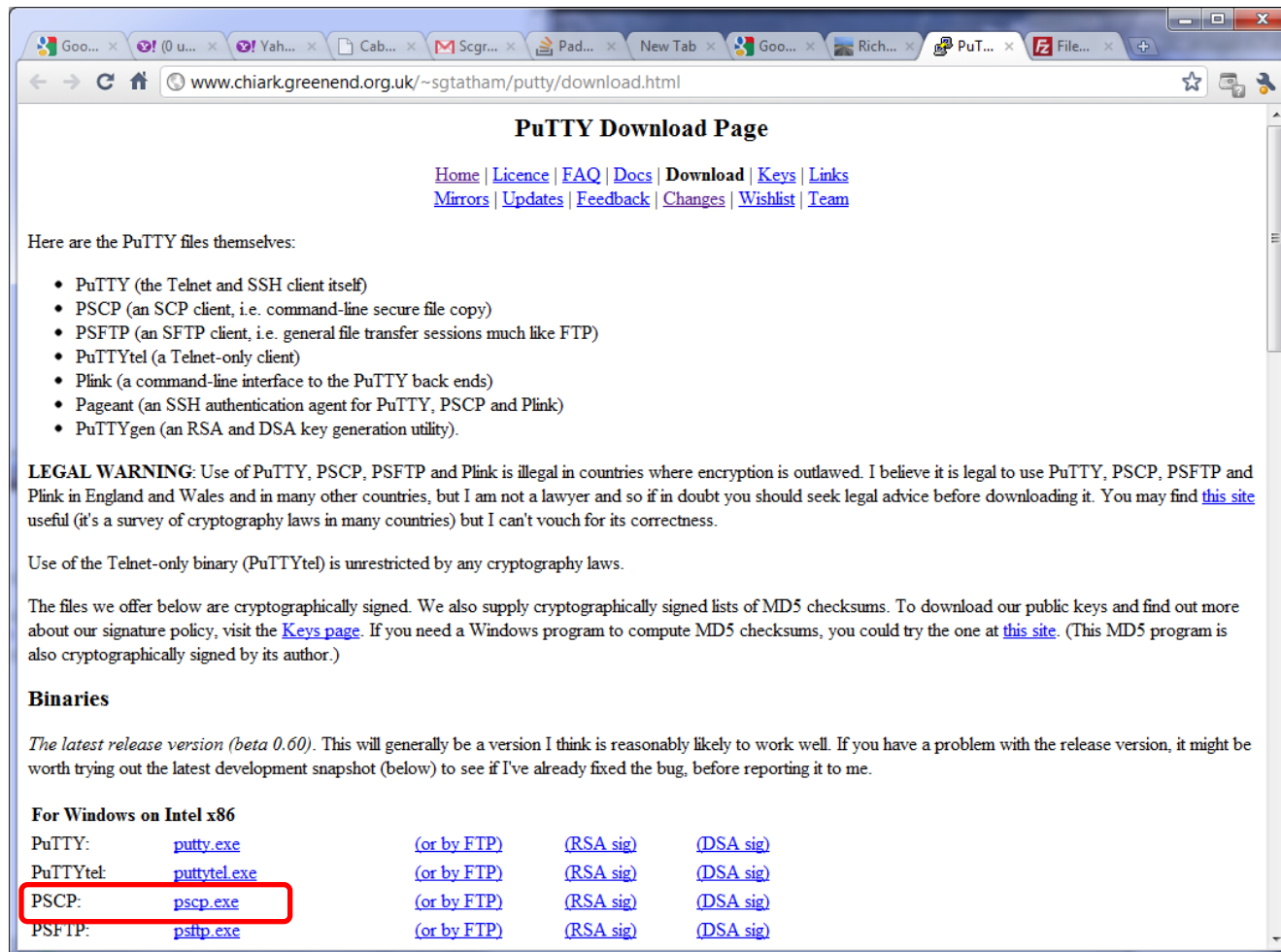
Failed transfers can happen if you don't have read permissions for a file

File Transfer Windows PSCP

PSCP

Downloading PSCP (Putty SCP)

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>



The screenshot shows a web browser window with the address bar displaying www.chiark.greenend.org.uk/~sgtatham/putty/download.html. The page title is "PuTTY Download Page". Below the title is a navigation menu with links: [Home](#), [Licence](#), [FAQ](#), [Docs](#), [Download](#), [Keys](#), [Links](#), [Mirrors](#), [Updates](#), [Feedback](#), [Changes](#), [Wishlist](#), and [Team](#). The main content area starts with the text "Here are the PuTTY files themselves:" followed by a bulleted list of software components: PuTTY (the Telnet and SSH client itself), PSCP (an SCP client, i.e. command-line secure file copy), PSFTP (an SFTP client, i.e. general file transfer sessions much like FTP), PuTTYtel (a Telnet-only client), Plink (a command-line interface to the PuTTY back ends), Pageant (an SSH authentication agent for PuTTY, PSCP and Plink), and PuTTYgen (an RSA and DSA key generation utility). Below this list is a "LEGAL WARNING" section stating that use of PuTTY, PSCP, PSFTP, and Plink is illegal in countries where encryption is outlawed, but it is legal in England and Wales. It advises users to seek legal advice before downloading. A note specifies that the Telnet-only binary (PuTTYtel) is unrestricted by any cryptography laws. The page then explains that the files are cryptographically signed and provides links to the signature policy and a site for MD5 checksums. A "Binaries" section follows, stating that the latest release version is beta 0.60. It then provides a table of download links for Windows on Intel x86. The table lists PuTTY, PuTTYtel, PSCP, and PSFTP, each with links to the executable file, a link to download "or by FTP", and links to RSA and DSA signatures. The "PSCP" row is highlighted with a red rectangle.

PuTTY Download Page

[Home](#) | [Licence](#) | [FAQ](#) | [Docs](#) | [Download](#) | [Keys](#) | [Links](#)
[Mirrors](#) | [Updates](#) | [Feedback](#) | [Changes](#) | [Wishlist](#) | [Team](#)

Here are the PuTTY files themselves:

- PuTTY (the Telnet and SSH client itself)
- PSCP (an SCP client, i.e. command-line secure file copy)
- PSFTP (an SFTP client, i.e. general file transfer sessions much like FTP)
- PuTTYtel (a Telnet-only client)
- Plink (a command-line interface to the PuTTY back ends)
- Pageant (an SSH authentication agent for PuTTY, PSCP and Plink)
- PuTTYgen (an RSA and DSA key generation utility).

LEGAL WARNING: Use of PuTTY, PSCP, PSFTP and Plink is illegal in countries where encryption is outlawed. I believe it is legal to use PuTTY, PSCP, PSFTP and Plink in England and Wales and in many other countries, but I am not a lawyer and so if in doubt you should seek legal advice before downloading it. You may find [this site](#) useful (it's a survey of cryptography laws in many countries) but I can't vouch for its correctness.

Use of the Telnet-only binary (PuTTYtel) is unrestricted by any cryptography laws.

The files we offer below are cryptographically signed. We also supply cryptographically signed lists of MD5 checksums. To download our public keys and find out more about our signature policy, visit the [Keys page](#). If you need a Windows program to compute MD5 checksums, you could try the one at [this site](#). (This MD5 program is also cryptographically signed by its author.)

Binaries

The latest release version (beta 0.60). This will generally be a version I think is reasonably likely to work well. If you have a problem with the release version, it might be worth trying out the latest development snapshot (below) to see if I've already fixed the bug, before reporting it to me.

For Windows on Intel x86

PuTTY:	putty.exe	(or by FTP)	(RSA sig)	(DSA sig)
PuTTYtel:	puttytel.exe	(or by FTP)	(RSA sig)	(DSA sig)
PSCP:	pscp.exe	(or by FTP)	(RSA sig)	(DSA sig)
PSFTP:	psftp.exe	(or by FTP)	(RSA sig)	(DSA sig)

*Download the
pscp.exe file and
place it in your
windows folder*

PSCP

PSCP syntax follows scp command syntax

pscp -P 2220 -r username@oslab.cabrillo.edu:* .

```

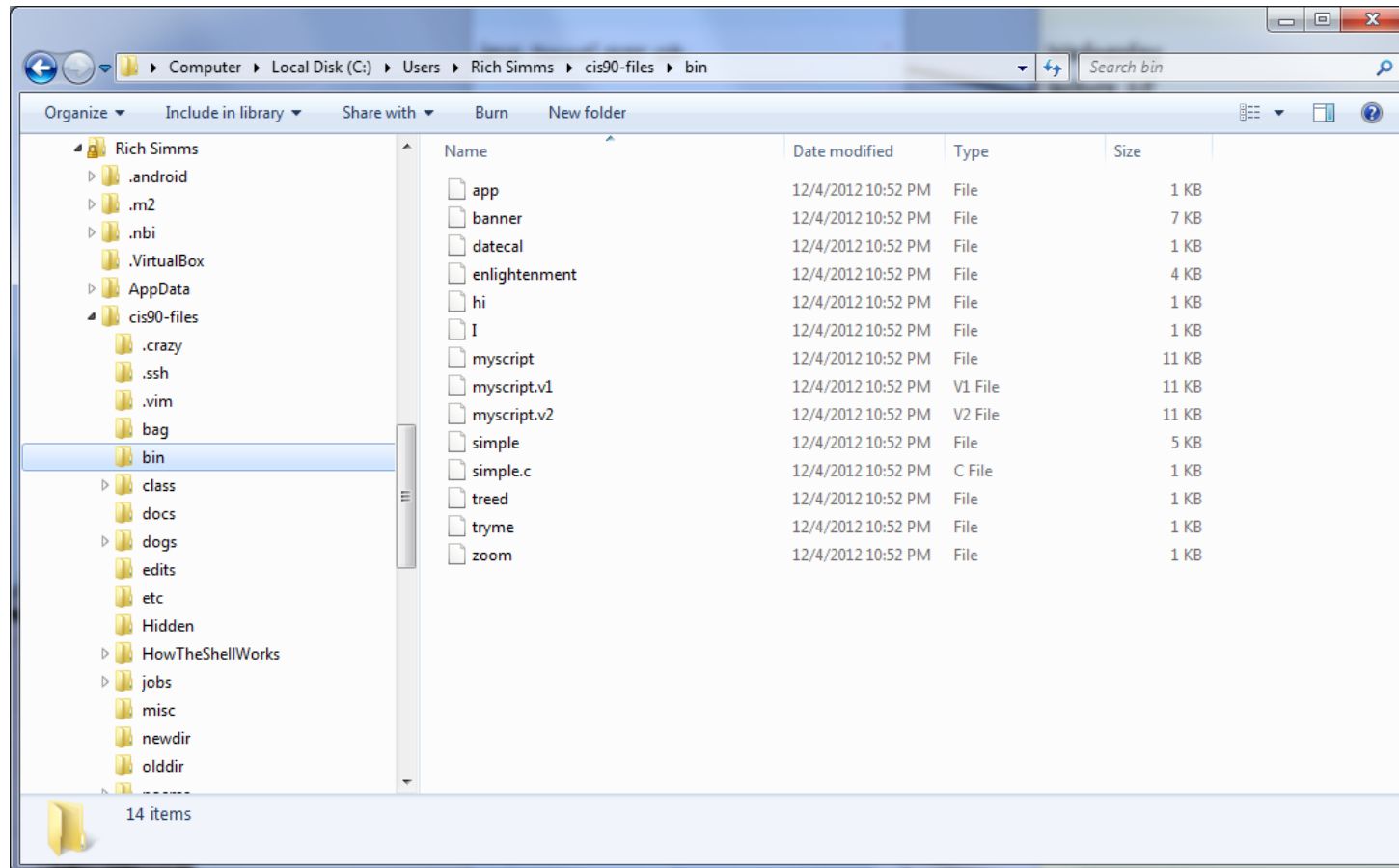
C:\Windows\system32\cmd.exe - pscp -P 2220 -r simben90@oslab.cabrillo.edu:*
C:\Users\Rich Simms\cis90-files>pscp -P 2220 -r simben90@oslab.cabrillo.edu:* .
simben90@oslab.cabrillo.edu's password:
lab05.graded      0 kB  1.0 kB/s  ETA: 00:00:00  100%
names             0 kB  0.0 kB/s  ETA: 00:00:00  100%
bigshell          0 kB  0.1 kB/s  ETA: 00:00:00  100%
.trick1           0 kB  0.8 kB/s  ETA: 00:00:00  100%
.netrw hist       0 kB  0.1 kB/s  ETA: 00:00:00  100%
treat2            0 kB  0.7 kB/s  ETA: 00:00:00  100%
lab09.graded      2 kB  2.8 kB/s  ETA: 00:00:00  100%
treasure          0 kB  0.1 kB/s  ETA: 00:00:00  100%
.trove           1 kB  1.9 kB/s  ETA: 00:00:00  100%
lab02.graded      1 kB  1.3 kB/s  ETA: 00:00:00  100%
.viminfo          5 kB  5.2 kB/s  ETA: 00:00:00  100%
treat3            1 kB  1.1 kB/s  ETA: 00:00:00  100%
lab02.graded      1 kB  1.3 kB/s  ETA: 00:00:00  100%
lab04.graded      0 kB  0.8 kB/s  ETA: 00:00:00  100%
lab01.graded      2 kB  2.7 kB/s  ETA: 00:00:00  100%
treat4            0 kB  1.0 kB/s  ETA: 00:00:00  100%
treat5            0 kB  0.8 kB/s  ETA: 00:00:00  100%
test01.graded     5 kB  5.8 kB/s  ETA: 00:00:00  100%
orders            0 kB  0.0 kB/s  ETA: 00:00:00  100%
quiet             0 kB  0.1 kB/s  ETA: 00:00:00  100%
labx2.bak         1 kB  1.1 kB/s  ETA: 00:00:00  100%
dogbone           0 kB  0.1 kB/s  ETA: 00:00:00  100%
  
```

Note: the transfer will end prematurely if a permission issue happens on one of the files.

Navigate to the local folder where you want to download your Opus files to then use the pscp command with the -r option to recursively download all the files in your home directory

PSCP

Your CIS 90 files are now on Windows



CIS 90 files copied from Opus to home Windows system

File Transfer

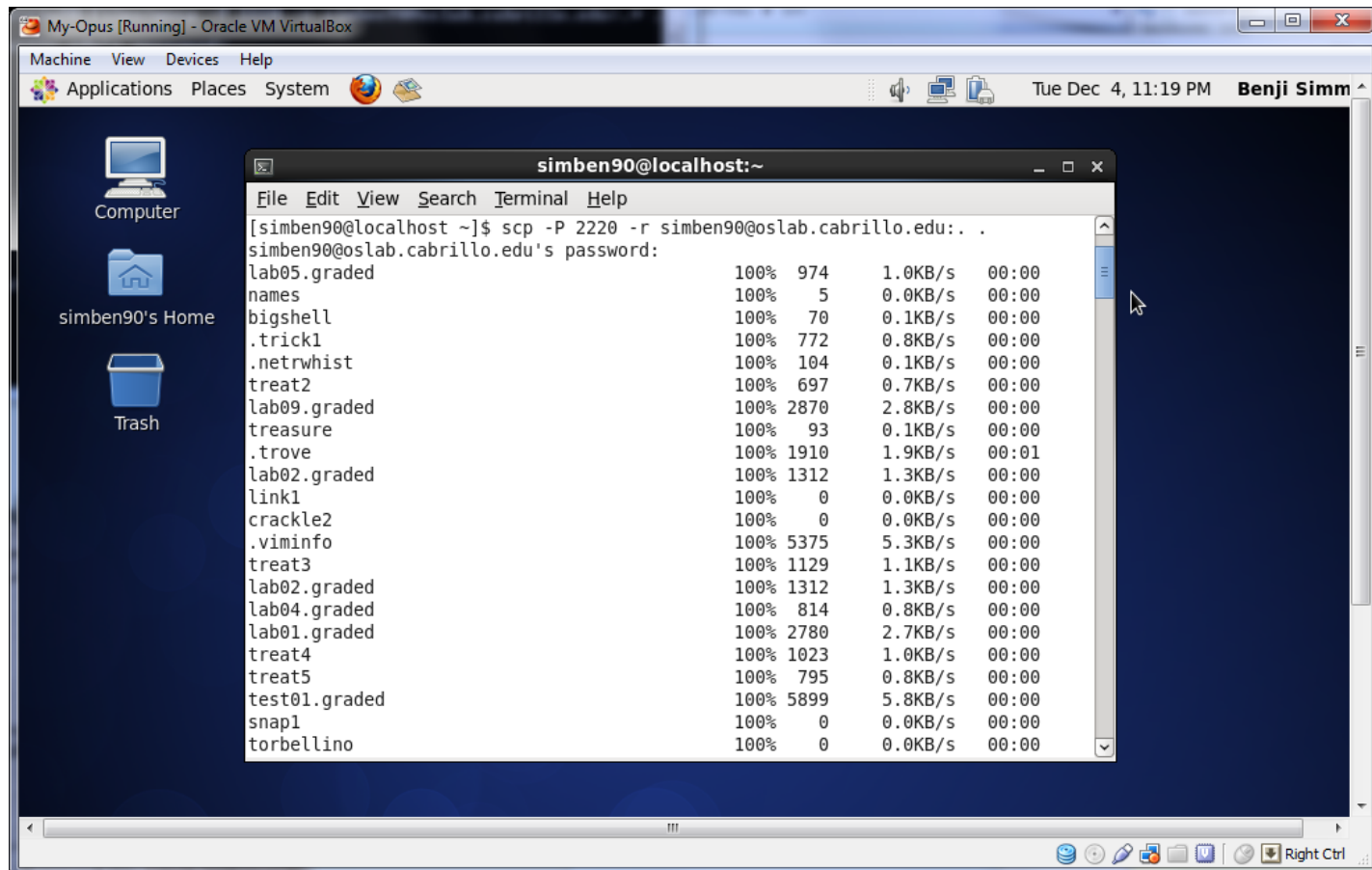
Linux or Mac

scp

File Transfer

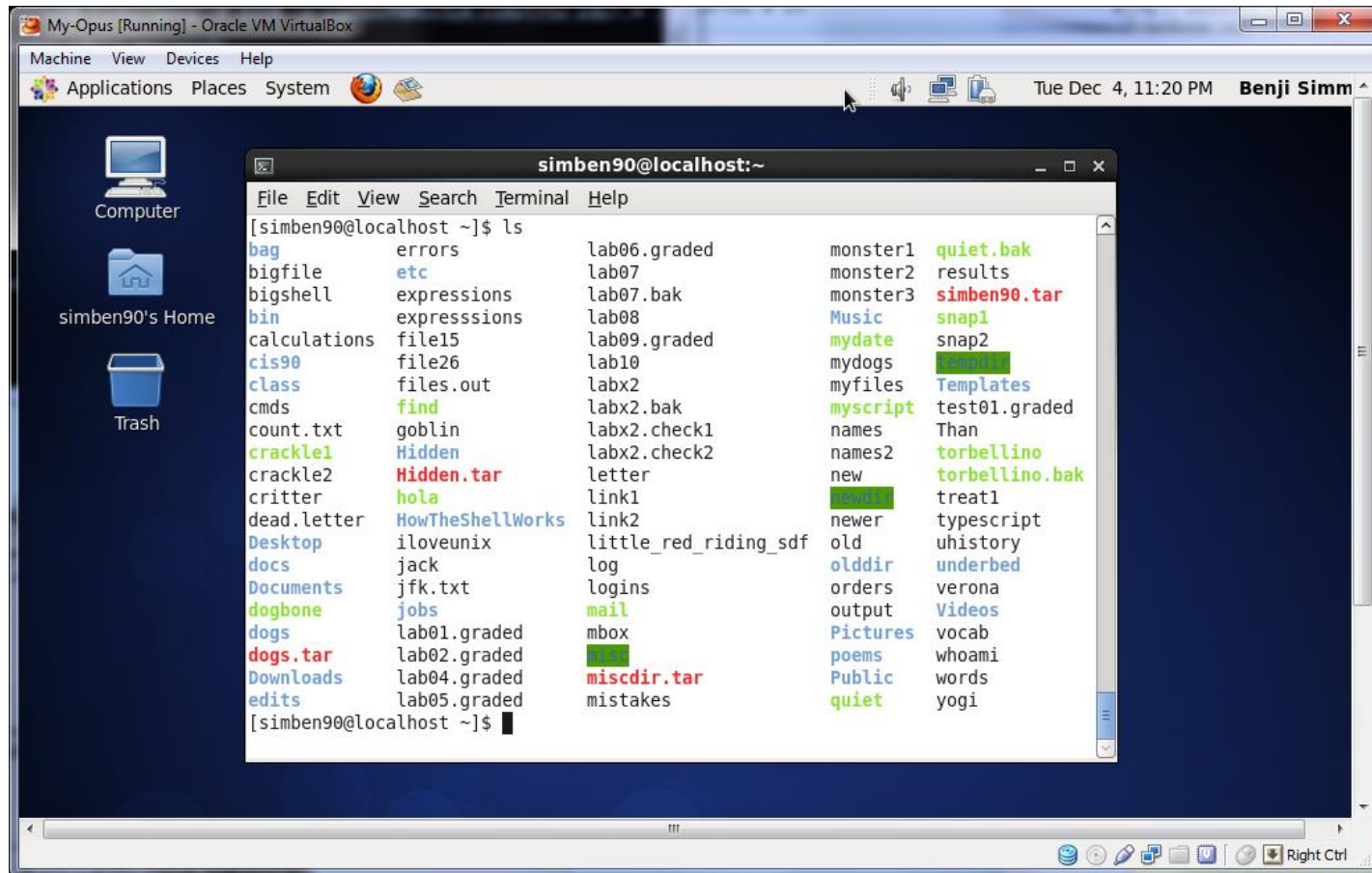
Downloading your Opus files to Linux or Mac using scp

scp -P 2220 -r simben90@oslab.cabrillo.edu:.. .



File Transfer

Downloading your Opus files to Linux or Mac using scp



CIS 90 files copied from Opus to home Linux system

File Transfer

Downloading your Opus files to Linux or Mac using scp

More examples of using scp on your local Mac or Linux system:

scp -P2220 -r simben90@oslab.cabrillo.edu:* .

Recursive copy of remote home directory to current local directory (doesn't copy home directory hidden files)

scp -P2220 -r simben90@oslab.cabrillo.edu:. .

Recursive copy of remote home directory to current local directory (includes hidden files in home directory)

scp -P2220 simben90@oslab.cabrillo.edu:simben90.tar .

Copies archive file in remote home directory to current local directory

scp -P2220 -r simben90@oslab.cabrillo.edu:/home/cis90/answers answers/

Recursive copy of class answers directory to local directory named answers (which must be created first)

Archiving & Restoring

Archiving

tar command (on Opus)

Use wc to count the number of files in the three directories

```
/home/cis90/simben $ cd ..  
/home/cis90 $ find simben/ bin/ answers/ depot/ | wc -l  
597
```

The bin directory has allscripts, riddles and other files used in class. The answers directory has answers for each lab. Your home directory has all the files you made during the course.

Archiving

tar command (on Opus)

verbose

create

Name of tarball to create

directories to backup

```

/home/cis90 $ tar cvf simben/simben90.tar simben/ bin/ answers/ depot/
bin/tally
bin/checkgrades
bin/riddle
bin/check5
< snipped >
tar: simben/newer: Cannot open: Permission denied
< snipped >
tar: simben/simben90.tar: file is the archive; not dumped
< snipped >
depot/scrooge
depot/smb.conf
depot/randomjokes
tar: Error exit delayed from previous errors
/home/cis90 $
  
```

Backup all these files into a single tarball

Archiving

tar command (on Opus)

verbose
table of contents

Name of tarball

```
/home/cis90 $ tar tvf simben/simben90.tar | wc -l  
594  
/home/cis90 $ find bin answers depot simben | wc -l  
598
```

Note, some files might not have been added to the archive due to permission errors or it was the tarball itself.

These errors were displayed when the tarball was created:

```
tar: simben/Hidden/.trove: Cannot open: Permission denied  
tar: simben/simben90.tar: file is the archive; not dumped  
tar: simben/newer: Cannot open: Permission denied  
tar: answers/test03: Cannot open: Permission denied  
tar: Exiting with failure status due to previous errors
```

Archiving

tar command (on Opus)

Archive everything in your home directory (including all sub directories) plus the class directories into one tarball.

```
cd ..
```

```
find ${LOGNAME%90} bin/ answers/ depot/ | wc -l
```

*Count the files to
be archived*

```
or find simben bin/ answers/ depot/ | wc -l
```

```
tar cvf ${LOGNAME%90}/${LOGNAME}.tar ${LOGNAME%90} bin/ answers/ depot/
```

```
or tar cvf simben/simben90.tar simben bin/ answers/ depot/
```

```
tar tvf ${LOGNAME%90}/${LOGNAME}.tar | wc -l
```

*This counts the files
that were archived*

```
or tar tvf simben/simben90.tar | wc -l
```

Restoring

tar command (extracting on home Linux computer)

Login to your home system

```
[rsimms@oslab bin]$ ssh cis90@p09-hugo
cis90@p09-hugo's password:
Welcome to Linux Mint 13 Maya (GNU/Linux 3.2.0-23-generic x86_64)

Welcome to Linux Mint
* Documentation:  http://www.linuxmint.com
Last login: Sun Dec  2 11:00:07 2012 from opus.cislab.net
cis90@P09-Hugo ~ $
```

Restoring

tar command (extracting on home Linux computer)

Make a directory to put your Opus files

```
cis90@P09-Hugo ~ $ mkdir opus-files  
cis90@P09-Hugo ~ $ cd opus-files/
```

Retrieve your archive from Opus using scp command

```
cis90@P09-Hugo ~/opus-files $ scp -P 2220 simben90@oslab.cabrillo.edu:simben90.tar .  
simben90@oslab.cabrillo.edu's password:  
simben90.tar                               100% 4710KB    4.6MB/s    00:00
```


Restoring

tar command (extracting on home Linux computer)

```
cis90@P09-Hugo ~/opus-files $ ls  
simben90.tar
```

```
cis90@P09-Hugo ~/opus-files $ tar xvf simben90.tar  
simben/  
simben/lab05.graded  
simben/names  
simben/bigshell  
simben/.vim/  
< snipped >  
depot/scrooge  
depot/smb.conf  
depot/randomjokes
```

*Extract the
tarball*

```
cis90@P09-Hugo ~/opus-files $ ls  
answers bin depot simben simben90.tar
```

*Note the new
directories created*

Restoring

tar command (extracting on home Linux computer)

```
cis90@P09-Hugo ~/opus-files $ cd simben/bin
cis90@P09-Hugo ~/opus-files/simben/bin $ myscript
No command 'myscript' found, did you mean:
  Command 'pyscript' from package 'python-pyscript' (universe)
myscript: command not found
```

```
cis90@P09-Hugo ~/opus-files/simben/bin $ ./myscript
```

CIS, please Enter an option number from the list below:

- 1) What is today?
- 2) The users on P09-Hugo
- 3) Warning, don't go here!!
- 4) Sort current directory
- 5) Back pat eCards
- 6) Check IP forwarding status

or enter Q to Quit

Enter Your Choice:

Note we have a different path on this system so may have to specify an absolute path to script file to run

Archives

gzip and gunzip

Archiving

tar command (on Opus)

```
/home/cis90/simben $ ls -l simben90.tar  
-rw-rw----. 1 simben90 cis90 4823040 Dec  2 11:21 simben90.tar
```

*Next, compress the archive with **gzip***

```
/home/cis90/simben $ gzip simben90.tar  
/home/cis90/simben $ ls -l simben90.tar.gz  
-rw-rw----. 1 simben90 cis90 791264 Dec  2 11:21 simben90.tar.gz
```

*Later, uncompress the archive with **gunzip***

```
/home/cis90/simben $ gunzip simben90.tar.gz  
/home/cis90/simben $ ls -l simben90.tar  
-rw-rw----. 1 simben90 cis90 4823040 Dec  2 11:21 simben90.tar
```

*Note: **gzip** renames the tarball by adding the **.gz** suffix and **gunzip** removes the suffix*

Final Exam

Final Exam

The CIS 90 Final Exam is Test #3

- **The Final Exam is Jun 6 - 1:00 to 3:50PM**
- **The final exam will be Test #3
(worth 30 points + 3 points extra credit)**
 - Open book, open notes, open computer.
 - During the test you must work alone and not ask or give assistance to others.

Final Exam

The CIS 90 Final Exam is Test #3

- **A Practice Test 3 is available on the web site**

- Advice:

- ❖ Work EVERY question on the practice test and NOTE exactly the steps required to answer each question.
 - ❖ Use the notes you took doing the practice test on the final exam.
- You may work with others and use the forum to discuss questions and answers on the practice test prior to the final exam.

Sun-Hwa \neq Opus

(Fedora 17)

(CentOS 6.2)

Sun-Hwa Differences

```
CISLAB\simben90@sun-hwa:~$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
uucp:x:10:14:uucp:/var/spool/uucp:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
gopher:x:13:30:gopher:/var/gopher:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/sbin/nologin
usbmuxd:x:113:113:usbmuxd user:/sbin/nologin
avahi-autoipd:x:170:170:Avahi IPv4LL Stack:/var/lib/avahi-autoipd:/sbin/nologin
smolt:x:999:998:Smolt:/usr/share/smolt:/sbin/nologin
dbus:x:81:81:System message bus:/sbin/nologin
abrt:x:173:173:/etc/abrt:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
rtkit:x:172:172:RealtimeKit:/proc:/sbin/nologin
openvpn:x:998:996:OpenVPN:/etc/openvpn:/sbin/nologin
sasauth:x:997:995:"Sasauthd user":/run/sasauthd:/sbin/nologin
colord:x:996:994:User for colord:/var/lib/colord:/sbin/nologin
nm-openconnect:x:995:993:NetworkManager user for OpenConnect:/sbin/nologin
mailnull:x:47:47:/var/spool/mqueue:/sbin/nologin
smmap:x:51:51:/var/spool/mqueue:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/ssh:/sbin/nologin
chrony:x:994:992:/var/lib/chrony:/sbin/nologin
tcpdump:x:72:72:/sbin/nologin
pulse:x:993:991:PulseAudio System Daemon:/var/run/pulse:/sbin/nologin
gdm:x:42:42:/var/lib/gdm:/sbin/nologin
rsimms:x:201:201:Rich Simms:/home/rsimms:/bin/bash
ntp:x:38:38:/etc/ntp:/sbin/nologin
jimgr:x:752:1000:Jim Griffin:/home/jimg:/bin/bash
cis90:x:1234:1234:CIS 90 student:/home/cis90:/bin/bash
sawyer:x:1235:1235:James Ford:/home/sawyer:/bin/csh
kate:x:1236:1236:Kate Austen:/home/kate:/bin/sh
hugo:x:1237:1237:Hugo Reyes:/home/hugo:/bin/ksh
igneous:x:202:1238:Igneous Rocks:/home/igneous:/bin/bash
sedimentary:x:203:1239:Sedimentary Rocks:/home/sedimentary:/bin/bash
romeo:x:1238:1240:Romeo, son of Montague:/home/romeo:/bin/bash
juliet:x:1239:1241:Juliet, daughter of Capulet:/home/juliet:/bin/bash
CISLAB\simben90@sun-hwa:~$
```

The CIS 90 accounts are not in /etc/passwd on Sun-Hwa!

Only local accounts are found there.

Instead they are on the CISLAB domain controller on a remote Windows server

Active Directory Users and Computers

Name	Type	Description	User Logon Name
Andrew Evans	User	CIS 90 Student	evaand90@cislabs.net
Benjamin Lyons	User	CIS 90 Student	lyoben90@cislabs.net
Benji Simms	User	CIS 90 Student	simben90@cislabs.net
Bryn Kanar	User	CIS 90 Student	kanbry90@cislabs.net
Carlie Ellis	User	CIS 90 Student	elcar90@cislabs.net
Carlos Ramirez	User	CIS 90 Student	ramcar90@cislabs.net
Carter Frost	User	CIS 90 Student	frocar90@cislabs.net
Chad Mesiroff	User	CIS 90 Student	mescha90@cislabs.net
Dajan Henk	User	CIS 90 Student	hendaj90@cislabs.net
Donald Davis	User	CIS 90 Student	davdon90@cislabs.net
Duke Roddy	User	CIS 90 Student	rodduk90@cislabs.net
Evan Norbom	User	CIS 90 Student	noreva90@cislabs.net
Evie Vergara	User	CIS 90 Student	verevi90@cislabs.net
Fidel Mendoza	User	CIS 90 Student	menfid90@cislabs.net
Gustavo Ramirez	User	CIS 90 Student	ramgus90@cislabs.net
Homer Miller	User	CIS 90 Student	milhom90@cislabs.net
Humberto Zamora	User	CIS 90 Student	zamhum90@cislabs.net
Jacob Williams	User	CIS 90 Student	wiljac90@cislabs.net
Jessica Rawlings	User	CIS 90 Student	rawjes90@cislabs.net
Joshua Potter	User	CIS 90 Student	potjos90@cislabs.net
Kelly Libbey	User	CIS 90 Student	libkel90@cislabs.net
Michael Messina	User	CIS 90 Student	mesmic90@cislabs.net
Raymond Marr	User	CIS 90 Student	marray90@cislabs.net
Rita Kennedy	User	CIS 90 Student	kenrit90@cislabs.net

Sun-Hwa Differences

```
ssh cislabs\simben90@sun-hwa
```

[illegible]

Sun-Hwa is a Fedora 17 Linux system which has joined the cislabs Windows Active Directory domain. Authentication is done using Active Directory.

Sun-Hwa Differences

Unlike Opus, the MAIL variable on Sun-Hwa does not contain the path to where the mail is actually delivered!

```

CISLAB\simben90@sun-hwa:~
[CISLAB\simben90@sun-hwa ~]$ mail
No mail for CISLAB\simben90
[CISLAB\simben90@sun-hwa ~]$ mail -f /var/mail/CISLABsimben90
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/mail/CISLABsimben90": 3 messages 2 unread
   1 Romeo                Sun Nov 25 09:08  21/781  "testrb7"
>U  2 Romeo                Sun Nov 25 09:16  21/780  "testrb9"
   U  3 Romeo                Sun Nov 25 09:18  21/772  "testrb10"
& q
[CISLAB\simben90@sun-hwa ~]$ echo $MAIL
/var/spool/mail/CISLAB\simben90
[CISLAB\simben90@sun-hwa ~]$ MAIL=/var/mail/CISLABsimben90
[CISLAB\simben90@sun-hwa ~]$ echo $MAIL
/var/mail/CISLABsimben90
[CISLAB\simben90@sun-hwa ~]$ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/mail/CISLABsimben90": 3 messages 2 unread
   1 Romeo                Sun Nov 25 09:08  21/781  "testrb7"
>U  2 Romeo                Sun Nov 25 09:16  21/780  "testrb9"
   U  3 Romeo                Sun Nov 25 09:18  21/772  "testrb10"
& q
Held 3 messages in /var/mail/CISLABsimben90
[CISLAB\simben90@sun-hwa ~]$ █

```

Workaround: Use the -f option on the mail command or update the MAIL variable as shown above to read your mail

Sun-Hwa Differences

On Sun-Hwa the LOGNAME variable does not work as a mail destination address!

```

CISLAB\simben90@sun-hwa:~
[CISLAB\simben90@sun-hwa ~]$ echo hola | mail -s "Note #1" $LOGNAME
[CISLAB\simben90@sun-hwa ~]$ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/mail/CISLABsimben90": 4 messages 1 new 3 unread
  1 Romeo                Sun Nov 25 09:08  21/781  "testrb7"
  U 2 Romeo                Sun Nov 25 09:16  21/780  "testrb9"
  U 3 Romeo                Sun Nov 25 09:18  21/772  "testrb10"
>N 4 Mail Delivery Subsys Tue Dec  4 23:47  71/2469 "Returned mail: see tr"
& q
Held 4 messages in /var/mail/CISLABsimben90
You have mail in /var/mail/CISLABsimben90
[CISLAB\simben90@sun-hwa ~]$ echo hola | mail -s "Note #2" cislalab\\\\simben90
[CISLAB\simben90@sun-hwa ~]$ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/mail/CISLABsimben90": 5 messages 1 new 4 unread
  1 Romeo                Sun Nov 25 09:08  21/781  "testrb7"
  U 2 Romeo                Sun Nov 25 09:16  21/780  "testrb9"
  U 3 Romeo                Sun Nov 25 09:18  21/772  "testrb10"
  U 4 Mail Delivery Subsys Tue Dec  4 23:47  72/2479 "Returned mail: see tr"
>N 5 "CISLAB\\simben90"@s Tue Dec  4 23:47  20/796  "Note #2"
& q
Held 5 messages in /var/mail/CISLABsimben90
[CISLAB\simben90@sun-hwa ~]$

```

*This
doesn't
work!*

*This
works!*

*Workaround #1: Spell out the username with four
backslashes as shown above.*

Sun-Hwa Differences

Workaround #2: Create a new variable to use instead as shown above.

```
CISLAB\simben90@sun-hwa:~
[CISLAB\simben90@sun-hwa ~]$ MLOGNAME=cislab\\\\${LOGNAME#CISLAB\\}
[CISLAB\simben90@sun-hwa ~]$ echo $MLOGNAME
cislab\\simben90
[CISLAB\simben90@sun-hwa ~]$ echo hola | mail -s "Note #3" $MLOGNAME
[CISLAB\simben90@sun-hwa ~]$ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/mail/CISLABsimben90": 6 messages 1 new 5 unread
  1 Romeo                Sun Nov 25 09:08  21/781  "testrb7"
U  2 Romeo                Sun Nov 25 09:16  21/780  "testrb9"
U  3 Romeo                Sun Nov 25 09:18  21/772  "testrb10"
U  4 Mail Delivery Subsys Tue Dec  4 23:47  72/2479 "Returned mail: see tr"
U  5 "CISLAB\\simben90"@s Tue Dec  4 23:47  21/806  "Note #2"
>N 6 "CISLAB\\simben90"@s Tue Dec  4 23:58  20/796  "Note #3"
& quit
Held 6 messages in /var/mail/CISLABsimben90
[CISLAB\simben90@sun-hwa ~]$
```

MLOGNAME=cislab\\\\\${LOGNAME#CISLAB\\}

or MLOGNAME=cislab\\\\simben90

Sun-Hwa Differences

Four backslashes must be used (domain\\\\"username) to send a classmate an email on Sun-Hwa!

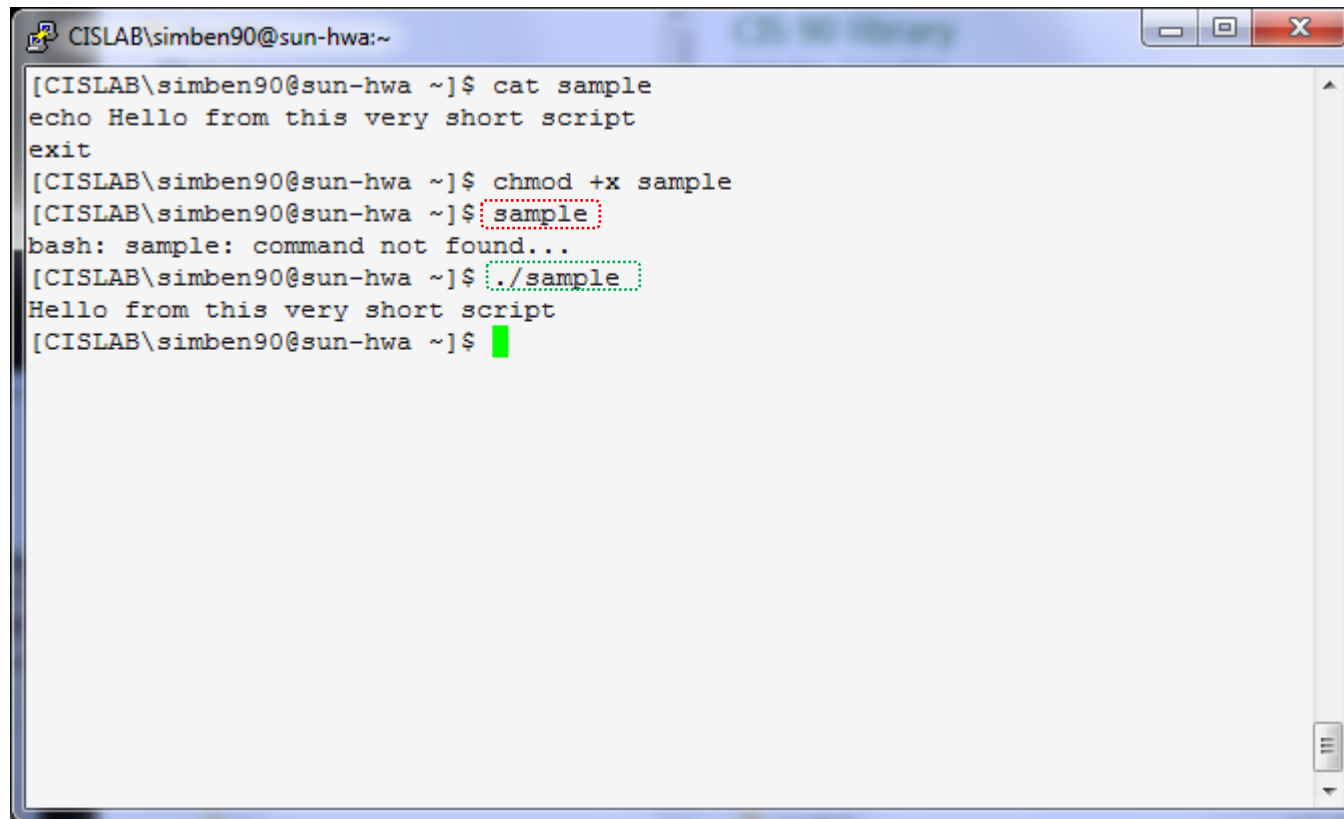
```

CISLAB\milhom90@sun-hwa:~
[CISLAB\simben90@sun-hwa ~]$ mail cislalab\\\\"milhom90 cislalab\\\\"rodduk90
Subject: Chicken pot pies
At my house tonight. Be there or be square!
- Benji
.
EOT
[CISLAB\simben90@sun-hwa ~]$ su - cislalab\\\\"milhom90
Password:
/home/CISLAB/milhom90 $ mail -f /var/mail/CISLABmilhom90
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/mail/CISLABmilhom90": 10 messages 2 new 4 unread
  1 Romeo                               Sun Nov 25 09:34 21/769 "testrh"
  2 Mail Delivery Subsys                 Sun Nov 25 14:08 72/2499 "Returned mail: see tr"
  3 Mail Delivery Subsys                 Sun Nov 25 14:10 72/2589 "Returned mail: see tr"
  4 "CISLAB\\\\"milhom90"@s Sun Nov 25 14:12 21/812 "testmm4"
  5 "CISLAB\\\\"milhom90"@s Sun Nov 25 14:29 21/817 "TestHH15"
  6 "CISLAB\\\\"milhom90"@s Tue Dec  4 16:32 21/845 "Reminder"
U  7 "CISLAB\\\\"milhom90"@s Tue Dec  4 16:36 21/844 "Reminder"
U  8 "CISLAB\\\\"milhom90"@s Tue Dec  4 16:47 21/803 "test"
>N 9 "CISLAB\\\\"milhom90"@s Wed Dec  5 01:00 20/834 "Reminder"
  N 10 "CISLAB\\\\"simben90"@s Wed Dec  5 08:21 21/827 "Chicken pot pies"
&

```


Sun-Hwa Differences

The . directory is not on your path

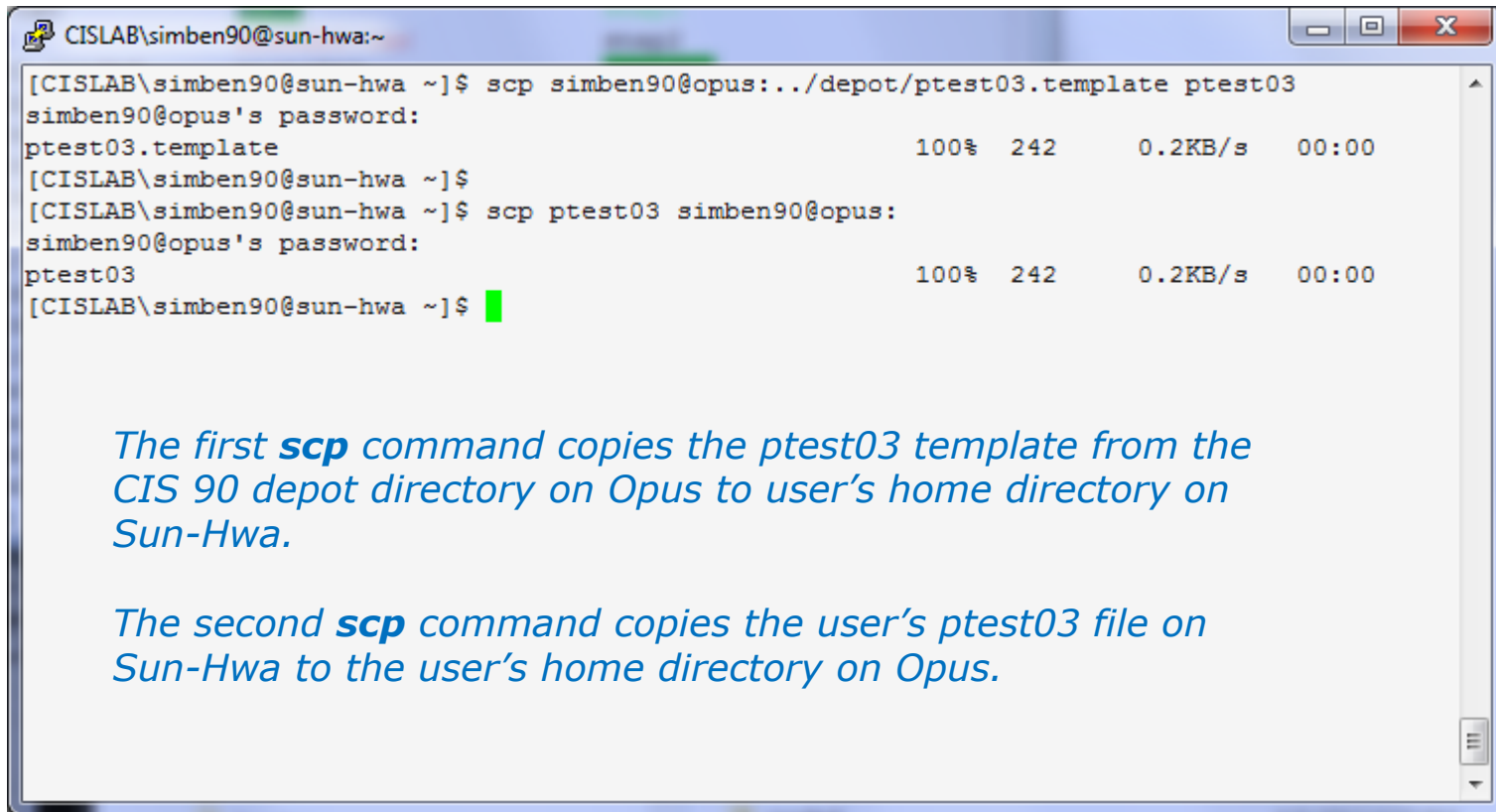
A terminal window titled 'CISLAB\simben90@sun-hwa:~' with standard window controls. The terminal shows a user creating a script named 'sample' with 'cat', making it executable with 'chmod +x', and then running it with './sample'. The script's output is 'Hello from this very short script'. The command 'sample' is highlighted with a red dashed box, and './sample' is highlighted with a green dashed box.

```
[CISLAB\simben90@sun-hwa ~]$ cat sample
echo Hello from this very short script
exit
[CISLAB\simben90@sun-hwa ~]$ chmod +x sample
[CISLAB\simben90@sun-hwa ~]$ sample
bash: sample: command not found...
[CISLAB\simben90@sun-hwa ~]$ ./sample
Hello from this very short script
[CISLAB\simben90@sun-hwa ~]$
```

Preface scripts you create with "./" to run them as shown in the example above

File transfer between Sun-Hwa and Opus

Use the scp command to transfer files between Opus and Sun-Hwa



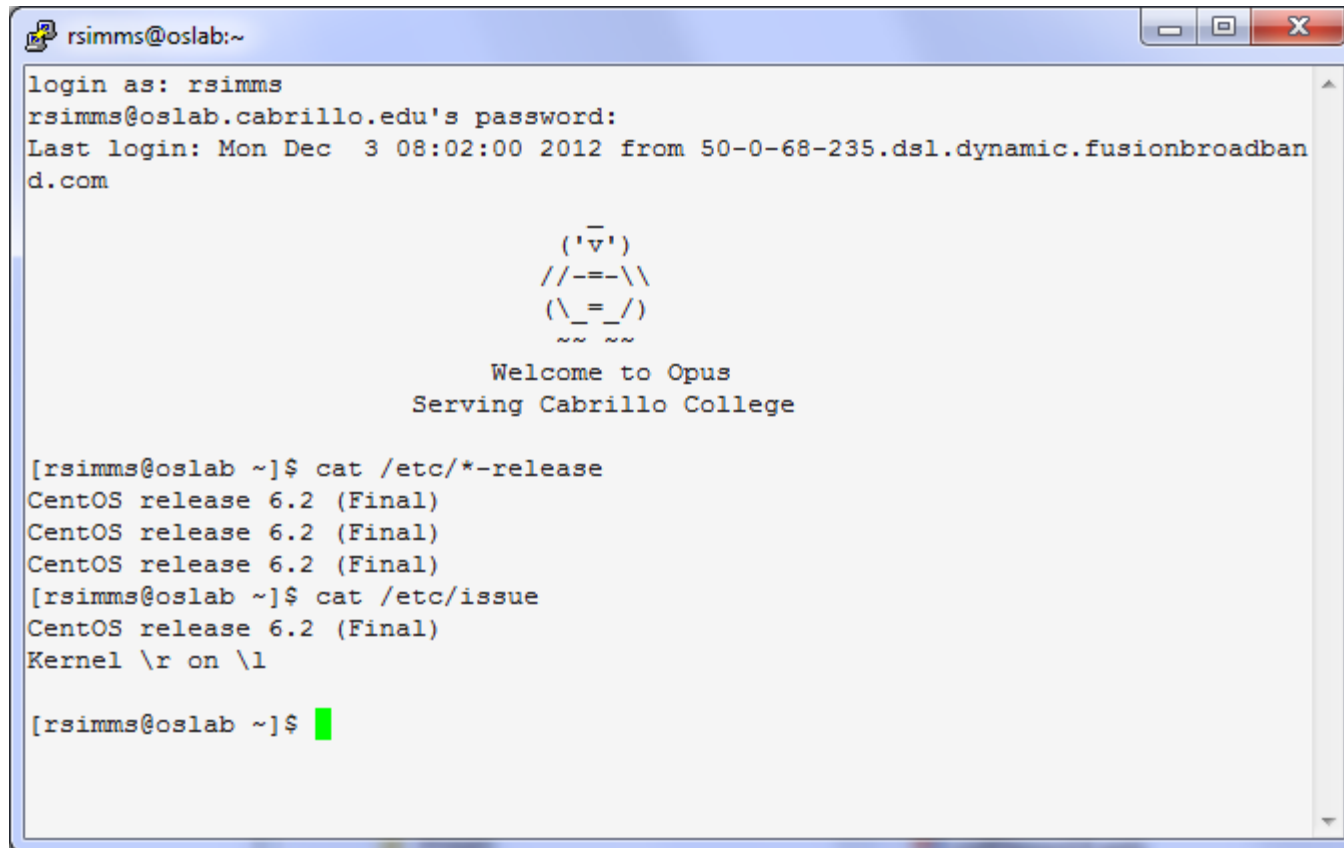
```

CISLAB\simben90@sun-hwa:~
[CISLAB\simben90@sun-hwa ~]$ scp simben90@opus:../depot/ptest03.template ptest03
simben90@opus's password:
ptest03.template                                100% 242      0.2KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$
[CISLAB\simben90@sun-hwa ~]$ scp ptest03 simben90@opus:
simben90@opus's password:
ptest03                                          100% 242      0.2KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$
  
```

The first **scp** command copies the *ptest03* template from the CIS 90 depot directory on Opus to user's home directory on Sun-Hwa.

The second **scp** command copies the user's *ptest03* file on Sun-Hwa to the user's home directory on Opus.

Make your own Opus at home



```
rsimms@oslab:~  
login as: rsimms  
rsimms@oslab.cabrillo.edu's password:  
Last login: Mon Dec 3 08:02:00 2012 from 50-0-68-235.dsl.dynamic.fusionbroadband.com  
  
      _  
    ('v')  
  //--=\ \  
  (\_=_/)  
   ~ ~ ~  
Welcome to Opus  
Serving Cabrillo College  
  
[rsimms@oslab ~]$ cat /etc/*-release  
CentOS release 6.2 (Final)  
CentOS release 6.2 (Final)  
CentOS release 6.2 (Final)  
[rsimms@oslab ~]$ cat /etc/issue  
CentOS release 6.2 (Final)  
Kernel \r on \l  
  
[rsimms@oslab ~]$
```

Opus is a CentOS 6.2 Linux system

Ingredients

To make your own Opus at home you will need to purchase the following to add to your home computer:

- A CentOS Linux distribution ... price: \$0.00
- Virtualization software
 - For Windows
 - VirtualBox ... price: \$0.00
 - *or* VMware Workstation ... price: \$0.00 (via VMware Academy)
 - For Mac
 - VirtualBox ... price: \$0.00
 - *or* VMware Fusion ... price: \$0.00 (via VMware Academy)

centos.org

The image shows two browser windows. The left window displays the main CentOS website (www.centos.org). The right window shows a mirror site (mirrors.sonic.net/centos/) with a directory listing of CentOS releases.

CentOS Overview

CentOS is an Enterprise-class Linux Distribution derived from sources freely provided to the public by a prominent North American Enterprise Linux vendor. CentOS conforms fully with the upstream vendor's redistribution policy and aims to be 100% binary compatible. (CentOS mainly changes packages to remove upstream vendor branding and artwork.) CentOS is free.

CentOS is developed by a small but growing team of core developers. In turn the core developers are supported by an active user community including system administrators, network administrators, enterprise users, managers, core Linux contributors and Linux enthusiasts from around the world.

CentOS has numerous advantages over some of the other done projects including: an active and growing user community, quickly rebuilt, tested, and QA'ed errata packages, an extensive **mirror network**, developers who are contactable and responsive, multiple free support avenues including **IRC Chat**, **Mailing Lists**, **Forums**, a dynamic **FAQ**.

This site makes use of Javascript. If your browser doesn't work with Javascript we recommend you use **Firefox**.

CentOS 6 Releases

July 9th 2012

The CentOS team is pleased to **announce** the immediate availability of CentOS-6.3 for i386 and x86_64 Architectures.

CentOS Sp

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sponsors of th

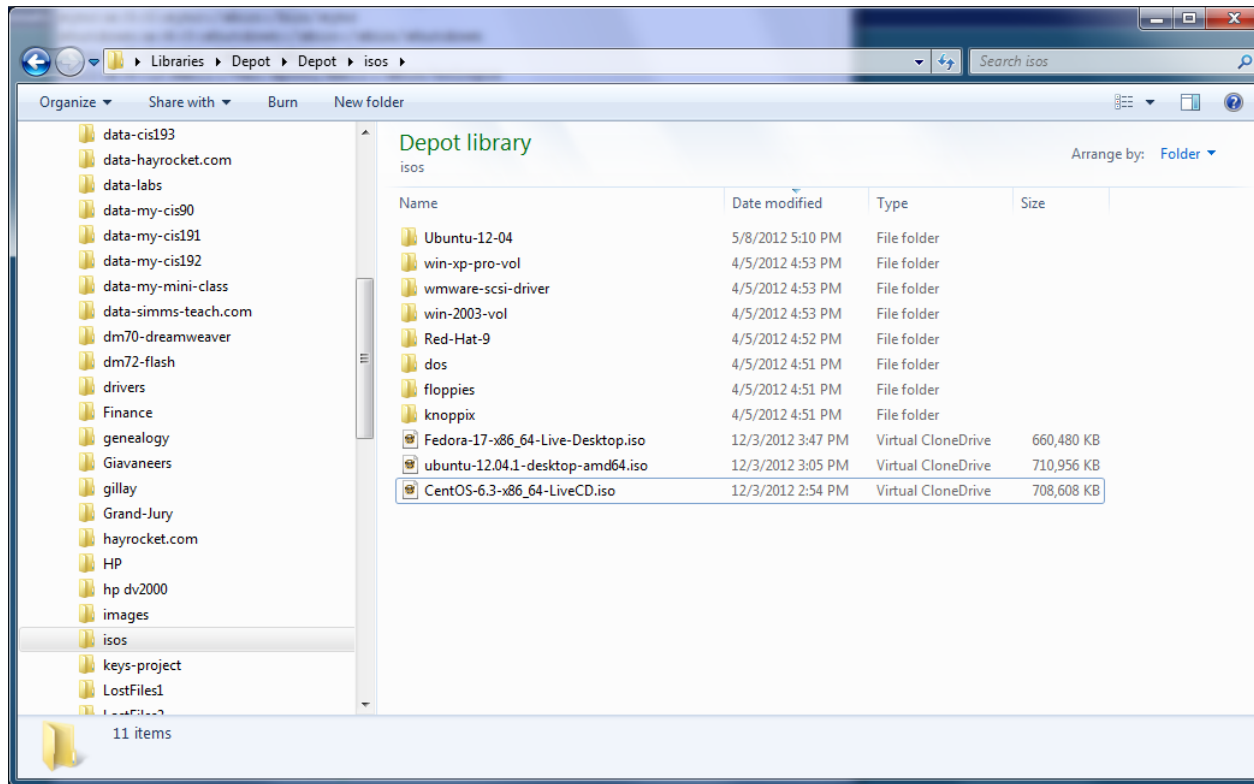
UK Dedicated

Website Back

If you would li
sponsoring a
web contact f

CentOS
The Community Enterprise Operating System
CentOS on the Web: [Mailing Lists](#) | [Mirror List](#) | [IRC](#) | [Forums](#) | [Bugs](#) | [Donate](#)

Name	Last modified	Size	Description
Parent Directory			
2.1/	08-Sep-2009 22:18	-	
2/	08-Sep-2009 22:18	-	
3.1/	02-Mar-2011 15:44	-	
3.3/	02-Mar-2011 15:44	-	
3.4/	02-Mar-2011 15:44	-	
3.5/	02-Mar-2011 15:44	-	
3.6/	02-Mar-2011 15:44	-	
3.7/	02-Mar-2011 15:44	-	
3.8/	02-Mar-2011 15:44	-	
3.9/	02-Mar-2011 15:44	-	
3/	02-Mar-2011 15:44	-	
4.0/	18-Jul-2005 14:11	-	
4.1/	21-Oct-2005 10:54	-	
4.2/	04-Nov-2006 04:43	-	
4.3/	10-Nov-2006 14:15	-	
4.4/	07-Jul-2007 11:21	-	
4.5/	10-Jan-2008 08:12	-	
4.6/	31-Mar-2009 04:55	-	
4.7/	08-Mar-2010 02:56	-	
4.8/	12-Mar-2012 17:14	-	
4.9/	12-Mar-2012 17:16	-	
4/	12-Mar-2012 17:16	-	
5.0/	10-Jan-2008 08:11	-	
5.1/	29-Jul-2008 14:01	-	
5.2/	07-Aug-2009 05:47	-	
5.3/	14-Feb-2010 04:36	-	
5.4/	11-Aug-2010 14:18	-	
5.5/	20-May-2011 02:28	-	
5.6/	19-Sep-2011 09:40	-	
5.7/	12-Mar-2012 17:20	-	
5.8/	27-Feb-2012 11:57	-	
5/	07-Mar-2012 19:47	-	
6.0/	31-Jul-2012 09:47	-	
6.1/	31-Jul-2012 09:47	-	
6.2/	31-Jul-2012 09:46	-	
6.3/	09-Jul-2012 13:10	-	
6/	09-Jul-2012 13:10	-	
RPM-GPG-KEY-CentOS-3	15-Mar-2004 15:16	1.8K	
RPM-GPG-KEY-CentOS-4	26-Feb-2005 09:51	1.8K	
RPM-GPG-KEY-CentOS-5	19-Feb-2007 09:57	1.5K	
RPM-GPG-KEY-CentOS-6	10-Jul-2011 07:28	1.7K	
RPM-GPG-KEY-CentOS-Debug-6	10-Jul-2011 07:28	1.7K	
RPM-GPG-KEY-CentOS-Security-6	10-Jul-2011 07:28	1.7K	
RPM-GPG-KEY-CentOS-Testing-6	10-Jul-2011 07:28	1.7K	
RPM-GPG-KEY-beta	19-Feb-2007 09:56	1.5K	
RPM-GPG-KEY-centos4	26-Feb-2005 09:51	1.8K	
TIME	03-Dec-2012 16:00	11	
html/	12-Jun-2004 04:56	-	



Download an iso image of the Linux distribution

virtualbox.org



The screenshot shows a web browser window with the URL <https://www.virtualbox.org/wiki/Downloads>. The page features the VirtualBox logo on the left and a navigation menu with links: About, Screenshots, Downloads, Documentation (with sub-links for End-user docs and Technical docs), Contribute, and Community. The main heading is "VirtualBox" in large blue letters, followed by "Download VirtualBox" in bold. Below this, a paragraph states: "Here, you will find links to VirtualBox binaries and its source code." A section titled "VirtualBox binaries" follows, with a note: "By downloading, you agree to the terms and conditions of the respective license." The main content area lists two primary download categories:

- VirtualBox platform packages.** The binaries are released under the terms of the GPL version 2.
 - VirtualBox 4.2.4 for Windows hosts → [x86/amd64](#)
 - VirtualBox 4.2.4 for OS X hosts → [x86/amd64](#)
 - VirtualBox 4.2.4 for Linux hosts
 - VirtualBox 4.2.4 for Solaris hosts → [x86/amd64](#)
- VirtualBox 4.2.4 Oracle VM VirtualBox Extension Pack** → [All supported platforms](#)
 Support for USB 2.0 devices, VirtualBox RDP and PXE boot for Intel cards. See [this chapter from the User Manual](#) for an introduction to this Extension Pack. The Extension Pack binaries are released under the [VirtualBox Personal Use and Evaluation License \(PUEL\)](#).
Please install the extension pack with the same version as your installed version of VirtualBox!
 If you are using **VirtualBox 4.1.22**, please download the extension pack → [here](#).
 If you are using **VirtualBox 4.0.16**, please download the extension pack → [here](#).

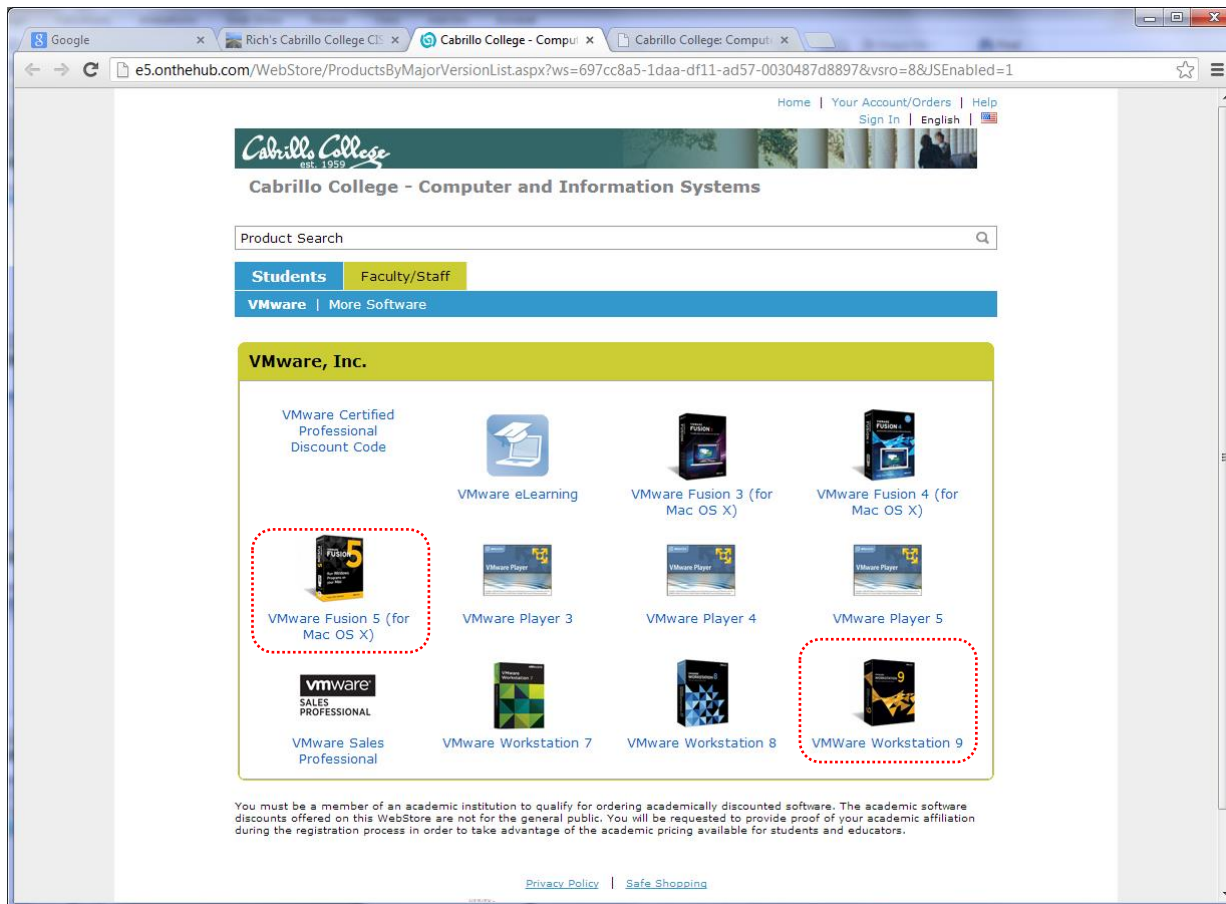
Below the list, it says: "See the [changelog](#) for what has changed. You might want to compare the"

- [SHA256](#) checksums or the

VMware Workstation (Windows) or Fusion (Mac)

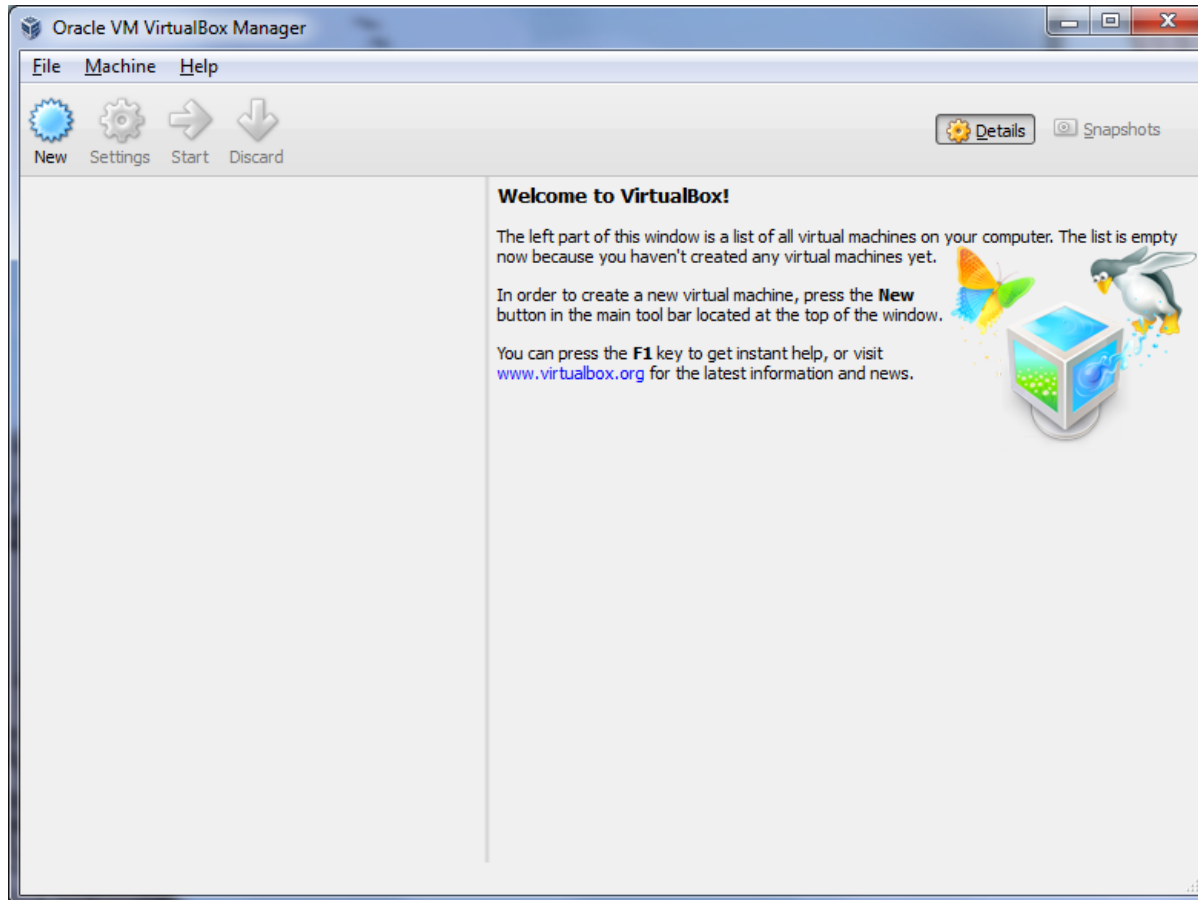
<http://e5.onthehub.com/WebStore/ProductsByMajorVersionList.aspx?ws=697cc8a5-1daa-df11-ad57-0030487d8897&vsro=8&JSEnabled=1>

or just use the VMware e-academy link on <http://simms-teach.com/resources.php>



VirtualBox

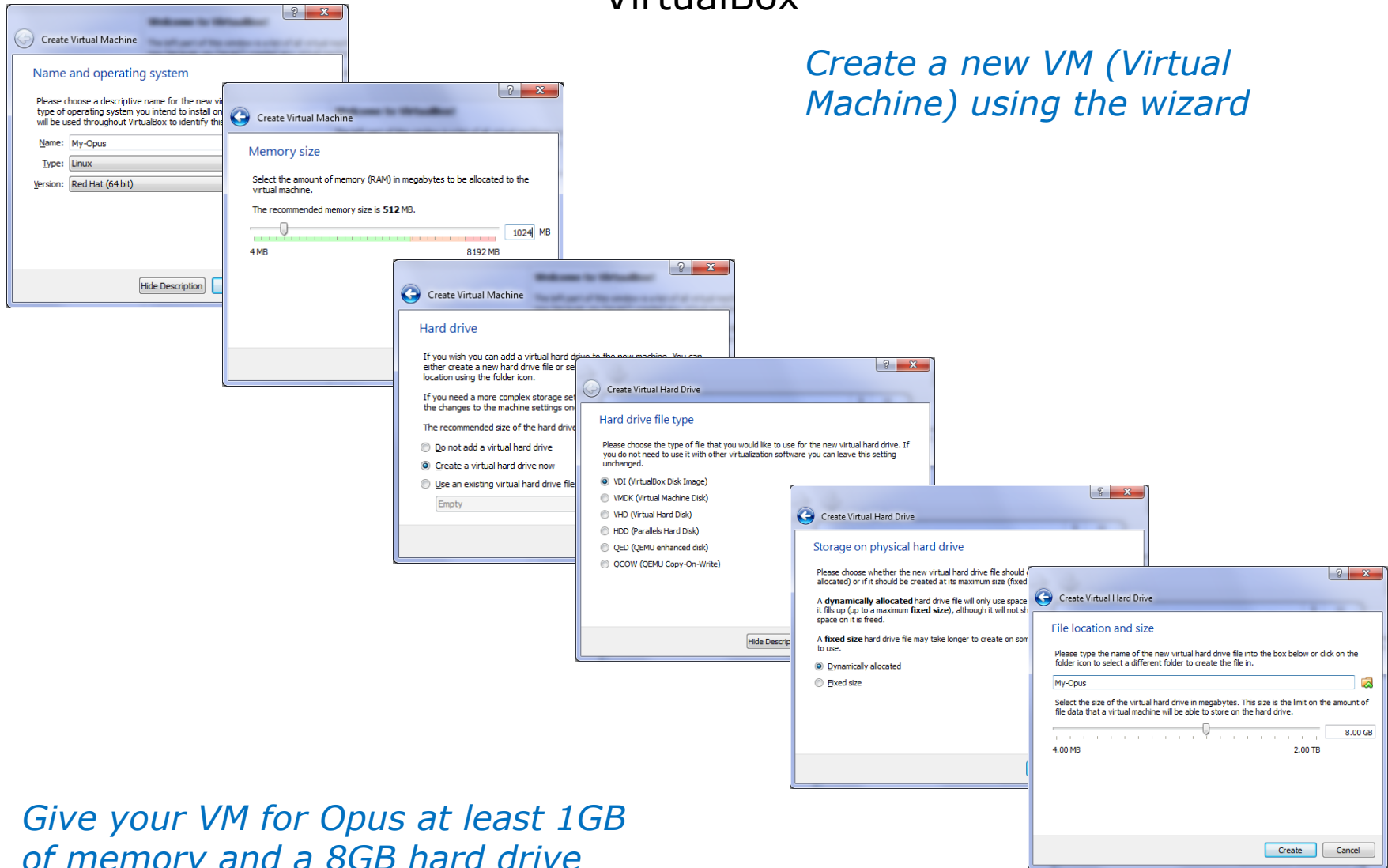
*Click the
New button
to create a
new VM.*



*Download and install one of the virtualization products.
This example will use VirtualBox.*

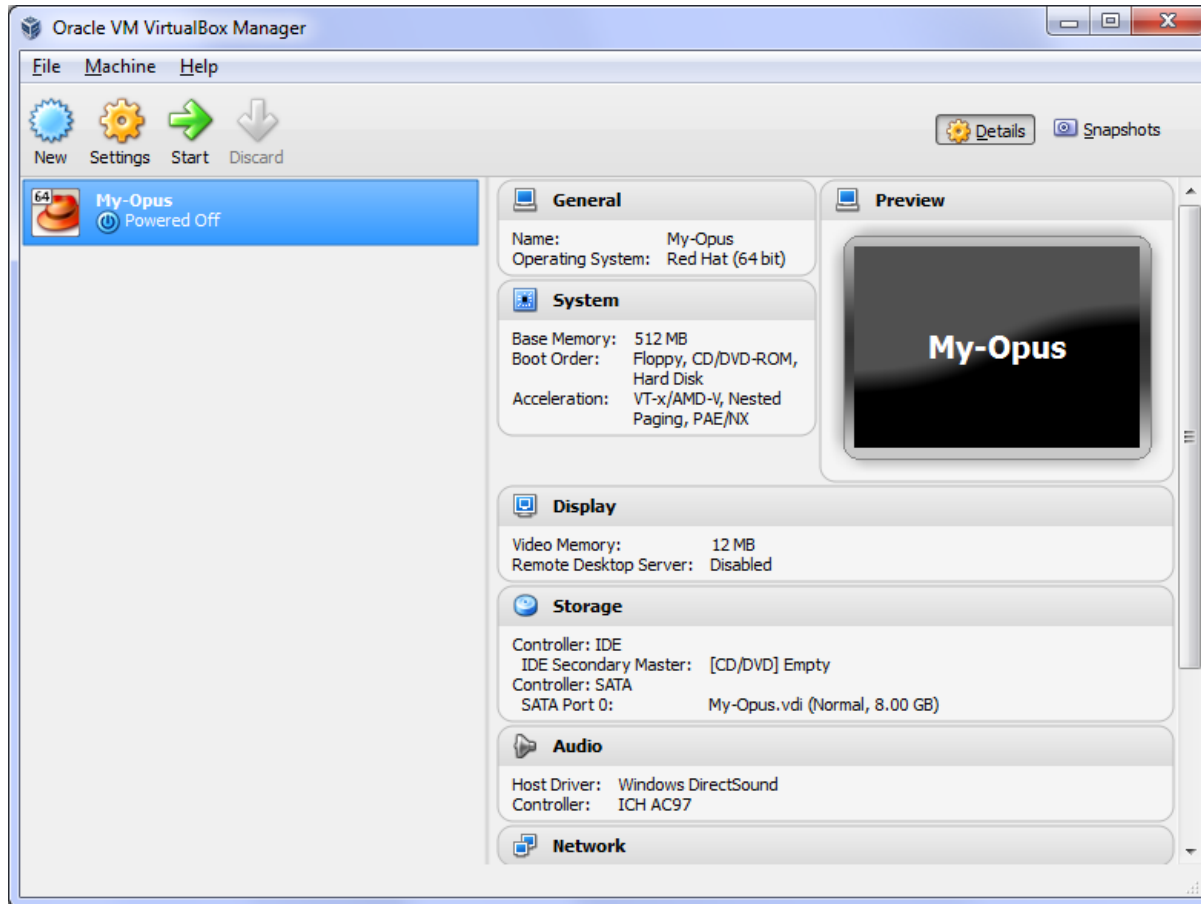
VirtualBox

Create a new VM (Virtual Machine) using the wizard



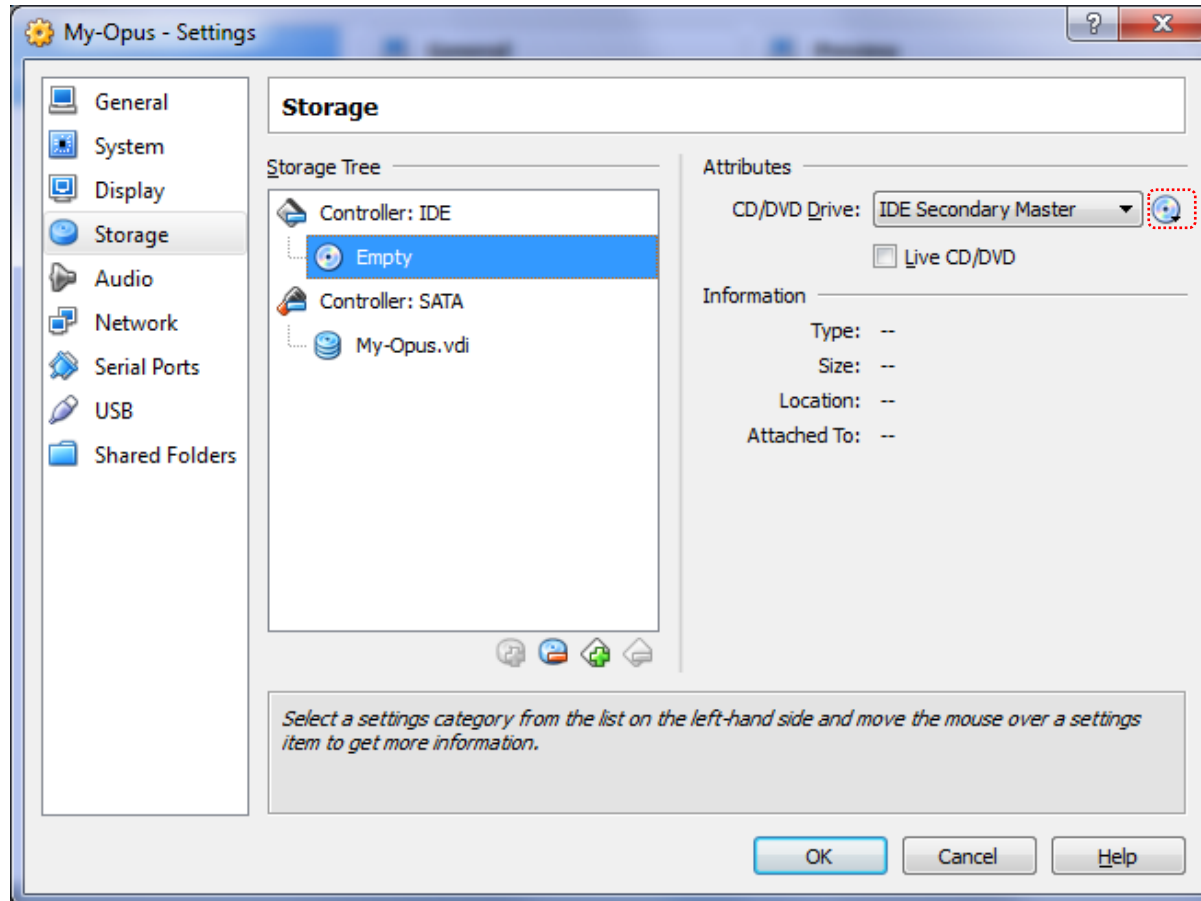
Give your VM for Opus at least 1GB of memory and a 8GB hard drive

VirtualBox



The new VM has no operating system

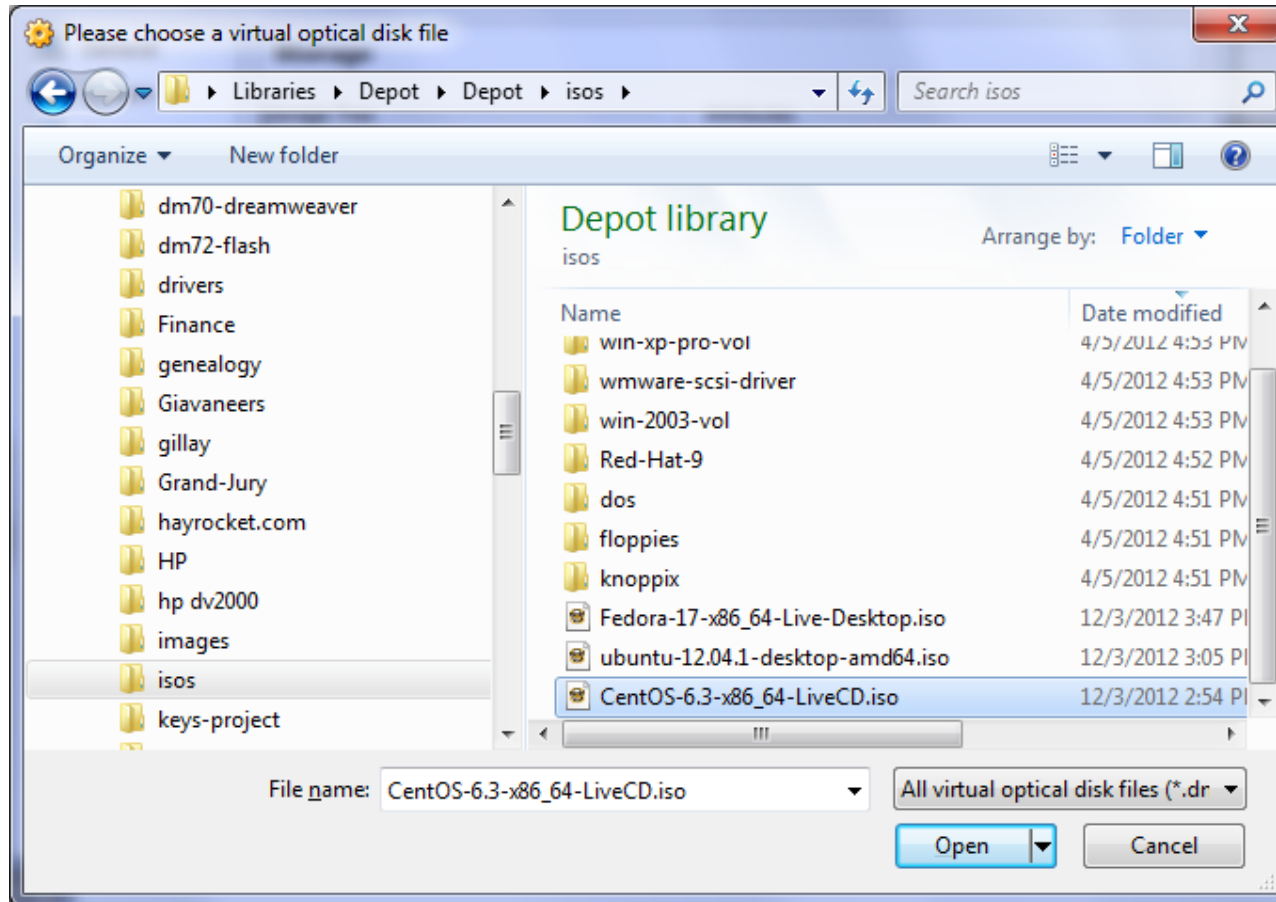
VirtualBox



Click the little CD icon to the left to browse to the CentOS ISO image to install

In Settings locate Storage so we can "put the CentOS CD into the DVD drive" by configuring the virtual IDE DVD drive with the ISO image downloaded earlier.

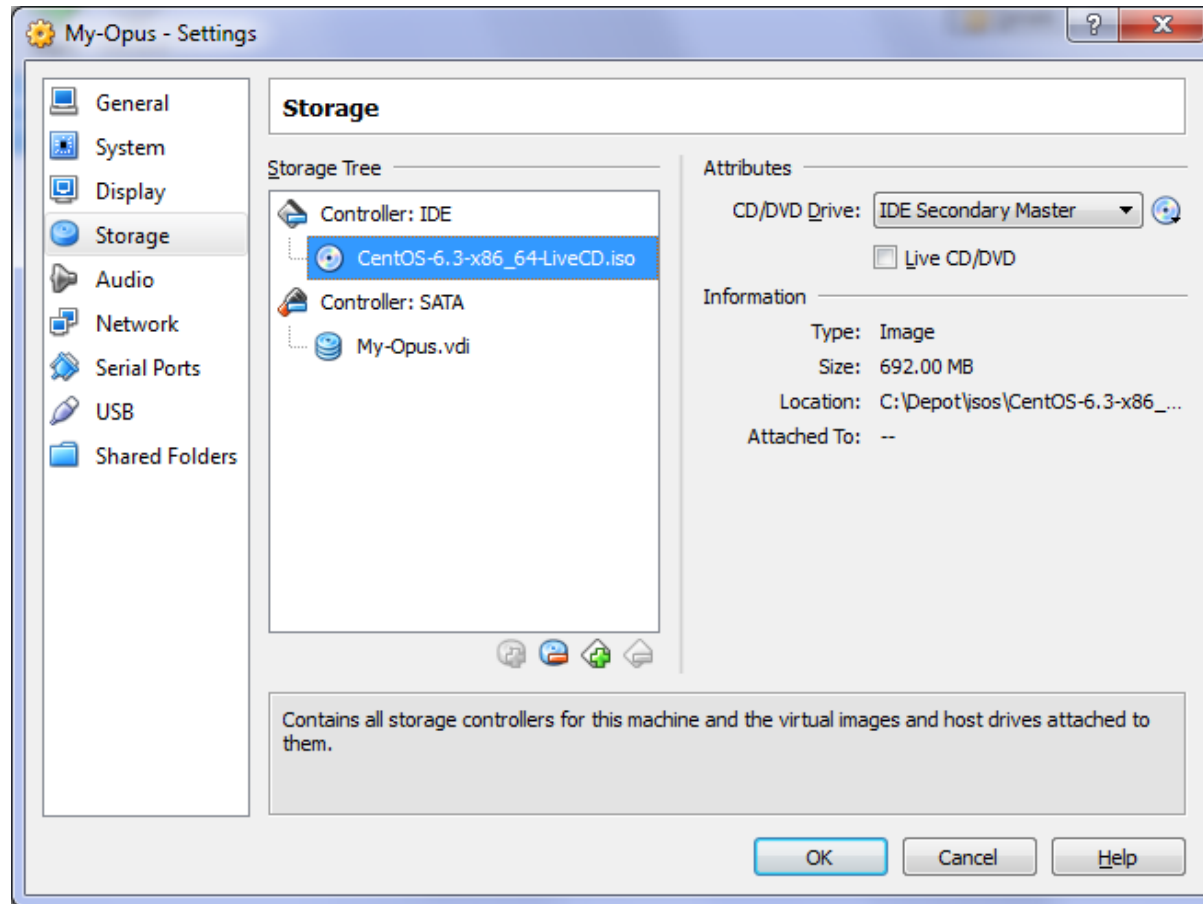
VirtualBox



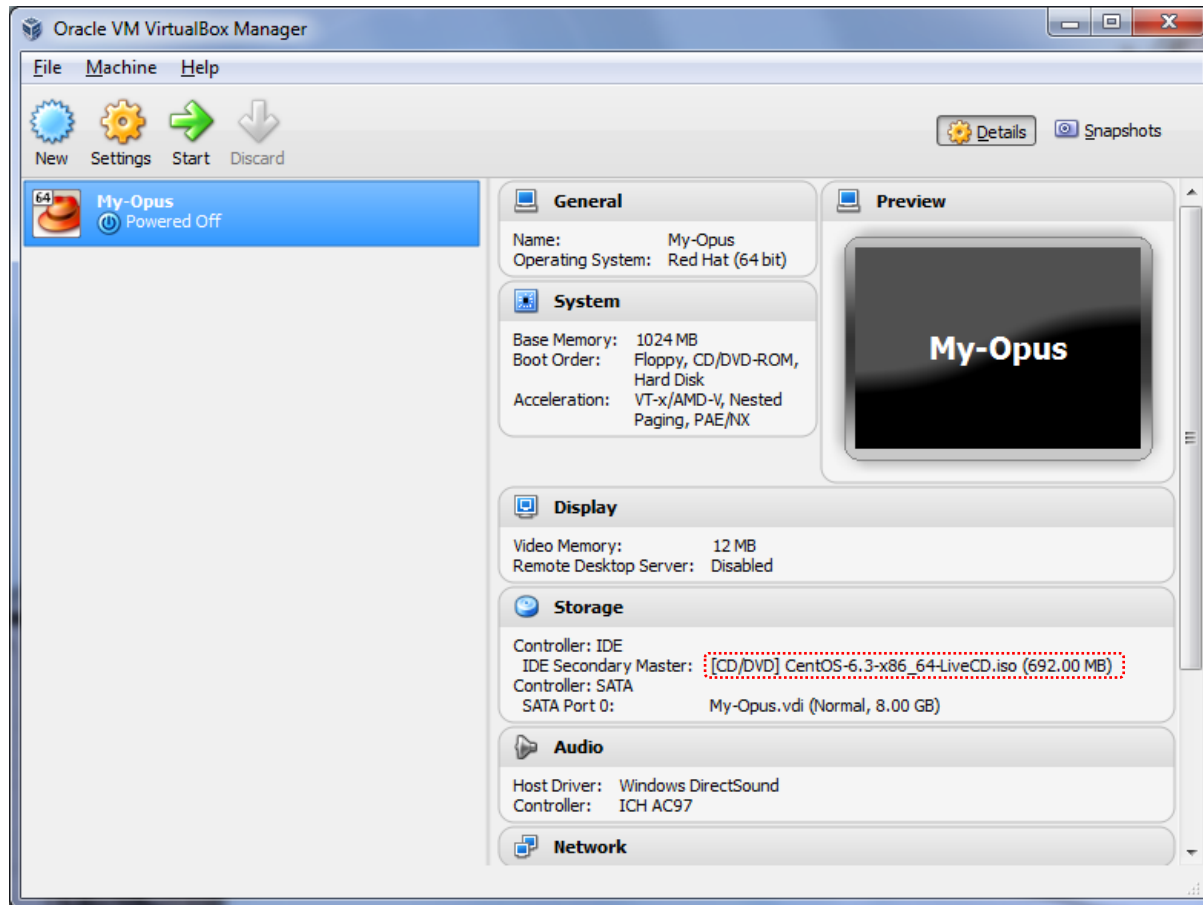
*Locate the
ISO image
to install*

CentOS-6.3-x86_64-LiveCD.iso

VirtualBox

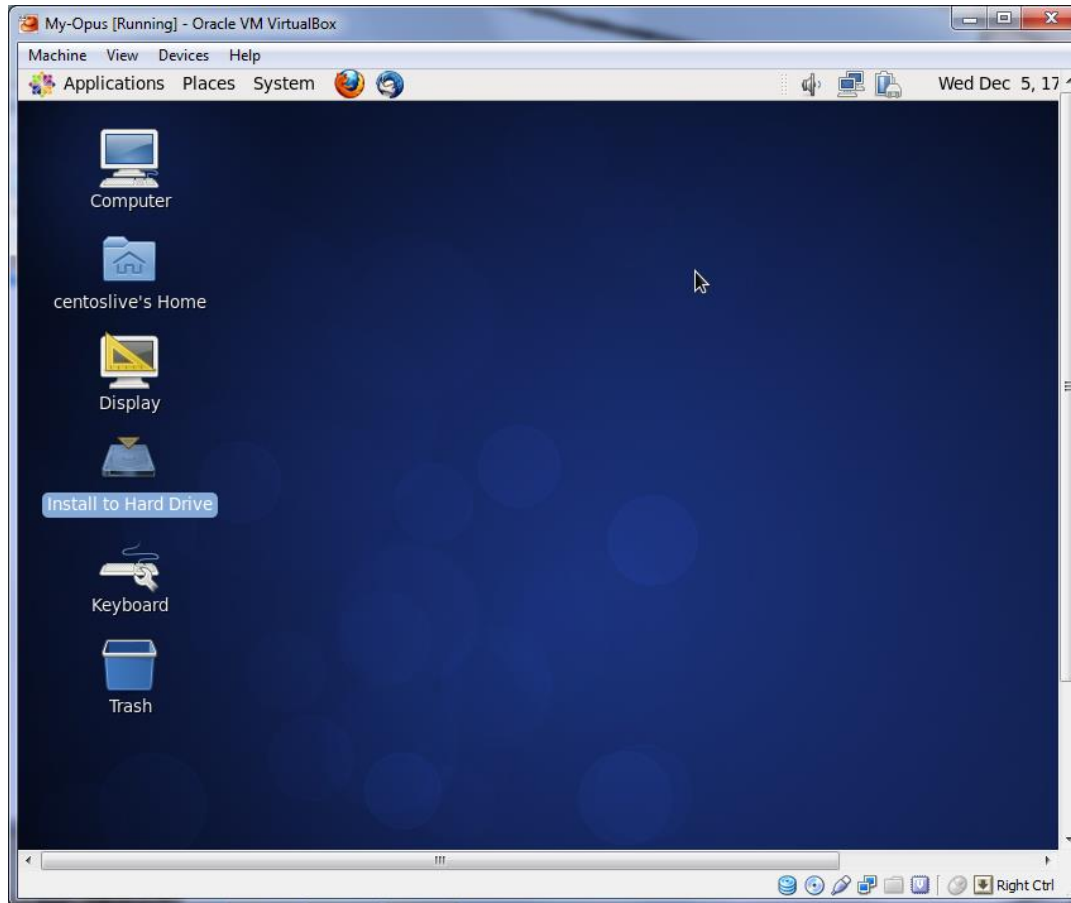


VirtualBox



If you see the correct ISO image in the drive you can power on the VM

VirtualBox



If it complains you don't have a 64-bit CPU (and you do have 64-bit CPU) then enable Virtualization Technology in your BIOS.

Otherwise just let it boot up using the live image which runs in memory and is not installed to the hard drive.

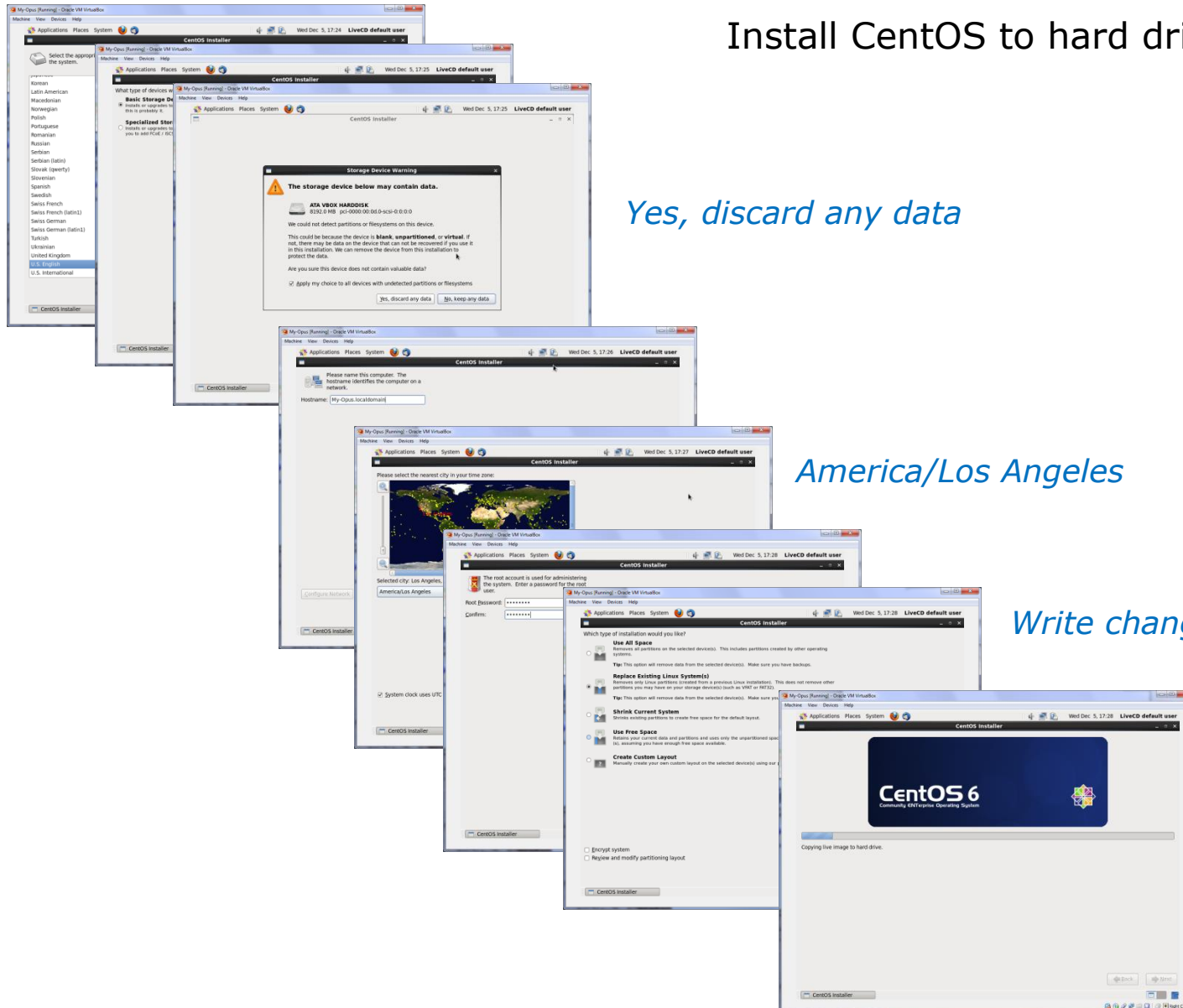
To install permanently to the VM hard drive open the "Install to Hard Drive" icon on the desktop

VirtualBox



Keep hitting the Next button to let the wizard install the CentOS Linux distribution

Install CentOS to hard drive

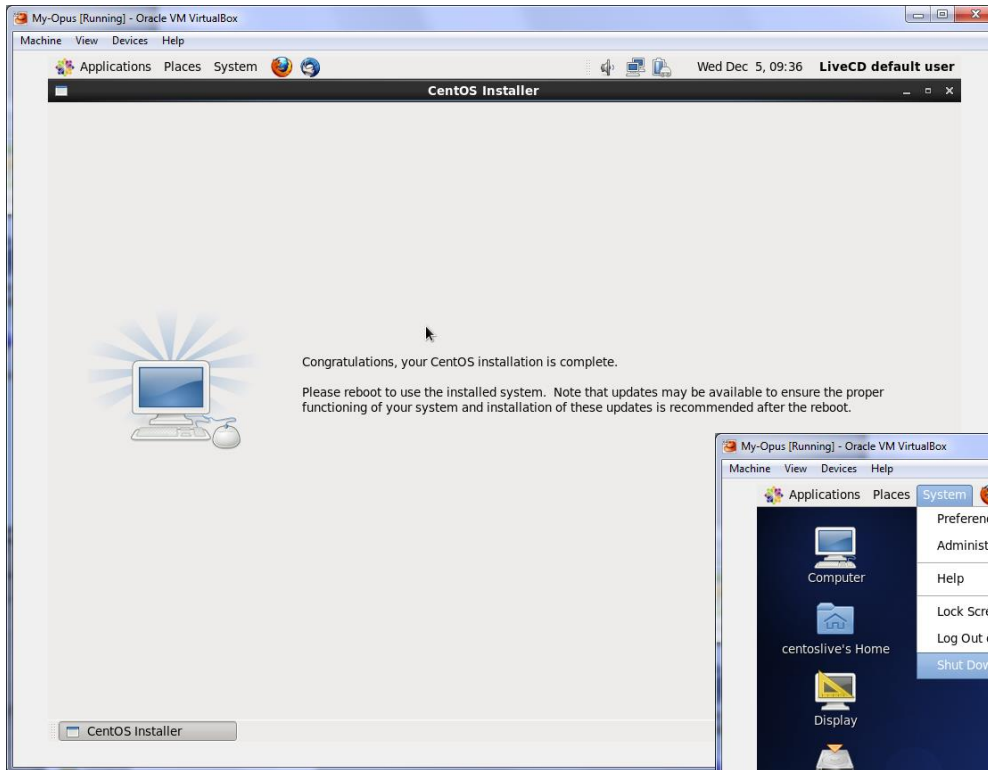


Yes, discard any data

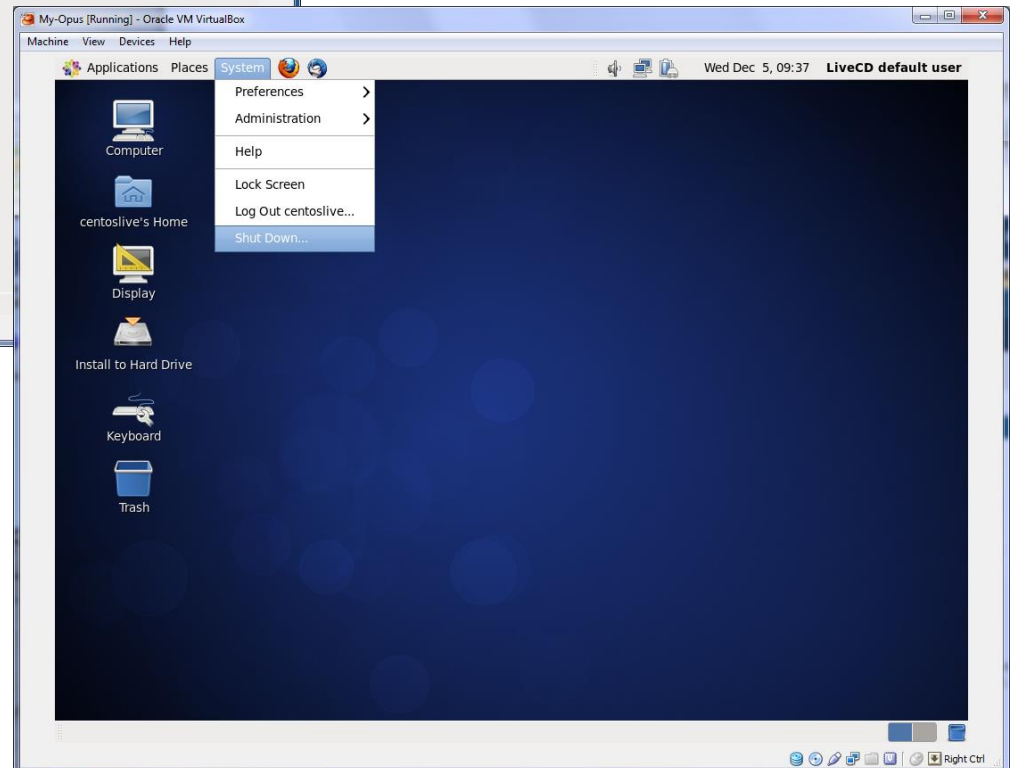
America/Los Angeles

Write changes to disk

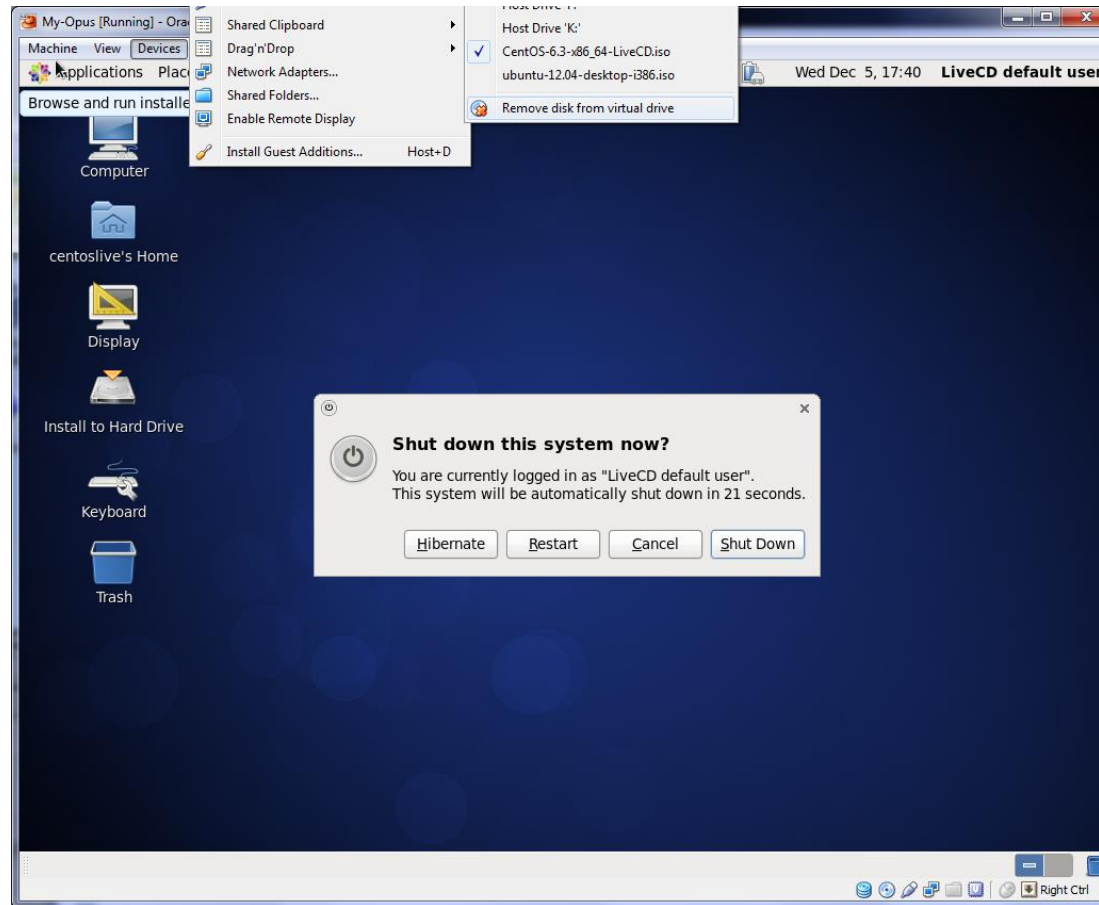
VirtualBox



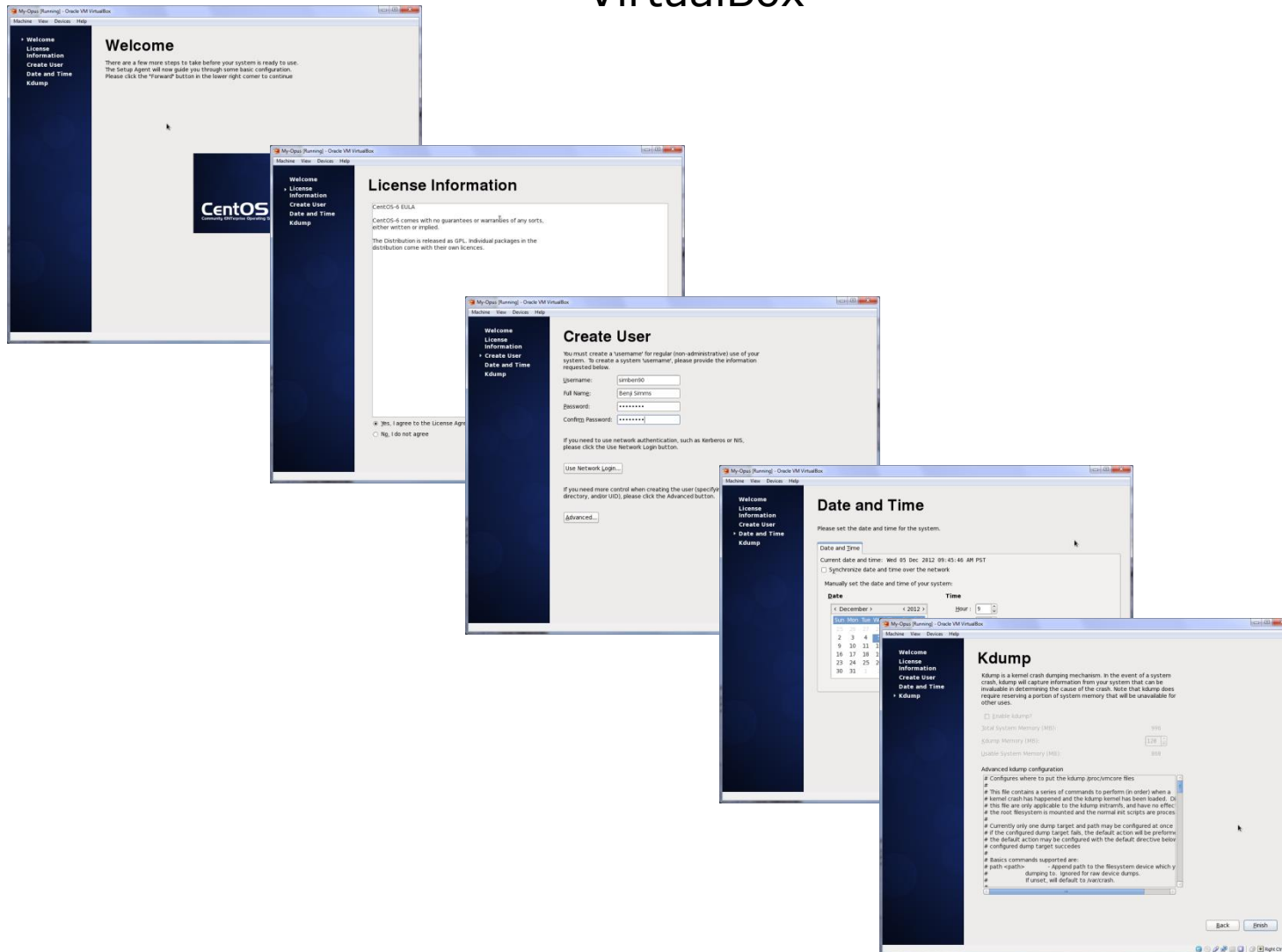
*Shutdown the system and
before starting again
remove the CD from the
drive (Settings > Storage)*



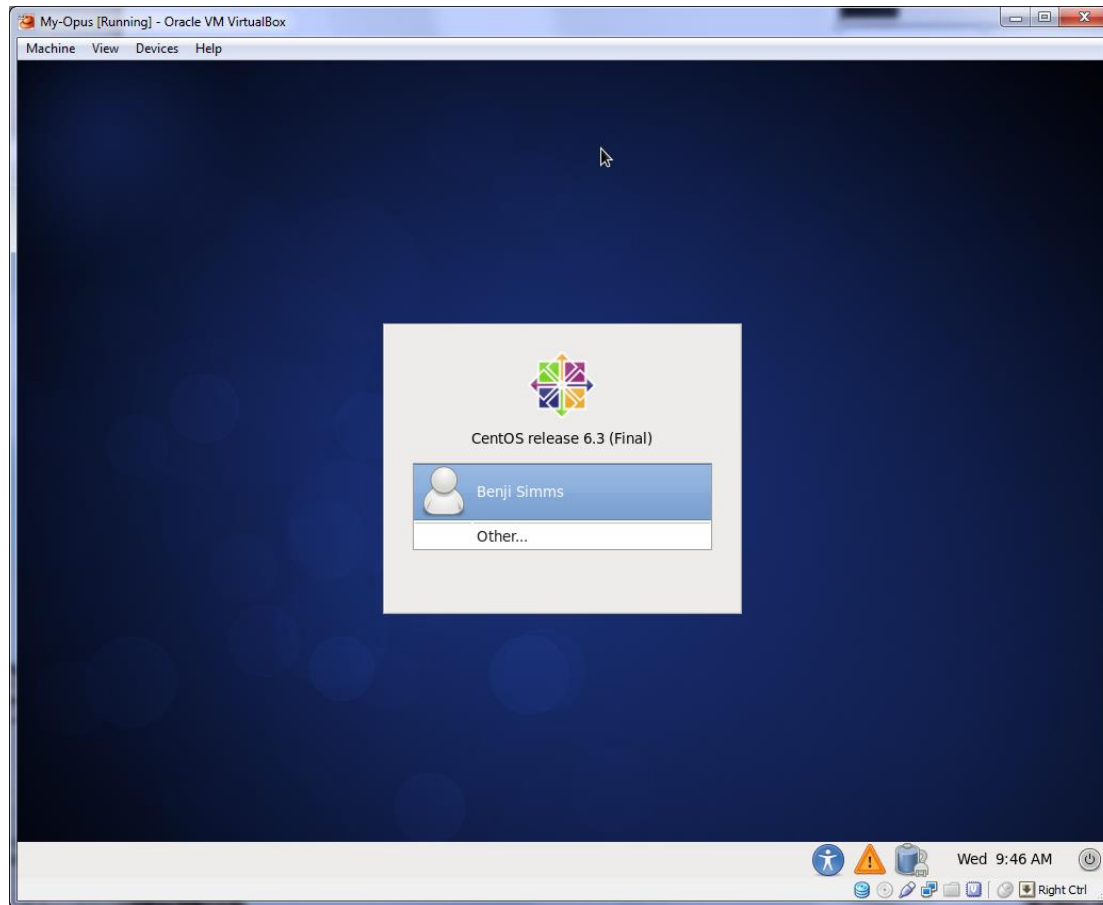
VirtualBox



VirtualBox



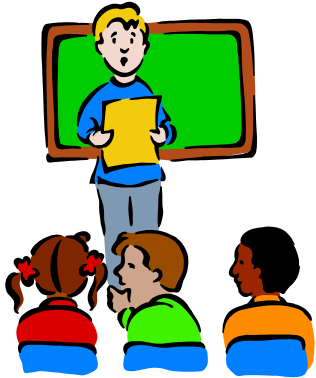
Voilà



If you like doing this you will love CIS 191!



Project Presentations



To demo your project and earn five points:

Join CCC Confer and share desktop when it is your turn

- Remote users should dial or Skype to 888-450-4821 and use passcode: 761867
- Classroom students can use Station #5 next to the Polycom

Five minutes max please!

CCC Confer - Attending class online

The screenshot displays the CCC Confer application window titled "CCC Confer - 0 - RICH SIMMS". The interface includes a menu bar (File, Edit, View, Tools, Window, Help) and a toolbar with icons for drawing, erasing, and navigating. The main display area shows a presentation slide titled "CIS Linux Classes" with the Cabrillo College logo and instructor information: "Instructor: Rich Simms" and "Dial-in: 888-450-4821". The slide background features a grid of 40 white silhouette icons on a green field. Two callout boxes provide instructions: "Raise your hand, make gestures, use emoticons and indicate responses using these controls" (pointing to the participant controls) and "Ask public or private questions using the chat area" (pointing to the chat window).

AUDIO & VIDEO

Rich Simms

Talk Video

PARTICIPANTS

Benji

MAIN ROOM (2)

Rich Simms
Moderator

Benji
(You)

CHAT

- You joined the Main Room. (2:23 PM) -

- Rich Simms joined the Main Room. (2:24 PM) -

Raise your hand, make gestures, use emoticons and indicate responses using these controls

Ask public or private questions using the chat area

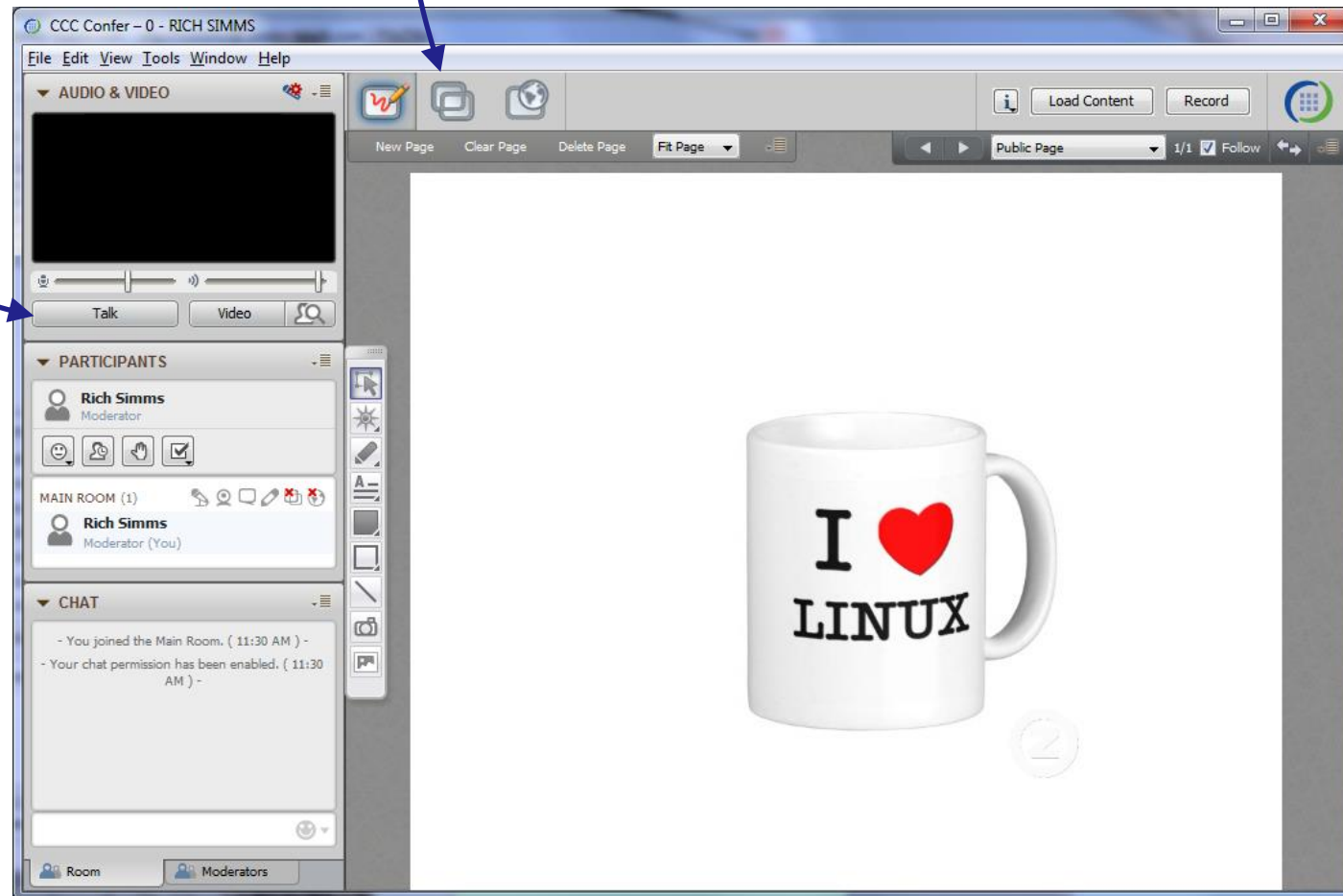
Slide1

84

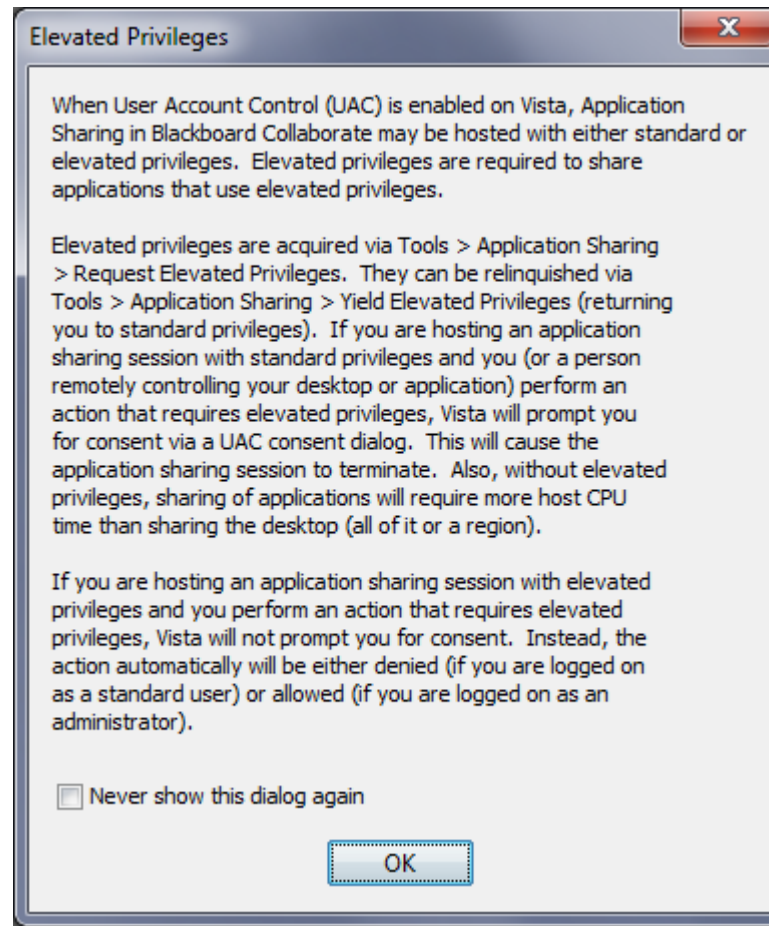
Sharing from CCC Confer

Click **Talk** so we can hear you from your computer's microphone

Click **overlapping rectangles** to share

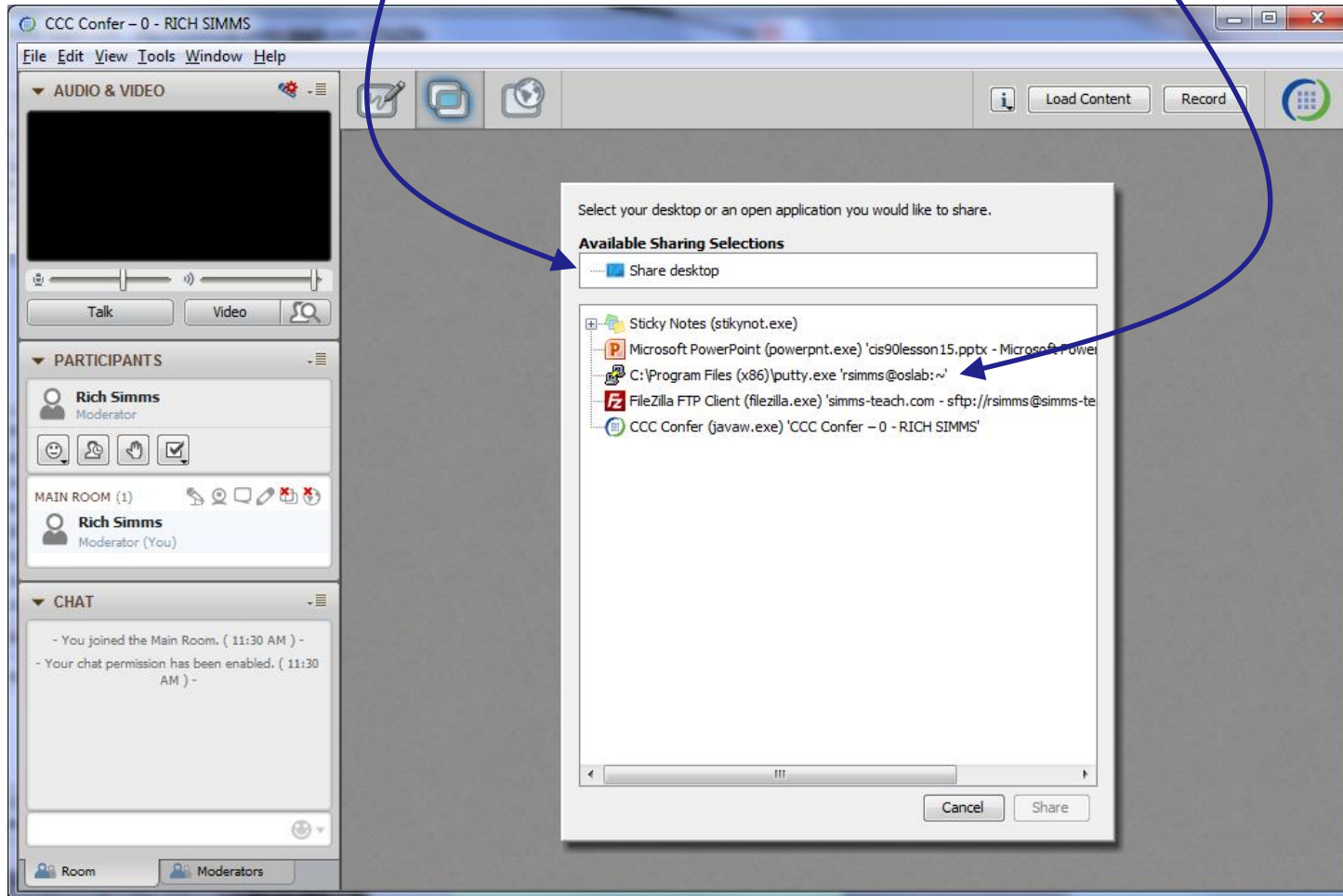


Sharing from CCC Confer



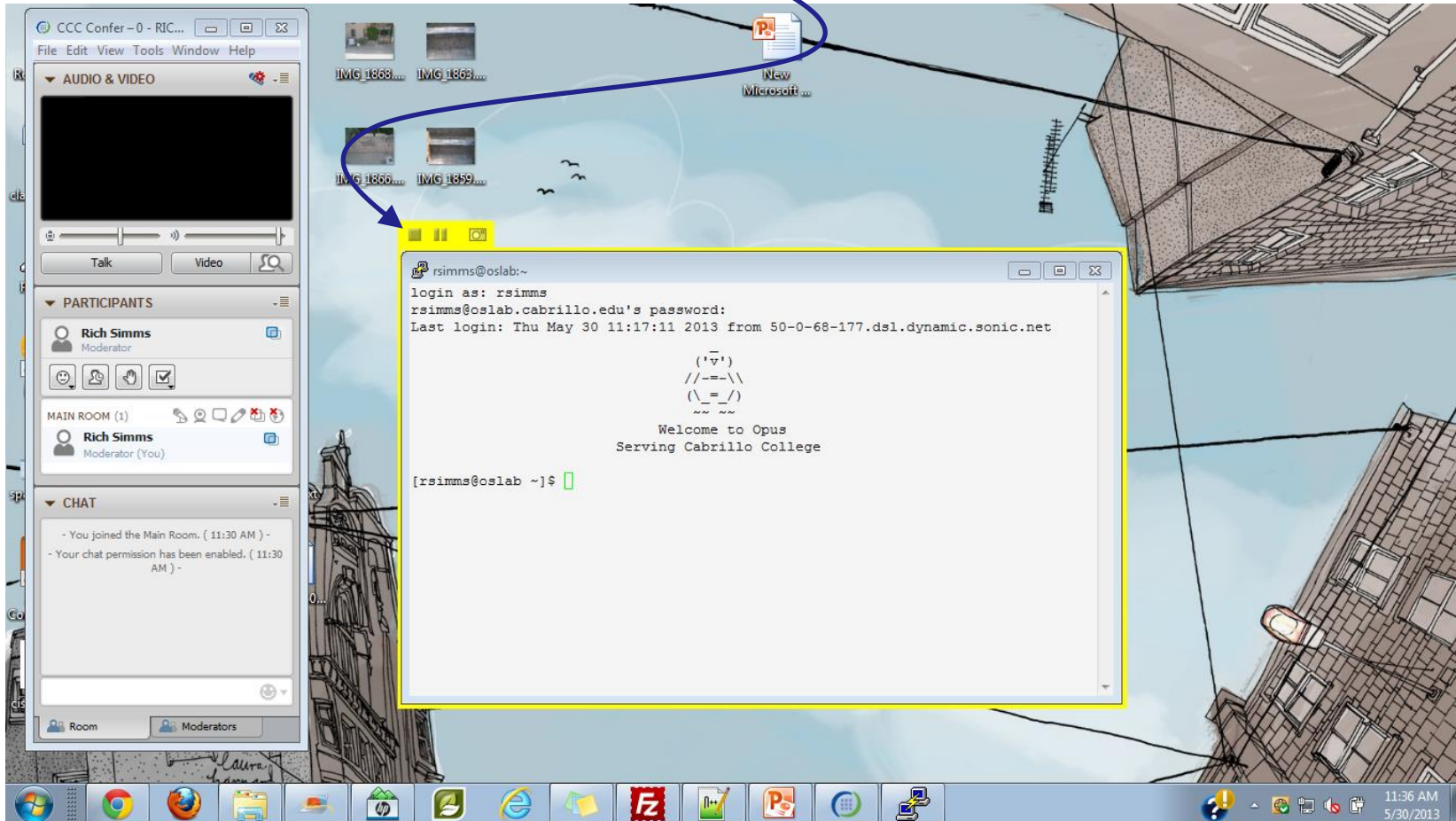
Sharing from CCC Confer

Either share putty/terminal or entire desktop



Sharing from CCC Confer

Click stop symbol to end sharing



Wrap up

New commands:
tar

Backup and restore files

New Files and Directories:

Next Class is the Final Exam

Test #3

Five Posts

Lab X1 (extra credit)

Lab X2 (extra credit)



Project Workshop (optional)

Backup