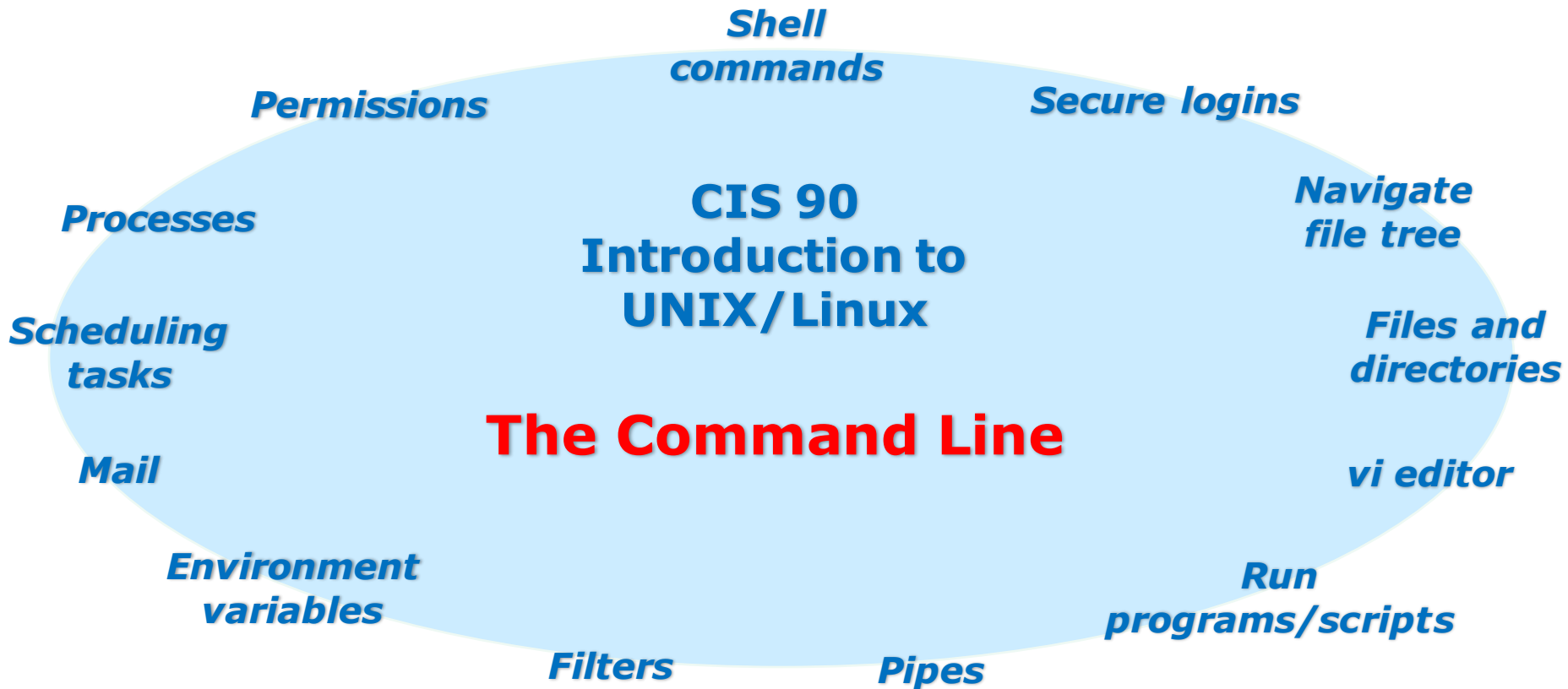




## Rich's CCC Confer checklist - setup

- Slides posted
- WB converted from PowerPoint
- Print out agenda slide and annotate page numbers
  
- Flash cards
- Page numbers
- 1st minute quiz
- Web Calendar summary
- Web book pages
- Commands
  
- Bring Linux ISOs on thumb drive
- Canvas Practice Test ready and scheduled
- Practice Test systems ready
- Schedule midnight turnin directory lock
- Schedule midnight backup of all myscript files
  
- Backup slides, CCC info, handouts on flash drive
- Spare 9v battery for mic
- Key card for classroom door
  
- Update CCC Confer and 3C Media portals

*Last updated 12/7/2016*



### **Student Learner Outcomes**

1. Navigate and manage the UNIX/Linux file system by viewing, copying, moving, renaming, creating, and removing files and directories.
2. Use the UNIX features of file redirection and pipelines to control the flow of data to and from various commands.
3. With the aid of online manual pages, execute UNIX system commands from either a keyboard or a shell script using correct command syntax.

## 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/>)



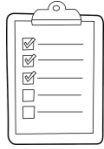
## Student checklist for attending class

The screenshot shows a web browser window with the address bar containing `simms-teach.com/cis90calendar.php`. The page title is "Rich's Cabrillo College CIS Classes CIS 90 Calendar". The main content area is titled "CIS 90 (Fall 2014) Calendar" and includes a "Calendar" link. A table lists lessons with columns for "Lesson", "Date", "Topics", and "Link". The first lesson is "Class and Linux Overview" with a "Presentation slides (download)" link. Below the table, there are links for "Supplemental", "Assignments", "CIS 90 Syllabus", "Quiz 1", and "Commands". A "CIS 90" link is also visible in the left sidebar.

Lesson	Date	Topics	Link
Class and Linux Overview	9/2	<ul style="list-style-type: none"> <li>Understand how the course will work</li> <li>High-level overview of computers, operating systems and virtual machines</li> <li>Overview of UNIX/Linux market and architecture</li> <li>Using SSH for remote network logs</li> <li>Using terminals and the command line</li> </ul>	<a href="#">Presentation slides (download)</a>
Supplemental		<ul style="list-style-type: none"> <li>PowerPoint: Logging into Opus (COMING)</li> </ul>	
Assignments		<ul style="list-style-type: none"> <li>Student Survey</li> <li>Lab 1</li> </ul>	
CIS 90 Syllabus			
Quiz 1			
Commands			

1. Browse to:  
**<http://simms-teach.com>**
2. Click the **CIS 90** link.
3. Click the **Calendar** link.
4. Locate today's lesson.
5. Find the **Presentation slides** for the lesson and **download** for easier viewing.
6. Click the **Enter virtual classroom** link to join CCC Confer.
7. Log into Opus with Putty or ssh command.

Note: Blackboard Collaborate Launcher only needs to be installed once. It has already been downloaded and installed on the classroom PC's.



## Student checklist for suggested screen layout

Google

CCC Confer

Downloaded PDF of Lesson Slides

The screenshot shows a virtual classroom interface. On the left is a Blackboard course page for 'Rich's Cabrillo College CIS 90 Classes'. In the center is a CCC Confer window showing a video of Rich Simms and a list of participants. Overlaid on the confer window is a Google Maps window titled 'Class Activity - Where are you now?'. On the right is an Adobe Acrobat Pro window displaying a PDF slide titled 'The CIS 90 System Playground'. Below the confer window is a terminal window showing a password prompt and a welcome message for Opus.

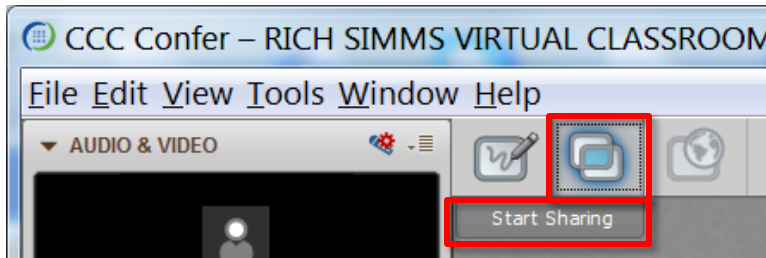
CIS 90 website Calendar page

One or more login sessions to Opus

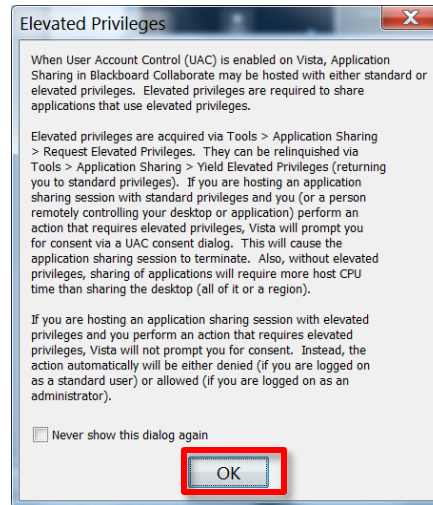


# Student checklist for sharing desktop with classmates

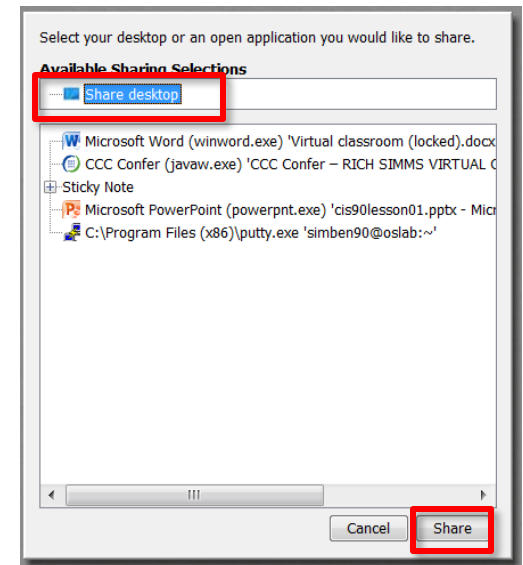
1) Instructor gives you sharing privileges



2) Click overlapping rectangles icon. If white "Start Sharing" text is present then click it as well.



3) Click OK button.



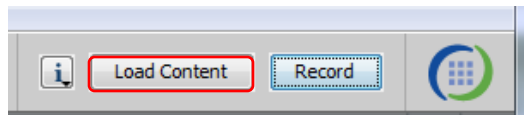
4) Select "Share desktop" and click Share button.



# Rich's CCC Confer checklist - setup

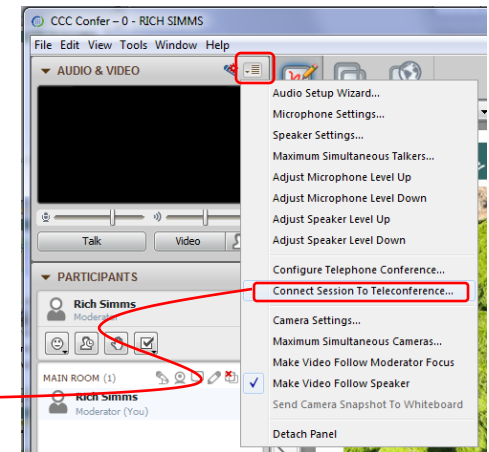
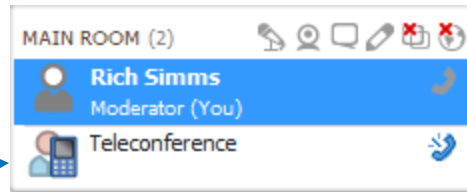


[ ] Preload White Board



[ ] Connect session to Teleconference

*Session now connected to teleconference*



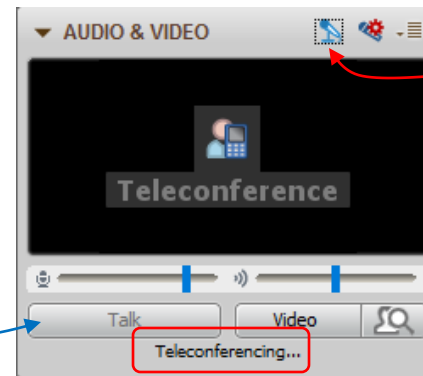
[ ] Is recording on?



*Red dot means recording*

[ ] Use teleconferencing, not mic

*Should be grayed out*



*Should change from phone handset icon to little Microphone icon and the Teleconferencing... message displayed*



## Rich's CCC Confer checklist - screen layout



The screenshot displays a Windows desktop with several applications open:

- CCC Confer - 0 - RIC...:** A teleconference window showing a video feed of Rich Simms, a list of participants (Rich Simms as Moderator), and a chat window.
- foxit for slides:** A Foxit Reader window displaying a PDF document titled 'cis90lesson07.pdf'.
- chrome:** A Google Chrome browser window showing a PDF document from 'simms-teach.com/docs/cis90/cis-90-TEST-1-Fall-12.pdf'. The document contains two questions: [Q1] What command shows the other users logged in to the computer? and [Q2] What environment variable is used by the shell to determine which directories to search when locating a command?
- putty:** A PuTTY terminal window showing a login session for 'simben90@oslab.cabrillo.edu'. The terminal output includes: 'login as: simben90', 'simben90@oslab.cabrillo.edu's password:', 'Access denied', 'simben90@oslab.cabrillo.edu's password:', and 'Last login: Mon Oct 8 18:58:43 2012 from 10.10.10.10'. The prompt is 'simben90@oslab:~\$'.
- vSphere Client:** A VMware vSphere Client window showing the 'vCenter - vSphere Client' interface with a tree view of virtual machines and a 'Recent Tasks' table.

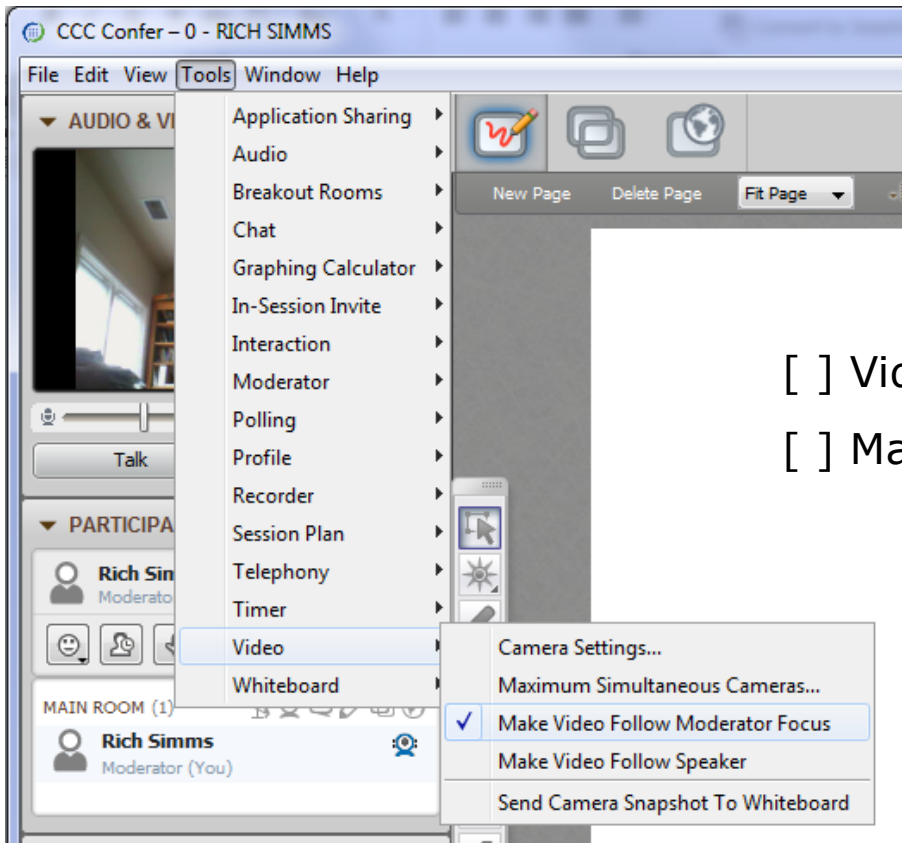
[ ] layout and share apps







## Rich's CCC Confer checklist - webcam setup

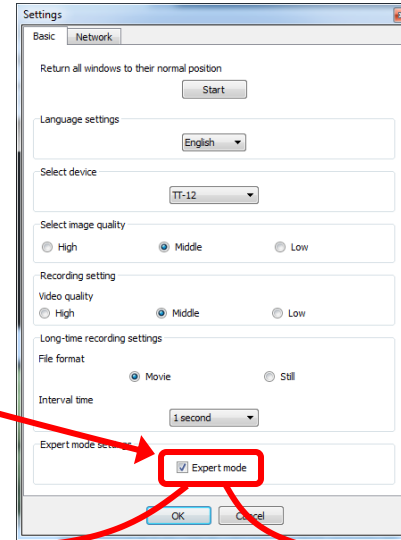
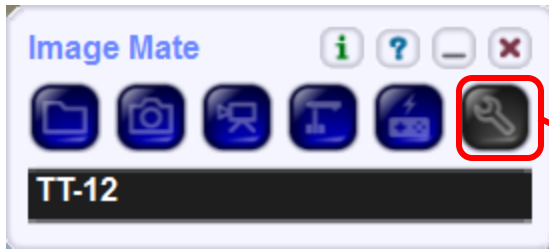


[ ] Video (webcam)

[ ] Make Video Follow Moderator Focus



# Rich's CCC Confer checklist - Elmo



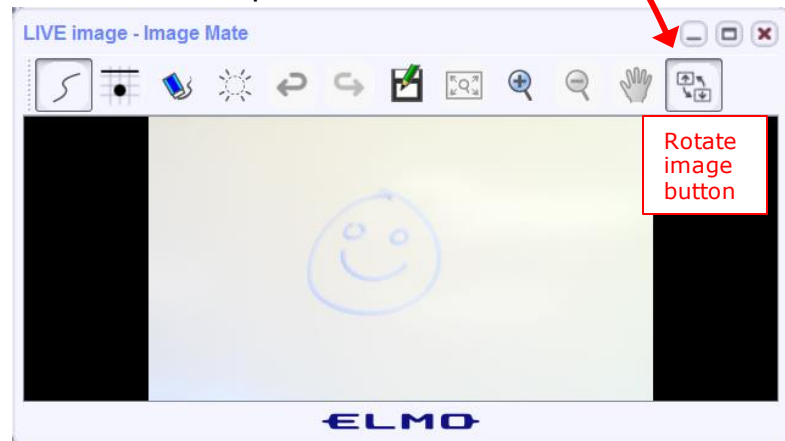
The "rotate image" button is necessary if you use both the side table and the white board.

Quite interesting that they consider you to be an "expert" in order to use this button!

Elmo rotated down to view side table



Elmo rotated up to view white board



Run and share the Image Mate program just as you would any other app with CCC Confer

## Rich's CCC Confer checklist - universal fixes

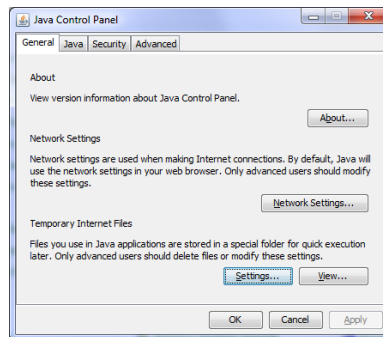
Universal Fix for CCC Confer:

- 1) Shrink (500 MB) and delete Java cache
- 2) Uninstall and reinstall latest Java runtime
- 3) <http://www.cccconfer.org/support/technicalSupport.aspx>

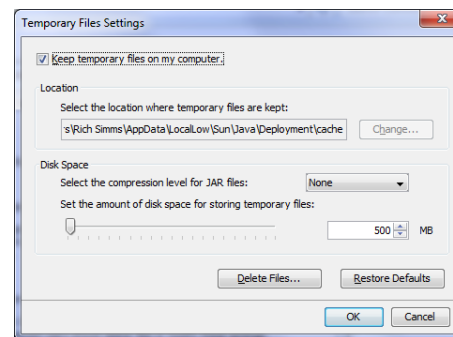
Control Panel (small icons)



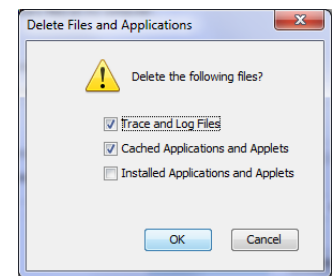
General Tab > Settings...



500MB cache size



Delete these



Google Java download





# Start

# Sound Check

*Students that dial-in should mute their line using \*6 to prevent unintended noises distracting the web conference.*

*Instructor can use \*96 to mute all student lines.*

## *Volume*

*\*4 - increase conference volume.*

*\*7 - decrease conference volume.*

*\*5 - increase your voice volume.*

*\*8 - decrease your voice volume.*



Instructor: **Rich Simms**

Dial-in: **888-886-3951**

Passcode: **136690**



Oscar N.



Jesselle



Alex



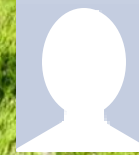
Eriberto



Kyle



Izzy



Ian



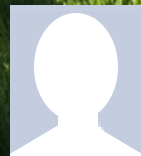
Cameron



Joseph



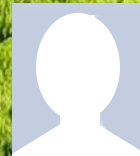
Ted



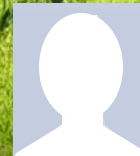
Rodney



Victoria



Vance



Adrian



Raul



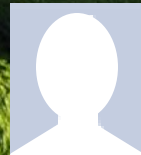
Matt



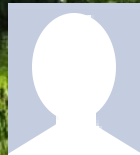
Sam



Kevin



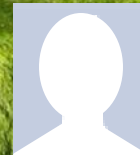
Allen



Zane



Nestor



Dustin



Mike



Zack

## Quiz

**No Quiz  
Today !**



## File Transfer and Review

### Objectives

- Transfer project files to Windows and Linux systems
- Prepare for final exam

### Agenda

- No Quiz
- Questions
- Housekeeping
- Final Exam (Test 3)
- Test 3 Tips
- File transfer continued
- Compressed archives
- Make your own Opus
- Project Presentations
- Wrap up





# 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





**Project is  
due tonight!**

**Don't forget  
to submit  
your  
project!**

- Final project **due 11:59 PM** tonight.
- Don't forget to **submit** using the instructions:

⇒ `cp myscript /home/rsimms/turnin/cis90/myscript.$LOGNAME`

- Project presentations after lesson material today.
- Final exam is next week **Wednesday** December 14<sup>th</sup>.
- Extra credit labs and forum posts due 11:59 PM day of the final exam.
- Practice test for final exam is available now.
- Practice test server will shutdown 30 minutes before the final exam.

## Grading rubric (60 points maximum)

Possible Points	Requirements
30	Implementing all five tasks (6 points each): <ul style="list-style-type: none"> <li>Requirements for each task:               <ul style="list-style-type: none"> <li>Minimum of 10 "original" script command lines</li> <li>Has one or more non-generic comments to explain what it is doing</li> <li>Has user interaction</li> </ul> </li> </ul>
25	You don't have to do all of these but do at least five: <ul style="list-style-type: none"> <li>Redirecting stdin (5 points)</li> <li>Redirecting stdout (5 points)</li> <li>Redirecting stderr (5 points)</li> <li>Use of permissions (5 points)</li> <li>Use of filename expansion characters (5 points)</li> <li>Use of absolute path (5 points)</li> <li>Use of relative path (5 points)</li> <li>Use of a PID (5 points)</li> <li>Use of inodes (5 points)</li> <li>Use of links (5 points)</li> <li>Use of scheduling (5 points)</li> <li>Use of a GID or group (5 points)</li> <li>Use of a UID or user (5 points)</li> <li>Use of a /dev/tty device (5 points)</li> <li>Use of a signal (5 points)</li> <li>Use of piping (5 points)</li> <li>Use of an environment variable (5 points)</li> <li>Use of /bin/mail (5 points)</li> <li>Use of a conditional (5 points)</li> </ul> The maximum for this section is 25 points.
5	Present your script to the class
<b>Points lost</b>	
-15	Fails to run from <b>allscripts</b>
-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"> <li>Doesn't give full credit to the original author</li> <li>Doesn't indicate where the code was obtained from</li> <li>Doesn't include licensing terms</li> <li>Violates copyright or licensing terms</li> </ul>
<b>Extra credit</b>	
30	Up to three additional tasks (10 points each)

← *Make sure you have at least five of these implemented*

← *Log in as cis90 and test your script so you don't lose any points*

## Final project status 12/7/2016

```
rsimms@oslab:~/cis90/project
[rsimms@oslab project]$ ./progress
myscript file: (brocam90) 2016-12-06 15:13:17 exists readable executable 55 lines
myscript file: (brukyl90) 2016-12-07 01:02:42 exists readable executable 317 lines
myscript file: (camkev90) 2016-12-06 16:51:07 exists readable executable 76 lines
myscript file: (cuines90) 2016-12-06 18:00:44 exists readable executable 138 lines
myscript file: (zuneri90) 2016-12-06 21:57:07 exists readable executable 48 lines
myscript file: (elszac90) 2016-12-06 15:58:01 exists readable executable 73 lines
myscript file: (estjes90) not found 0 lines
myscript file: (greall90) 2016-12-06 14:38:17 exists readable executable 82 lines
myscript file: (kelvan90) 2016-12-06 21:48:48 exists readable executable 270 lines
myscript file: (kerian90) not found 0 lines
myscript file: (lafjos90) 2016-12-06 21:45:31 exists readable executable 186 lines
myscript file: (lindus90) not found 0 lines
myscript file: (nieosc90) not found 0 lines
myscript file: (persam90) 2016-12-07 00:03:10 exists readable executable 303 lines
myscript file: (pruale90) 2016-11-16 14:48:07 exists readable executable 37 lines
myscript file: (ramisr90) 2016-12-05 15:04:35 exists readable executable 85 lines
myscript file: (roszak90) not found 0 lines
myscript file: (saimat90) 2016-12-06 23:26:56 exists readable executable 151 lines
myscript file: (soladr90) 2016-12-06 16:55:17 exists readable executable 80 lines
myscript file: (brevic90) 2016-12-07 01:48:07 exists readable executable 117 lines
myscript file: (ebarod90) not found 0 lines
myscript file: (elirau90) 2016-12-07 08:46:00 exists readable executable 100 lines
myscript file: (sedmic90) 2016-12-06 20:37:48 exists readable executable 124 lines
myscript file: (corlui90) not found 0 lines
myscript file: (horthe90) 2016-12-05 16:18:02 exists readable executable 189 lines
[rsimms@oslab project]$
```

*To get started see Lesson 13 "Final Project Getting Started" module*

*If you have started but it doesn't show here make sure you can run your myscript file from allscripts as the cis90 user.*



# Make backup copies of your script

*modify, debug, modify, debug, ... rest*

```
/home/cis90/simben/bin $ cp myscript myscript.v1
```

*modify, debug, modify, debug, ... rest*

```
/home/cis90/simben/bin $ cp myscript myscript.v2
```

*modify, debug, modify, debug, ... rest*

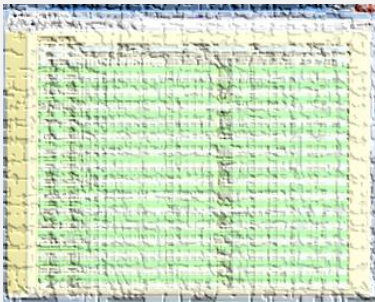
```
/home/cis90/simben/bin $ cp myscript myscript.v3
```

## Where to find your grades

**Send me your survey to get your LOR code name.**

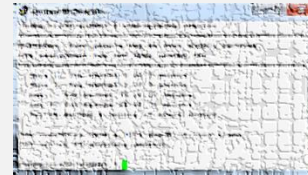
### The CIS 90 website Grades page

<http://simms-teach.com/cis90grades.php>



### Or check on Opus

**checkgrades** *codename*  
(where codename is your LOR codename)



Written by Jesse Warren a past CIS 90 Alumnus

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

### Points that could have been earned:

10 quizzes: 30 points  
 10 labs: 300 points  
 2 tests: 60 points  
 3 forum quarters: 60 points  
**Total: 450 points**

**At the end of the term I'll add up all your points and assign you a grade using this table**



# Final Exam (Test 3)

## Heads up on Final Exam

Test #3 (final exam) is **WEDNESDAY Dec 14 1-3:50PM**

<b>Wed</b>	12/14	<b>Test #3 (the final exam)</b>	5 posts <u>Lab X1</u> <u>Lab X2</u>
		<b>Time</b> <ul style="list-style-type: none"> <li>Wed 1:00PM - 3:50PM in Room 828</li> </ul> <b>Materials</b> <ul style="list-style-type: none"> <li>Test (<u>canvas</u>)</li> </ul> <b>CCC Confer</b> <ul style="list-style-type: none"> <li><u>Enter virtual classroom</u></li> <li><u>Class archives</u></li> </ul>	

*Extra credit  
labs and  
final posts  
due by  
11:59PM*

- All students will take the test at the same time. The test must be completed by **3:50PM**.
- Working and long distance students can take the test online via CCC Confer and Canvas.
- Working students will need to plan ahead to arrange time off from work for the test.
- Test #3 is mandatory (even if you have all the points you want)

## Final Exam (Test #3)

- **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.
  - Canvas test, so make sure you can log into Canvas before the test starts so you don't waste valuable time on this activity.

# Final Exam (Test #3)

## • Canvas Practice Test 3

### ➤ Advice:

- ❖ Work EVERY question on the practice test and make a personal reference sheet for remembering how to do things
  - ❖ Use your reference sheet on the final exam.
  - ❖ Take the practice test more than once. Use the **restore** command to reset your directory on the testing system
- Use of study groups and the forum are a great way to work on the practice test and prepare for the final exam!



# Test 3 Tips

Practice Test



**Do the practice test  
multiple times.**

**Use the restore command  
for a fresh start.**

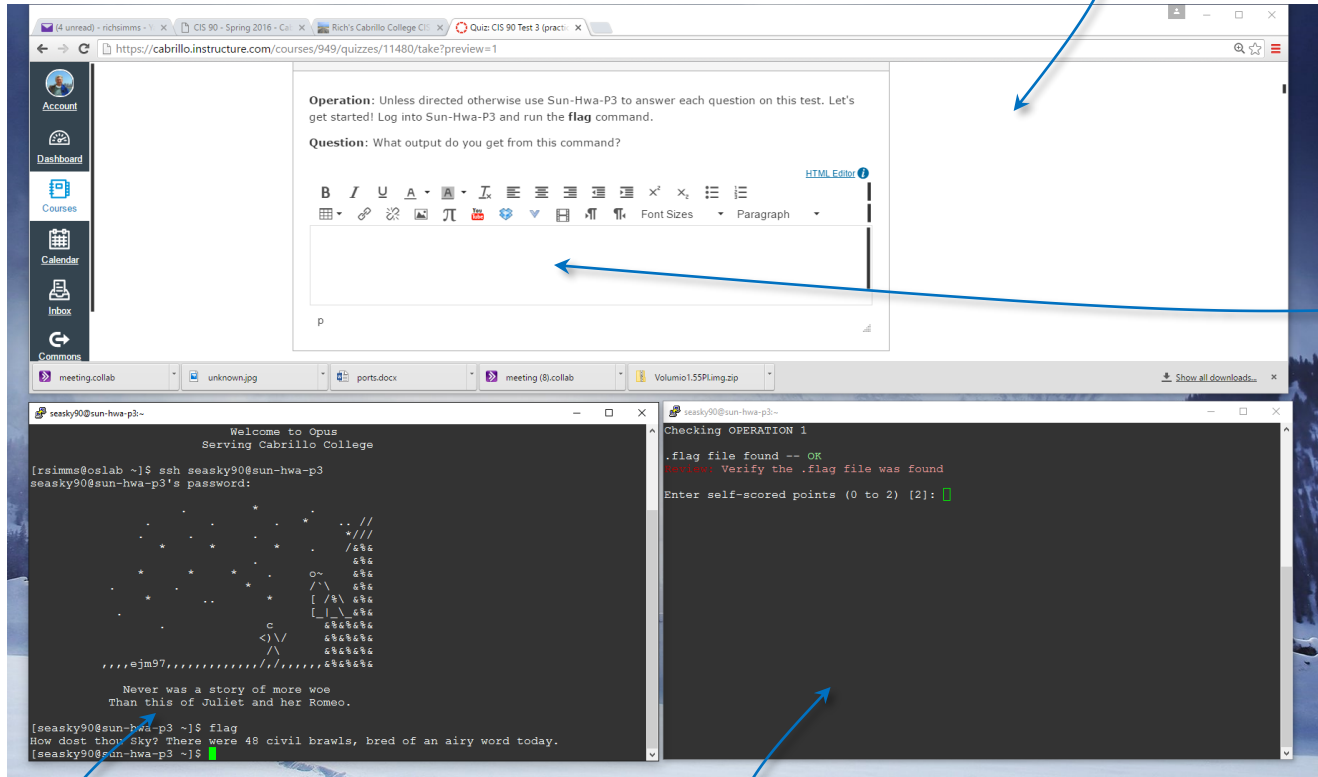


# Test Tips

Practice Test

## Screen Layout

*Resize Canvas to show just one question at a time*



*Note: You can copy and paste text from your session into Blackboard if needed*

*One session to work the questions in*

*Another session to run the check script in, show specs, send signals etc.*

# Test Tips

Use the -v (verbose option) to double check your work

## The -v (verbose) option

```
[rsimms@oslab ~]$ mkdir fun
[rsimms@oslab ~]$ touch fun/funny

[rsimms@oslab ~]$ chmod -R 700 fun

[rsimms@oslab ~]$ chmod -Rv 750 fun
mode of `fun' changed to 0750 (rwxr-x---)
mode of `fun/funny' changed to 0750 (rwxr-x---)

[rsimms@oslab ~]$ touch dog cat

[rsimms@oslab ~]$ mv dog fun

[rsimms@oslab ~]$ mv -v cat fun
`cat' -> `fun/cat'
```

*Notice how using the -v option gives you additional feedback*

# Test Tips

head and tail pipelines  
grep -n

## Sample Task

**Find a block of text in a large file that contains a specific text string. Then write a script that displays that block of text.**

**Examine the *dickens* file in the */home/cis90/depot* directory and find the block of lines containing this quote:**

```
"Father is so much kinder than he used to be"
```

*In the dickens file, which line number contains the quote above?*

*Write your answer in the chat window*

## One way: use grep to find the quote in the file

*Use grep to find the quote in the file*

```
/home/cis90/simben $ grep "much kinder" ../depot/dickens  
for ever and ever. Father is so much kinder than he used to be, that
```

*The -n option on grep shows the line number*

```
/home/cis90/simben $ grep -n "much kinder" ../depot/dickens  
305:for ever and ever. Father is so much kinder than he used to be, that
```

*Using grep we see that the quote is on line 305 of the dickens file*



## Use vi to view the block of lines containing the quote

```
vi ../depot/dickens
```

```
simben90@oslab:~
It opened; and a little girl, much younger than the boy, came darting in,
and putting her arms about his neck, and often kissing him, addressed
him as her "Dear, dear brother."

"I have come to bring you home, dear brother!" said the child, clapping
her tiny hands, and bending down to laugh. "To bring you home, home,
home!"

"Home, little Fan?" returned the boy.

"Yes!" said the child, brimful of glee. "Home, for good and all. Home,
for ever and ever. Father is so much kinder than he used to be, that
home's like Heaven! He spoke so gently to me one dear night when I
was going to bed, that I was not afraid to ask him once more if you
might come home; and he said Yes, you should; and sent me in a coach to
bring you. And you're to be a man!" said the child, opening her eyes,
"and are never to come back here; but first, we're to be together all
the Christmas long, and have the merriest time in all the world."

"You are quite a woman, little Fan!" exclaimed the boy.

She clapped her hands and laughed, and tried to touch his head; but being
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

305,19 43%

*For a script to output the circled block of text above we must determine the line numbers of the start and end of the block*

Starts on  
line 304

```
simben90@oslab:~  
It opened; and a little girl, much younger than the boy, came darting in,  
and putting her arms about his neck, and often kissing him, addressed  
him as her "Dear, dear brother."  
  
"I have come to bring you home, dear brother!" said the child, clapping  
her tiny hands, and bending down to laugh. "To bring you home, home,  
home!"  
  
"Home, little Fan?" returned the boy.  
  
Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I
```

Ends on  
line 311

```
simben90@oslab:~  
It opened; and a little girl, much younger than the boy, came darting in,  
and putting her arms about his neck, and often kissing him, addressed  
him as her "Dear, dear brother."  
  
"I have come to bring you home, dear brother!" said the child, clapping  
her tiny hands, and bending down to laugh. "To bring you home, home,  
home!"  
  
"Home, little Fan?" returned the boy.  
  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I  
was going to bed, that I was not afraid to ask him once more if you  
might come home; and he said Yes, you should; and sent me in a coach to  
bring you. And you're to be a man!" said the child, opening her eyes,  
"and are never to come back here; but first, we're to be together all  
the Christmas long, and have the merriest time in all the world."  
  
"You are quite a woman, little Fan!" exclaimed the boy.  
  
She clapped her hands and laughed, and tried to touch his head; but being  
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

304,1

311,1

Just move the cursor in vi and the line number in the lower right changes

`/home/cis90/depot/dickens`

```
simben90@oslab:~  
It opened; and a little girl, much younger than the boy, came darting in,  
and putting her arms about his neck, and often kissing him, addressed  
him as her "Dear, dear brother."  
  
"I have come to bring you home, dear brother!" said the child, clapping  
her tiny hands, and bending down to laugh. "To bring you home, home,  
home!"  
  
"Home, little Fan?" returned the boy.  
  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I  
was going to bed, that I was not afraid to ask him once more if you  
might come home; and he said Yes, you should; and sent me in a coach to  
bring you. And you're to be a man!" said the child, opening her eyes,  
"and are never to come back here; but first, we're to be together all  
the Christmas long, and have the merriest time in all the world."  
  
"You are quite a woman, little Fan!" exclaimed the boy.  
  
She clapped her hands and laughed, and tried to touch his head; but being  
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

305,19 43%

*Starts on  
line 304*

*Ends on  
line 311*

*What pipeline command using head and tail would print  
just the block of text above?*

*Write your answer in the chat window*

*The last line of  
the block is 311*

*The number of lines in  
the block would be  
 $311 - 304 + 1$   
or 8 lines*

```
/home/cis90/simben $ head -n311 ../depot/dickens | tail -n8  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I  
was going to bed, that I was not afraid to ask him once more if you  
might come home; and he said Yes, you should; and sent me in a coach to  
bring you. And you're to be a man!" said the child, opening her eyes,  
"and are never to come back here; but first, we're to be together all  
the Christmas long, and have the merriest time in all the world."  
/home/cis90/simben $
```

*This is how you would use a head and tail pipeline to print just  
the block of text in the file containing the quote*

*Let's now make that long command into a script named dickens101*

```
/home/cis90/simben $ vi dickens101
/home/cis90/simben $ cat dickens101
head -n311 ../depot/dickens | tail -n8
```

```
/home/cis90/simben $ chmod +x dickens101
/home/cis90/simben $ dickens101
```

```
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,
for ever and ever. Father is so much kinder than he used to be, that
home's like Heaven! He spoke so gently to me one dear night when I
was going to bed, that I was not afraid to ask him once more if you
might come home; and he said Yes, you should; and sent me in a coach to
bring you. And you're to be a man!" said the child, opening her eyes,
"and are never to come back here; but first, we're to be together all
the Christmas long, and have the merriest time in all the world."
```

```
/home/cis90/simben $
```

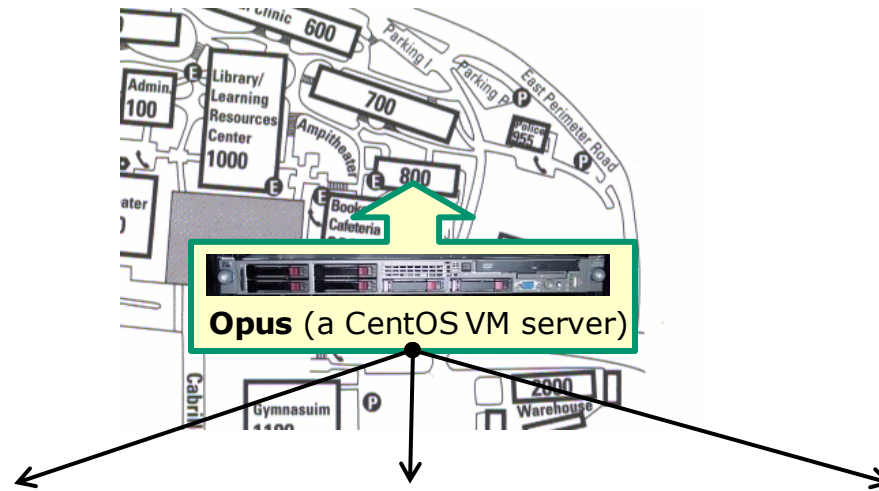
*Now we have a one-line script to print the block of text containing the quote*



# File transfer continued

# File Transfer

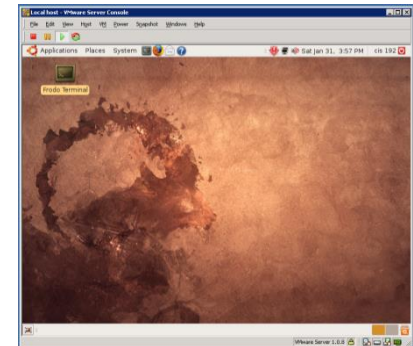
Downloading your Opus files to your home computer



Windows



Mac



Linux

## First, let's backup your home directory on Opus

```
/home/cis90/simben $ tar czf simben90.tgz .  
tar: .: file changed as we read it
```

*The tarball (archive) simben90.tgz is created. The tarball does not include itself. The error message warns the directory changed during backup (new tarball added).*

```
/home/cis90/simben $ ls -lh simben90.tgz  
-rw-rw-r--. 1 simben90 cis90 79K May 10 16:11 simben90.tgz
```

*The -h (human readable) option shows the simben90.tgz tarball is 79K bytes in size*

```
/home/cis90/simben $ tar tzf simben90.tgz | wc -l  
197
```

*197 files were backed up*



Next, let's look at some file transfer tools

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

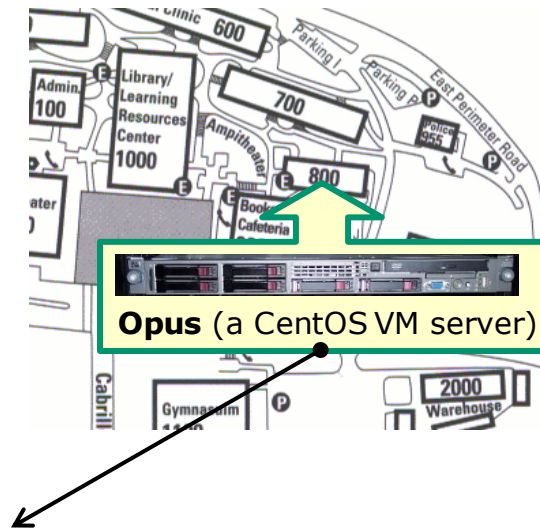


# File Transfer To Windows

## FileZilla

# File Transfer

Downloading your Opus files to your home computer



Windows

Using  FileZilla

# File Transfer

<http://filezilla-project.org>

Rich's Cabrillo College CIS x CIS 90 - Spring 2016 - Cal x Google Image Result for x FileZilla - Client Download x

[https://filezilla-project.org/download.php?show\\_all=1](https://filezilla-project.org/download.php?show_all=1)

## FileZilla

The free FTP solution

Home

- FileZilla
  - Features
  - Screenshots
  - Download
  - Documentation
- FileZilla Server
  - Download
- Community
  - Forum
  - Project page
  - Wiki
- General
  - FAQ
  - Contact
  - License
  - Privacy Policy
- Development
  - Source code
  - Nightly builds
  - Translations
  - Version history
  - Changelog
  - Issue tracker
- Other projects
  - libfilezilla
  - Octochess

**Client Download**

The latest stable version of FileZilla Client is 3.17.0.1

Please select the file appropriate for your platform below.

- Windows (64bit)**
  - [FileZilla\\_3.17.0.1\\_win64-setup.exe](#) (recommended)
  - [FileZilla\\_3.17.0.1\\_win64.zip](#)

The 64bit versions of Windows Vista, 7, 8, 8.1 and 10 are supported.
- Windows (32bit)**
  - [FileZilla\\_3.17.0.1\\_win32-setup.exe](#) (recommended)
  - [FileZilla\\_3.17.0.1\\_win32.zip](#)

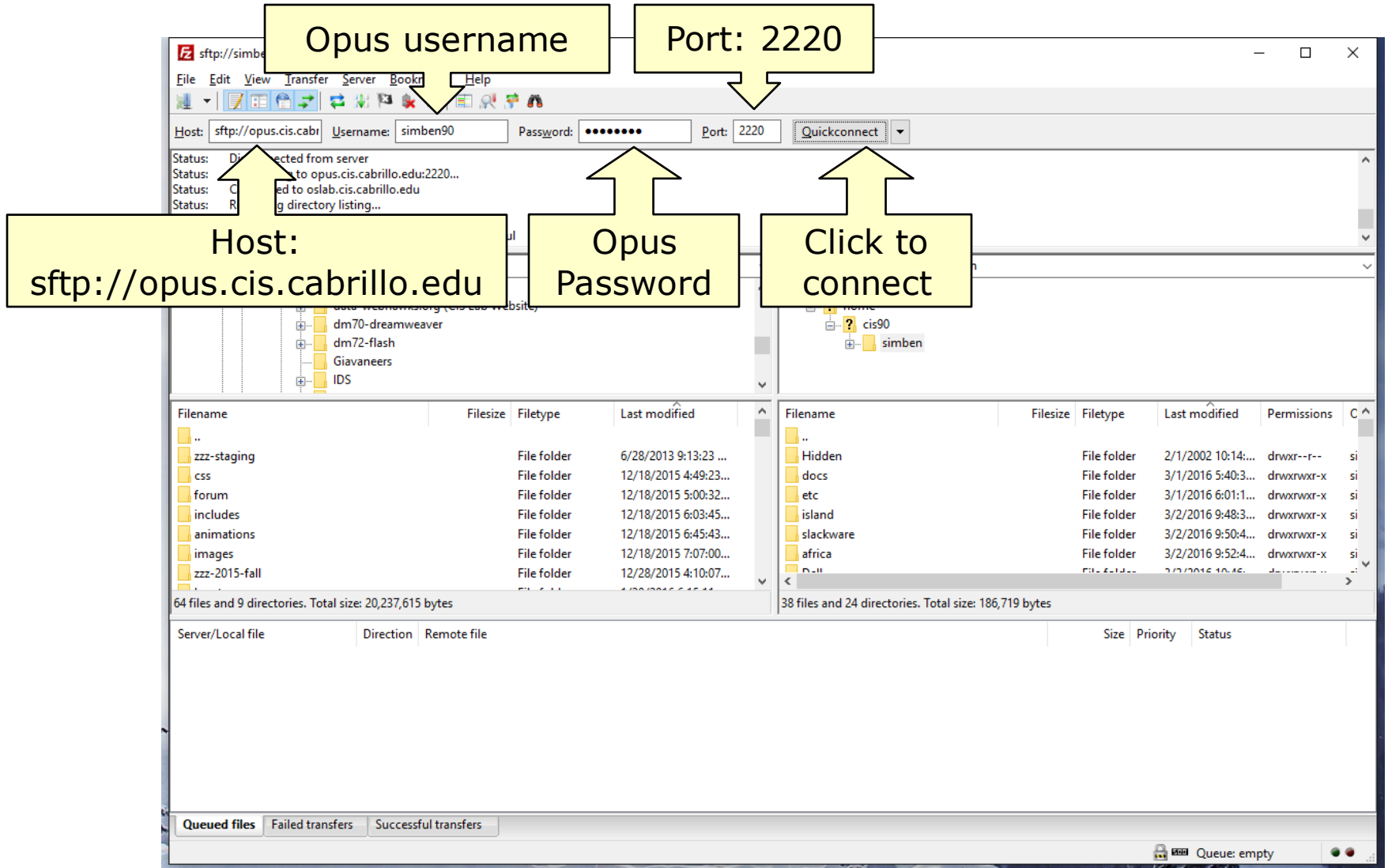
The 32bit versions of Windows Vista, 7, 8, 8.1 and 10 are supported.
- Linux**
  - [FileZilla\\_3.17.0.1\\_i586-linux-gnu.tar.bz2](#)
  - [FileZilla\\_3.17.0.1\\_x86\\_64-linux-gnu.tar.bz2](#)

Built for Debian 8.0 (Jessie). It is highly recommended to use the package management system of your distribution or to manually compile FileZilla if you are running a different flavour of Linux.
- Mac OS X**
  - [FileZilla\\_3.17.0.1\\_macosx-x86.app.tar.bz2](#)

PayPal

*Download and install FileZilla on your Windows PC*

## On Windows, connect to your account on Opus



The screenshot shows the FileZilla client interface with several yellow callout boxes providing instructions:

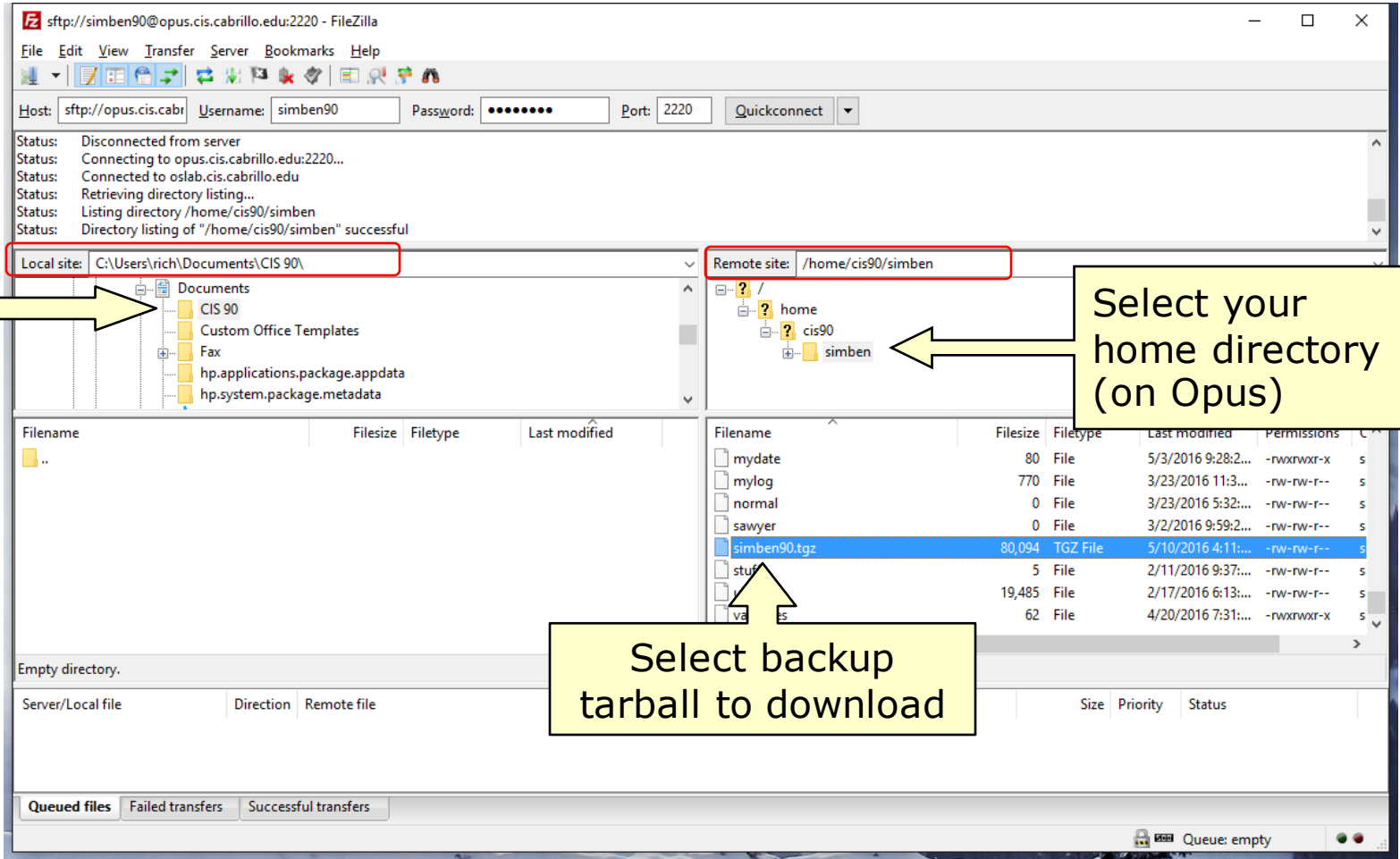
- Opus username**: Points to the Username field containing "simben90".
- Port: 2220**: Points to the Port field containing "2220".
- Host: sftp://opus.cis.cabrillo.edu**: Points to the Host field containing "sftp://opus.cis.cabrillo.edu".
- Opus Password**: Points to the Password field, which is masked with dots.
- Click to connect**: Points to the "Quickconnect" button.

The interface shows two local drives on the left and a remote directory structure on the right. The remote directory contains folders such as "Hidden", "docs", "etc", "island", "slackware", "africa", and "D-".

Server/Local file	Direction	Remote file	Size	Priority	Status

At the bottom, there are tabs for "Queued files", "Failed transfers", and "Successful transfers". The status bar at the very bottom indicates "Queue: empty".

## **Select destination and source directories**



The screenshot shows the FileZilla interface with the following details:

- Host:** sftp://opus.cis.cabri
- Username:** simben90
- Password:** [masked]
- Port:** 2220
- Local site:** C:\Users\rich\Documents\CIS 90\
- Remote site:** /home/cis90/simben

Local site file list:

Filename	Filesize	Filetype	Last modified
..			
Documents			
CIS 90			
Custom Office Templates			
Fax			
hp.applications.package.appdata			
hp.system.package.metadata			

Remote site file list:

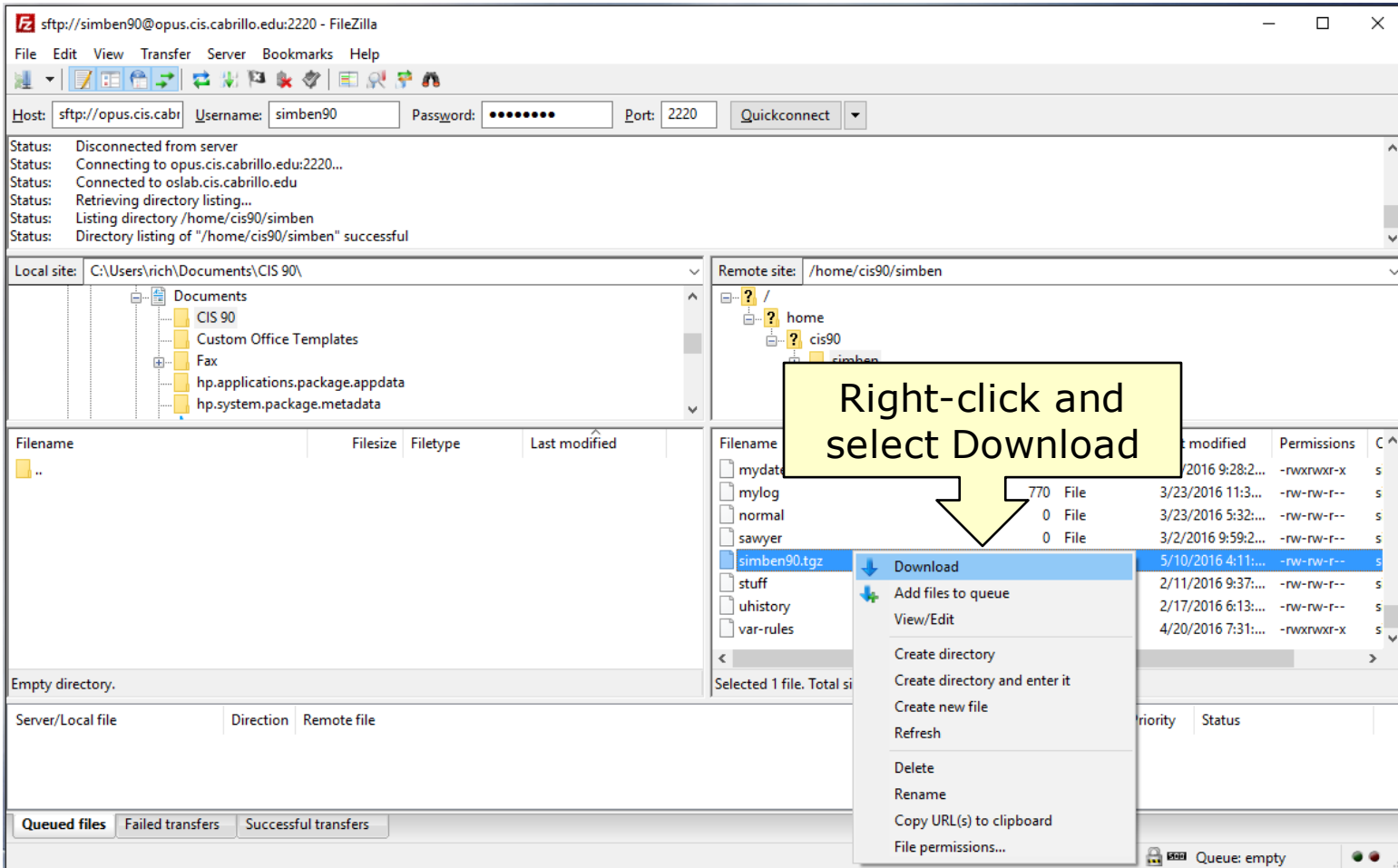
Filename	Filesize	Filetype	Last modified	Permissions
..				
home				
cis90				
simben				
mydate	80	File	5/3/2016 9:28:2...	-rwxrwxr-x
mylog	770	File	3/23/2016 11:3:...	-rw-rw-r--
normal	0	File	3/23/2016 5:32:...	-rw-rw-r--
sawyer	0	File	3/2/2016 9:59:2...	-rw-rw-r--
simben90.tgz	80,094	TGZ File	5/10/2016 4:11:...	-rw-rw-r--
stuf	5	File	2/11/2016 9:37:...	-rw-rw-r--
va	19,485	File	2/17/2016 6:13:...	-rw-rw-r--
es	62	File	4/20/2016 7:31:...	-rwxrwxr-x

Annotations:

- Create and select destination folder**: Points to the local site path.
- Select your home directory (on Opus)**: Points to the remote site path.
- Select backup tarball to download**: Points to the `simben90.tgz` file in the remote site list.

Select local Windows folder on the left and Opus file to download on the right

## FileZilla Initiate Download



The screenshot shows the FileZilla interface with the following details:

- Host:** sftp://opus.cis.cabrillo.edu:2220
- Username:** simben90
- Port:** 2220
- Local site:** C:\Users\rich\Documents\CIS 90\
- Remote site:** /home/cis90/simben

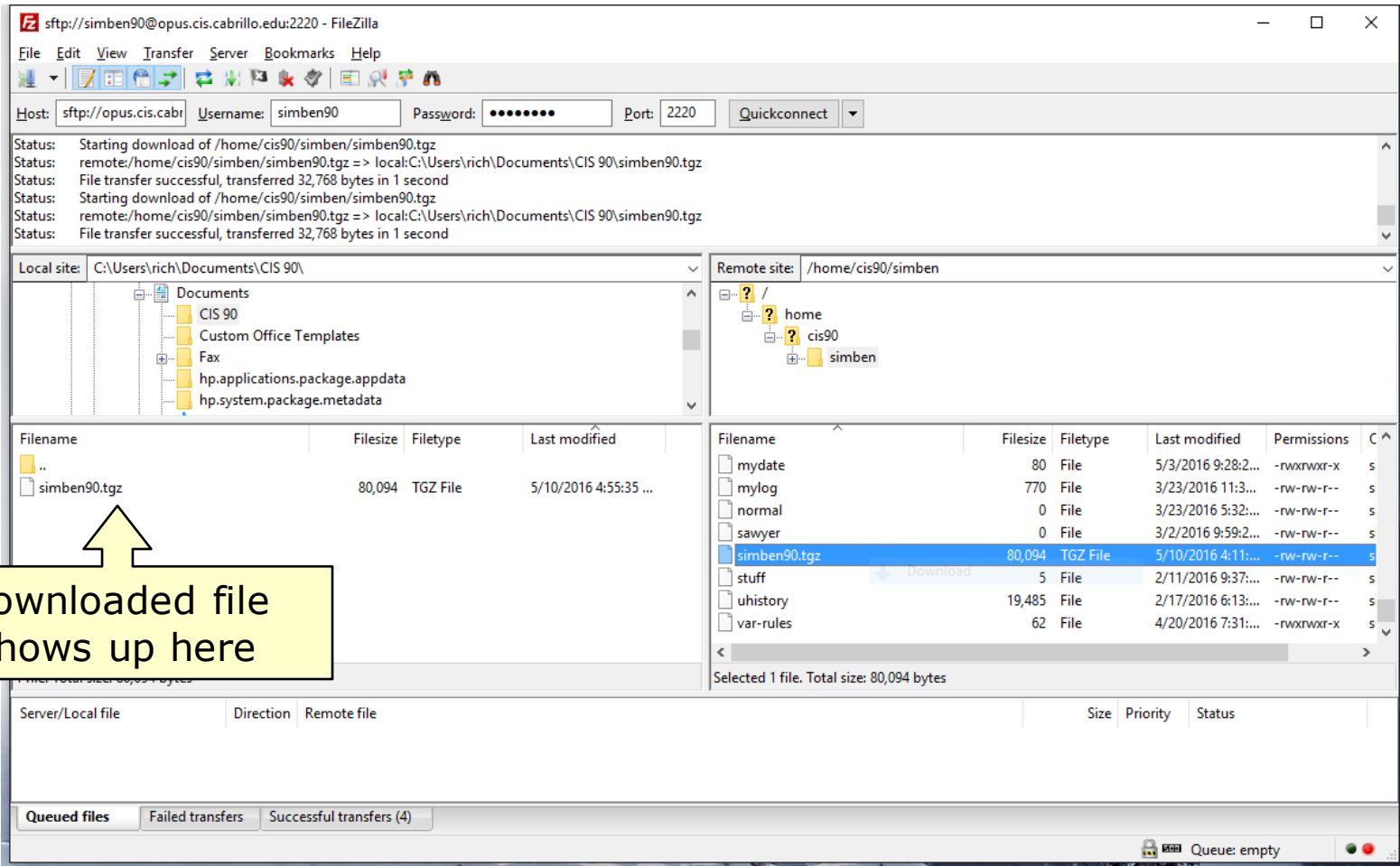
The remote site directory listing is as follows:

Filename	Filesize	Filetype	Last modified	Permissions
..				
mydat			5/10/2016 9:28:2...	-rwxrwxr-x
mylog	770	File	3/23/2016 11:3...	-rw-rw-r--
normal	0	File	3/23/2016 5:32:...	-rw-rw-r--
sawyer	0	File	3/2/2016 9:59:2...	-rw-rw-r--
simben90.tgz			5/10/2016 4:11:...	-rw-rw-r--
stuff			2/11/2016 9:37:...	-rw-rw-r--
uhistory			2/17/2016 6:13:...	-rw-rw-r--
var-rules			4/20/2016 7:31:...	-rwxrwxr-x

A yellow callout box with the text "Right-click and select Download" points to the context menu for the file `simben90.tgz`. The "Download" option is highlighted in blue.

At the bottom of the interface, the "Queued files" section shows "Queue: empty".

## FileZilla Monitor transfer progress



Host: sftp://opus.cis.cabrillo.edu:2220    Username: simben90    Password: .....    Port: 2220    Quickconnect

Status: Starting download of /home/cis90/simben/simben90.tgz  
 Status: remote:/home/cis90/simben/simben90.tgz => local:C:\Users\rich\Documents\CIS 90\simben90.tgz  
 Status: File transfer successful, transferred 32,768 bytes in 1 second  
 Status: Starting download of /home/cis90/simben/simben90.tgz  
 Status: remote:/home/cis90/simben/simben90.tgz => local:C:\Users\rich\Documents\CIS 90\simben90.tgz  
 Status: File transfer successful, transferred 32,768 bytes in 1 second

Local site: C:\Users\rich\Documents\CIS 90\

Filename	Filesize	Filetype	Last modified
..			
simben90.tgz	80,094	TGZ File	5/10/2016 4:55:35 ...

Remote site: /home/cis90/simben

Filename	Filesize	Filetype	Last modified	Permissions
mydate	80	File	5/3/2016 9:28:2...	-rwxrwxr-x
mylog	770	File	3/23/2016 11:3:...	-rw-rw-r--
normal	0	File	3/23/2016 5:32:...	-rw-rw-r--
sawyer	0	File	3/2/2016 9:59:2...	-rw-rw-r--
simben90.tgz	80,094	TGZ File	5/10/2016 4:11:...	-rw-rw-r--
stuff	5	File	2/11/2016 9:37:...	-rw-rw-r--
uhistory	19,485	File	2/17/2016 6:13:...	-rw-rw-r--
var-rules	62	File	4/20/2016 7:31:...	-rwxrwxr-x

Selected 1 file. Total size: 80,094 bytes

Server/Local file    Direction    Remote file    Size    Priority    Status

Queued files    Failed transfers    Successful transfers (4)

Queue: empty

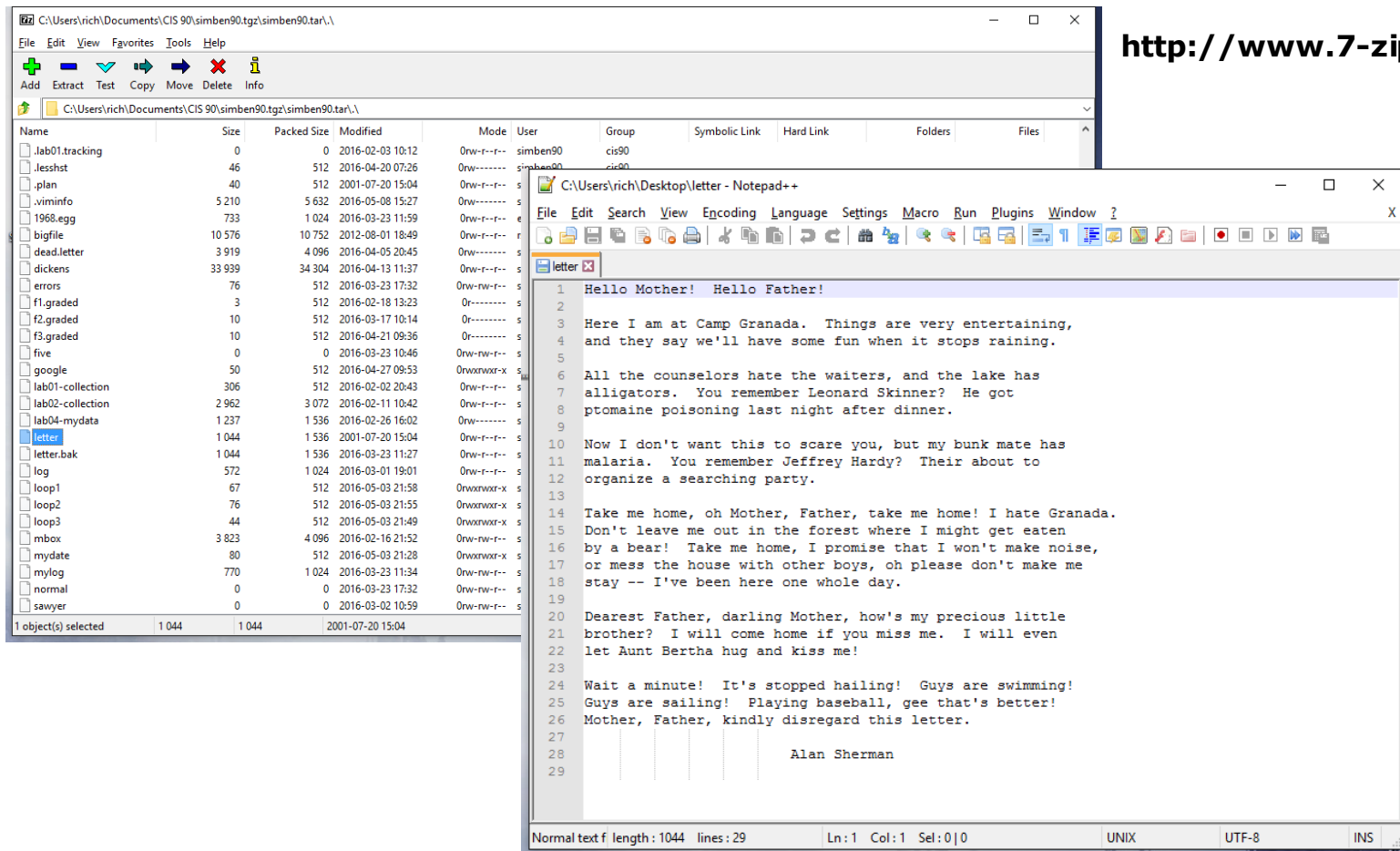
Downloaded file  
shows up here



## FileZilla File transfers

You can use 7-zip to view or extract files from the archive

<http://www.7-zip.org/>



The screenshot shows two windows. The top window is FileZilla, displaying a file list for the local path C:\Users\rich\Documents\CIS 90\simben90.tgz\simben90.tar\.

Name	Size	Packed Size	Modified	Mode	User	Group	Symbolic Link	Hard Link	Folders	Files
lab01.tracking	0	0	2016-02-03 10:12	Orw-r--r--	simben90	cis90				
leshst	46	512	2016-04-20 07:26	Orw-r--r--	simben90	cis90				
splan	40	512	2001-07-20 15:04	Orw-r--r--	s					
viminfo	5 210	5 632	2016-05-08 15:27	Orw-r--r--	s					
1968.egg	733	1 024	2016-03-23 11:59	Orw-r--r--	e					
bigfile	10 576	10 752	2012-08-01 18:49	Orw-r--r--	r					
dead.letter	3 919	4 096	2016-04-05 20:45	Orw-r--r--	s					
dickens	33 939	34 304	2016-04-13 11:37	Orw-r--r--	s					
errors	76	512	2016-03-23 17:32	Orw-rw-r-x	s					
f1.graded	3	512	2016-02-18 13:23	Or-----	s					
f2.graded	10	512	2016-03-17 10:14	Or-----	s					
f3.graded	10	512	2016-04-21 09:36	Or-----	s					
five	0	0	2016-03-23 10:46	Orw-rw-r-x	s					
google	50	512	2016-04-27 09:53	Orwxrwxr-x	s					
lab01-collection	306	512	2016-02-02 20:43	Orw-r--r--	s					
lab02-collection	2 962	3 072	2016-02-11 10:42	Orw-r--r--	s					
lab04-mydata	1 237	1 536	2016-02-26 16:02	Orw-r--r--	s					
letter	1 044	1 536	2001-07-20 15:04	Orw-r--r--	s					
letter.bak	1 044	1 536	2016-03-23 11:27	Orw-r--r--	s					
log	572	1 024	2016-03-01 19:01	Orw-r--r--	s					
loop1	67	512	2016-05-03 21:58	Orwxrwxr-x	s					
loop2	76	512	2016-05-03 21:55	Orwxrwxr-x	s					
loop3	44	512	2016-05-03 21:49	Orwxrwxr-x	s					
mbox	3 823	4 096	2016-02-16 21:52	Orw-rw-r-x	s					
mydate	80	512	2016-05-03 21:28	Orwxrwxr-x	s					
mylog	770	1 024	2016-03-23 11:34	Orw-rw-r--	s					
normal	0	0	2016-03-23 17:32	Orw-rw-r--	s					
sawyer	0	0	2016-03-02 10:59	Orw-rw-r--	s					

The bottom window is Notepad++ showing the contents of the selected file 'letter':

```

1 Hello Mother! Hello Father!
2
3 Here I am at Camp Granada. Things are very entertaining,
4 and they say we'll have some fun when it stops raining.
5
6 All the counselors hate the waiters, and the lake has
7 alligators. You remember Leonard Skinner? He got
8 ptomaine poisoning last night after dinner.
9
10 Now I don't want this to scare you, but my bunk mate has
11 malaria. You remember Jeffrey Hardy? Their about to
12 organize a searching party.
13
14 Take me home, oh Mother, Father, take me home! I hate Granada.
15 Don't leave me out in the forest where I might get eaten
16 by a bear! Take me home, I promise that I won't make noise,
17 or mess the house with other boys, oh please don't make me
18 stay -- I've been here one whole day.
19
20 Dearest Father, darling Mother, how's my precious little
21 brother? I will come home if you miss me. I will even
22 let Aunt Bertha hug and kiss me!
23
24 Wait a minute! It's stopped hailing! Guys are swimming!
25 Guys are sailing! Playing baseball, gee that's better!
26 Mother, Father, kindly disregard this letter.
27
28
29 Alan Sherman
  
```

At the bottom of the Notepad++ window, it shows: Normal text f length: 1044 lines: 29 Ln: 1 Col: 1 Sel: 0 | 0 UNIX UTF-8 INS



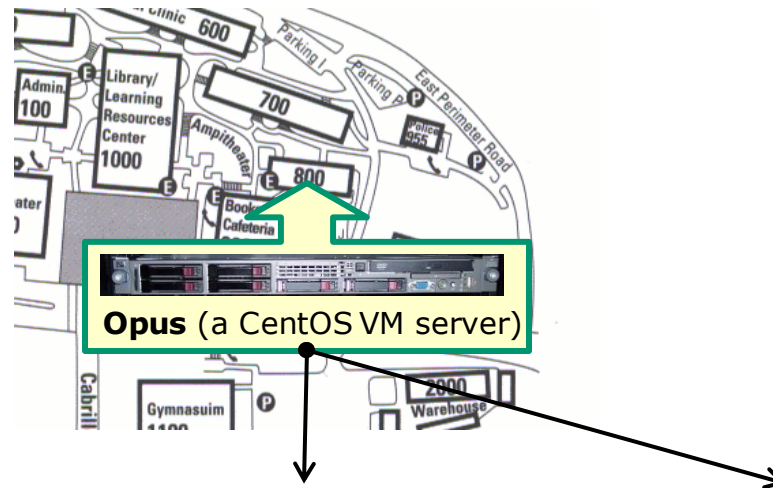
# File Transfer

## Linux or Mac

scp

# File Transfer

Downloading your Opus files to your home computer



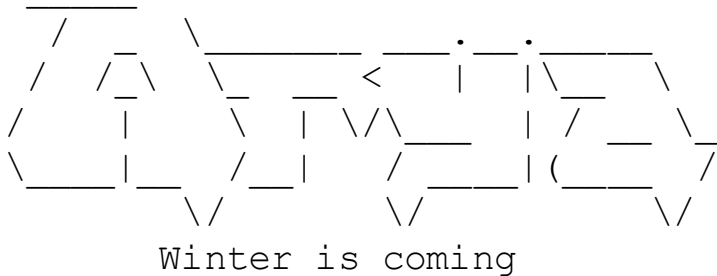
Mac



Linux

# File Transfer

Downloading your Opus files to your Linux system



```
Last login: Tue May 10 16:58:45 2016 from opus.cis.cabrillo.edu
cis90@Arya-03:~$ mkdir cis90
cis90@Arya-03:~$ cd cis90
cis90@Arya-03:~/cis90$ scp -P 2220 simben90@opus.cis.cabrillo.edu:simben90.tgz .
simben90@opus.cis.cabrillo.edu's password:
simben90.tgz                                100% 78KB 78.2KB/s 00:00
cis90@Arya-03:~/cis90$
```

*Use the scp command on Linux or Mac to download the tarball on Opus*

# File Transfer

Extracting files from your backup tarball on your Linux VM

```

cis90@Arya-03:~/cis90$ tar xzf simben90.tgz
cis90@Arya-03:~/cis90$ ls
1968.egg      debian      f2.graded  L7-fun      loop2       sawyer
africa       Dell       f3.graded  lab01-collection  loop3       simben90.tgz
Apple        dickens    five       lab02-collection  mbox        slackware
basket       Directory3 fun        lab04-mydata    misc        stuff
bigfile      docs      google     lesson7      mydate      uhistory
bin          edits     Hidden    letter       mylog       var-rules
cis90_html  errors    HP        letter.bak    normal
class       etc       island    log          poems
dead.letter  f1.graded jobs      loop1       redhat
cis90@Arya-03:~/cis90$

```

*Use the tar command on Linux or Mac to extract the files*

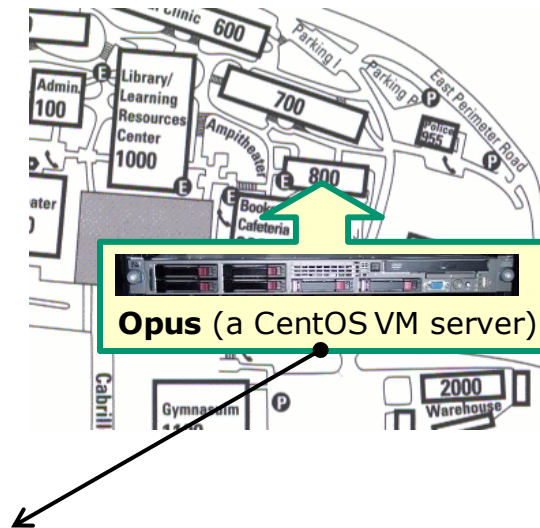


# File Transfer To Windows

## PSCP

# File Transfer

Downloading your Opus files to your home computer



*Using PSCP*

Windows

# PSCP (Putty SCP) Downloading

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

**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:	<a href="#">putty.exe</a>	<a href="#">(or by FTP)</a>	<a href="#">(RSA sig)</a>	<a href="#">(DSA sig)</a>
PuTTYtel:	<a href="#">puttytel.exe</a>	<a href="#">(or by FTP)</a>	<a href="#">(RSA sig)</a>	<a href="#">(DSA sig)</a>
<b>PSCP:</b>	<b><a href="#">pscp.exe</a></b>	<a href="#">(or by FTP)</a>	<a href="#">(RSA sig)</a>	<a href="#">(DSA sig)</a>
PSFTP:	<a href="#">psftp.exe</a>	<a href="#">(or by FTP)</a>	<a href="#">(RSA sig)</a>	<a href="#">(DSA sig)</a>

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



# PSCP

**PSCP** syntax follows **scp** command syntax

`pscp -P 2220 simben90@opus.cis.Cabrillo.edu:simben90.tgz .`

*Backup file  
to copy*

*Destination is  
"here" (the  
current local  
directory)*

```
Command Prompt
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\rich>cd Documents
C:\Users\rich\Documents>cd "CIS 90"
C:\Users\rich\Documents\CIS 90>pscp -P 2220 simben90@opus.cis.cabrillo.edu:simben90.tgz .
simben90@opus.cis.cabrillo.edu's password:
simben90.tgz          | 78 kB | 78.2 kB/s | ETA: 00:00:00 | 100%

C:\Users\rich\Documents\CIS 90>dir
Volume in drive C is Windows
Volume Serial Number is BED2-0FE4

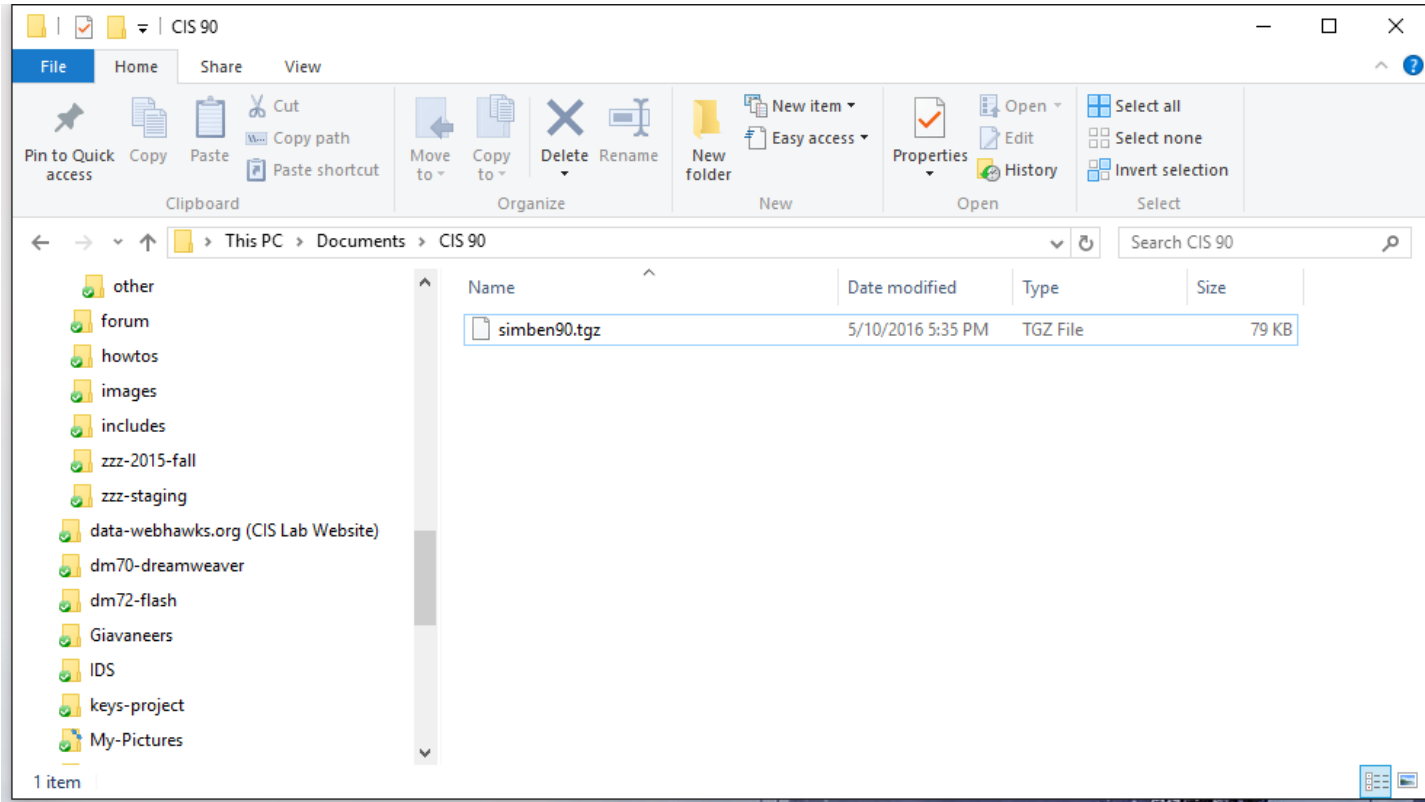
Directory of C:\Users\rich\Documents\CIS 90

05/10/2016  05:35 PM    <DIR>          .
05/10/2016  05:35 PM    <DIR>          ..
05/10/2016  05:35 PM                80,094 simben90.tgz
               1 File(s)                80,094 bytes
               2 Dir(s)  94,341,988,352 bytes free

C:\Users\rich\Documents\CIS 90>
```

# PSCP

Your CIS 90 backup file is now on Windows



*Tarball (archive) copied from Opus to home Windows system*



# Compressed Archives

gzip and gunzip  
tar -z option

## gzip and gunzip commands

```
/home/cis90/simben $ ls -l simben90.tar
-rw-rw-r--. 1 simben90 cis90 1751040 Dec 10 07:57 simben90.tar
```

*Uncompressed  
archive file*

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

```
/home/cis90/simben $ gzip simben90.tar
/home/cis90/simben $ ls -l simben90.tar.gz
-rw-rw-r--. 1 simben90 cis90 440895 Dec 10 07:57 simben90.tar.gz
```

*Compressed  
archive file*

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

```
/home/cis90/simben $ gunzip simben90.tar.gz
/home/cis90/simben $ ls -l simben90.tar
-rw-rw-r--. 1 simben90 cis90 1751040 Dec 10 07:57 simben90.tar
```

*Use gzip and gunzip to compress and un-compress regular tar files.*

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

## tar -z option

```
/home/cis90/simben $ tar cf simben90.tar .
tar: ./Hidden: Cannot open: Permission denied
tar: ./simben90.tar: file is the archive; not dumped
tar: ./newer: Cannot open: Permission denied
tar: Exiting with failure status due to previous errors
```

*New tarball is  
NOT compressed.*

```
/home/cis90/simben $ ls -l simben90.tar
-rw-rw----. 1 simben90 cis90 768000 Dec  9 07:52 simben90.tar
/home/cis90/simben $
```

```
/home/cis90/simben $ rm simben90.tar
rm: remove regular file `simben90.tar'? y
```

```
/home/cis90/simben $ tar czf simben90.tar.gz .
tar: ./Hidden: Cannot open: Permission denied
tar: ./newer: Cannot open: Permission denied
tar: Exiting with failure status due to previous errors
```

*New tarball  
IS compressed.*

```
/home/cis90/simben $ ls -l simben90.tar.gz
-rw-rw----. 1 simben90 cis90 158724 Dec  9 07:51 simben90.tar.gz
```

*Use the z option to compress files when creating the tarball*

## tar -z option

```
/home/cis90/simben $ tar tvzf simben90.tar.gz | head
drwxr-xr-x simben90/cis90      0 2014-12-09 07:58 ./
-r----- simben90/staff 1111 2014-10-15 10:09 ./lab05.graded
-rw-r--r-- simben90/cis90    22 2014-10-21 09:25 ./names
-rw-r--r-- simben90/cis90    70 2014-11-02 17:12 ./bigshell
-r----- simben90/staff 1276 2014-09-17 10:28 ./lab02.graded
-rw----- simben90/root    410 2014-11-24 07:44 ./bash_profile.fq
-rw----- simben90/cis90 5146 2014-12-08 19:10 ./viminfo
-rw----- simben90/cis90   406 2014-11-20 11:49 ./bash_profile.bug
drwx--x--- simben90/cis90    0 2014-10-28 15:48 ./class/
dr-x-wx--- simben90/users    0 2014-10-28 15:48 ./class/labs/
/home/cis90/simben $
```

*Using the z option when extracting or viewing compressed tar files*

## .tar.gz vs .tgz

```
/home/cis90/simben $ tar czf simben90.tar.gz .  
tar: ./Hidden: Cannot open: Permission denied  
tar: .: file changed as we read it  
tar: Exiting with failure status due to previous errors  
/home/cis90/simben $ ls -l simben90.tar.gz  
-rw-rw-r--. 1 simben90 cis90 147319 May 12 20:01 simben90.tar.gz  
/home/cis90/simben $ rm simben90.tar.gz
```

```
/home/cis90/simben $ tar czf simben90.tgz .  
tar: ./Hidden: Cannot open: Permission denied  
tar: .: file changed as we read it  
tar: Exiting with failure status due to previous errors  
/home/cis90/simben $ ls -l simben90.tgz  
-rw-rw-r--. 1 simben90 cis90 147319 May 12 20:01 simben90.tgz  
/home/cis90/simben $ rm simben90.tgz
```

*The usage of .tgz and .tar.gz suffixes are equivalent and both indicate the tarball (archive) was compressed*



# Make your own Opus



```
simben90@oslab:~  
login as: simben90  
simben90@oslab.cis.cabrillo.edu's password:  
Last login: Tue Apr 12 10:40:50 2016 from c-71-198-219-50.hsd1.ca.comcast.net  
  
      ( 'v' )  
     \/---\/  
    ( \_=_/ )  
     ~ ~ ~  
      Welcome to Opus  
      Serving Cabrillo College  
  
Terminal type? [xterm]  
Terminal type is xterm.  
/home/cis90/simben $ cat /etc/*-release  
CentOS release 6.7 (Final)  
LSB_VERSION=base-4.0-ia32:base-4.0-noarch:core-4.0-ia32:core-4.0-noarch:graphics-4.0-ia32:graphics-4.0-noarch:printing-4.0-ia32:printing-4.0-noarch  
CentOS release 6.7 (Final)  
CentOS release 6.7 (Final)  
/home/cis90/simben $ █
```

*Opus is a CentOS 6.7 Linux system*

# Ingredients

**To make your own Opus at home you will need to purchase the following items for 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)
  - For Linux
    - VirtualBox ... price: \$0.00

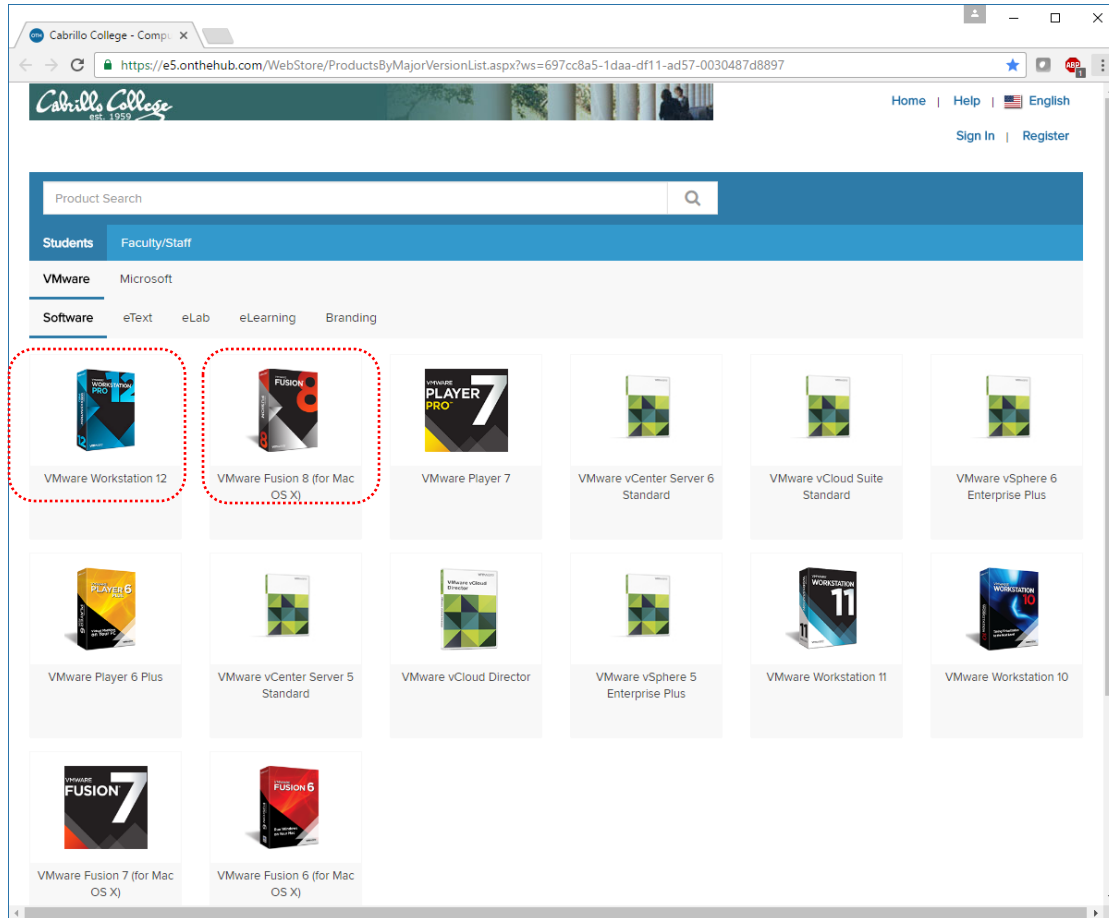
The screenshot shows a web browser window with the URL [simms-teach.com/resources.php](http://simms-teach.com/resources.php). The navigation menu includes Home, Resources (highlighted), Forums, CIS Lab, and Blackboard. The main content area is titled 'Links' and is organized into several columns:

- Instructors:**
  - Programming Master Ed
  - Network Master Gerlinde
  - Programming Master Jeffrey
  - Linux Master Jim
  - Web Master John
  - Systems Master Michael
  - Hardware Master Marcelo
  - Network Master Rick
  - Programming Master Steve
- Getting Linux/UNIX:**
  - Linux ISOs** (highlighted)
  - Kernels
  - RPMs (rpmfind)
  - RPMs (pbone)
  - OpenSolaris
- Tools and Software:**
  - Apache
  - Bastille
  - CoRD
  - cygwin
  - DOS boot disks
  - Dynamips/Dynagen
  - John the Ripper
  - Netfilter
  - Putty SSH Tools
  - Quagga routing suite
  - Tripwire
  - Wireshark
- Academic Software for CIS Students:**
  - Microsoft Webstore
  - VMware Webstore** (highlighted)
- Virtualization:**
  - VirtualBox** (highlighted)
  - VMware ESXi and vSphere client
- Standards:**
- Commands:**
  - Practical
  - Command Directory
  - Useful
  - vi summary
  - vi cheat sheet
- Howtos:**
  - HowtoForge
  - email
  - DNS
  - Ethernet (NIC drivers)
  - NFS
  - NIS
  - PPP
  - Putty SSH Keys
  - Using sed
- Student Howtos:**
  - Logging into Opus from a Mac by Laura Sreckovic and updated by Ann Pike
  - Monitor Script by Sean Callahan
  - WiFi Penetration by Ryan Schell
  - Logging into Opus from a Mac by Laura Sreckovic
  - LDAP Implementation by Tim Childers
  - Install and DualBoot into Microsoft Windows 7 and Linux Ubuntu by Richie Fou

On the left sidebar, there are links for Login, Flashcards, Admin, CIS 90 Previous Classes, 11 days till term ends!, Cabrillo College Web Advisor, Commands and Files, VLab RDP file, CIS 90 VLab VM Assignments, RIP Dennis Ritchie, and Opus Status: UP.

*Shopping for the ingredients*

## VMware Workstation (Windows) or Fusion (Mac)





# Vmware Workstaton

Rich's Cabrillo College CIS Classes Resources

Home Resources Forums CIS Lab Canvas

Login  
Flashcards  
Admin

CIS 90  
Previous Terms

11 days till term ends!

Cabrillo College  
Web Advisor  
Blackboard  
Commands and Files

Enter VLab

CIS 90 VLab VM Assignments

RIP Dennis Ritchie

Opus Status: UP

Links

**Instructors**

- Ed
- Gerlinde
- Jeffrey
- Jim
- John
- Michael
- Marcelo
- Rick
- Steve

**Departments**

- CNSA
- CIS
- CS

**Crib Sheets**

- Ollie Wright (CIS 90)

**Documentation**

- TLDP
- LINFO
- UNIX Rosetta Stone

**Animations**

- Linux network technologies

**Getting Linux/UNIX**

- Linux ISOs
- kernels
- RPMs (rpmfind)
- RPMs (pbone)

**Tools and Software**

- Apache
- Bastille
- CoRD
- cvqwin
- DOS boot disks
- GNS3
- John the Ripper
- Netfilter
- Putty SSH Tools
- Quagga routing suite
- Tripwire
- Wireshark

**Academic Software for CIS Students**

- Microsoft Webstore
- VMware Webstore

**Virtualization**

- VirtualBox
- VMware ESXi and vSphere client

**Standards**

- IEEE
- IETF (RFCs)

**Academies**

- Cisco NetSpace

**Commands**

- Practical
- Command Directory
- vi summary
- vi cheat sheet
- Using sed

**Regular Expressions**

- Regular Expressions (Goyvaerts)
- Regular Expressions (Salo)

**Howtos**

- HowtoForge
- DNS
- Ethernet (NIC drivers)
- NFS
- NIS
- PPP
- Putty SSH Keys

**Student Howtos**

- Replacing a MacBook Pro Hard Drive by Amr Sorour
- Logging into Opus from a Mac by Laura Sreckovic and updated by Ann Pike
- Monitor Script by Sean Callahan
- WiFi Penetration by Ryan Schell
- Logging into Opus from a Mac by Laura Sreckovic
- LDAP Implementation by Tim Childers
- Install and DualBoot into Microsoft Windows 7 and Linux Ubuntu by Richie Fou

The screenshot shows a web browser window with the URL [iso.linuxquestions.org](http://iso.linuxquestions.org). The page features a navigation menu on the left with sections like "LQ ISOs", "Search", "Need Help?", "Sponsored Links", "Statistics", and "LQ Job Board". A central banner for "VM TURBO" offers a "FREE VIRTUAL MONITOR" for various operating systems. The main content area includes a "Welcome to LQ ISO" message, a search bar, and a list of "15 Latest Linux Distribution Releases". The "CentOS" entry in the "Popular Linux Distributions" list is highlighted with a red box. A download bar at the bottom shows two CentOS ISO files.

LinuxQuestions.org

LinuxQuestions.org > ISOs

**LQ ISOs**

- Search
- Alphabetical List
- Latest Releases
- Release Notification
- Suggest Additions

**Search**

**Need Help?**

- Downloading ISOs
- Burning ISOs

**Sponsored Links**

- Ubuntu
- Wireless Network
- Open Office
- Download For Linux
- GNU/Linux
- Install Windows
- Laptop Deals

**Statistics**

**Distros:** 479  
**Versions:** 3069  
**Mirrors:** 1895  
**Downloads:** 75,493,145

**LQ Job Board**

**Jobs**

Linux Kernel

**Welcome to LQ ISO**

**\$0.26/Mbps IP Transit**  
Global Internet Backbone IPv6+IPv4 and BGP For Your Network

Welcome to LQ [ISO](#)

This site is designed to meet all of your Linux distribution [download](#) needs, including searching for fast [mirrors](#), receiving email updates when new versions of your favorite distributions are released and reading reviews. If you do not see the distribution you are looking for below, you can view the complete alphabetical list. Please let us know if you have any suggestions.

If you find the site useful, you can help spread the word by telling 10 friends the URL (<http://www.lqiso.org/>). Thanks.

**15 Latest Linux Distribution Releases**

1. [gNewSense 4.0](#)
2. [Simplicity Linux 16.04](#)
3. [4MLinux 17.0](#)
4. [Voyager Live 16.04](#)
5. [GParted Live 0.26.0-1](#)
6. [SparkyLinux 4.3](#)
7. [Proxmox 4.2 "Virtual Environment"](#)
8. [Ubuntu GNOME 16.04](#)
9. [Black Lab Linux 7.6](#)
10. [Tails 2.3](#)
11. [Slackel 6.0.5 "Openbox"](#)
12. [Mythbuntu 16.04](#)
13. [KaOS 2016.04](#)
14. [OpenIndiana 2016.04](#)
15. [Ubuntu Kylin 16.04](#)

**Popular Linux Distributions**

- [Ubuntu](#)
- [Fedora](#)
- [Linux Mint](#)
- [openSUSE](#)
- [PCLinuxOS](#)
- [Debian](#)
- [Mageia](#)
- [Slackware](#)
- [Puppy](#)
- [Arch](#)
- [MEPIS](#)

View by Topic: [Desktop](#), [Server](#), [Security](#), [Mobile](#), [Live](#), [Firewall](#), [Rescue](#)

**15 Most Downloaded Distribution Versions (last 30 Days)**

**15 Most Downloaded Distributions (Ever)**

**Main Menu**

- Linux Forums
- Android Forum
- Chrome OS Forum
- Linux HCL
- Linux Tutorials
- Linux Wiki
- Distro Reviews
- Book Reviews

**Ad**

VM TURBO

FREE VIRTUAL MONITOR  
ESXi() - HYPER-V - XENSERVER - RED HAT

CentOS-7-x86\_64-Mi...iso  
CentOS-7-x86\_64-Mi...iso  
Canceled

Show all downloads...

The screenshot shows the website [iso.linuxquestions.org/centos/](http://iso.linuxquestions.org/centos/). The page features a navigation menu on the left, a main content area with a SoftLayer Cloud advertisement and a list of CentOS versions, and a sidebar with a main menu and sponsored links.

**LinuxQuestions.org** [LinuxQuestions.org](#) > [ISOs](#) > CentOS

**LQ ISOs**

- Search
- Alphabetical List
- Latest Releases
- Release Notification
- Suggest Additions

**Search**

**Need Help?**

- Downloading ISOs
- Burning ISOs

**Sponsored Links**

- Red Hat Enterprise Linux
- Linux Enterprise Server
- Red Hat Linux
- Linux Laptops
- Linux Server
- Linux Software
- GNU/Linux

**Statistics**

**Distros:** 479  
**Versions:** 3069  
**Mirrors:** 1895  
**Downloads:** 75,524,703

**LQ Job Board**

**34 versions of CentOS available**

**SoftLayer® Cloud**  
 We Provide the Highest Level of Transparency & Control for Cloud.

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 vendors redistribution policy and aims to be 100% binary [compatible](#). (CentOS mainly changes [packages](#) to remove upstream vendor branding and artwork.)

**Related Links:** [CentOS Forum](#), [CentOS Reviews](#), [Official website](#)

Would you like to [receive an email](#) when a new [version](#) of CentOS is released? If so then [click here](#).

<a href="#">CentOS 7-1511</a>	<a href="#">Review CentOS 7-1511</a>	1 isos in 1 groups
<a href="#">CentOS 6.7</a>	<a href="#">Review CentOS 6.7</a>	7 isos in 4 groups
<a href="#">CentOS 6.6</a>	<a href="#">Review CentOS 6.6</a>	10 isos in 2 groups
<a href="#">CentOS 5.11</a>	<a href="#">Review CentOS 5.11</a>	10 isos in 2 groups
<a href="#">CentOS 7.0-1406</a>	<a href="#">Review CentOS 7.0-1406</a>	12 isos in 1 groups
<a href="#">CentOS 6.5</a>	<a href="#">Review CentOS 6.5</a>	18 isos in 2 groups
<a href="#">CentOS 5.10</a>	<a href="#">Review CentOS 5.10</a>	6 isos in 2 groups
<a href="#">CentOS 6.4</a>	<a href="#">Review CentOS 6.4</a>	10 isos in 2 groups
<a href="#">CentOS 5.9</a>	<a href="#">Review CentOS 5.9</a>	8 isos in 2 groups
<a href="#">CentOS 6.3</a>	<a href="#">Review CentOS 6.3</a>	10 isos in 2 groups

**Main Menu**

- Linux Forums
- Android Forum
- Chrome OS Forum
- Linux HCL
- Linux Tutorials
- Linux Wiki
- Distro Reviews
- Book Reviews

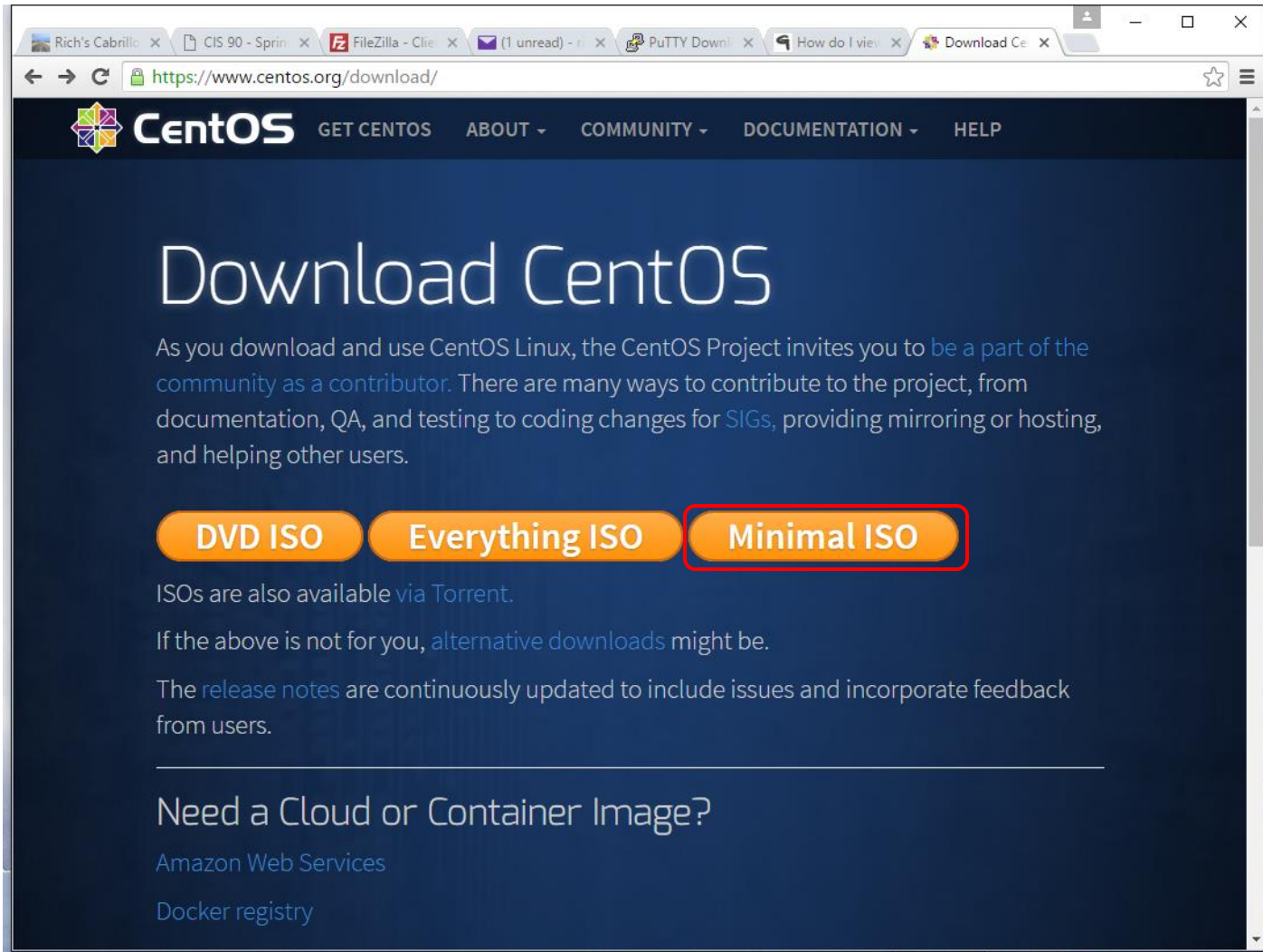
**Ad**

**GEARBEST**

- 41%
- 60%
- 54%
- \$4.66 **\$2.12** [Buy now](#)
- 41%
- 58%
- 54%
- 54%
- 50%
- 54%








The screenshot shows a web browser window with the URL <https://www.centos.org/download/>. The browser's address bar and several tabs are visible at the top. The page content includes the CentOS logo and navigation menu, a main heading 'Download CentOS', a paragraph about community contribution, three orange buttons for 'DVD ISO', 'Everything ISO', and 'Minimal ISO' (the latter is highlighted with a red box), and a section for cloud/container images with links to Amazon Web Services and Docker registry.

Rich's Cabrillo x CIS 90 - Sprin x FileZilla - Clie x (1 unread) - r x PuTTY Downl x How do I view x Download Ce x

<https://www.centos.org/download/>

 **CentOS** GET CENTOS ABOUT COMMUNITY DOCUMENTATION HELP

## Download CentOS

As you download and use CentOS Linux, the CentOS Project invites you to [be a part of the community as a contributor](#). There are many ways to contribute to the project, from documentation, QA, and testing to coding changes for [SIGs](#), providing mirroring or hosting, and helping other users.

[DVD ISO](#) [Everything ISO](#) [Minimal ISO](#)

ISOs are also available [via Torrent](#).

If the above is not for you, [alternative downloads](#) might be.

The [release notes](#) are continuously updated to include issues and incorporate feedback from users.

---


### Need a Cloud or Container Image?

[Amazon Web Services](#)

[Docker registry](#)

Rich's Cabrillo x CIS 90 - Sprin x FileZilla - Clie x (1 unread) - r x PuTTY Downl x How do I vie x CentOS Mirro x

← → ↻ | isoredirect.centos.org/centos/7/isos/x86\_64/CentOS-7-x86\_64-Minimal-1511.iso



## CentOS

**CentOS on the Web:** [CentOS.org](#) | [Mailing Lists](#) | [Mirror List](#) | [IRC](#) | [Forums](#) | [Bugs](#) | [Donate](#)

In order to conserve the limited bandwidth available .iso images are not downloadable from mirror.centos.org

The following mirrors should have the ISO images available:

[http://mirror.evolvedservers.com/CentOS/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.evolvedservers.com/CentOS/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.us.leaseweb.net/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.us.leaseweb.net/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.rackspace.com/CentOS/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.rackspace.com/CentOS/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://centos.mbni.med.umich.edu/mirror/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://centos.mbni.med.umich.edu/mirror/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.us.oneandone.net/linux/distributions/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.us.oneandone.net/linux/distributions/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.solarvps.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.solarvps.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirrors.advancedhosters.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirrors.advancedhosters.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.tzulo.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.tzulo.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://dallas.tx.mirror.xygenhosting.com/CentOS/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://dallas.tx.mirror.xygenhosting.com/CentOS/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.steadfast.net/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.steadfast.net/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirrors.arsc.edu/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirrors.arsc.edu/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.chpc.utah.edu/pub/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.chpc.utah.edu/pub/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.scalabledns.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.scalabledns.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://centos.mirrors.hoobly.com/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://centos.mirrors.hoobly.com/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://pubmirrors.dal.corespace.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://pubmirrors.dal.corespace.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.supremebytes.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.supremebytes.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirrors.centos.webair.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirrors.centos.webair.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.math.princeton.edu/pub/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.math.princeton.edu/pub/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://centos.mirrors.wvstateu.edu/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://centos.mirrors.wvstateu.edu/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirrors.usc.edu/pub/linux/distributions/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirrors.usc.edu/pub/linux/distributions/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirrors.cmich.edu/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirrors.cmich.edu/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://dist1.800hosting.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://dist1.800hosting.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirror.lax.hugeserver.com/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.lax.hugeserver.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

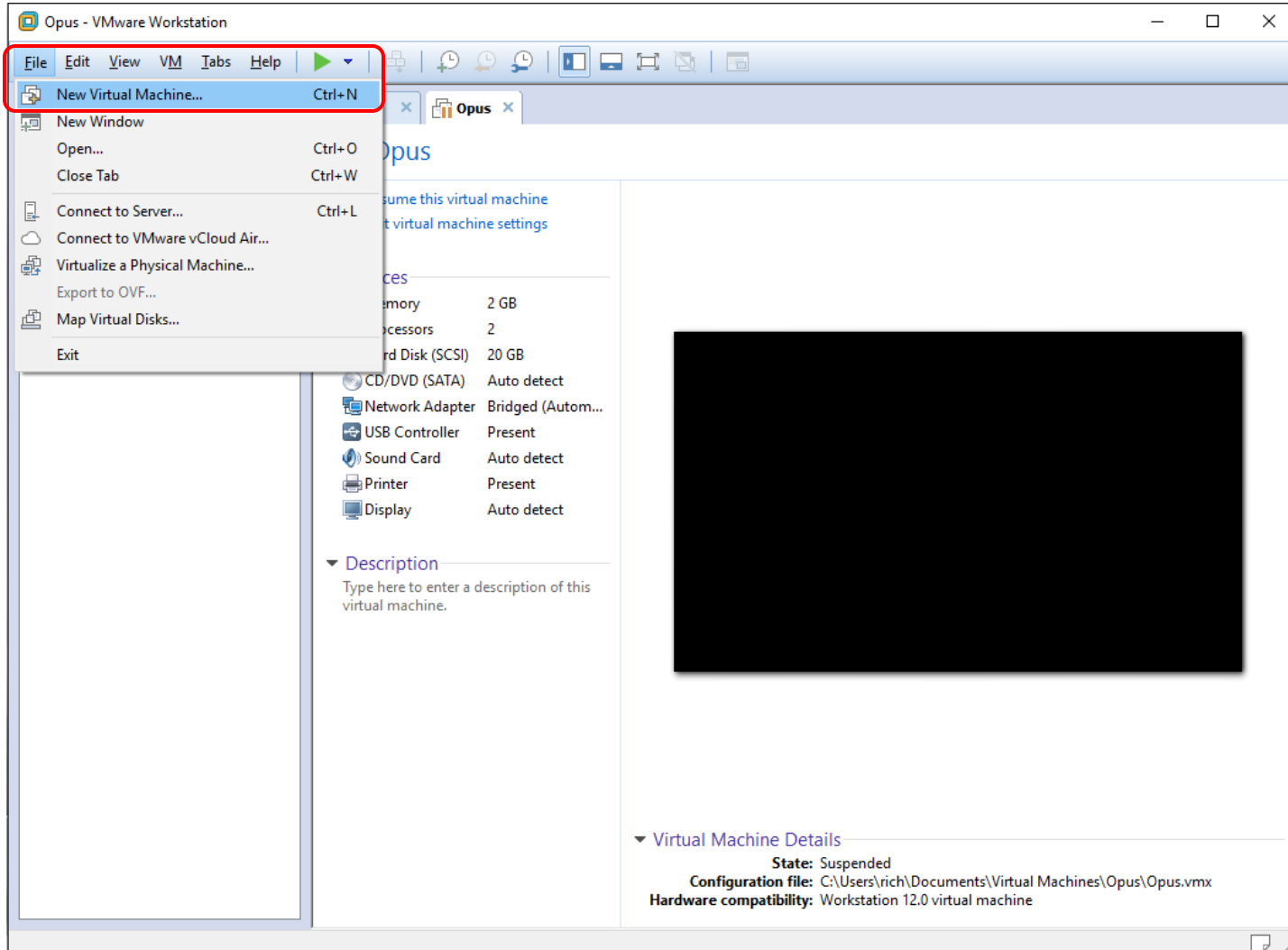
[http://mirror.vcu.edu/pub/gnu+linux/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.vcu.edu/pub/gnu+linux/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://centos-dist.1gserver.com/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://centos-dist.1gserver.com/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

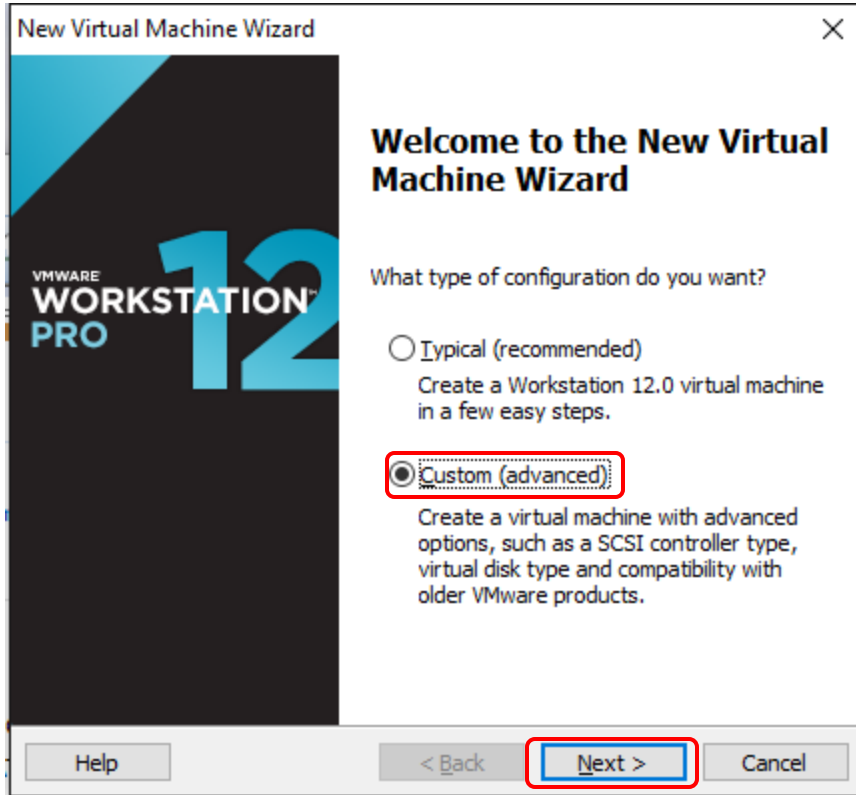
[http://mirror.cs.uwp.edu/pub/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirror.cs.uwp.edu/pub/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

[http://mirrors.lga7.us.voxel.net/centos/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1511.iso](http://mirrors.lga7.us.voxel.net/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso)

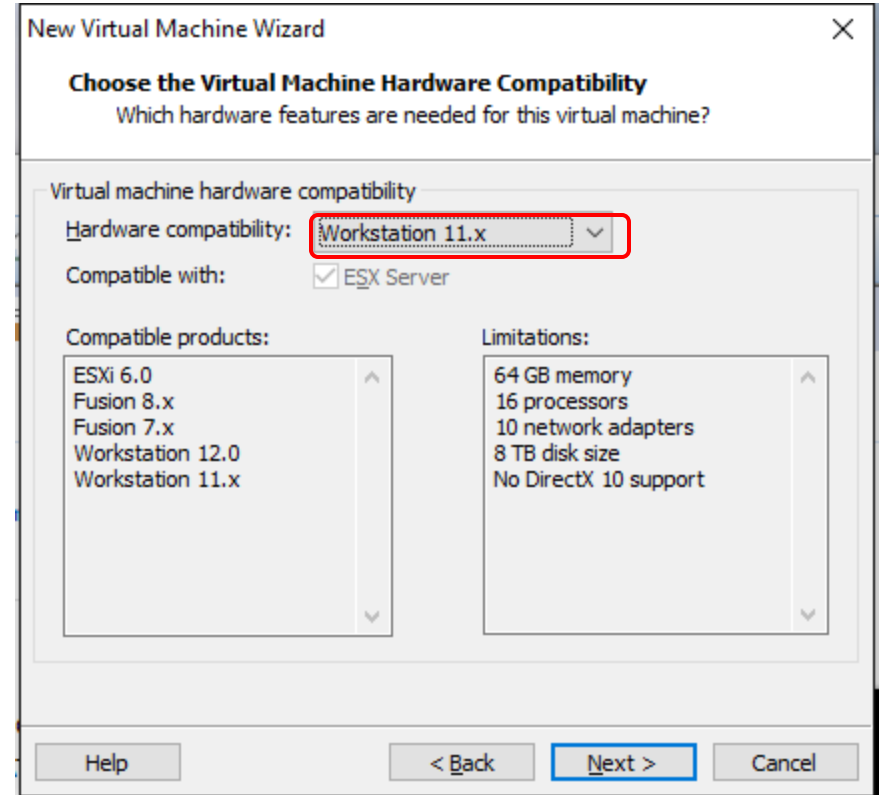
*Pick a mirror and download ISO file*



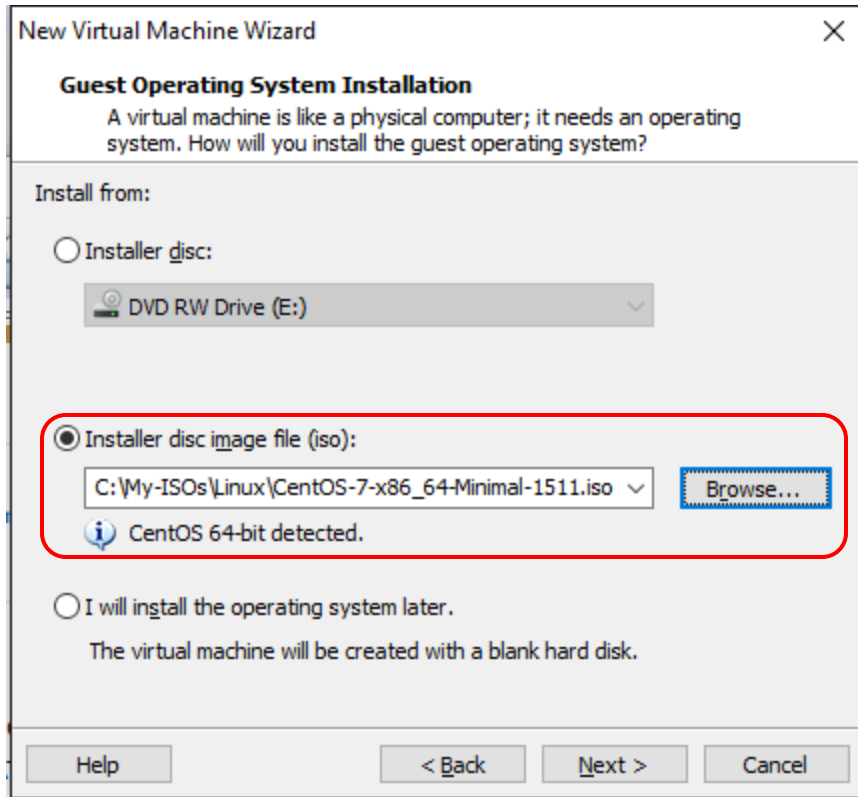
Create new VM



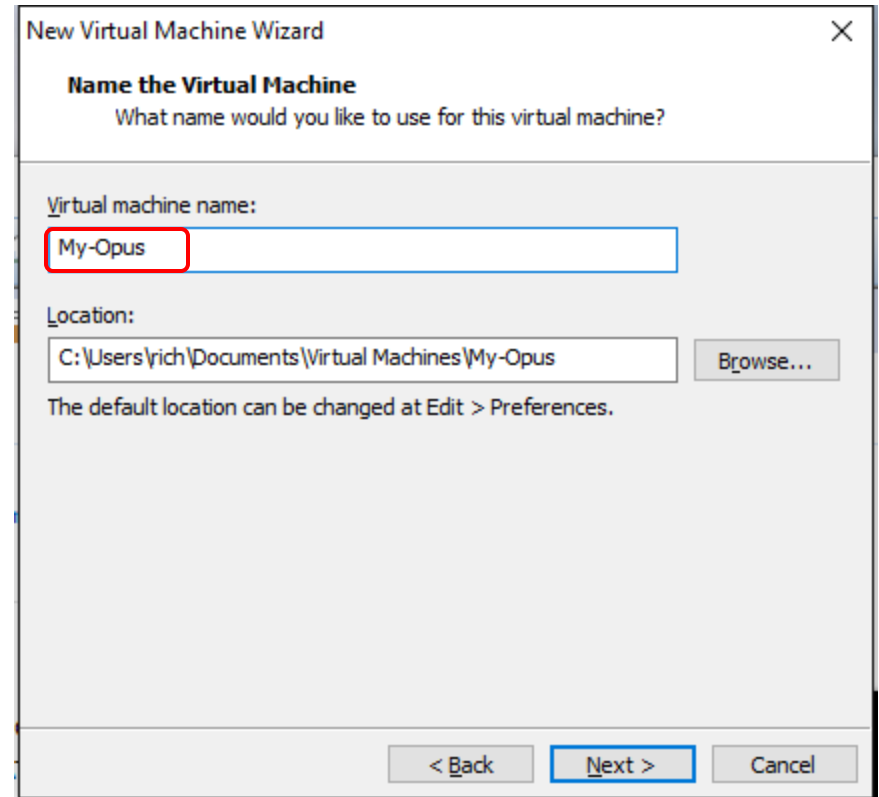
*Custom configuration*



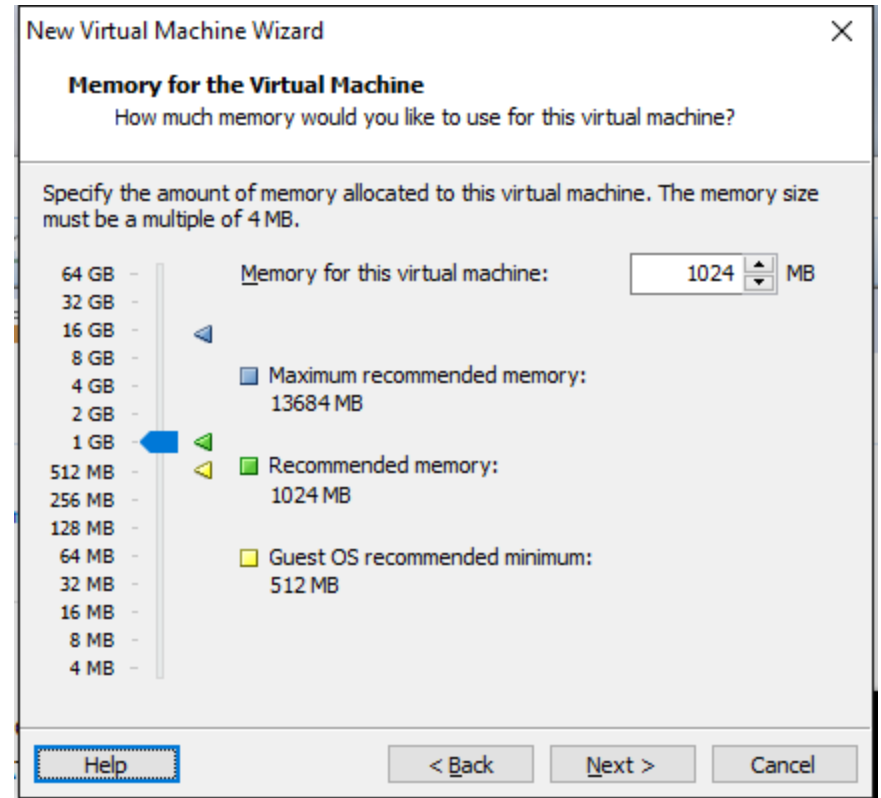
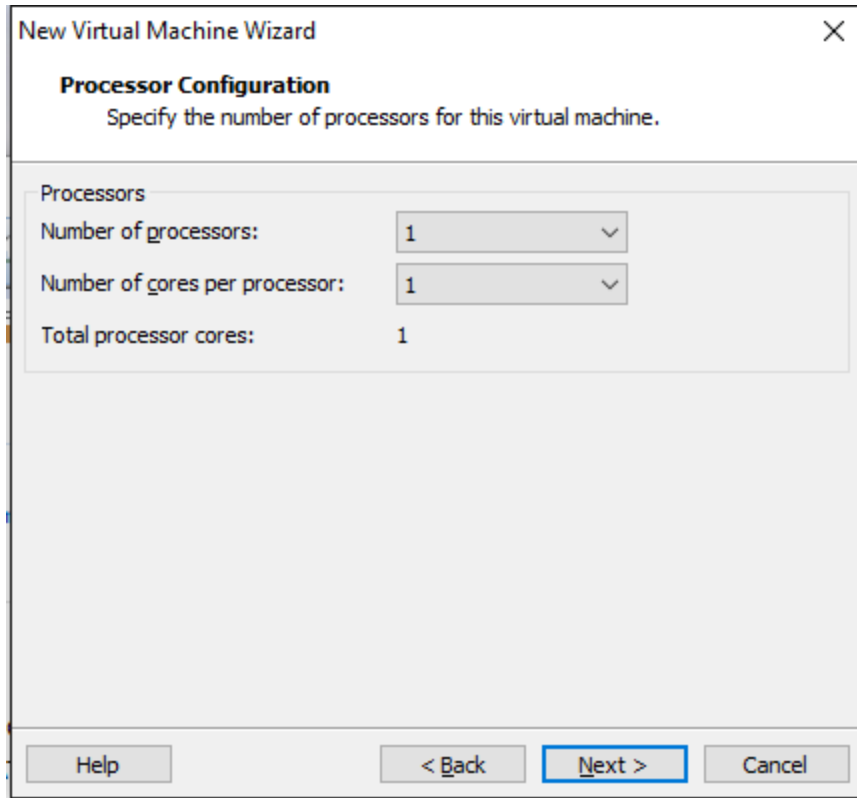
*Want to be able to use it on ESXi 6.0 server too*



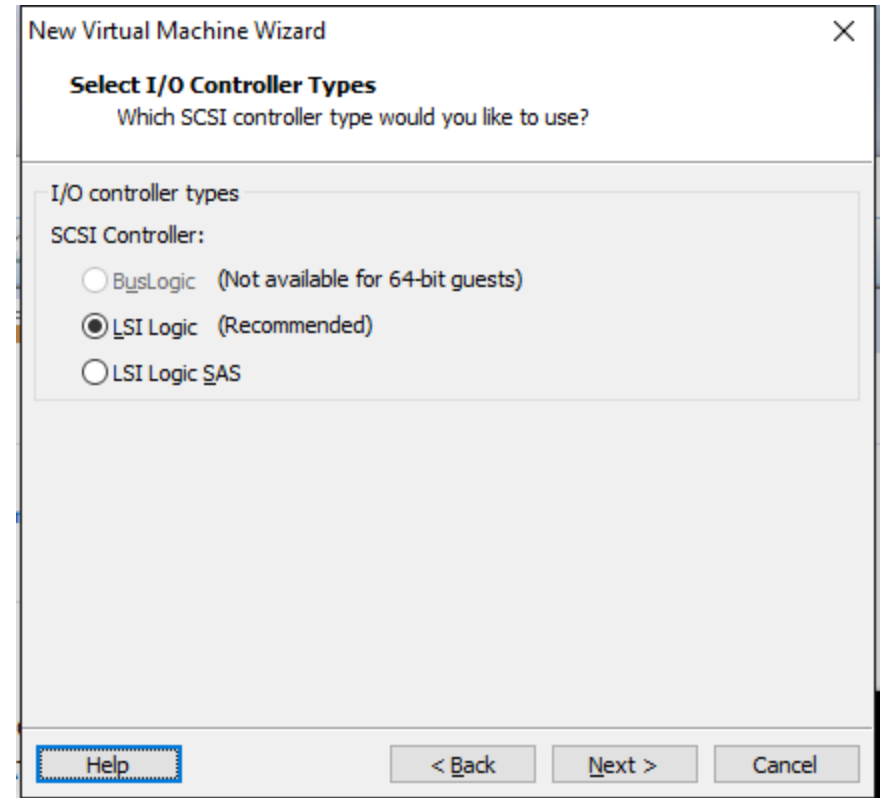
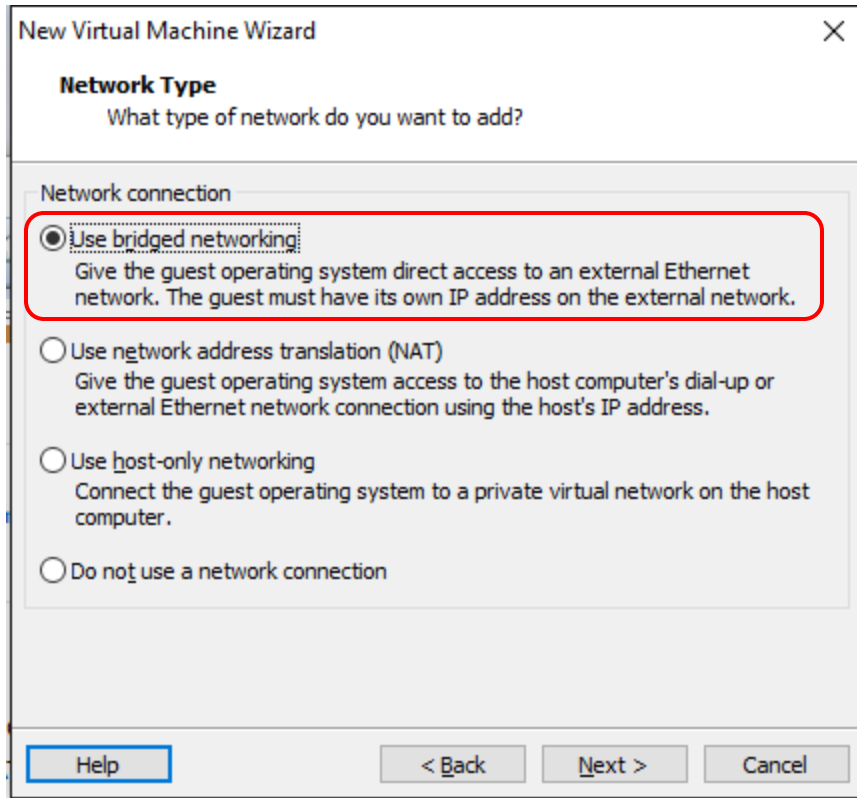
*Browse to downloaded ISO file*



*Name the new VM*



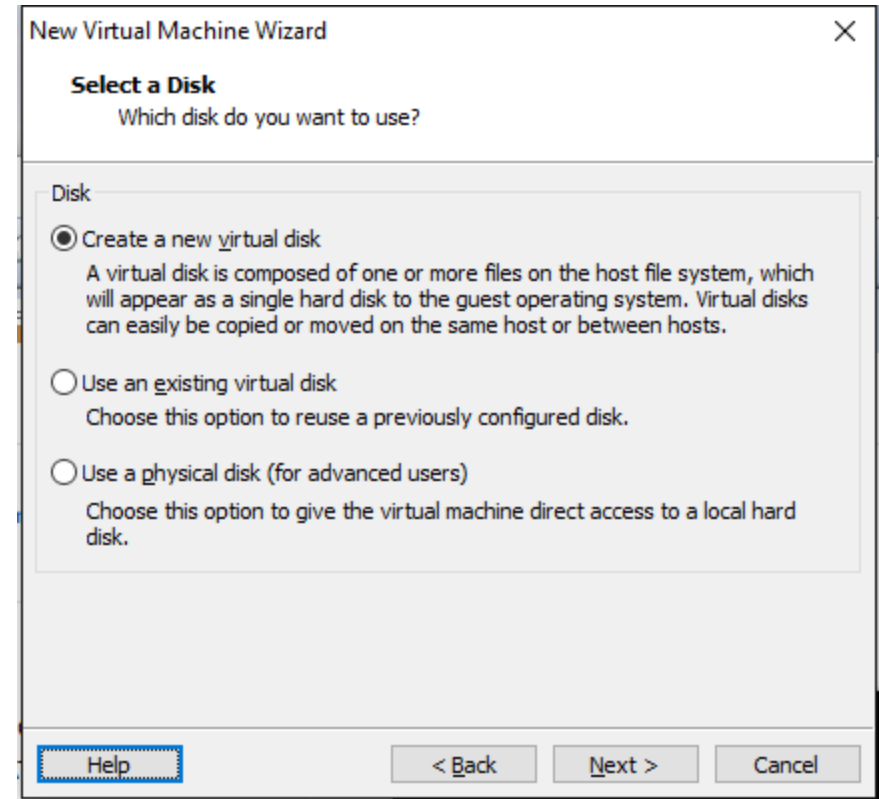
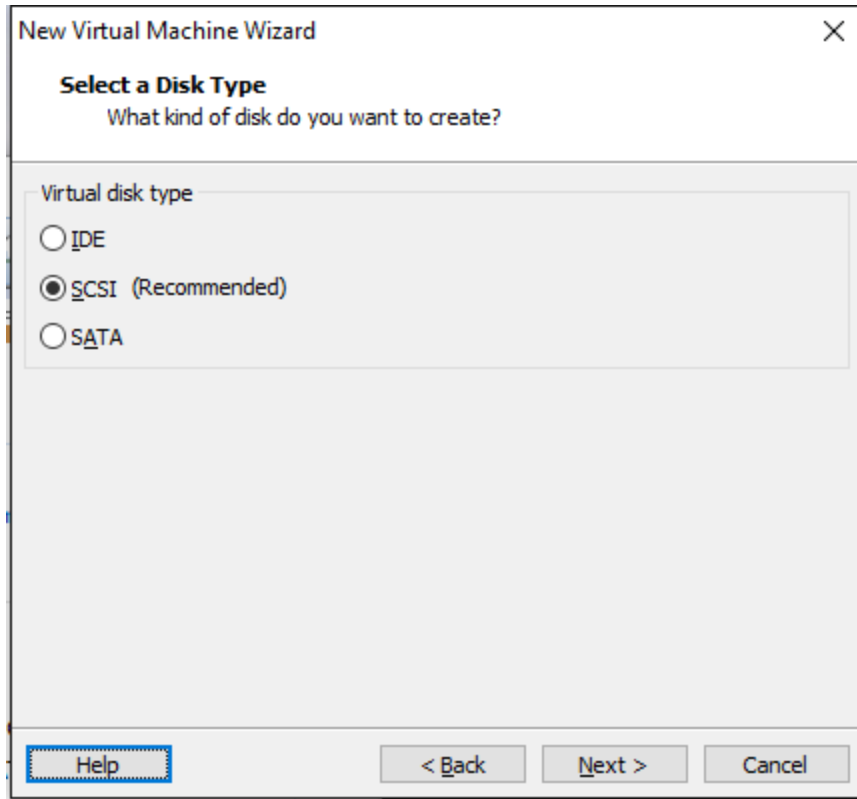
*Take defaults: 1 CPU and 1GB RAM*



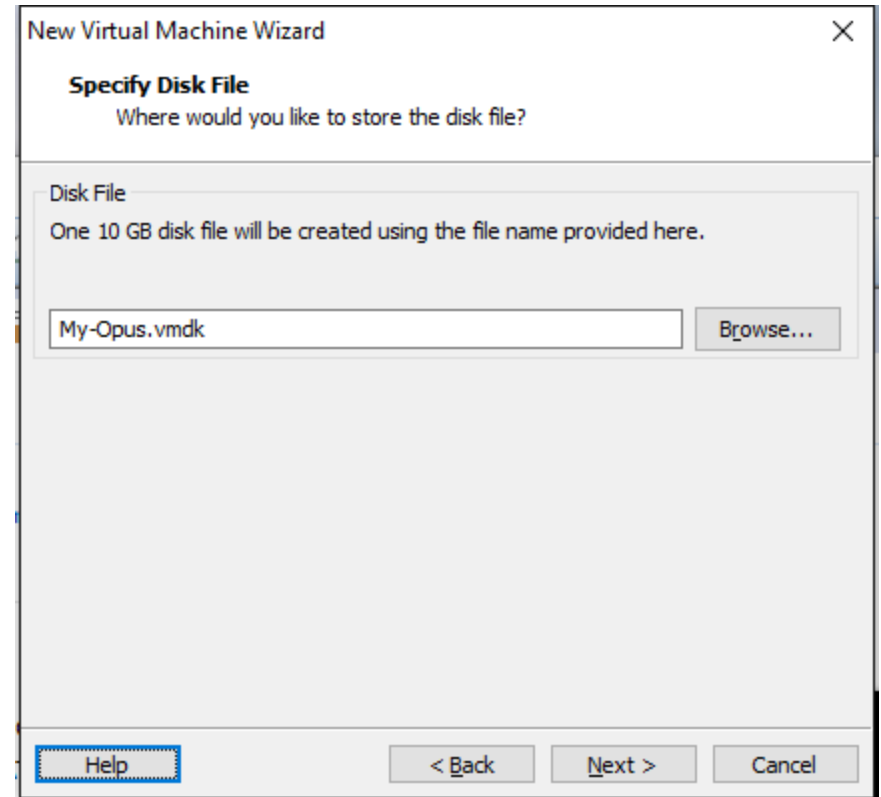
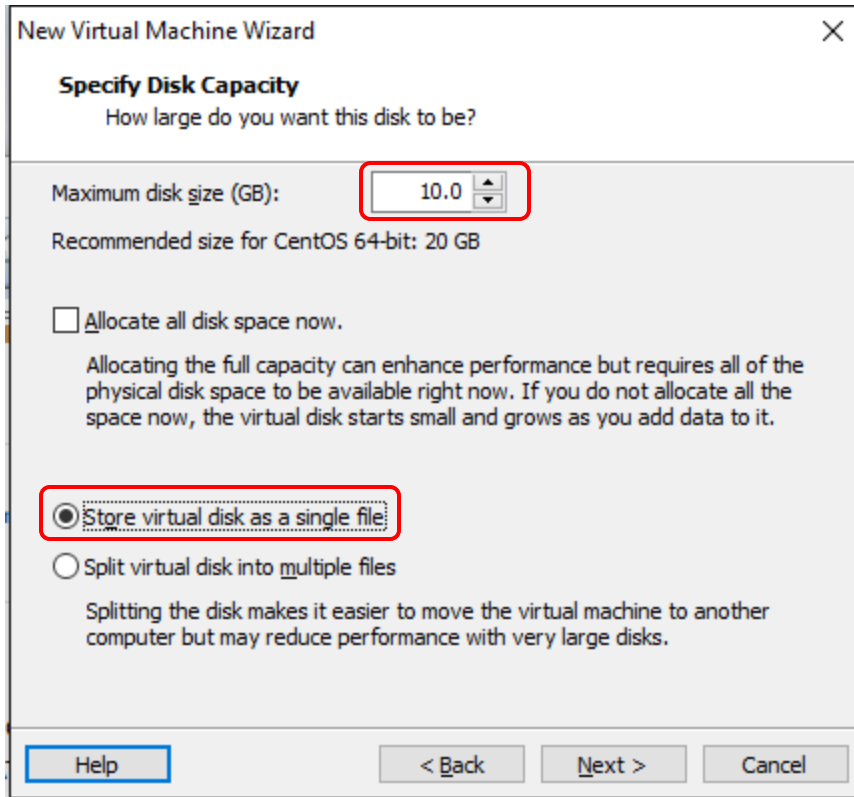
*Let's use bridged so we can ssh into our new VM from the host computer*

*Take default*



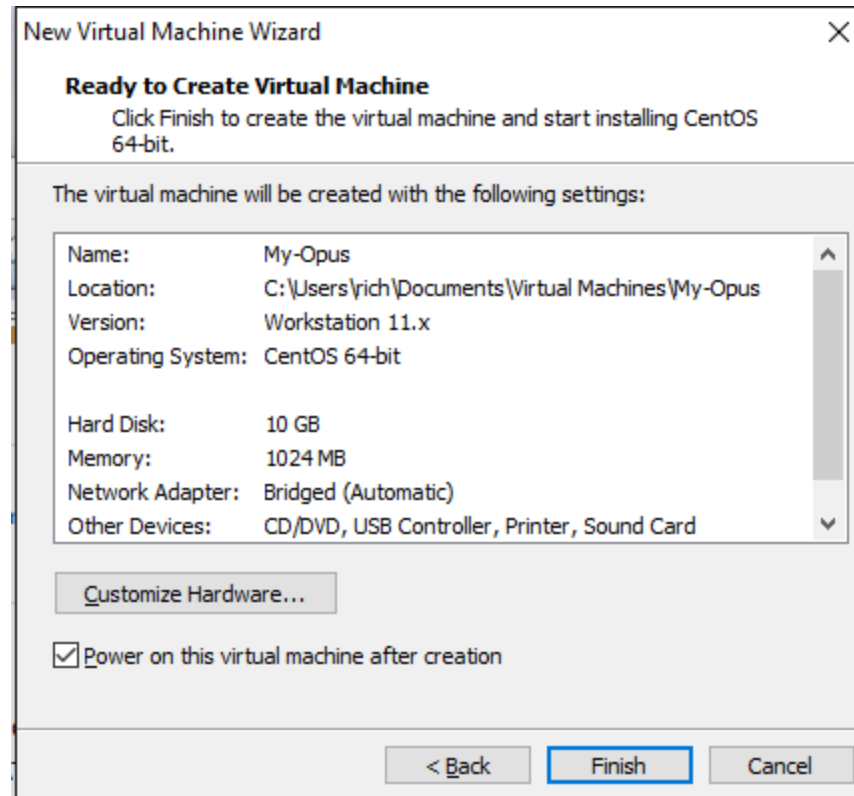


*Take defaults*

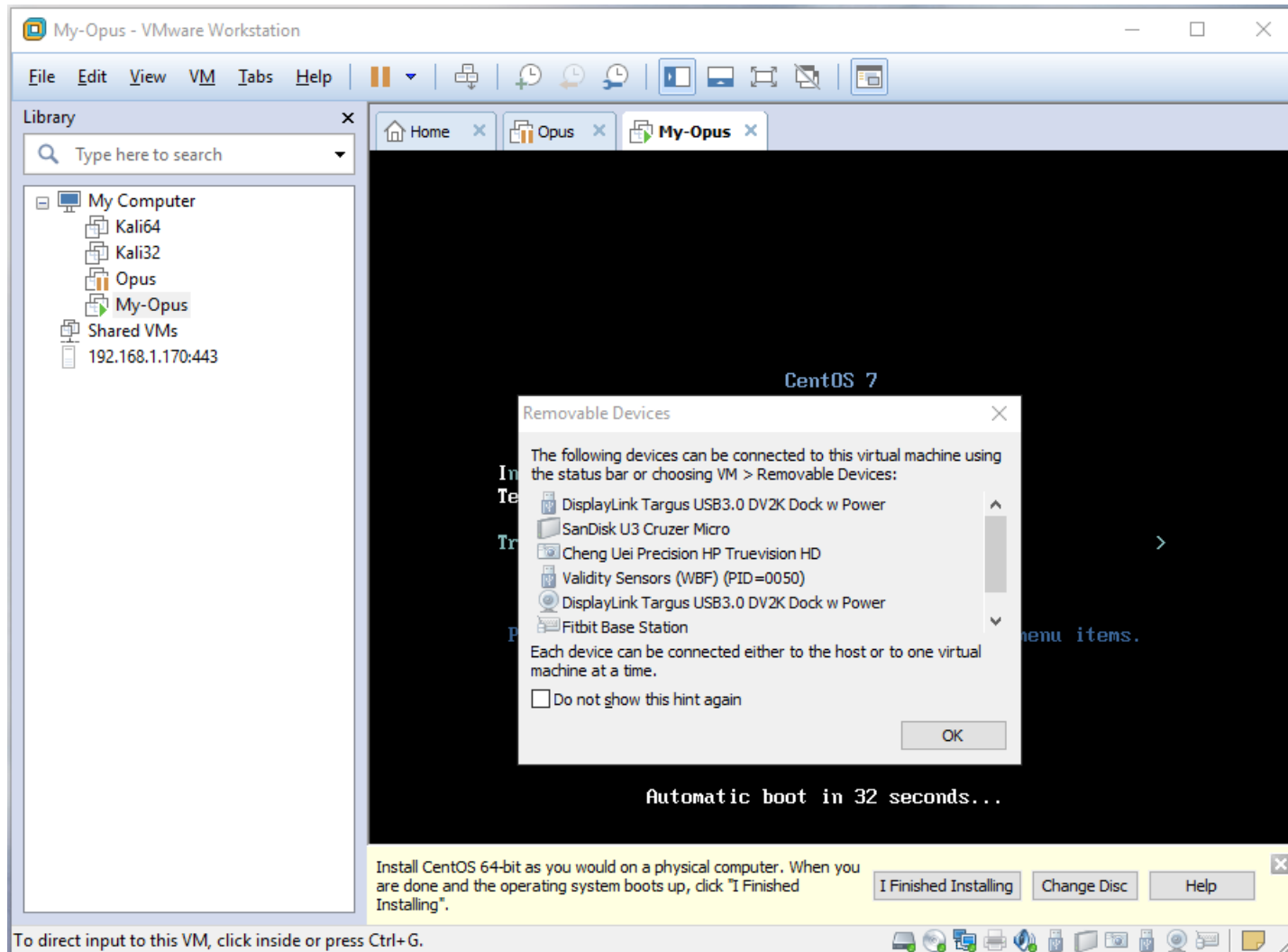


*Select hard drive size and store a single file*

*Take default*



*Go for it!*



*Read and click OK. Click inside VM, arrow up to "Install CentOS 7" and press Enter*

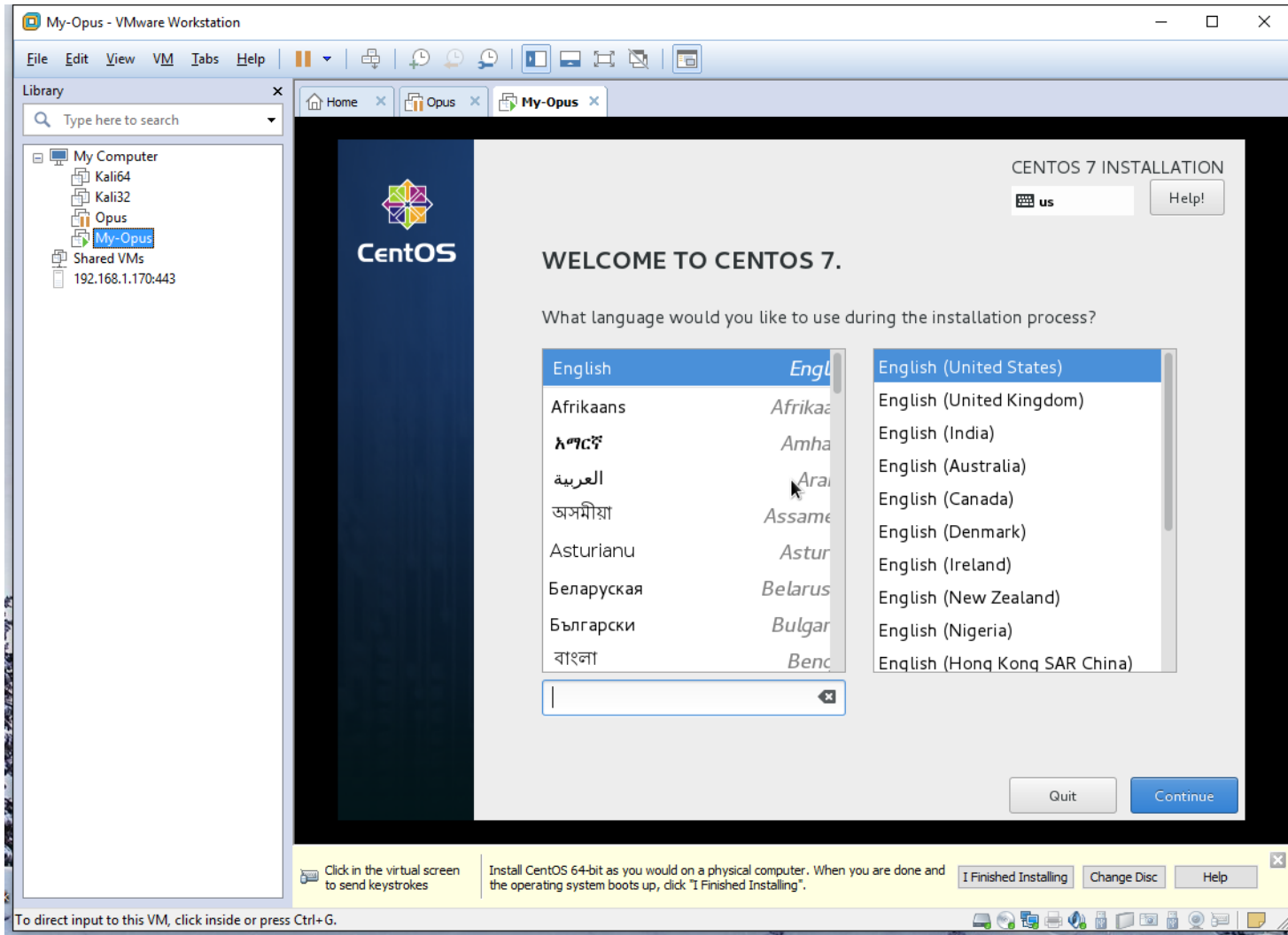
The screenshot shows the VMware Workstation interface with the 'My-Opus' virtual machine selected in the library. The main window displays the installation progress of CentOS 64-bit. The terminal output includes the following text:

```

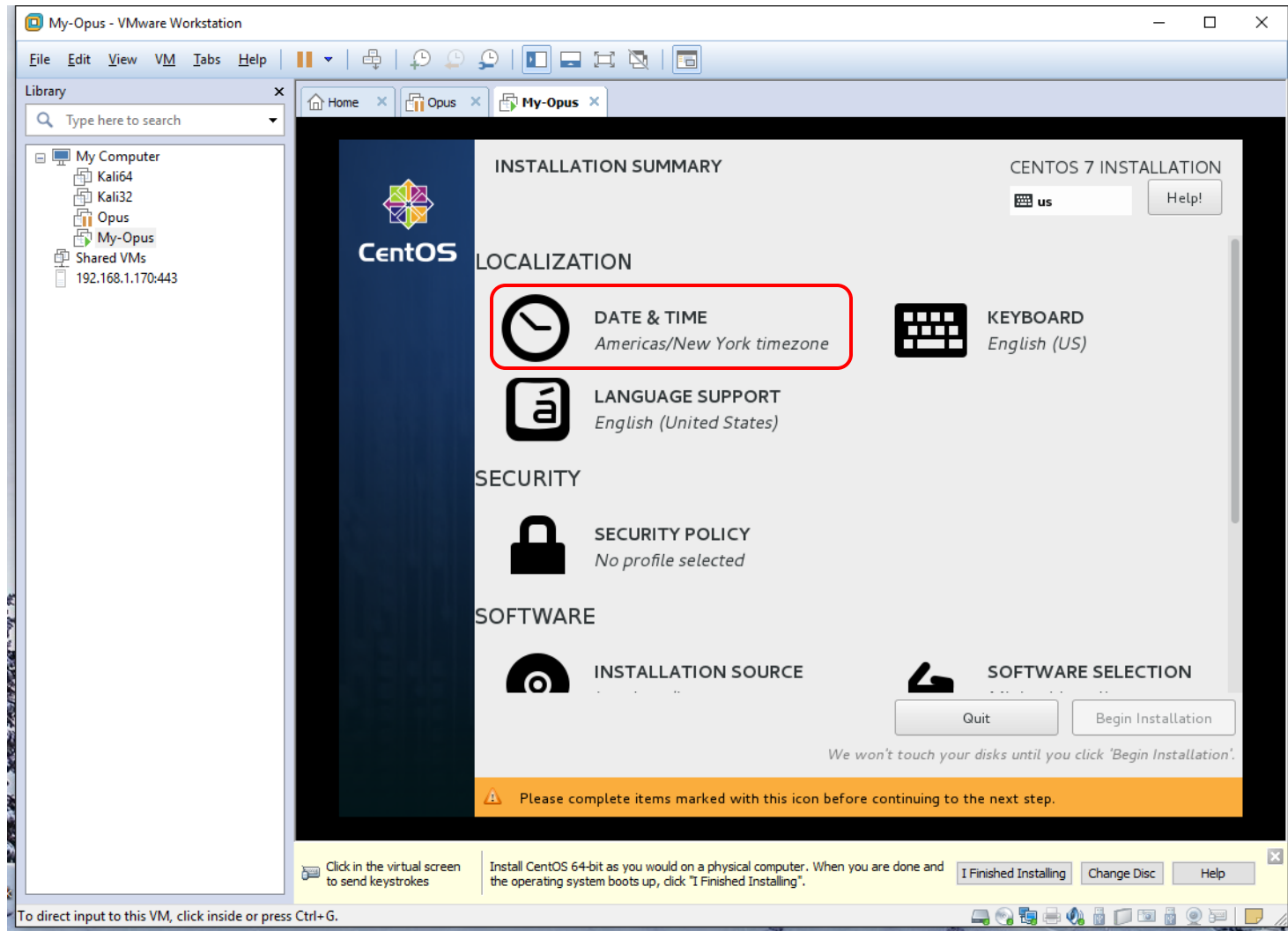
- Press the <ENTER> key to begin the installation process.
[ OK ] Started Show Plymouth Boot Screen.
[ OK ] Reached target Paths.
[ OK ] Reached target Basic System.
[ 9.004000] sd 0:0:0:0: [sd] Assuming drive cache: write through
[ 11.864797] dracut-initqueue[795]: mount: /dev/sr0 is write-protected, mounting read-only
[ OK ] Started Show Plymouth Boot Screen.
[ OK ] Reached target Paths.
[ OK ] Reached target Basic System.
[ 11.864797] dracut-initqueue[795]: mount: /dev/sr0 is write-protected, mounting read-only
[ OK ] Created slice system-checkisomd5.slice.
Starting Media check on /dev/sr0...
/dev/sr0: a18337e16e17f182a883fe4fed964a06
Fragment sums: 81b86de6b6fead6a352123ab45885175e2d8dc5e8548a81c5d1af78c72bf
Fragment count: 20
Press [Esc] to abort check.
Checking: 097.4%_
  
```

At the bottom of the window, there are buttons for 'I Finished Installing', 'Change Disc', and 'Help'. A tooltip indicates: 'Click in the virtual screen to send keystrokes'. The status bar at the very bottom reads: 'To direct input to this VM, click inside or press Ctrl+G.'

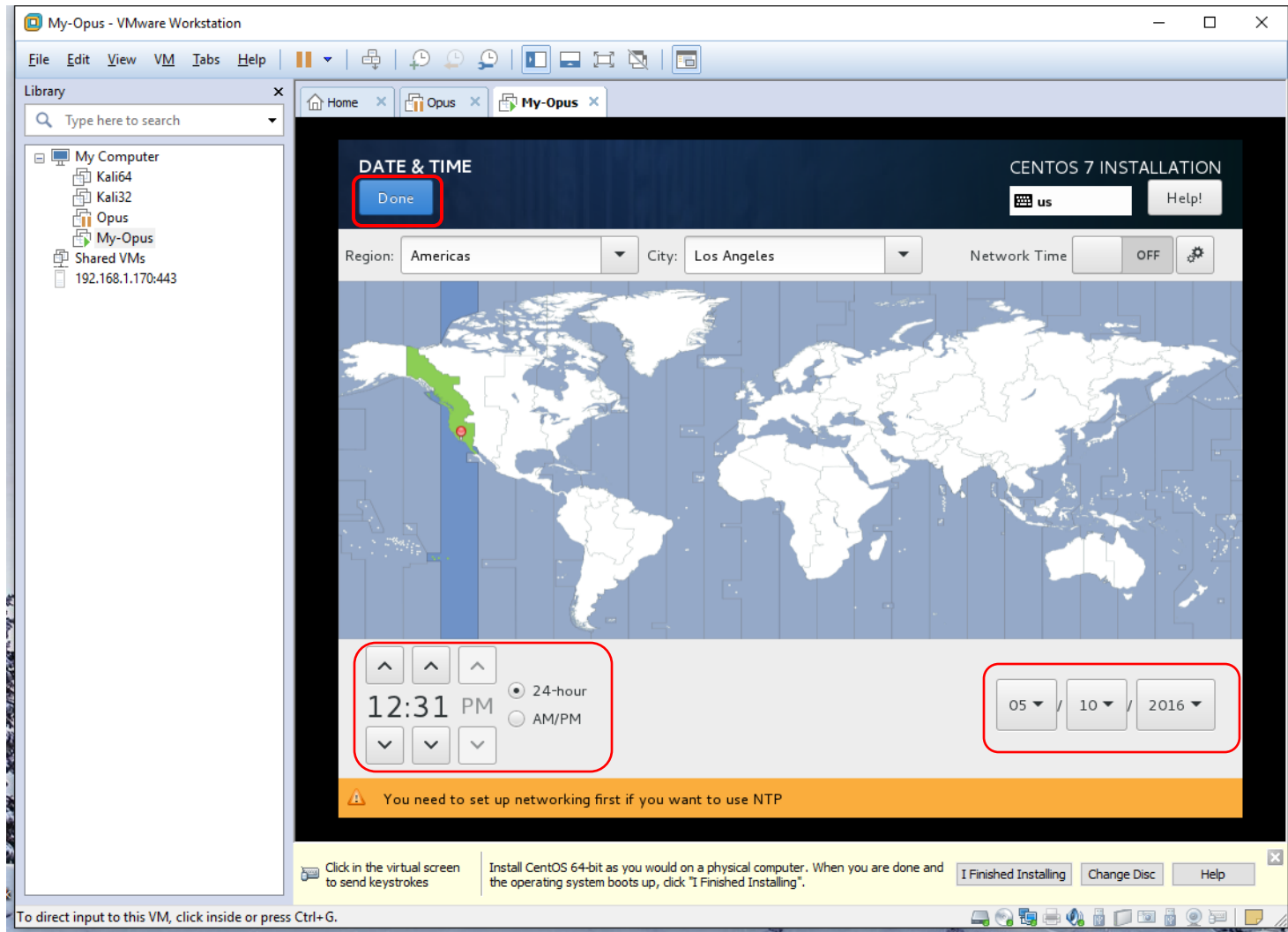
*Away it goes ...*



Take defaults

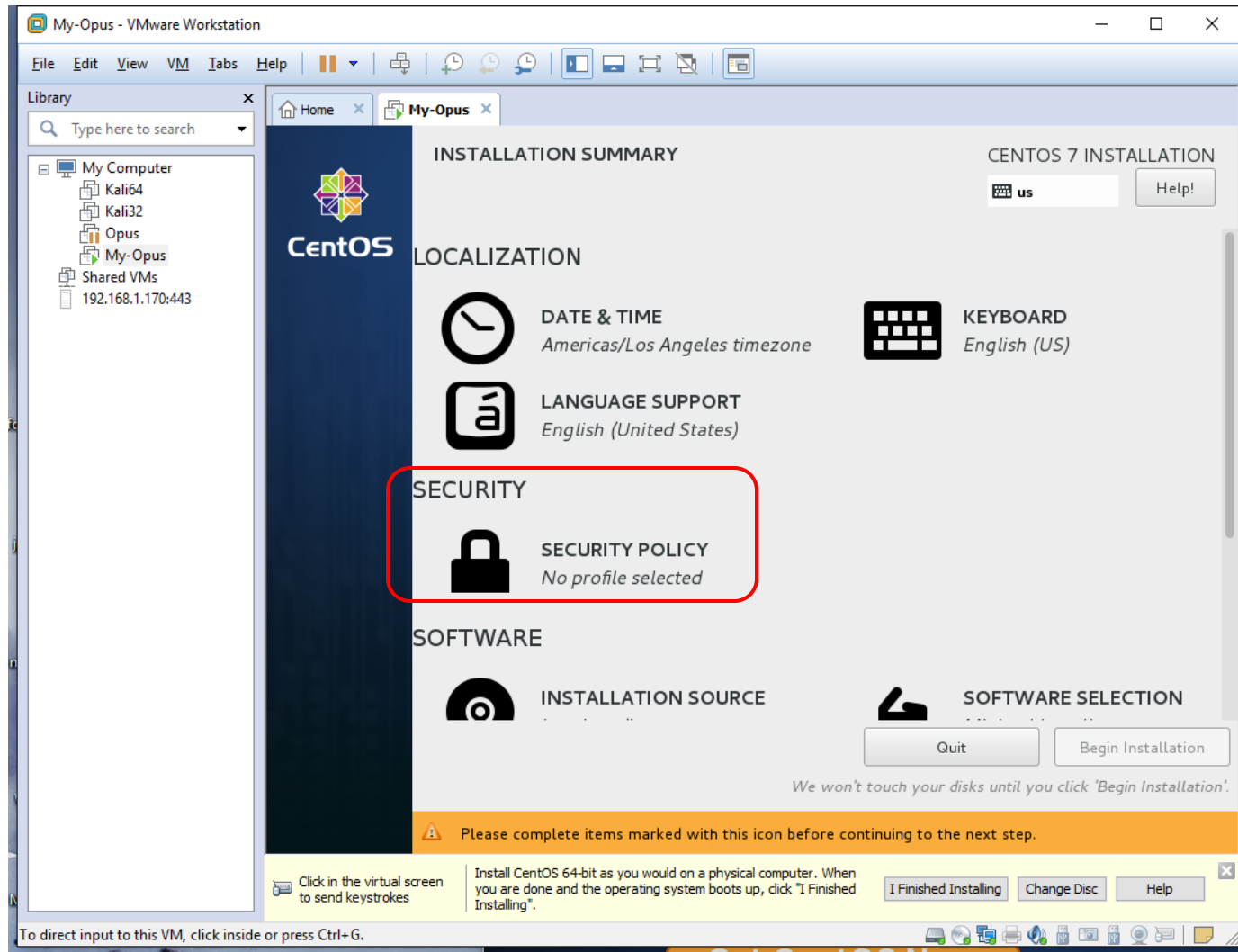


Update time zone

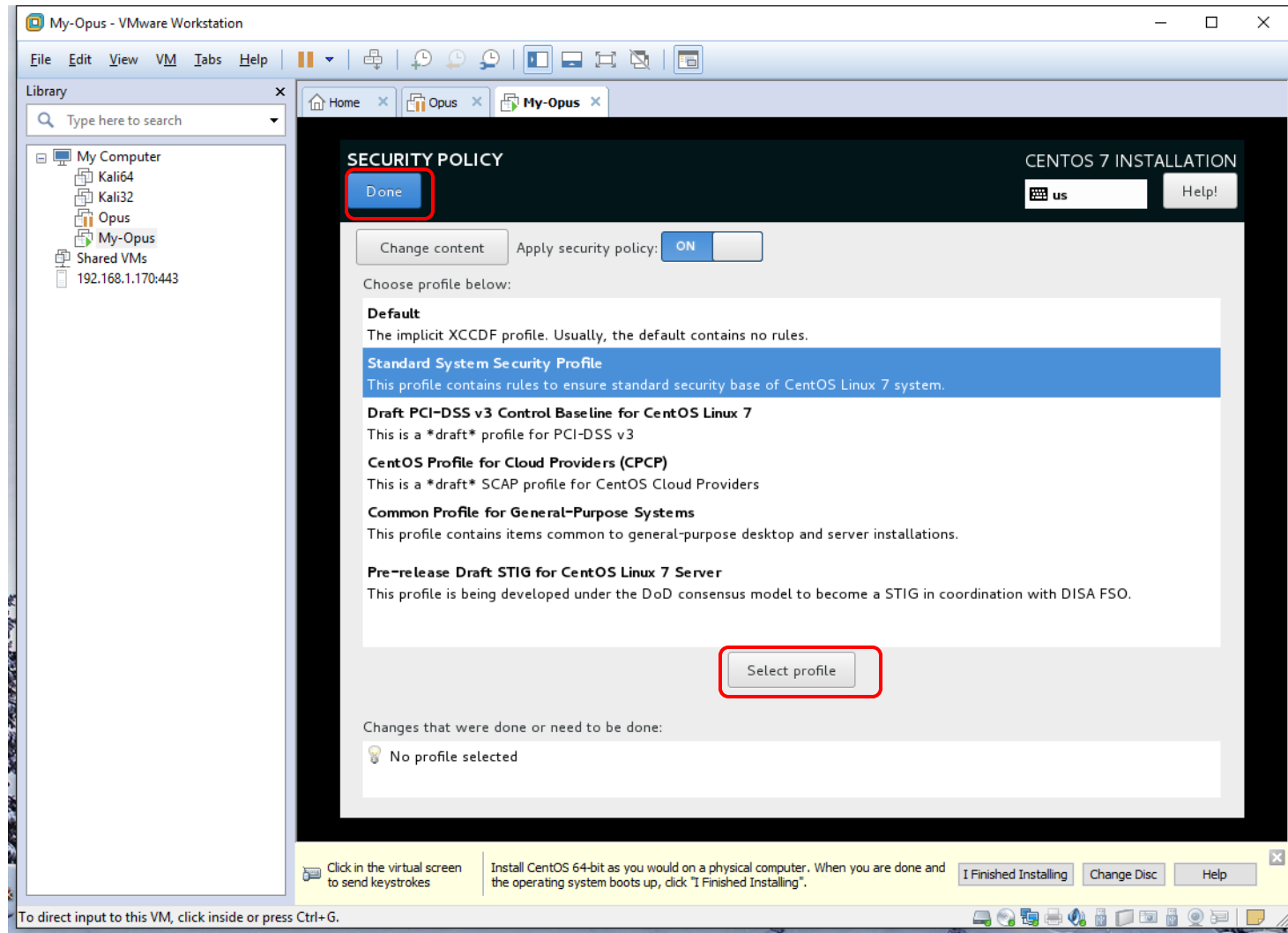


*Click your zone, set the correct time and date then click done*

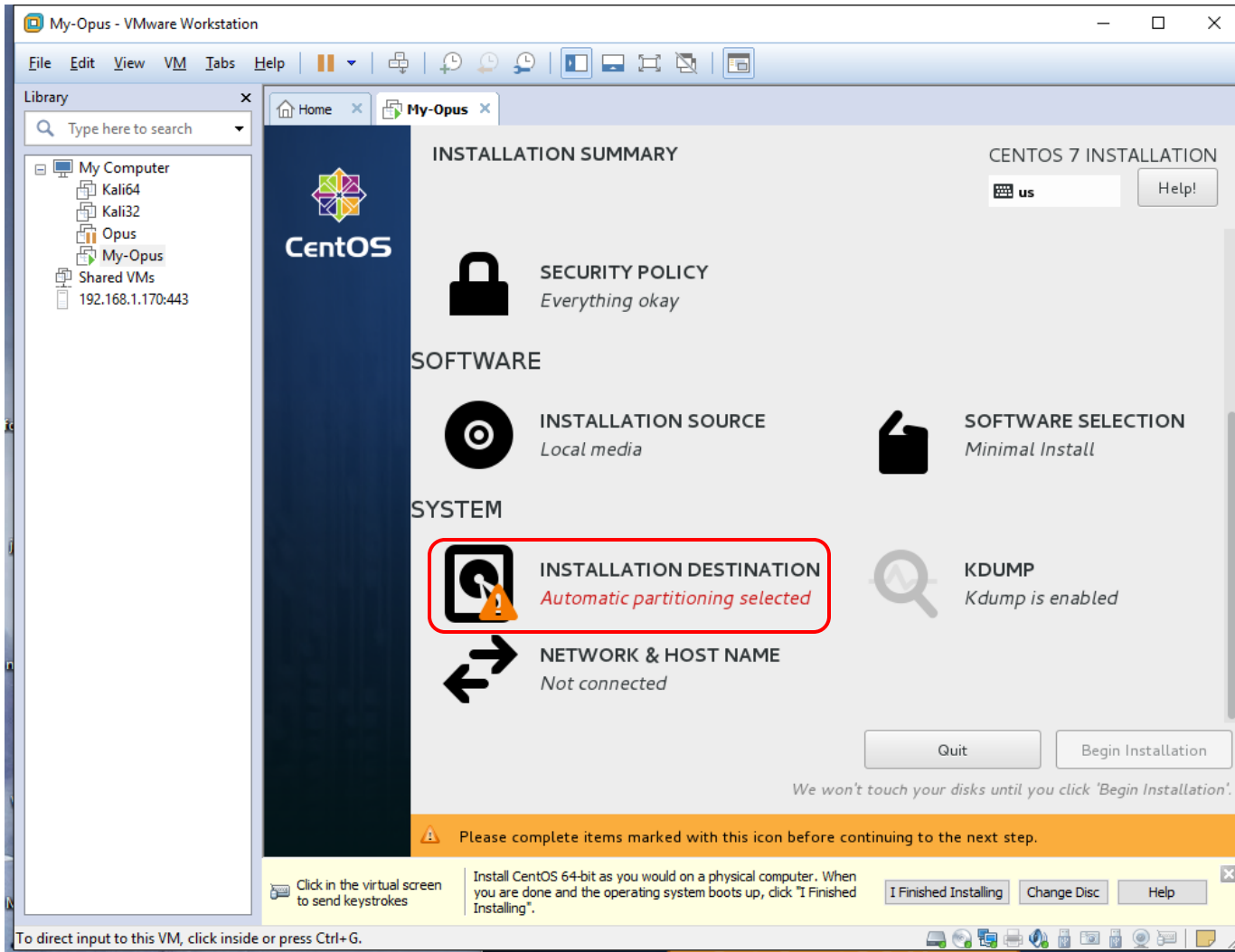




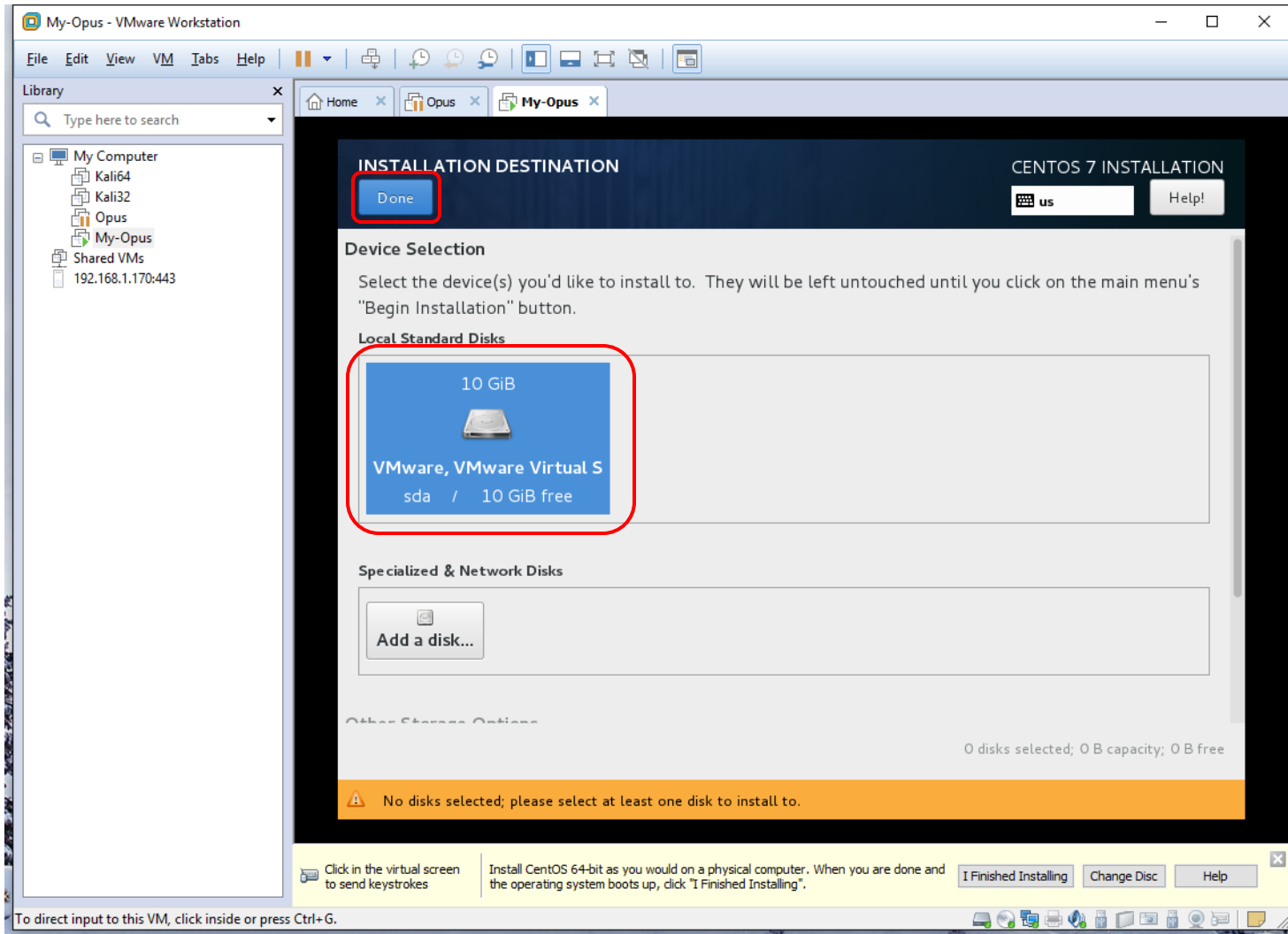
Update security policy



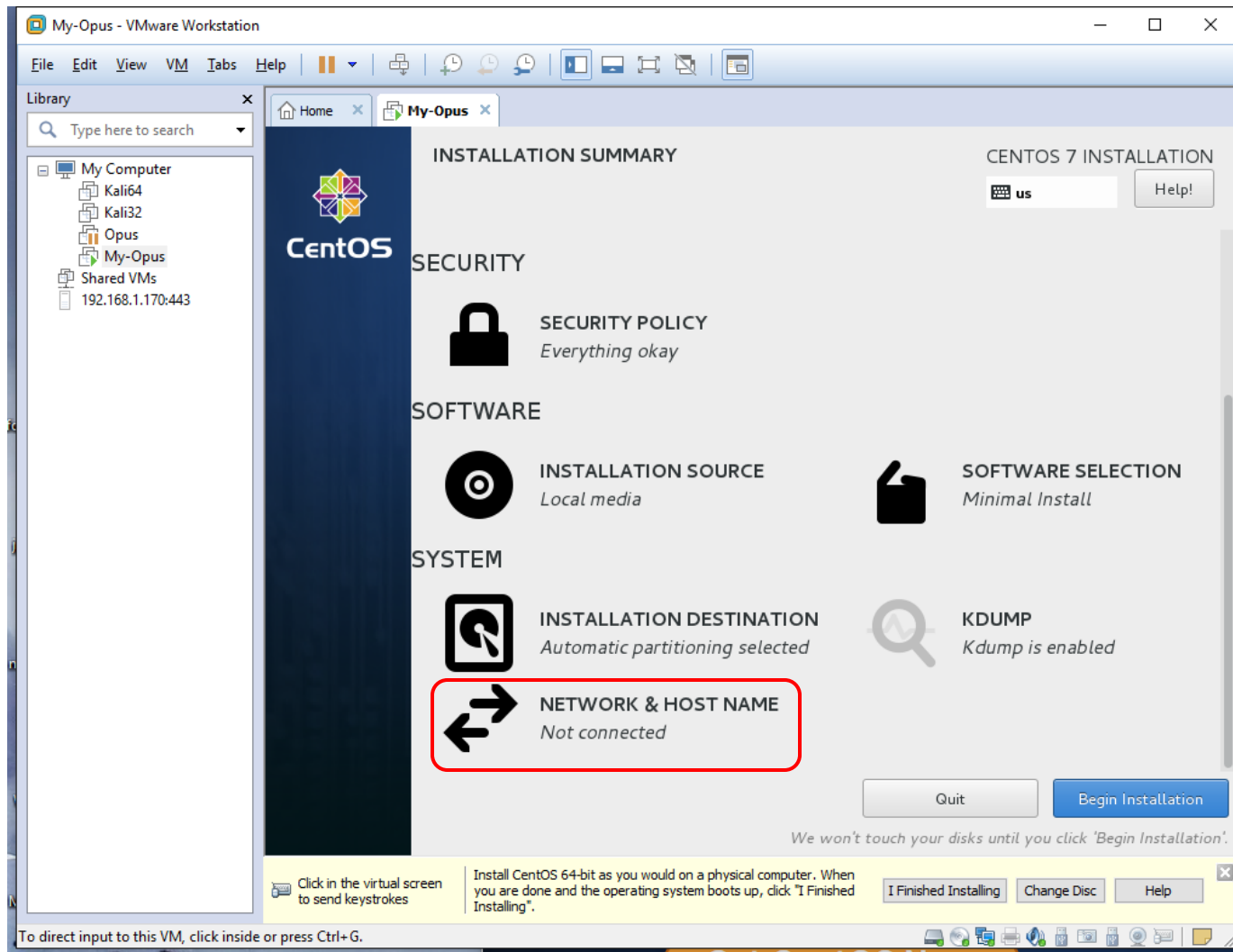
*Select standard, click Select profile and click Done*



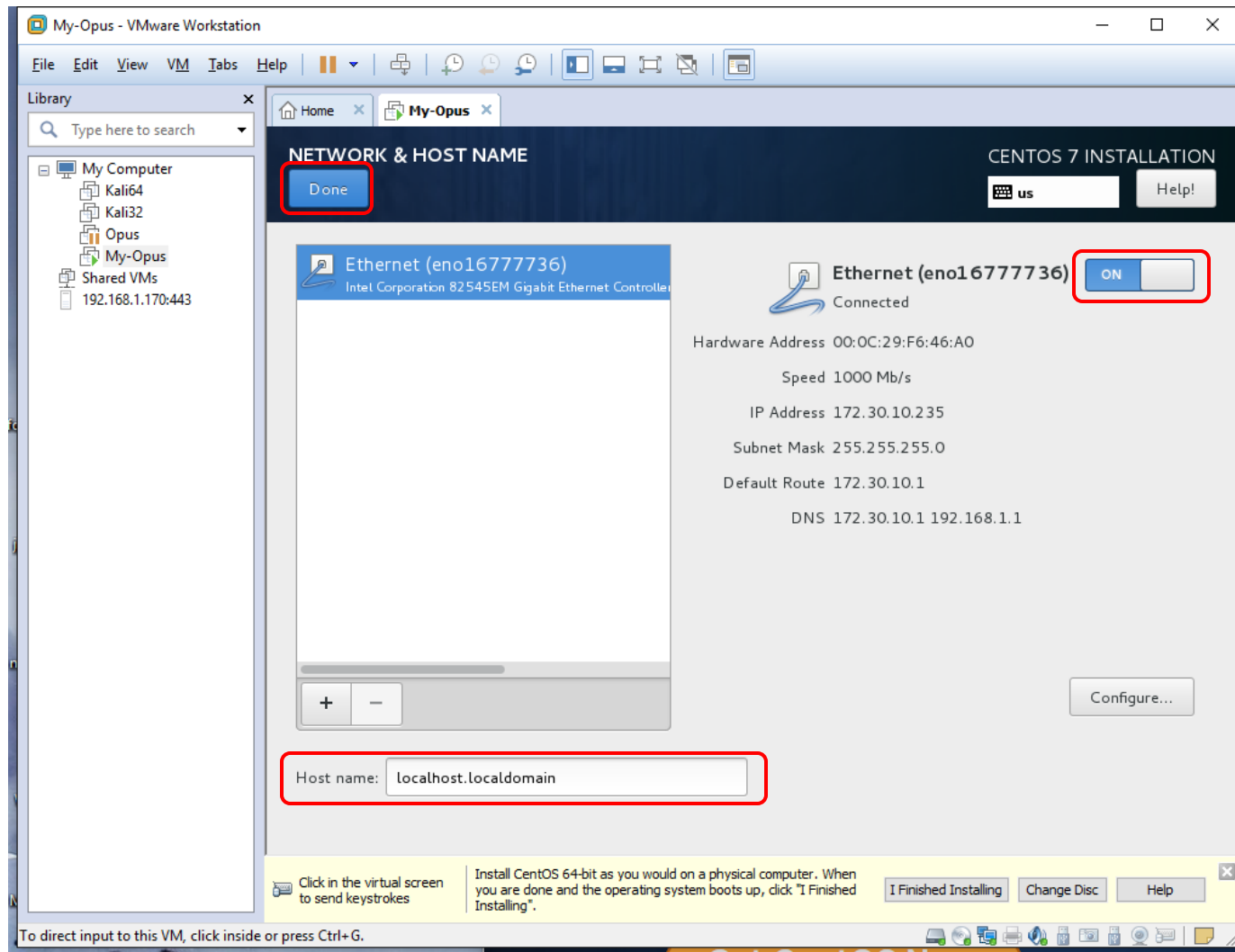
Select where to install



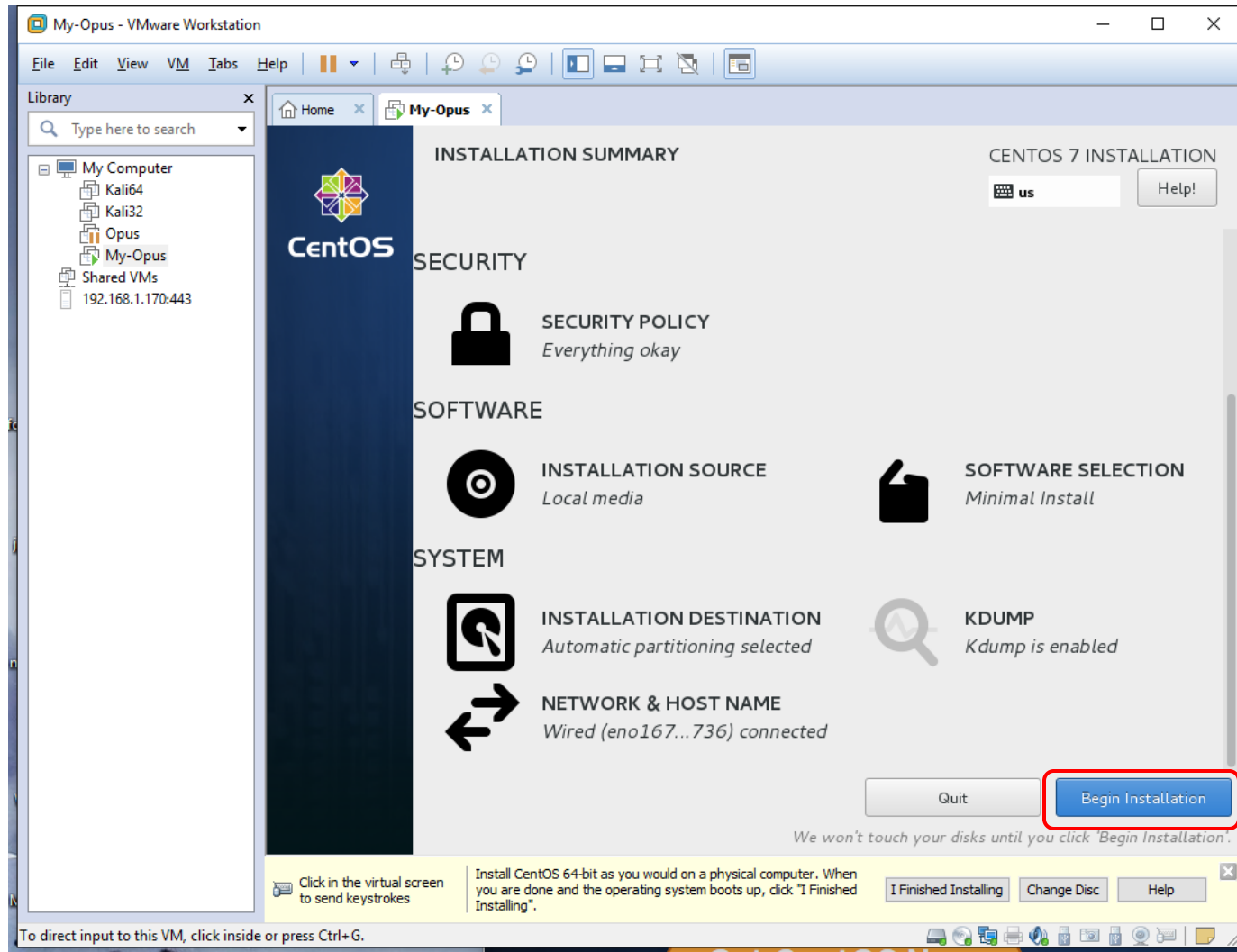
*Select new drive and click Done*



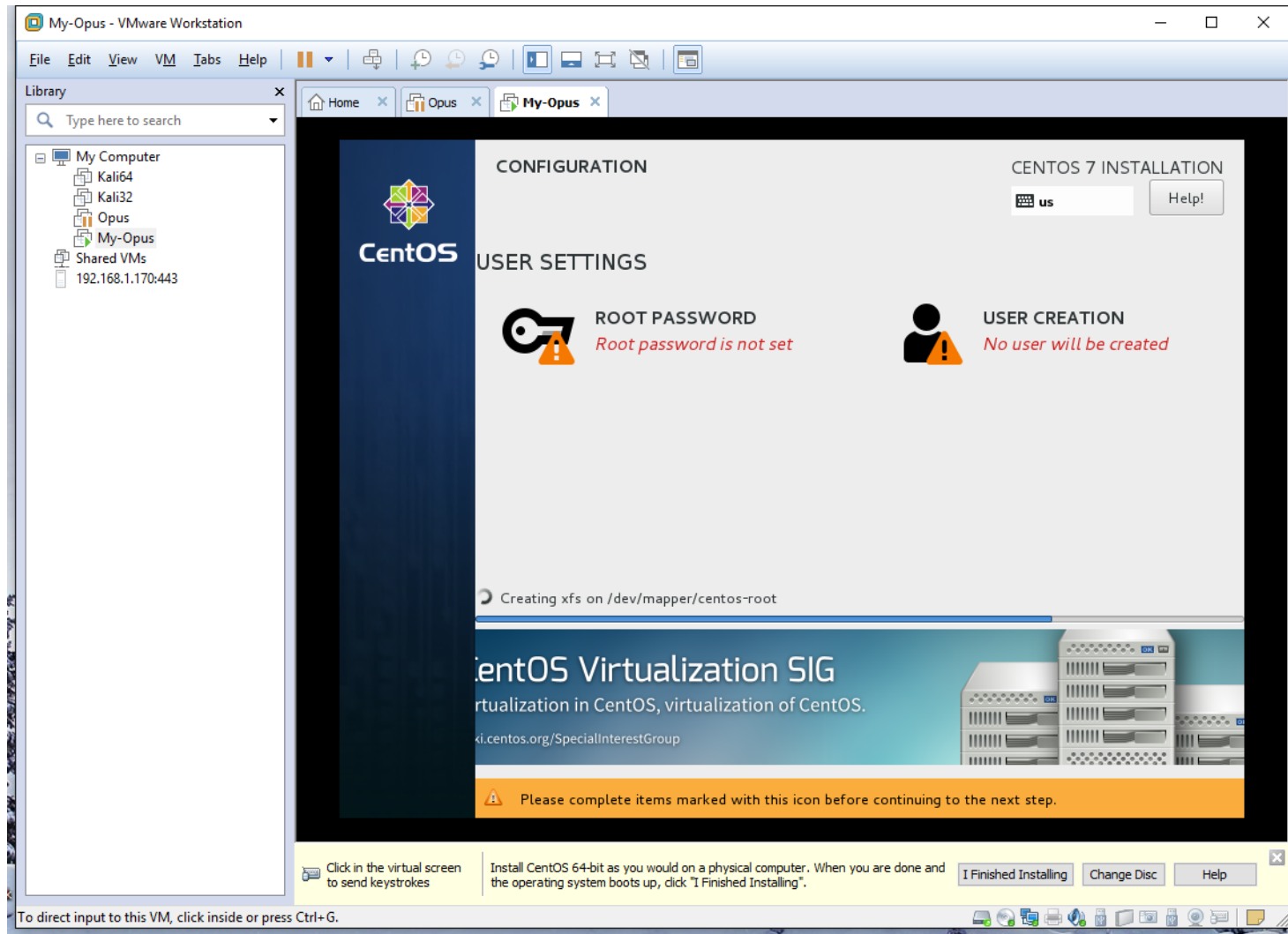
Configure network



*Configure interface to "ON", optionally name system then click Done*

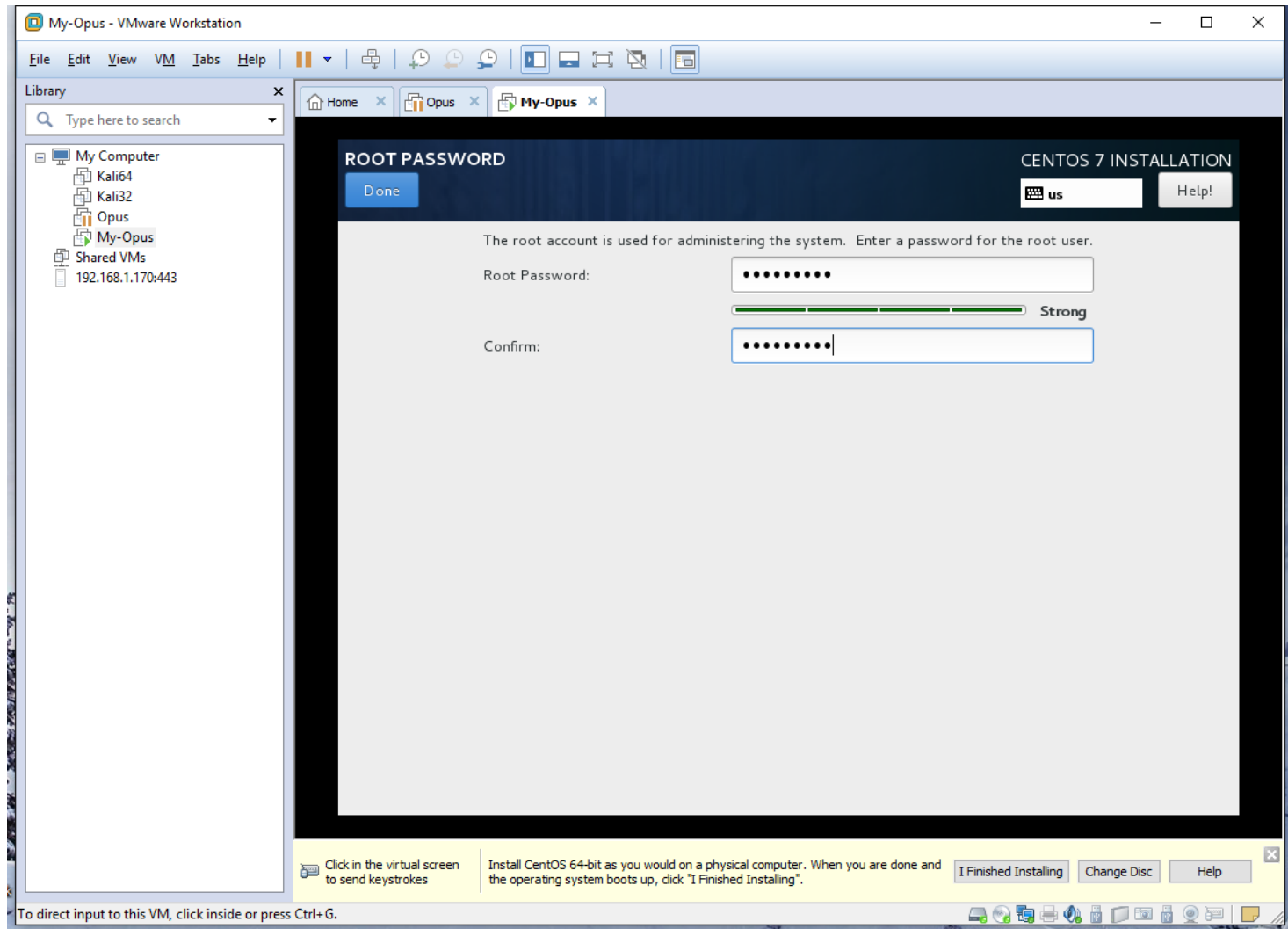


Go for it!

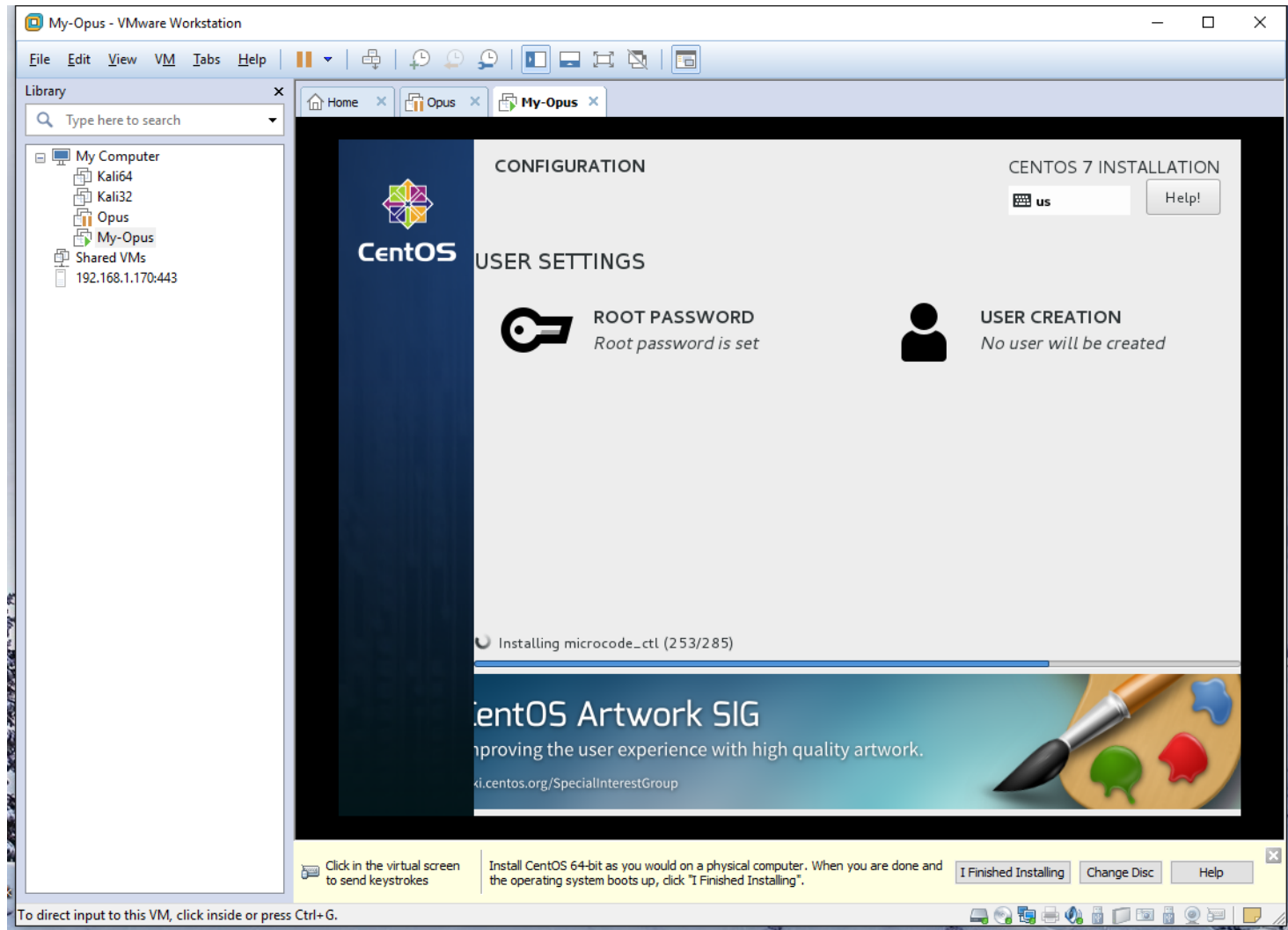


*While we are waiting set password for root user*

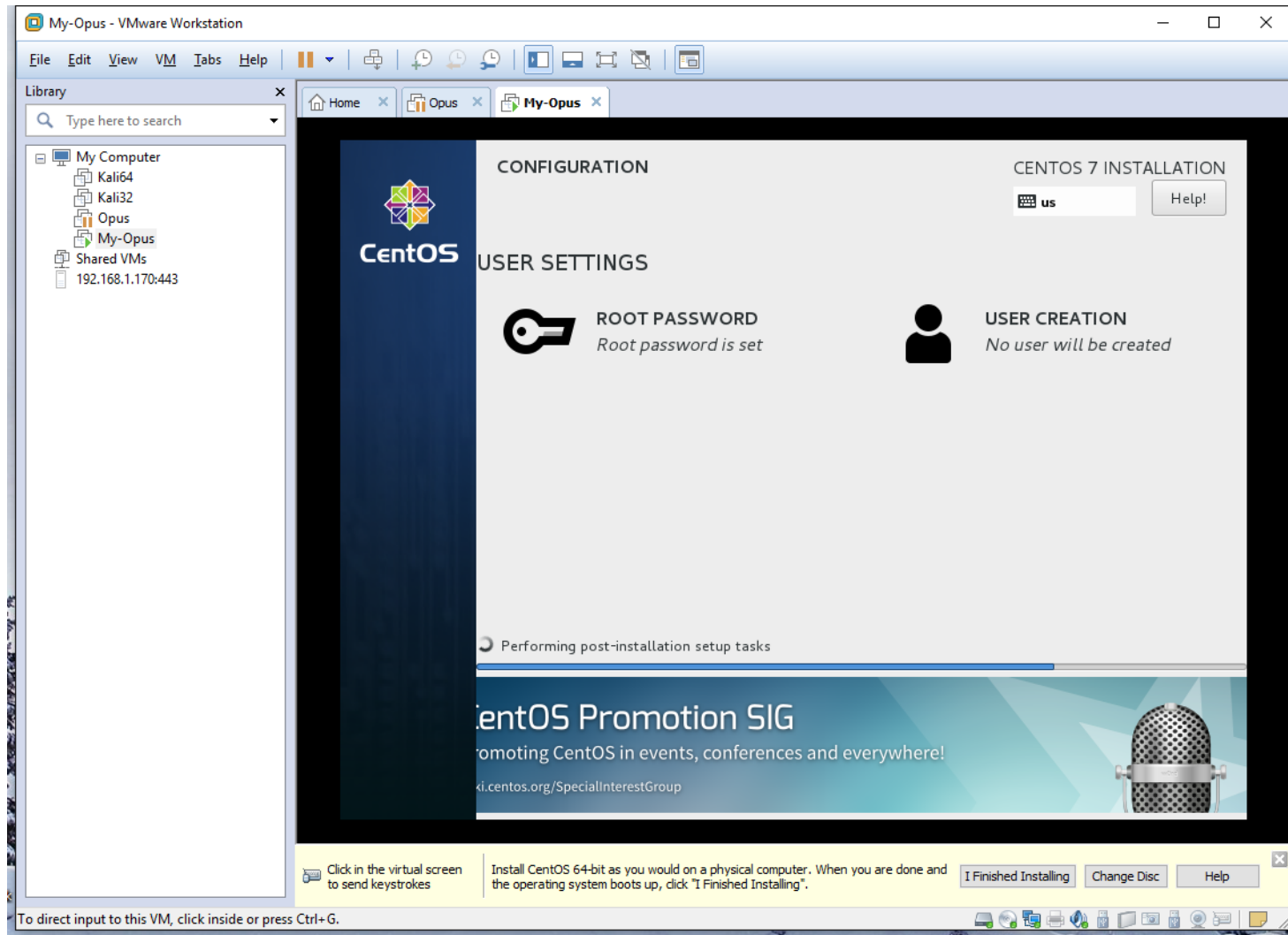




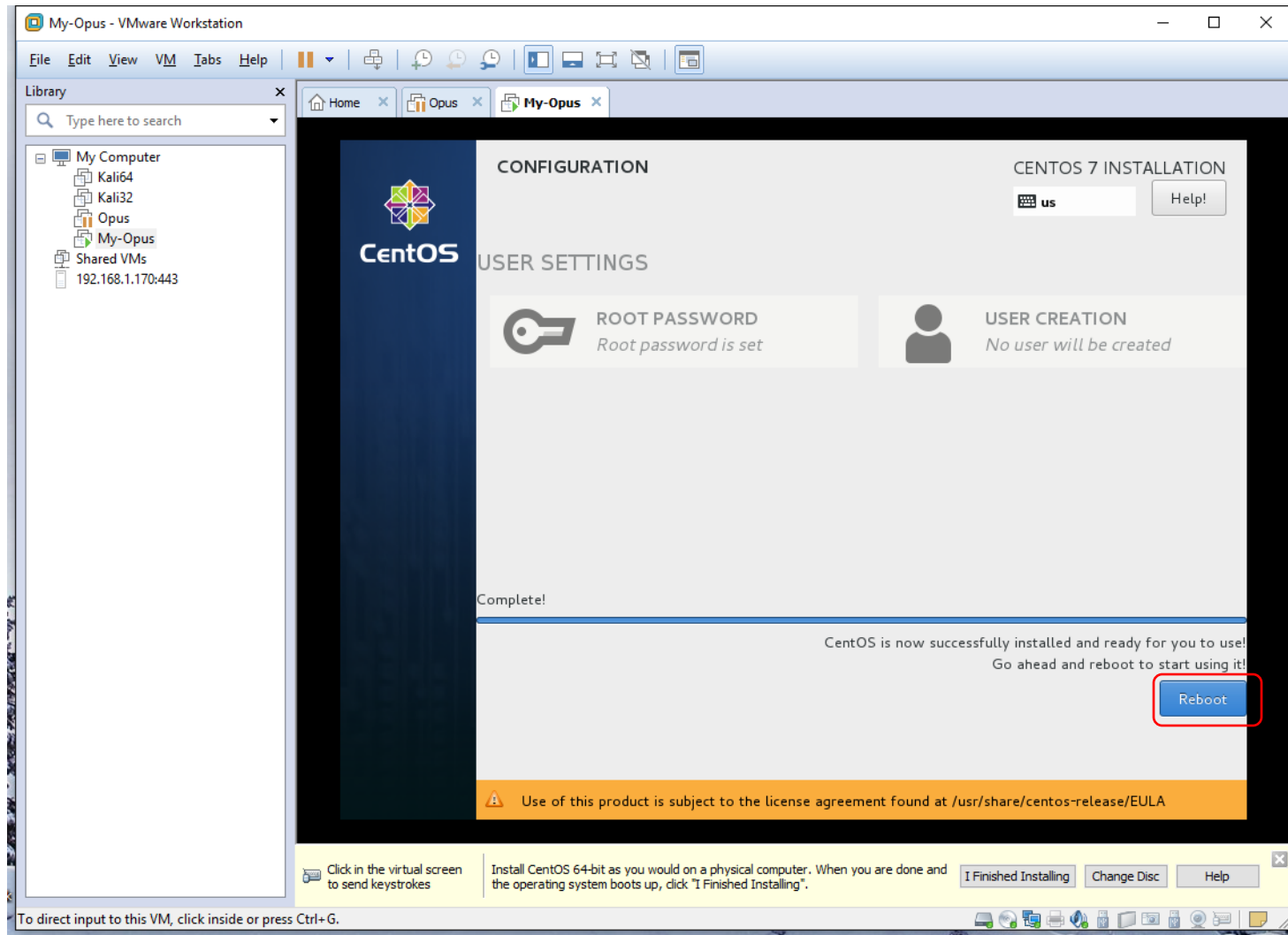
*Make it a strong one*



Wait ...



Wait some more ...



Click Reboot to start new VM

My-Opus - VMware Workstation

File Edit View VM Tabs Help

Library

My Computer

- Kali64
- Kali32
- Opus
- My-Opus
- Shared VMs
- 192.168.1.170:443

```

CentOS Linux 7 (Core)
Kernel 3.10.0-327.el7.x86_64 on an x86_64

localhost login: root
Password:
[root@localhost ~]#
[root@localhost ~]# useradd simben90
[root@localhost ~]# passwd simben90
Changing password for user simben90.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# tail /etc/passwd
nobody:x:99:99:Nobody:/:/sbin/nologin
avahi-autoipd:x:170:170:Avahi IPv4LL Stack:/var/lib/avahi-autoipd:/sbin/nologin
systemd-bus-proxy:x:999:997:systemd Bus Proxy:/:/sbin/nologin
systemd-network:x:998:996:systemd Network Management:/:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
polkitd:x:997:995:User for polkitd:/:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcsd daemon:/dev/null:/sbin/nologin
postfix:x:89:89:/:var/spool/postfix:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/ssh:/sbin/nologin
simben90:x:1000:1000:~/home/simben90:/bin/bash
[root@localhost ~]#
    
```

Click in the virtual screen to send keystrokes

Install CentOS 64-bit as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".

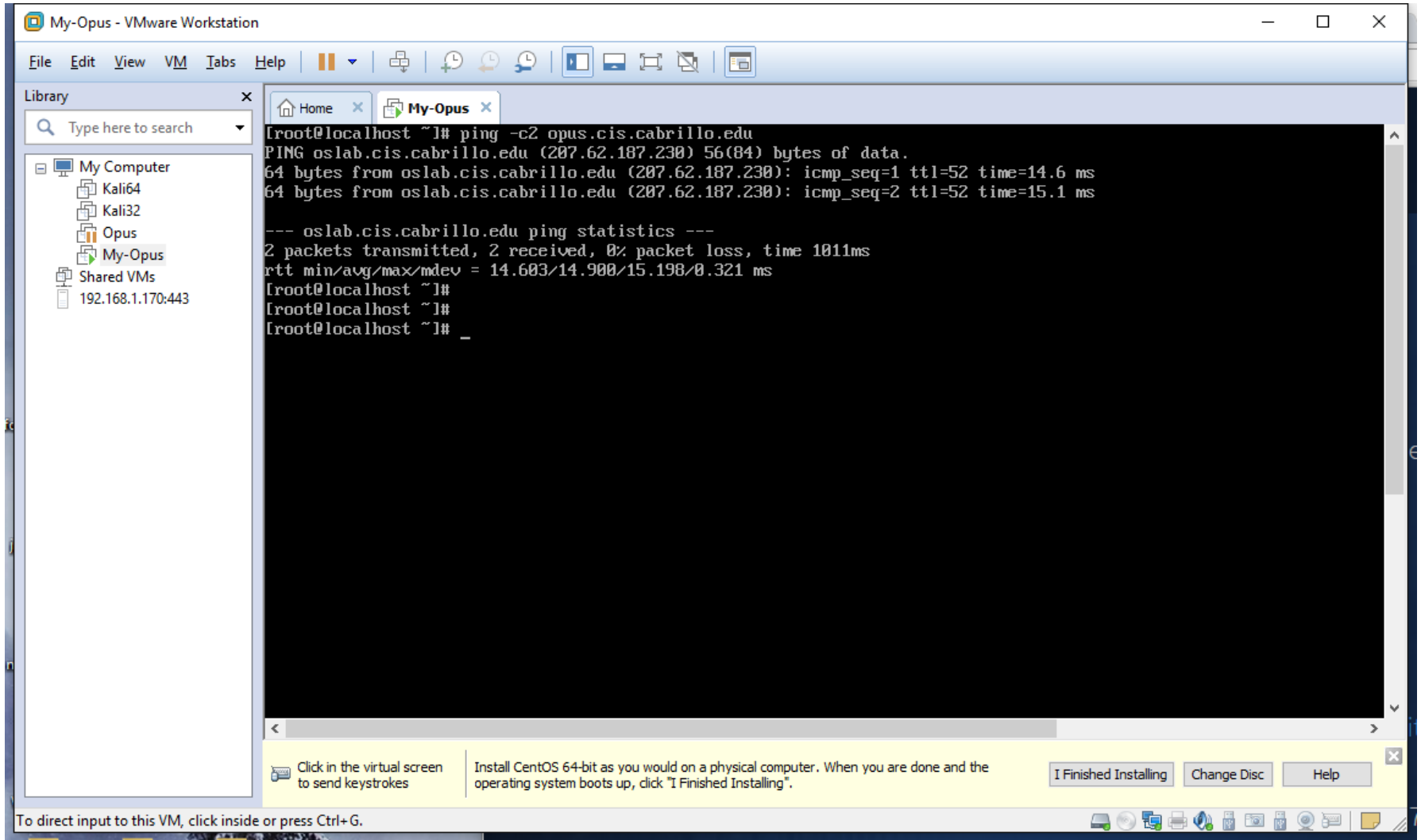
I Finished Installing Change Disc Help

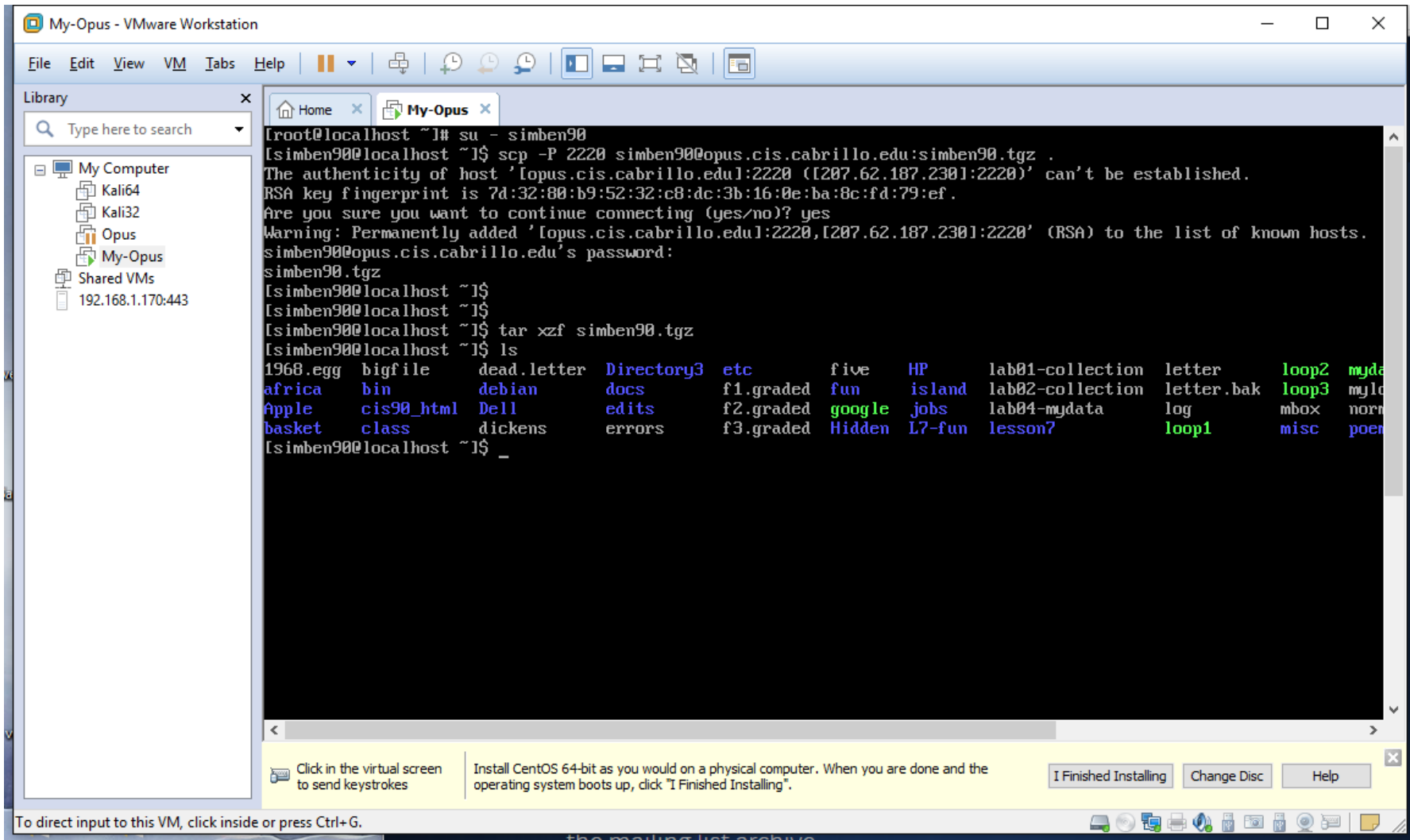
To direct input to this VM, click inside or press Ctrl+G.

*Login as root*

```

adduser simben90
passwd simben90
tail /etc/passwd
    
```





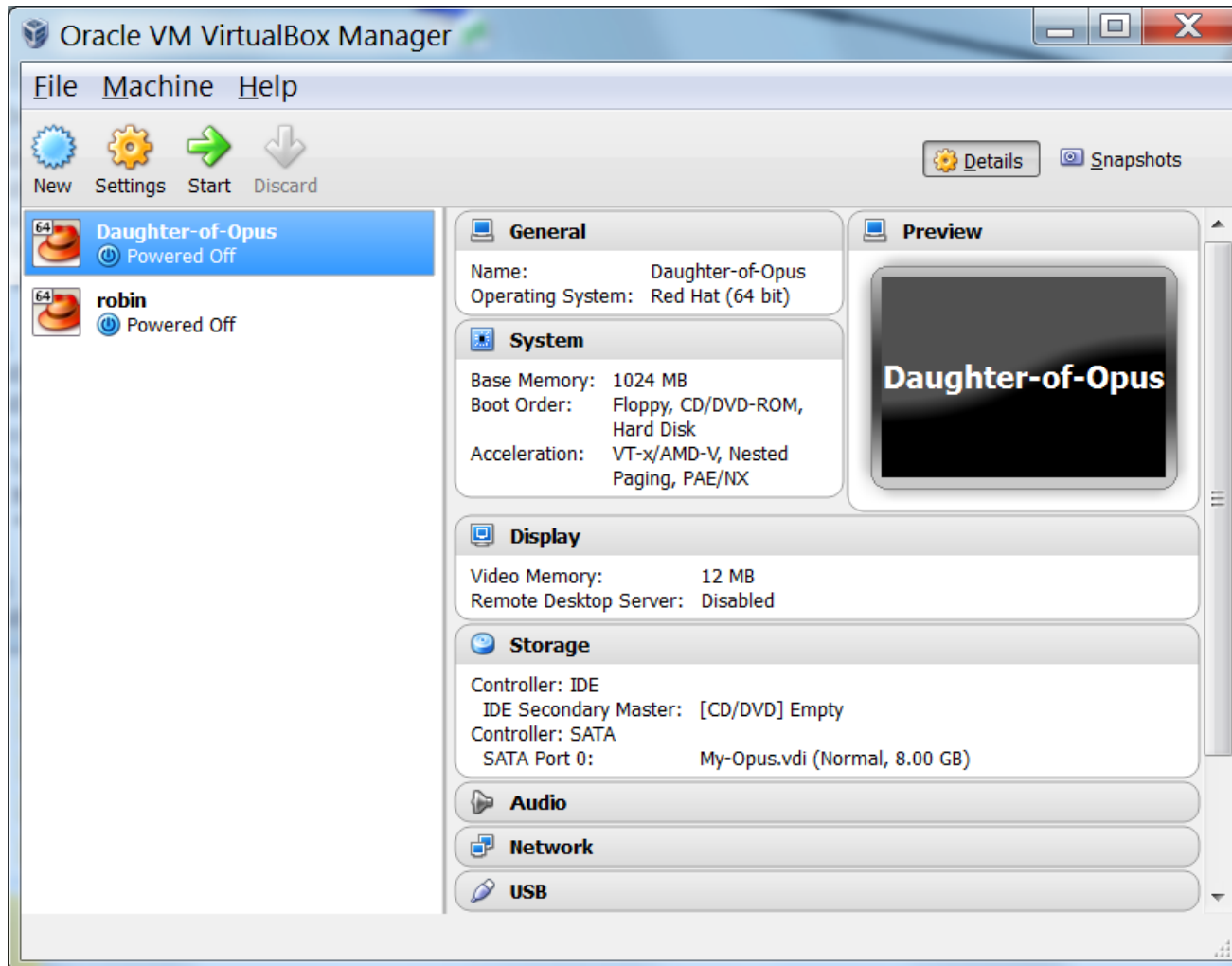
```
su - simben90
scp -P 2220 simben90@opus.cis.cabrillo.edu:simben90.tgz .
tar xzf simben90.tgz
```



# Virtual Box



## Oracle VirtualBox



*Provides you with an empty (No OS) virtual computer*

# virtualbox.org

VirtualBox

## Download VirtualBox

Here, you will find links to VirtualBox binaries and its source code.

### VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

- VirtualBox platform packages.** The binaries are released under the terms of the GPL version 2.
  - VirtualBox 4.3.20 for Windows hosts [⇒ x86/amd64](#)
  - VirtualBox 4.3.20 for OS X hosts [⇒ x86/amd64](#)
  - VirtualBox 4.3.20 for Linux hosts
  - VirtualBox 4.3.20 for Solaris hosts [⇒ amd64](#)
- VirtualBox 4.3.20 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 4.2.26**, please download the extension pack [⇒ here](#).  
 If you are using **VirtualBox 4.1.34**, please download the extension pack [⇒ here](#).  
 If you are using **VirtualBox 4.0.26**, please download the extension pack [⇒ here](#).
- VirtualBox 4.3.20 Software Developer Kit (SDK)** [⇒ All platforms](#)

See the [changelog](#) for what has changed.  
 You might want to compare the

- SHA256 checksums or the
- MD5 checksums

to verify the integrity of downloaded packages.  
*The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!*

**Note:** After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

### User Manual

<http://iso.linuxquestions.org/>

The screenshot shows a web browser window with the URL [iso.linuxquestions.org](http://iso.linuxquestions.org/). The page layout includes:

- Header:** LinuxQuestions.org logo with four penguins, a Rackspace Managed Cloud banner, and a navigation menu.
- Left Sidebar:**
  - LQ ISOs:** Search, Alphabetical List, Latest Releases, Release Notification, Suggest Additions.
  - Search:** A search input field with a 'Go' button.
  - Need Help?:** Downloading ISOs, Burning ISOs.
  - Sponsored Links:** Linux Os, Ubuntu Server, Download Linux, Laptop Deals, Programming, Linux Certification, Linux Operating System.
  - Statistics:** Distros: 465, Versions: 2760, Mirrors: 1849, Downloads: 55,668,721.
  - LQ Job Board:** Jobs.
- Main Content Area:**
  - Welcome to LQ ISOs:** Linux Download (Answer Your Linux Questions. Expert Articles & Tips. Free Guide!).
  - Welcome to LQ ISO:** This site is designed to meet all of your Linux distribution [download](#) needs, including searching for fast [mirrors](#), receiving email updates when new versions of your favorite distributions are released and reading reviews. If you do not see the distribution [you are looking for](#) below, you can view the complete [alphabetical list](#). Please let us know if you have any suggestions.
  - If you find the site useful, you can help spread the word by telling 10 friends the URL (<http://www.lqiso.org/>). Thanks.**
  - 15 Latest Linux Distribution Releases:**
    - Porteus 3.1
    - FreeNAS 9.3
    - SparkyLinux 3.6 "LXDE", "MATE", "Razor-qt", "Xfce"
    - MakuluLinux 7.0 "Xfce"
    - antiX 14.3 "MX"
    - Linux Lite 2.2
    - Manjaro Linux 0.8.11
    - Linux Mint 17.1
    - 4MLinux 10.1
    - DragonFly BSD 4.0.1
    - siduction 14.1.0
    - NetBSD 5.2.3, 5.1.5
    - Guadalinex 9
    - Univention Corporate Server 4.0
    - Grml 2014.11
  - Popular Linux Distributions:**
    - Ubuntu
    - Fedora
    - Linux Mint
    - openSUSE
    - PCLinuxOS
    - Debian
    - Mageia
    - Slackware
    - CentOS
    - Puppy
    - Arch
    - MEPIS
  - View by Topic:** Desktop, Server, Security, Mobile, Live, Firewall, Rescue.
- Right Sidebar:**
  - Main Menu:** Linux Forums, Android Forum, Chrome OS Forum, Linux HCL, Linux Tutorials, Linux Wiki, Distro Reviews, Book Reviews.
  - Ad:** Google Cloud Platform advertisement with a 'Try it now' button.

*You will need a Linux Distro to install on your virtual Computer*

## centos.org

The image shows two browser windows. The left window displays the main CentOS website at www.centos.org. The right window shows a mirror index at mirrors.sonic.net/centos/.

**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**

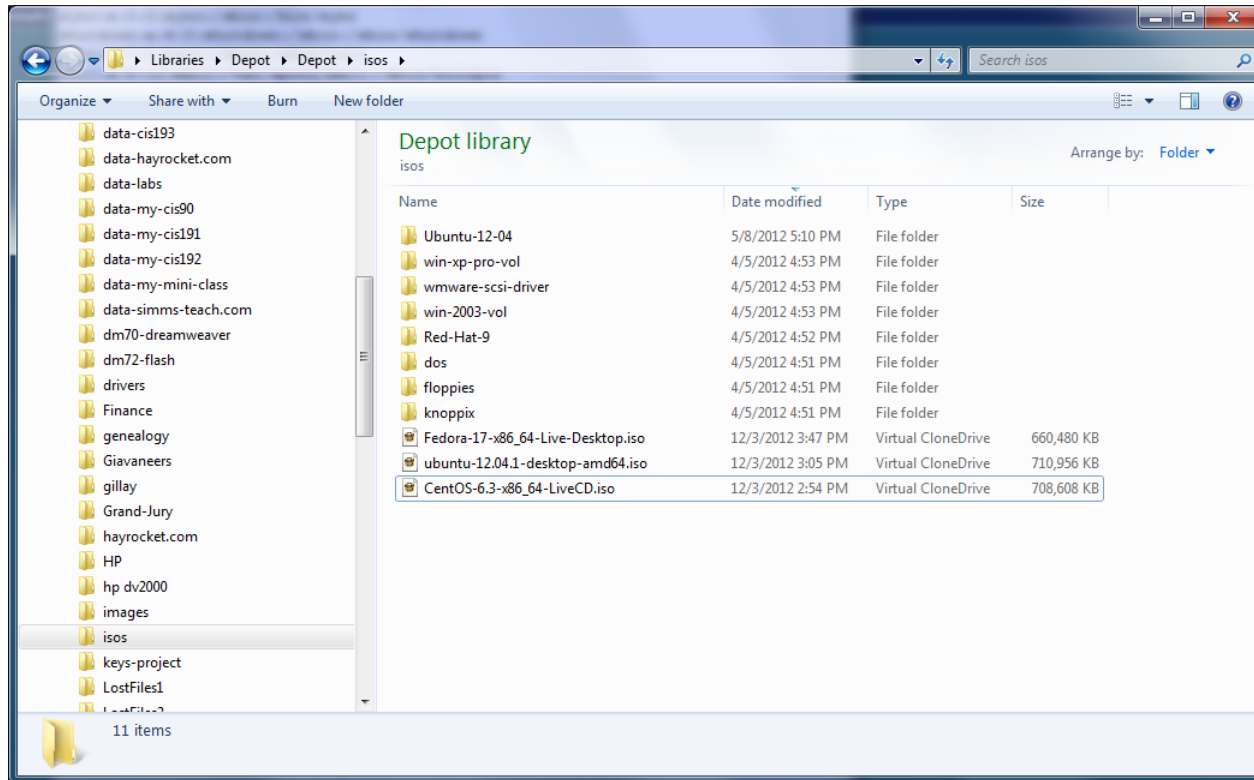
July 9th 2012

The CentOS team is pleased to **announce** the immediate availability of CentOS-6.3 for i386 and x86\_64 Architectures.

**Mirror Index Table:**

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	-	
3.2/	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	
build/	12-Jun-2005 05:56	-	

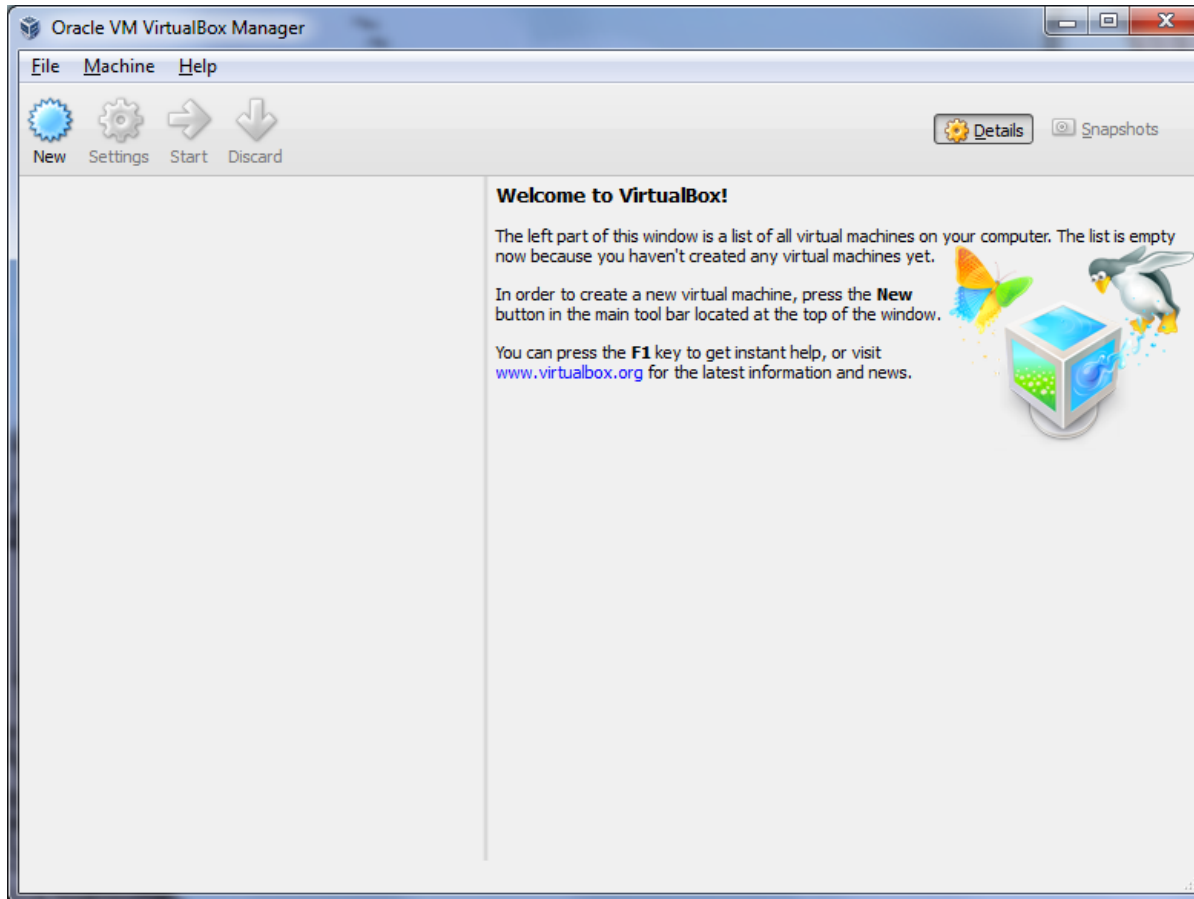
*Use the CentOS Distro to make your own Opus*



*Download an iso image of the Linux distribution*

## VirtualBox

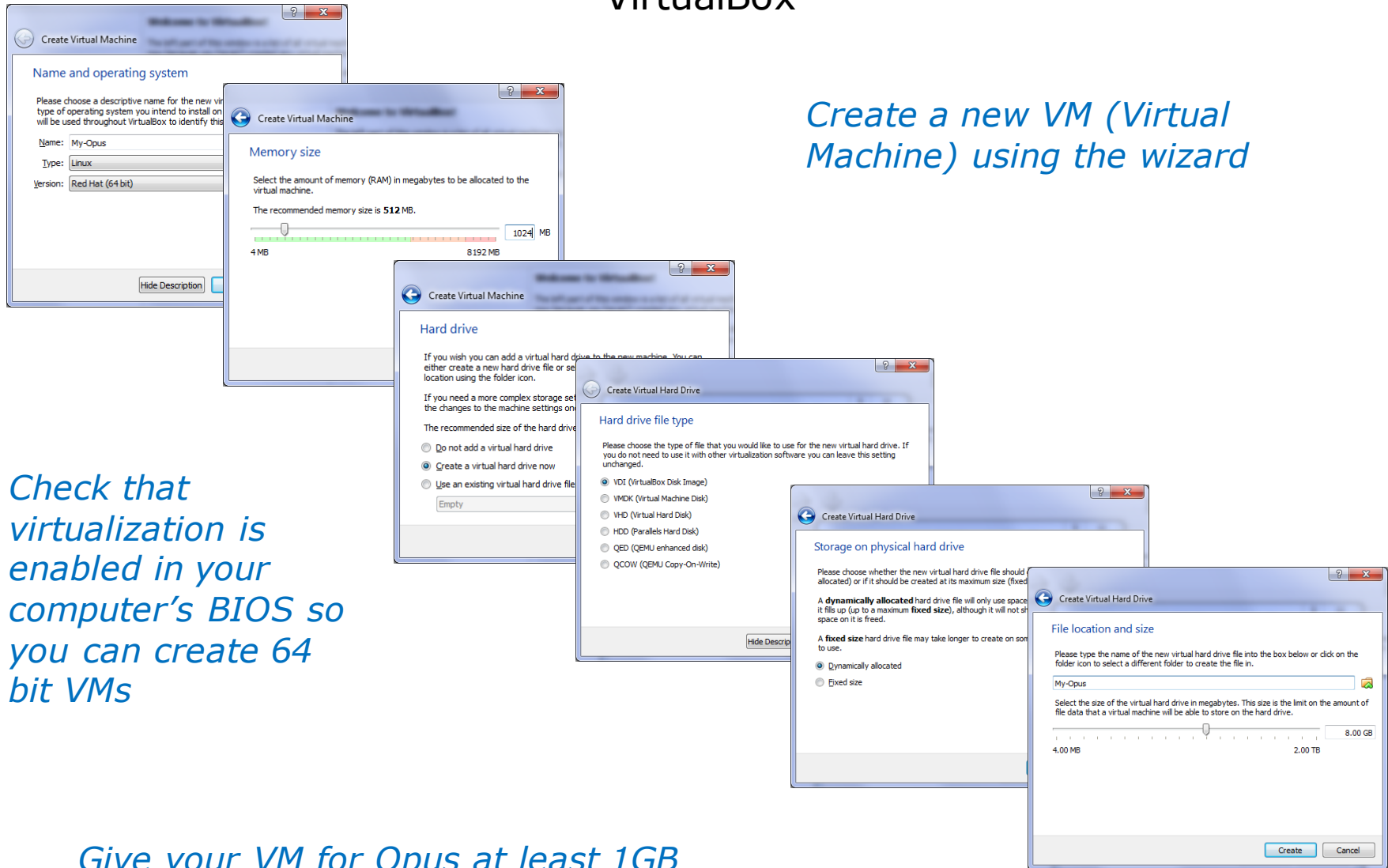
*Click the  
New button  
to create a  
new VM.*



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

## VirtualBox

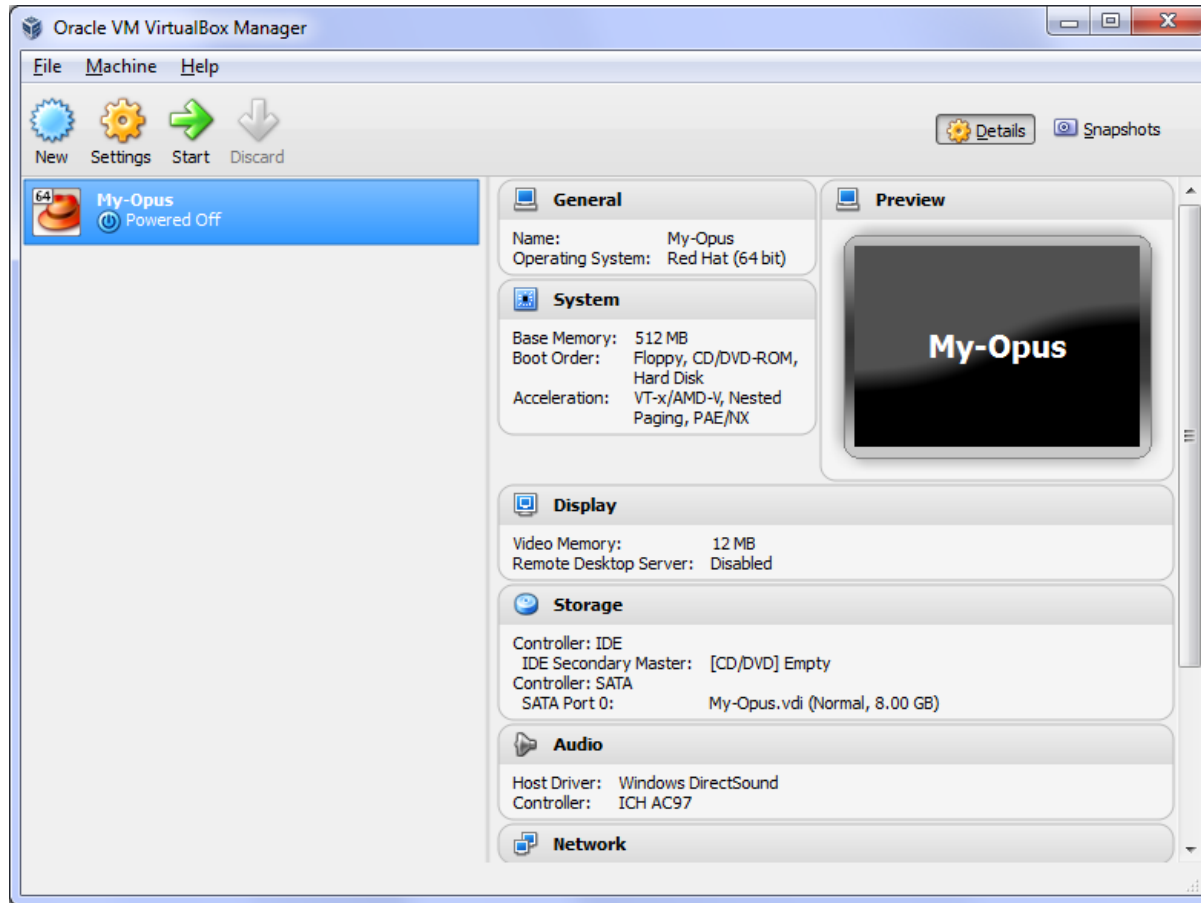
*Create a new VM (Virtual Machine) using the wizard*



*Check that virtualization is enabled in your computer's BIOS so you can create 64 bit VMs*

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

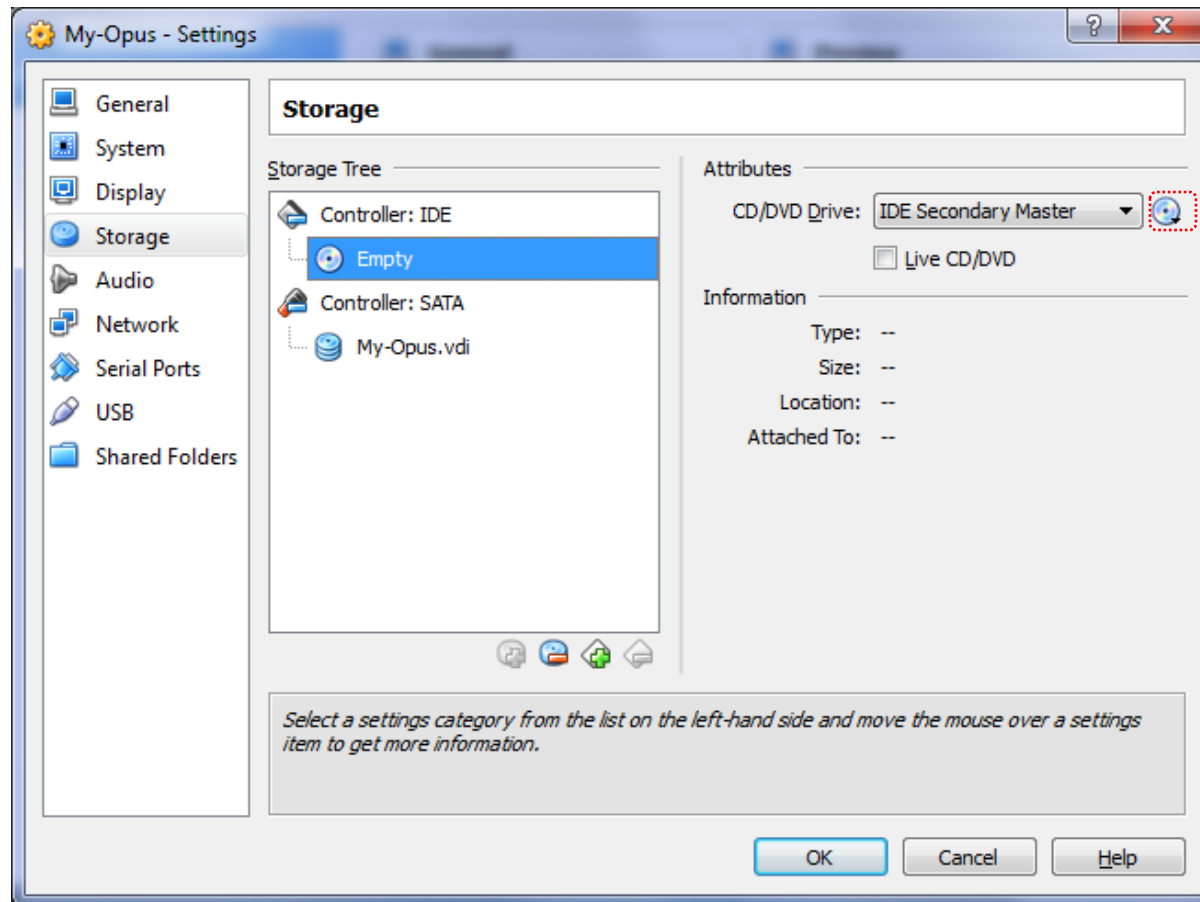
## VirtualBox



*The new VM has no operating system*



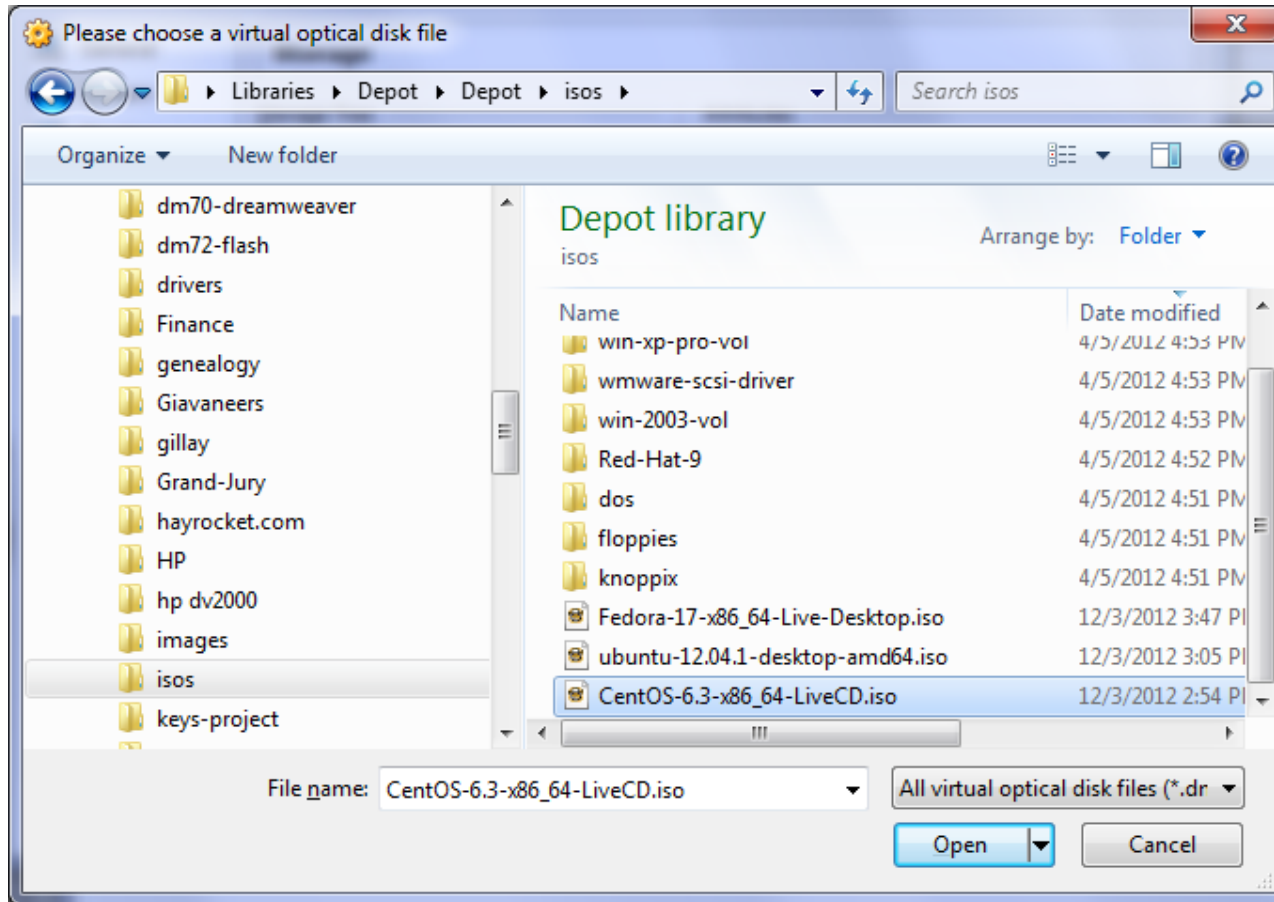
## VirtualBox



*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.*

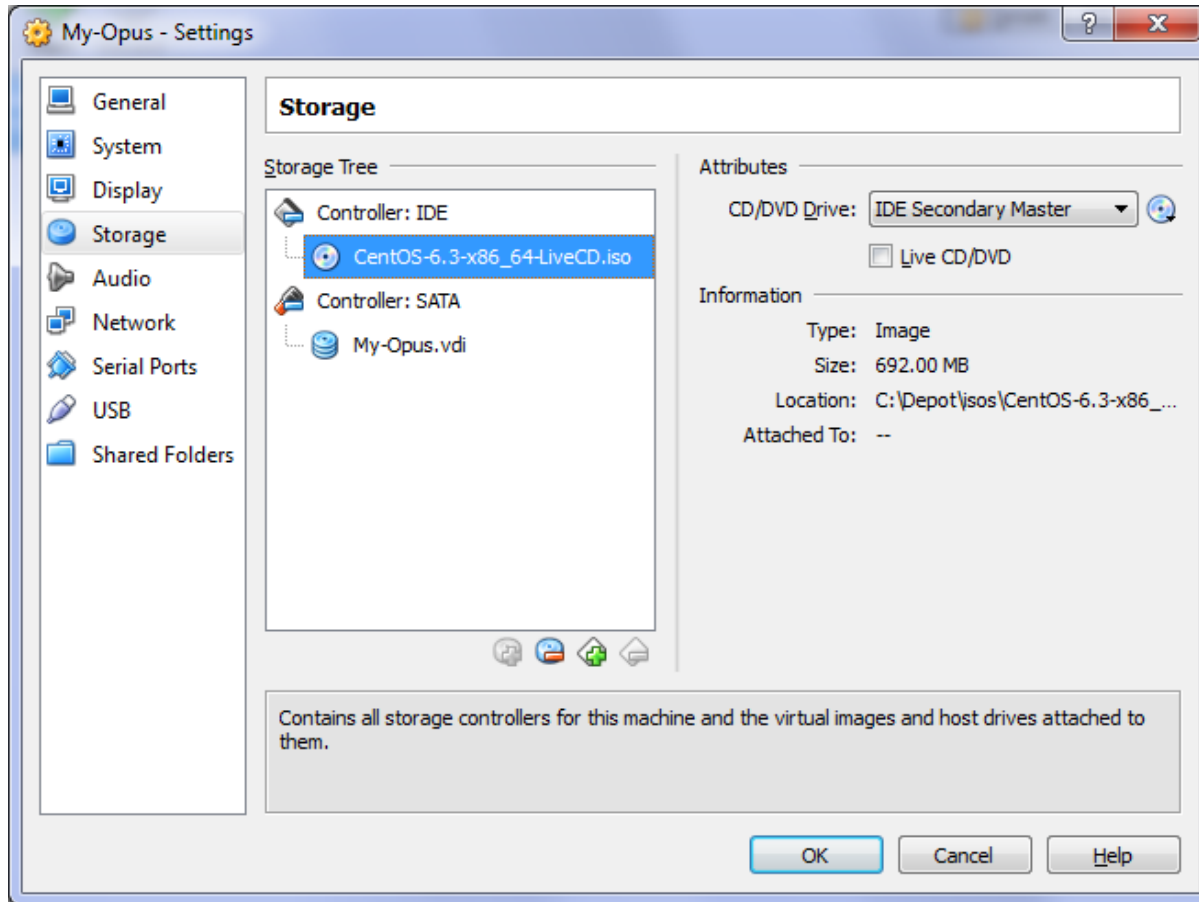
## VirtualBox



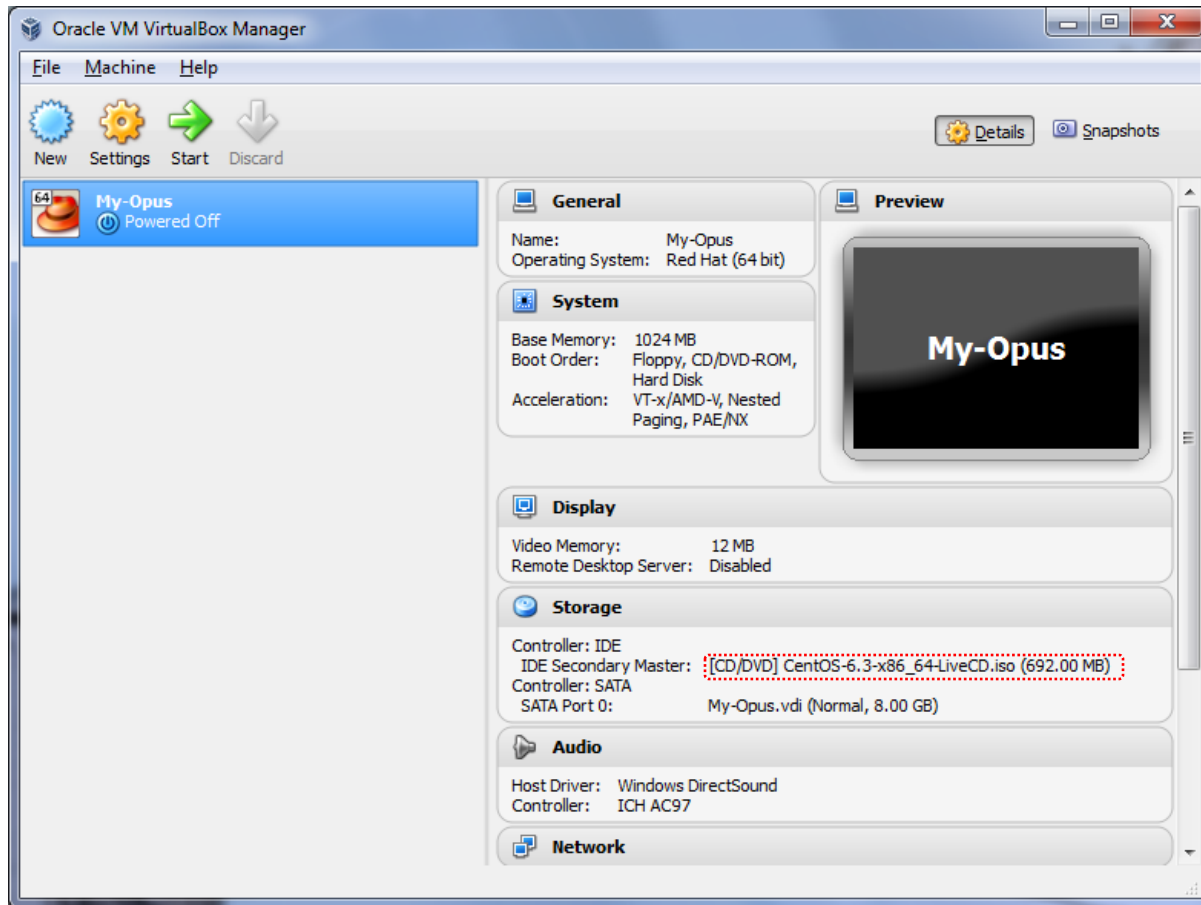
*Locate the ISO image to install*

CentOS-6.3-x86\_64-LiveCD.iso

## VirtualBox

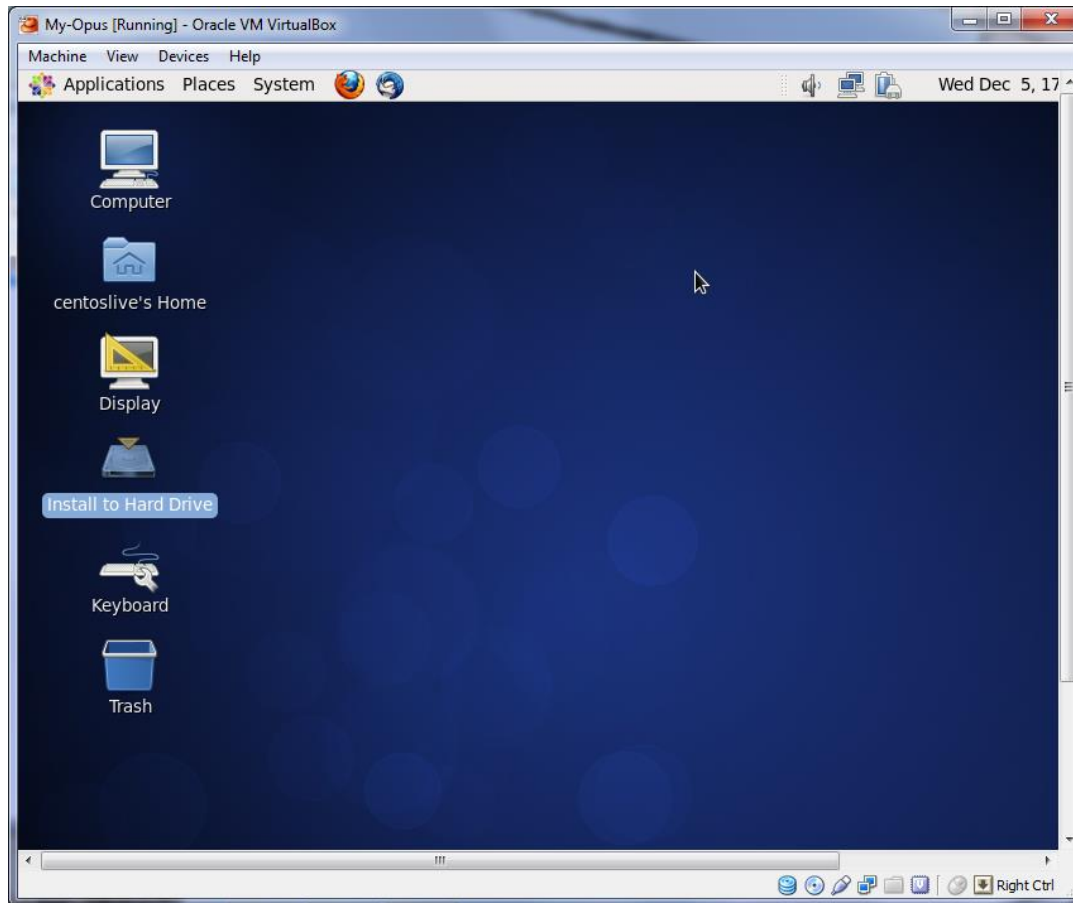


## VirtualBox



*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 a 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.*

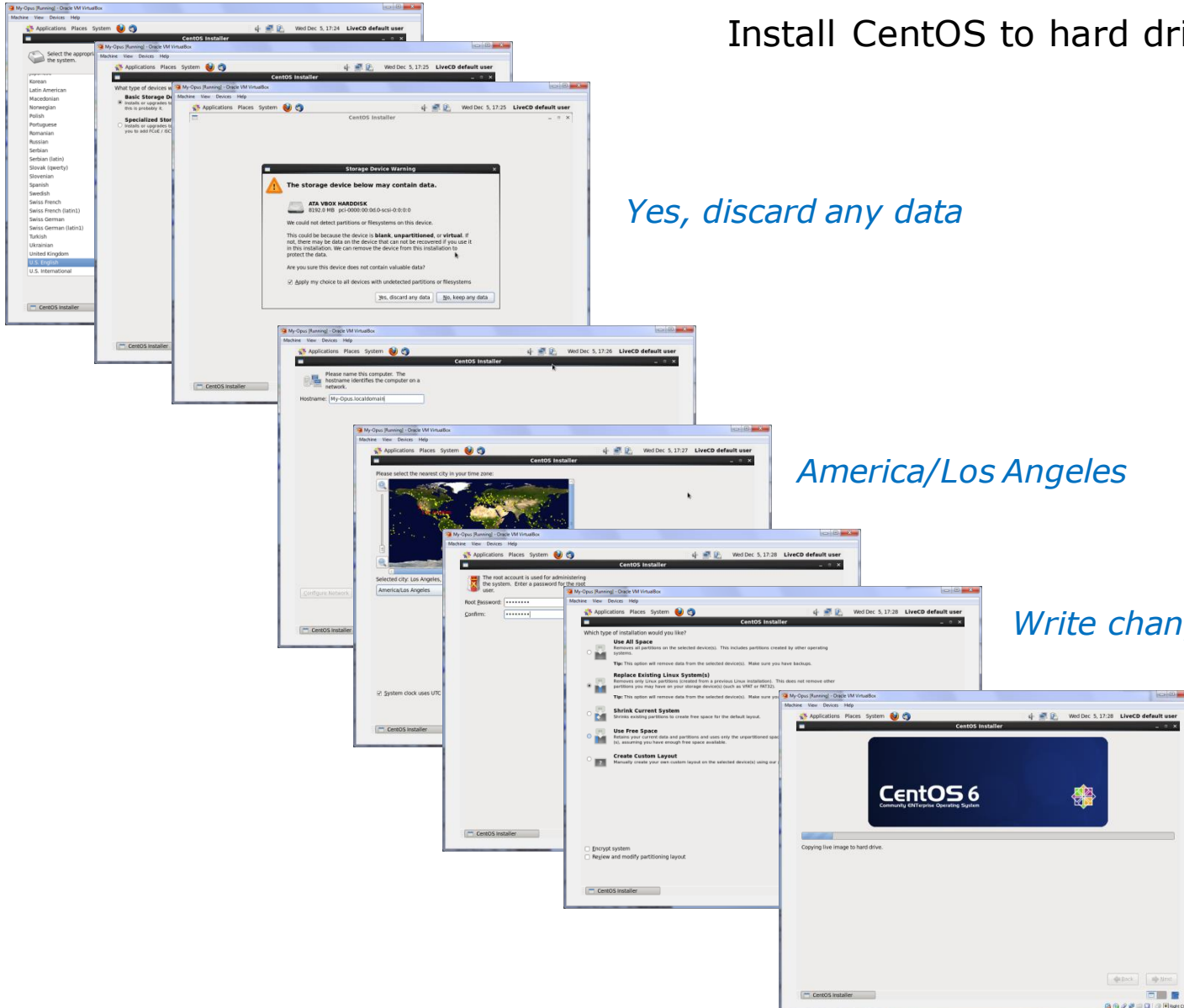
*To install permanently to the VM hard drive open the "Install to Hard Drive" icon on the desktop*

## VirtualBox



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

## Install CentOS to hard drive

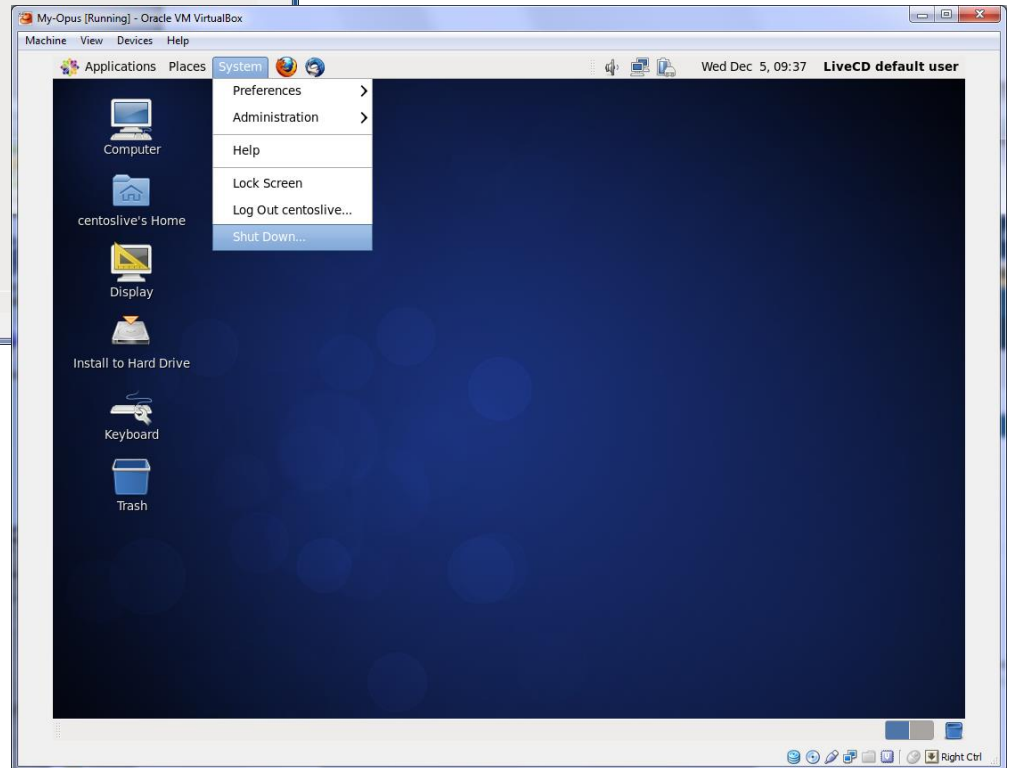
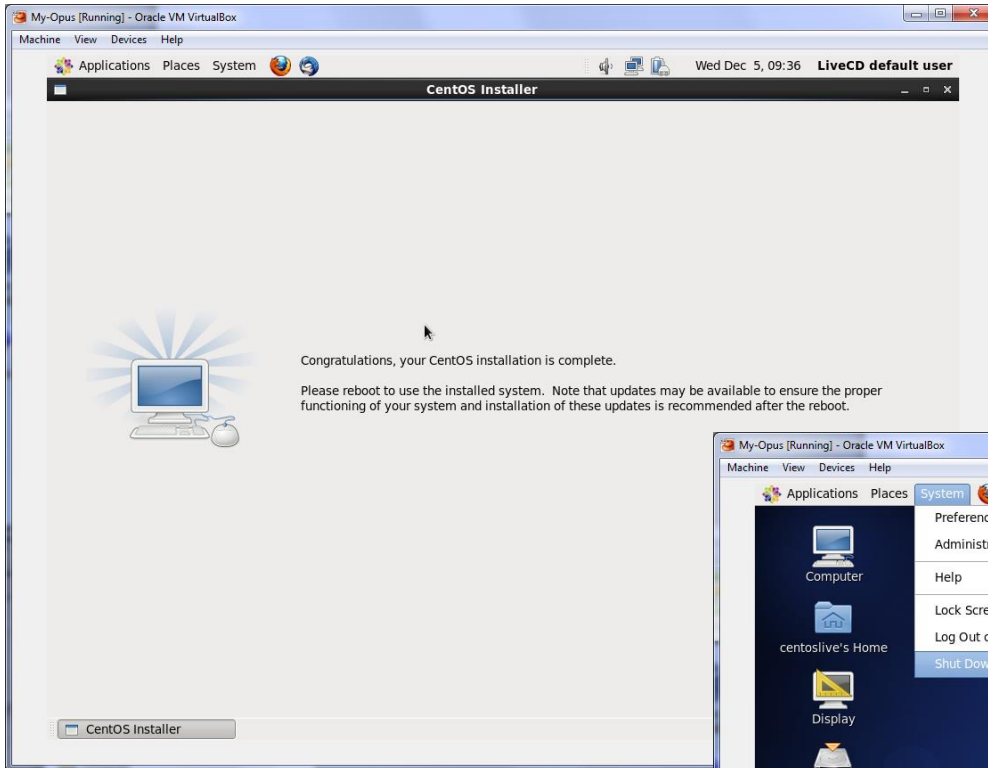


*Yes, discard any data*

*America/Los Angeles*

*Write changes to disk*

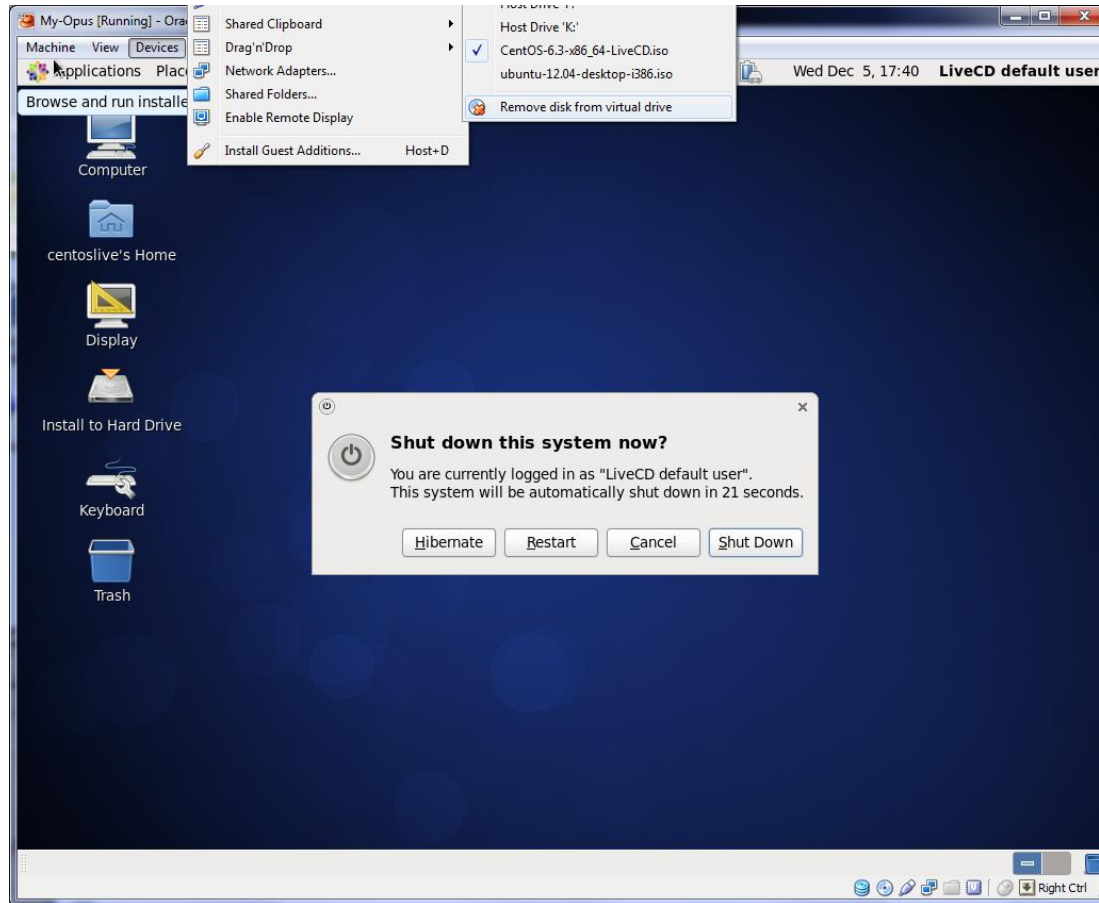
# VirtualBox



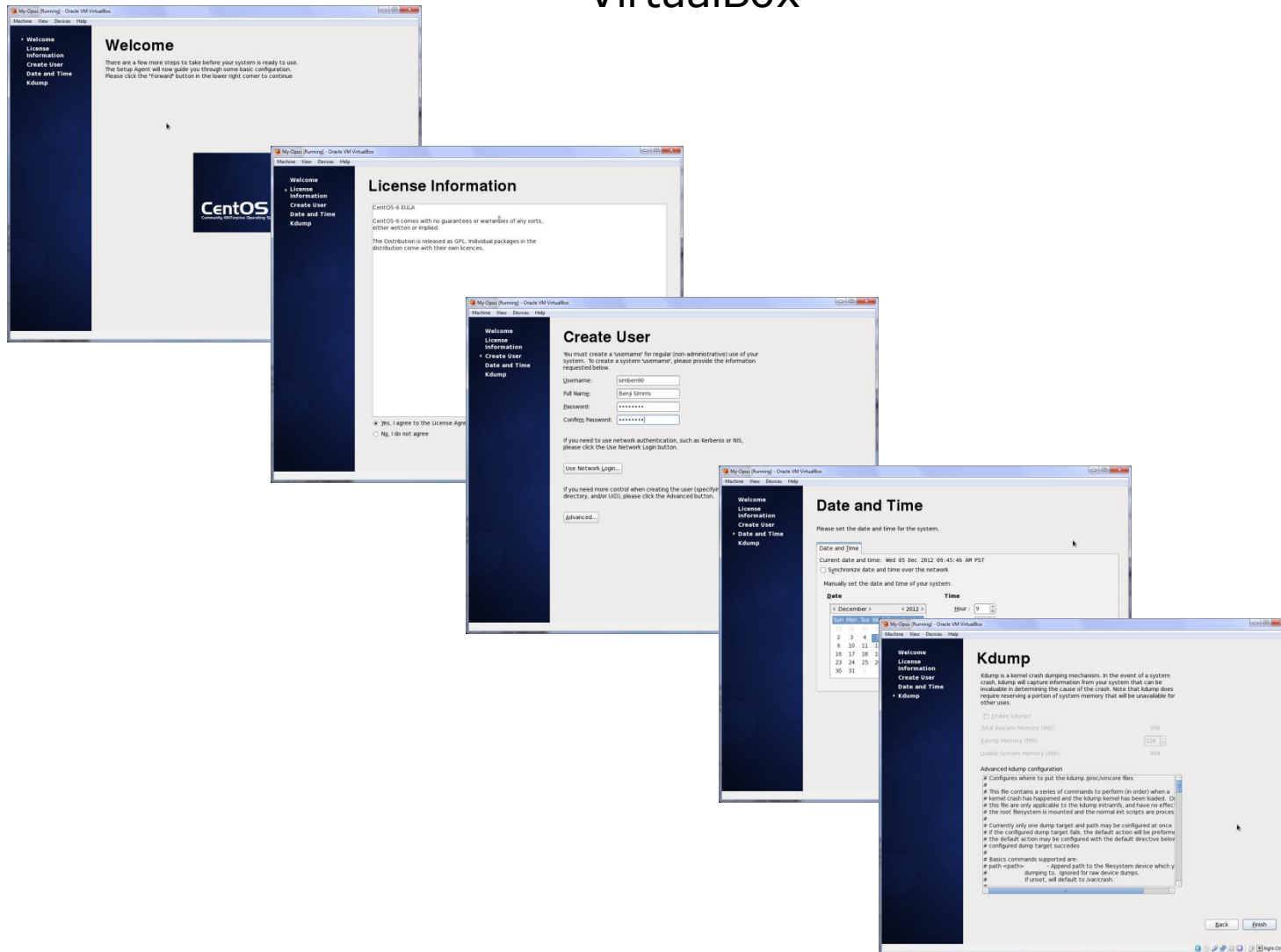
*Shutdown the system and before starting again remove the CD from the drive (Settings > Storage)*



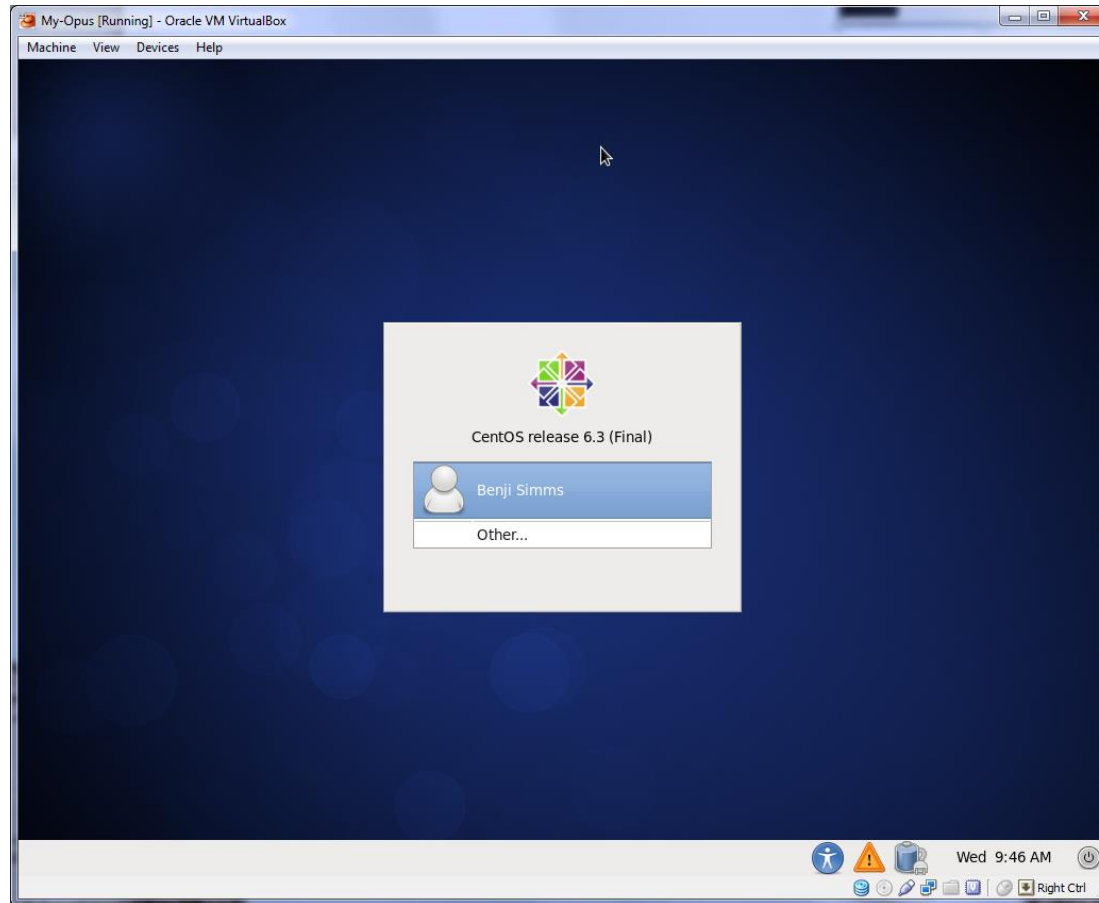
## VirtualBox



## VirtualBox



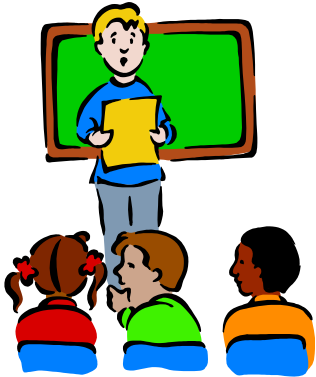
Voilà



*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 888-886-3951 and use passcode: 136690
- Classroom students can use the station next to the Polycom teleconference phone.

*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 content area shows a slide titled "CIS Linux Classes" with the Cabrillo College logo and instructor information: "Instructor: Rich Simms" and "Dial-in: 888-450-4821". A grid of 40 white silhouette icons represents participants in the "MAIN ROOM (2)".

On the left side, there are three main panels:

- AUDIO & VIDEO:** Features a video feed for "Rich Simms" (currently blank), volume controls, and buttons for "Talk" and "Video".
- PARTICIPANTS:** Lists "Benji" and "Rich Simms (Moderator)". Below the list is a row of four icons: a smiley face, a hand, a hand with a raised index finger, and a checkmark. This row is highlighted with a red box.
- CHAT:** Shows a chat history with messages: "- You joined the Main Room. ( 2:23 PM ) -" and "- Rich Simms joined the Main Room. ( 2:24 PM ) -". A text input field and a smiley face icon are at the bottom. This area is also highlighted with a red box.

Two blue callout boxes provide instructions:

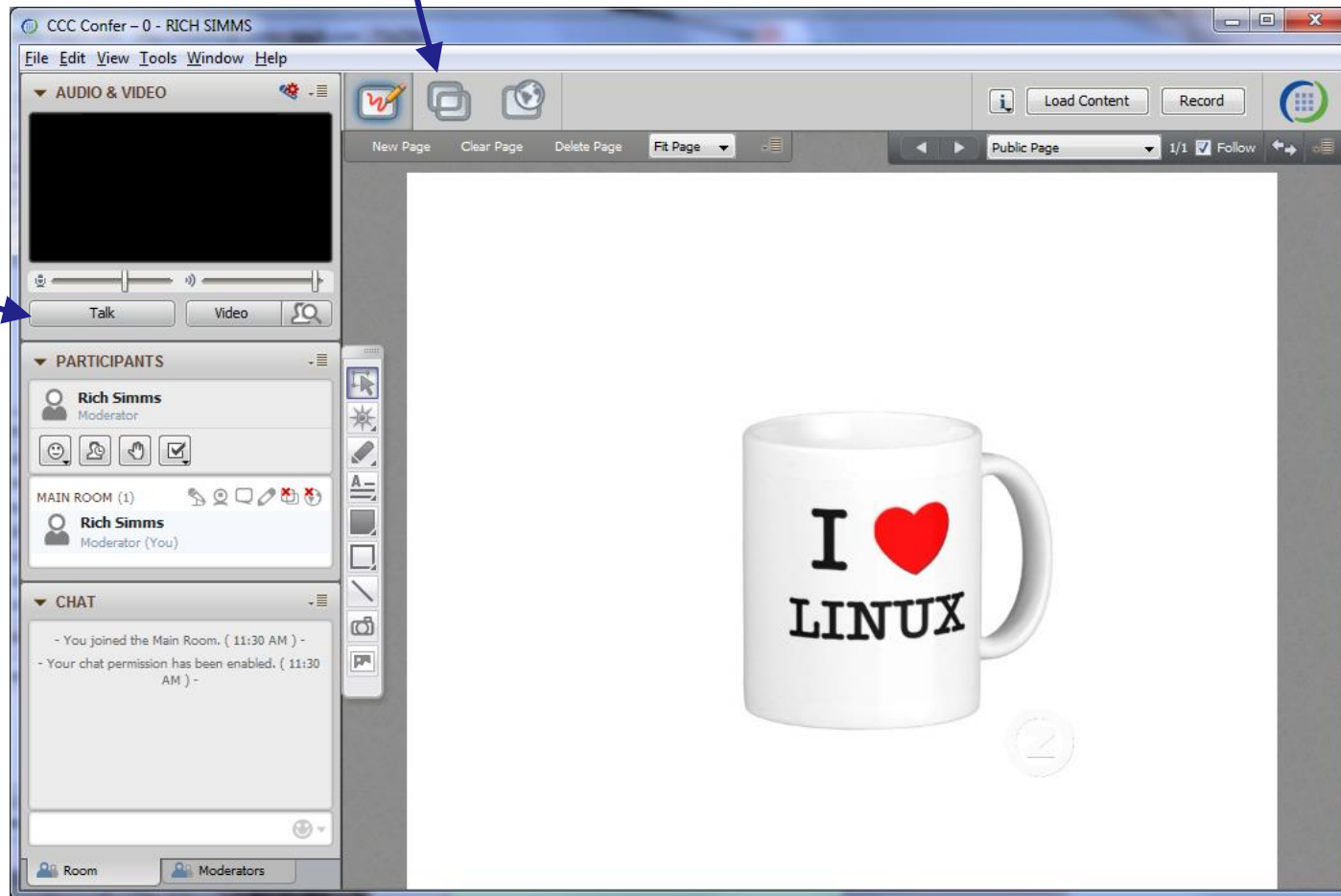
- The top callout, pointing to the participant icons, says: "Raise your hand, make gestures, use emoticons and indicate responses using these controls".
- The bottom callout, pointing to the chat area, says: "Ask public or private questions using the chat area".

At the bottom right of the slide, there is a small text fragment: "of your face for 3 points extra credit".

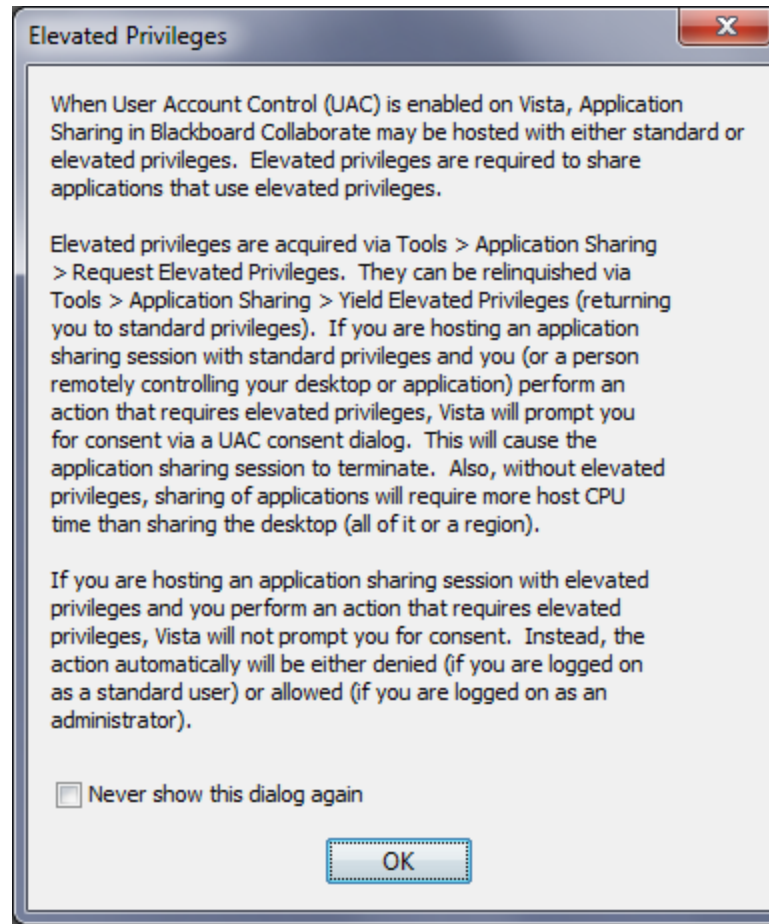
# Sharing from CCC Confer

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

Click **overlapping rectangles** to share



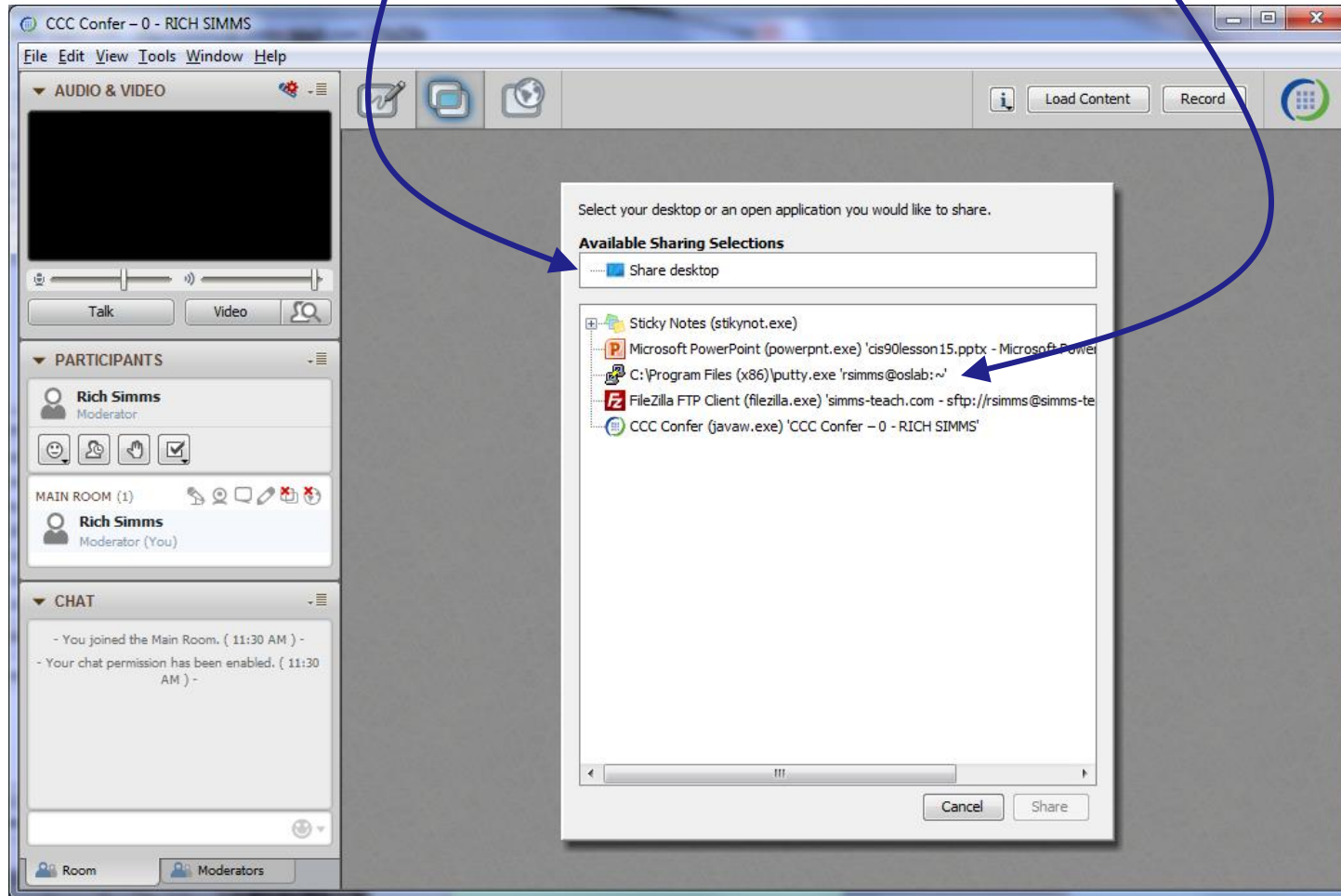
## Sharing from CCC Confer





# Sharing from CCC Confer

*Either share putty/terminal or entire desktop*



# Sharing from CCC Confer

*Click stop symbol to end sharing*

The screenshot shows a Windows desktop environment. On the left, there is a 'CCC Confer - 0 - RIC...' window. The confer window has a 'PARTICIPANTS' list with 'Rich Simms' as the Moderator. A terminal window titled 'rsimms@oslab:~' is being shared, displaying a login prompt and a welcome message: 'Welcome to Opus Serving Cabrillo College'. The terminal prompt is '[rsimms@oslab ~]\$'. A blue arrow points from the text 'Click stop symbol to end sharing' to the stop symbol (two vertical bars) in the confer window's title bar. The desktop background is a sketch of a building. The taskbar at the bottom shows various application icons and the system clock indicating 11:36 AM on 5/30/2013.

# Assignment



Do Practice Test #3

Do Practice Test #3

Do Practice Test #3

Do Practice Test #3

Do Practice Test #3

Five Posts

Lab X1 (extra credit)

Lab X2 (extra credit)



# Wrap up

New commands:

tar

gzip

gunzip

Backup and restore files

Zip and compress files

Unzip files

New Files and Directories:

Next Class is the Final Exam (Test #3)

Test #3

Five Posts

Lab X1 (extra credit)

Lab X2 (extra credit)



# Backup





# Linux and Telephones



## Way back in Lesson 1

### Apple iOS



*The Apple iOS, internally known as Darwin, like Mac OS X, runs on a Unix-like kernel (Mach kernel + BSD components)*

### Android



*Android smartphones use the Linux kernel*



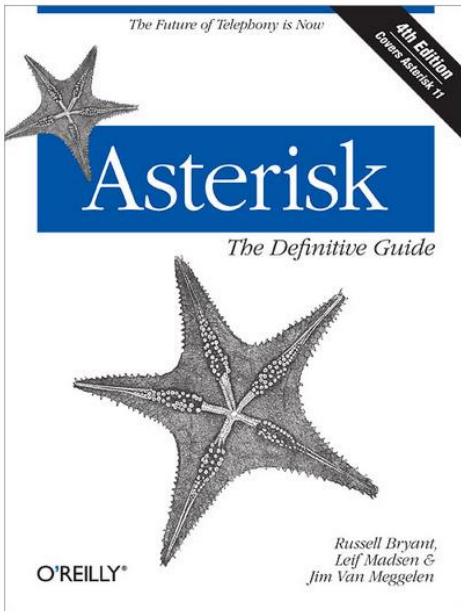
## Telephone System Terminology

**PSTN (Public Switched Telephone Network)** - The global telecommunication infrastructure.

**PBX (Private Branch Exchange)** - a telephone system used by a business or organization. Each user has their own extension. Trunk lines connect the PBX to the PSTN for incoming and outgoing calls.

**SIP (Session Initiation Protocol)** - a protocol used for voice/video sessions.

**VoIP (Voice over IP)** - umbrella group of technologies for delivering voice communications and multimedia sessions.



- Open source PBX (Private Branch Exchange) software.
- Implements a complete VOIP phone system.
- Created in 1999 by Mark Spencer of Digium.
- <http://www.asterisk.org/>

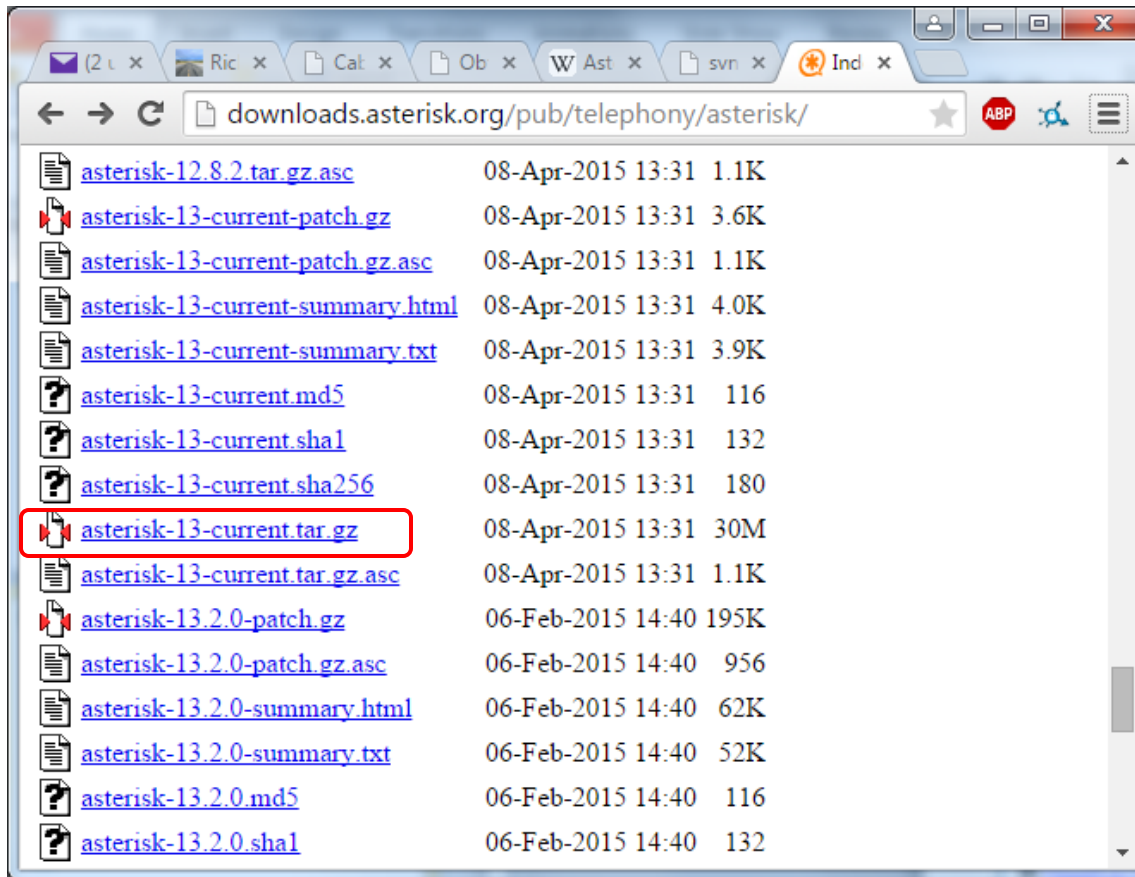


- Open-source web-based GUI (Graphical User Interface) to manage Asterisk.
- <http://www.freepbx.org/>

## Asterisk Source Code



<http://downloads.asterisk.org/pub/telephony/asterisk/>



*Asterisk is licensed under the GNU GPL which means you have the freedom to download, view and modify the source code.*

*All the files for each version have been tarred and compressed into a single tarball.*

*Obtaining the current version Asterisk source code to examine*

# Asterisk app\_voicemail.c source code file



You can see it was authored by Mark Spencer and licensed under the GNU GPL (General Public License).

```

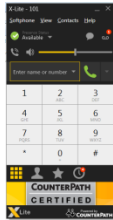
1  /*
2  * Asterisk -- An open source telephony toolkit.
3  *
4  * Copyright (C) 1999 - 2006, Digium, Inc.
5  *
6  * Mark Spencer <markster@digium.com>
7  *
8  * See http://www.asterisk.org for more information about
9  * the Asterisk project. Please do not directly contact
10 * any of the maintainers of this project for assistance;
11 * the project provides a web site, mailing lists and IRC
12 * channels for your use.
13 *
14 * This program is free software, distributed under the terms of
15 * the GNU General Public License Version 2. See the LICENSE file
16 * at the top of the source tree.
17 */
18
19 /*!
20 * \file
21 * \author Mark Spencer <markster@digium.com>
22 * \brief Comedian Mail - Voicemail System
23 *
24 * unixODBC (http://www.unixodbc.org/)
25 * A source distribution of University of Washington's IMAP c-client
26 * (http://www.washington.edu/imap/)
27 *
28 * \par See also
29 * \arg \ref Config_vm
30 * \note For information about voicemail IMAP storage, https://wiki.asterisk.
31 * \ingroup applications
32 * \todo This module requires res_adsi to load. This needs to be optional
33 * during compilation.
34 *
35 * \todo This file is now almost impossible to work with, due to all \#ifdefs
  
```

```

1776
1777 /*!
1778 * \brief The handler for the change password option.
1779 * \param vmu The voicemail user to work with.
1780 * \param newpassword The new password (that has been gathered from the appropriate prompting).
1781 * This is called when a new user logs in for the first time and the option to force them to set.
1782 * It is also called when the user wants to change their password from menu option '5' on the mailbox options menu.
1783 */
1784 static void vm_change_password(struct ast_vm_user *vmu, const char *newpassword)
1785 {
1786     struct ast_config *cfg = NULL;
1787     struct ast_variable *var = NULL;
1788     struct ast_category *cat = NULL;
1789     char *category = NULL, *value = NULL, *new = NULL;
1790     const char *tmp = NULL;
1791     struct ast_flags config_flags = { CONFIG_FLAG_WITHCOMMENTS };
1792     char secretfn[PATH_MAX] = "";
1793     int found = 0;
1794
1795     if (!change_password_realtime(vmu, newpassword))
1796         return;
1797
1798     /* check if we should store the secret in the spool directory next to the messages */
1799     switch (vmu->passwordlocation) {
1800     case OPT_FWLOC_SPOOLDIR:
1801         snprintf(secretfn, sizeof(secretfn), "%s/%s/secret.conf", VM_SPOOL_DIR, vmu->context, vmu->mailbox);
1802         if (write_password_to_file(secretfn, newpassword) == 0) {
1803             ast_test_suite_event_notify("PASSWORDCHANGED", "Message: secret.conf updated with new password\r\nPasswordSource:
1804             secret.conf");
1805             ast_verb(4, "Writing voicemail password to file %s succeeded\n", secretfn);
1806             reset_user_pw(vmu->context, vmu->mailbox, newpassword);
1807             ast_copy_string(vmu->password, newpassword, sizeof(vmu->password));
1808             break;
1809         } else {
1810             ast_verb(4, "Writing voicemail password to file %s failed, falling back to config file\n", secretfn);
  
```

It is written in the C language.  
The C function shown on the right implements voicemail user password changes.

# Making your own telephone system on a budget



**PC Soft Phone**  
X-Lite  
Free

<http://www.counterpath.com/x-lite-download/>



**Android/iOS Soft Phone**  
Zoiper  
Free

<http://www.zoiper.com/>



**raspbx download**  
(Asterisk + FreePBX)

Free download, SD card ~\$12  
<http://www.raspberry-asterisk.org/downloads/beta-image/>



**raspbx documentation**  
Free

<http://www.raspberry-asterisk.org/>



**Linux Computer**  
Raspberry Pi 2  
\$39.99

<http://tinyonestore.com/>



**Network Switch**

RouterBoard (Mikrotik) RB260GS  
\$38.95

<http://www.streakwave.com/>

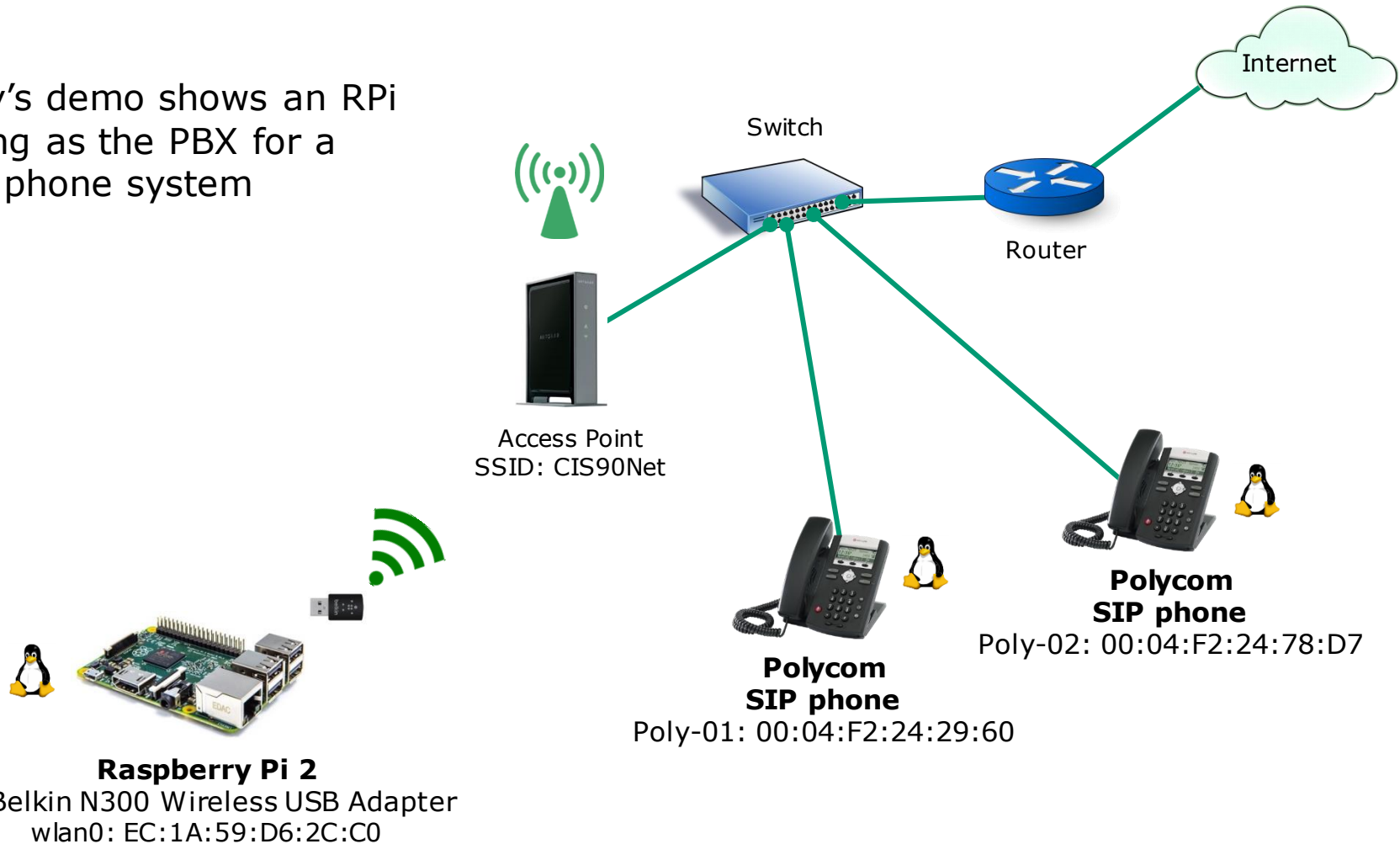


**SIP phones**

Polycom SoundPoint IP 331  
\$15.00 each  
<http://ebay.com/>

# VOIP Demo on RPi and Polycom SIP phones

Today's demo shows an RPi serving as the PBX for a VOIP phone system



Download RPi raspbx image from  
<http://www.raspberry-asterisk.org/>





# Polycom SoundPoint IP Phones



**SIP phone**  
Polycom SoundPoint IP 331

*Is it a phone?  
Is it a computer?*



SEPTEMBER 2013 | 3725-47083-002/A

## Polycom® Voice OFFER of Source for GPL and LGPL Software

You may have received from Polycom®, certain products that contain—in part—some free software (software licensed in a way that allows you the freedom to run, copy, distribute, change, and improve the software).

As a part of this product, Polycom may have distributed to you hardware and/or software, or made electronic downloads, that contain a version of alsa-lib, alsasink, alsa-utils, BlueZ, busybox-1.11.1, DirectFB, fbset, ffmpeg, ffmpegdec, glibc, glib2, gst-openmax, gstreamer, libomxil-bellagio, libstdc++ 4.3.2, libusb, Libxml, **Linux Kernel**, module-init-tools-3.2.2, mtd-utils-1.2.0-1.fc10, omxvideodec, procps-3.2.7-20.fc9, SDL, tsattach-1.0, tslib, u-boot, udev-092, WebKit, wireless-tools, wrsv-1tt, and x-loader, which are **free software programs developed by the Free Software Foundation**. With your purchase of the products listed in Table A, Polycom has granted you a license to the above-mentioned software under the terms of the GNU General Public License (GPL), GNU Library General Public License (LGPLv2), or GNU Lesser General Public License (LGPL). The text of these Licenses can be found in Licenses on page 19.

For at least three years from the date of distribution of the applicable product or software, we will give to anyone who contacts us at the contact information provided below, for a charge of no more than our cost of physically distributing, the following items:

- A copy of the complete corresponding machine-readable source code for programs listed below that are distributed under the GNU GPL
- A copy of the corresponding machine-readable source code for the libraries listed below that are distributed under the GNU LGPL, as well as the executable object code of the Polycom work that the library links with

The software included or distributed for the product, including any software that may be downloaded electronically via the internet or otherwise (the "Software") is licensed, not sold. The customer may modify any of the Libraries listed below licensed under the GNU LGPL, and then re-link to produce a modified executable containing the modified Library. Customers who choose to modify the original software delivered by Polycom for the product void all WARRANTY, SERVICE and SOFTWARE SUPPORT agreements.

### Table A: Polycom® Products Incorporating GPL and LGPL Software

Business Media Phones: Polycom VVX® 300, Polycom VVX® 310, Polycom VVX® 400, Polycom VVX® 410, Polycom VVX® 600, Polycom VVX® 600, Polycom VVX® 1500, Polycom VVX® 1500 D

SoundStructure: Polycom SoundStructure® VoIP Interface Plug-in Card

# Add User (extension) to PBX



# Adding New Extension (user) on PBX



<http://<ip-of-pbx-server>>

A screenshot of the FreePBX web administration interface. The browser address bar shows 'raspbx/admin/config.php?display=index'. The main content area displays a 'System Overview' section with a 'Welcome to FreePBX' message and system status indicators. A left-hand navigation menu is visible, with the 'Extensions' option highlighted by a red rectangular box.



**raspbx server**  
(Asterisk + FreePBX on Linux)

A screenshot of the 'Add an Extension' form in the FreePBX interface. The form includes a title, a instruction to select a device, a dropdown menu for device selection (currently set to 'Generic CHAN SIP Device'), and a 'Submit' button.

# Adding New Extension (user) on PBX



CIS 90 VLab Assignments

Student	Hostname
Abraham C.	Arya-12
Abraham N.	Arya-66
Ahmad	Arya-75
Al	Arya-03
Benji C.	Arya-54
Benji S.	Arya-02
Cameron	Arya-68
Chris	Arya-35
Clara	Arya-17
Diego	Arya-73
Django	Arya-08
Duke	Arya-46
Eddie	Arya-72
Efrain	Arya-38
Emilio	Arya-74
Ethan	Arya-21
Geoffrey	
Gerlinde	
Homer	
Ian	
Ivers	
John	
Mario	
Mateo	
Matt	
Melissa	
Mike	
Monte	
Nick	
Rick	
Roberto	
Ryan	
Sean	
Sherpa	
Sky	
Tanner	
Tess	
Tim	Arya-23
TBD	Arya-57
TBD	Arya-31
TBD	Arya-47
TBD	Arya-19
TBD	Arya-13
TBD	Arya-60



**raspbx server**  
(Asterisk + FreePBX on Linux)

- Add Extension

---

User Extension <sup>?</sup>

Display Name <sup>?</sup>

CID Num Alias <sup>?</sup>

SIP Alias <sup>?</sup>

Portion of FreePBX "Add Extension" web page

*Enter User Extension and Display Name  
(4xx is "4" + student CIS 90 VM pod number)*

## Adding New Extension (user) on PBX



**raspbx server**  
(Asterisk + FreePBX on Linux)

- Device Options

---

This device uses **CHAN\_SIP** technology listening on **:5060**

Secret <sup>?</sup>

DTMF Signaling <sup>?</sup>

NAT Mode <sup>?</sup>

Portion of FreePBX "Add Extension" web page

*Set Secret password to use when adding handset later*

## Adding New Extension (user) on PBX



**raspbx server**  
(Asterisk + FreePBX on Linux)

- Voicemail

Status	<input type="text" value="Enabled"/>
Voicemail Password <sup>?</sup>	<input type="text" value="12345"/>
Require From Same Extension <sup>?</sup>	<input checked="" type="radio"/> yes <input type="radio"/> no
Email Address <sup>?</sup>	<input type="text" value="watshe90@opus.cis.cabrillo.edu"/>
Pager Email Address <sup>?</sup>	<input type="text" value="watshe90@opus.cis.cabrillo.edu"/>
Email Attachment <sup>?</sup>	<input checked="" type="radio"/> yes <input type="radio"/> no
Play CID <sup>?</sup>	<input checked="" type="radio"/> yes <input type="radio"/> no
Play Envelope <sup>?</sup>	<input checked="" type="radio"/> yes <input type="radio"/> no
Delete Voicemail <sup>?</sup>	<input checked="" type="radio"/> yes <input type="radio"/> no

Portion of FreePBX "Add Extension" web page

*Configure voicemail and use Opus email address*

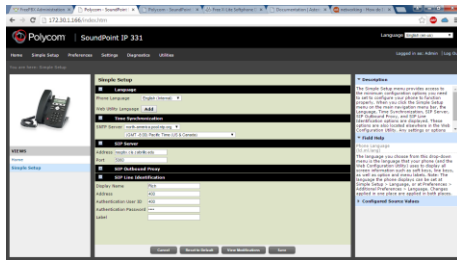
# Add SIP Hard Phone to Network



# Configure SIP "Hard" Phone as extension



<http://<ip-of-sip-phone>>



**SIP phone**  
is connected using standard LAN cable

Simple Setup	
<b>Language</b>	
Phone Language	English (Internal) ▼
Web Utility Language	Add
<b>Time Synchronization</b>	
SNTP Server	north-america.pool.ntp.org ▼
	(GMT -8:00) Pacific Time (US & Canada) ▼
<b>SIP Server</b>	
Address	raspbx.cis.cabrillo.edu
Port	5060
<b>SIP Outbound Proxy</b>	
<b>SIP Line Identification</b>	
Display Name	Rich
Address	400
Authentication User ID	400
Authentication Password	****
Label	

*Configure SIP phone with extension number and address of PBX server*

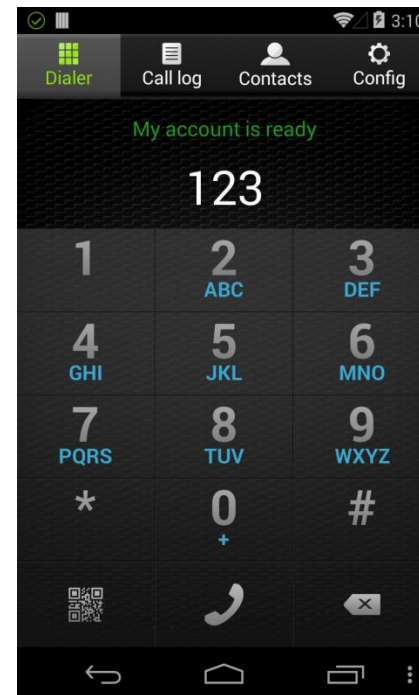
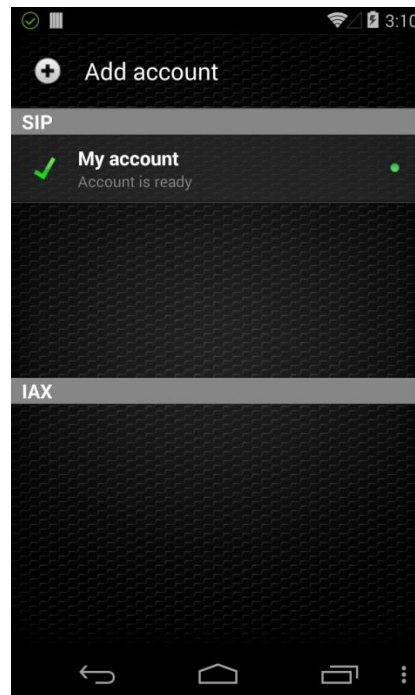


# Install SIP Soft Phone on Android



# Zoiper

<http://www.zoiper.com/>



*Lets you use your Android device as an phone extension*

# Install SIP Soft Phone on PC



## X-Lite soft phone

<http://www.counterpath.com/x-lite-download/>

**COUNTERPATH** PRODUCTS SOLUTIONS PARTNERS COMPANY SUPPORT **STORE**

### Ready to Download the Free X-Lite Softphone?

Before you download X-Lite for Windows PC or Mac, please note that in order to use X-Lite to make audio calls to softphone/mobile/landline numbers and make video calls/send Instant Messages to softphones, a **VoIP subscription with a local service provider or Internet Service Provider is required**. Please contact your local service provider to subscribe.

[Download X-Lite 4.8.2 for Windows](#)

[Download X-Lite 4.8.2 for Mac](#)

[Download X-Lite 4.5 for Windows XP](#)

[Sales Request Form](#)

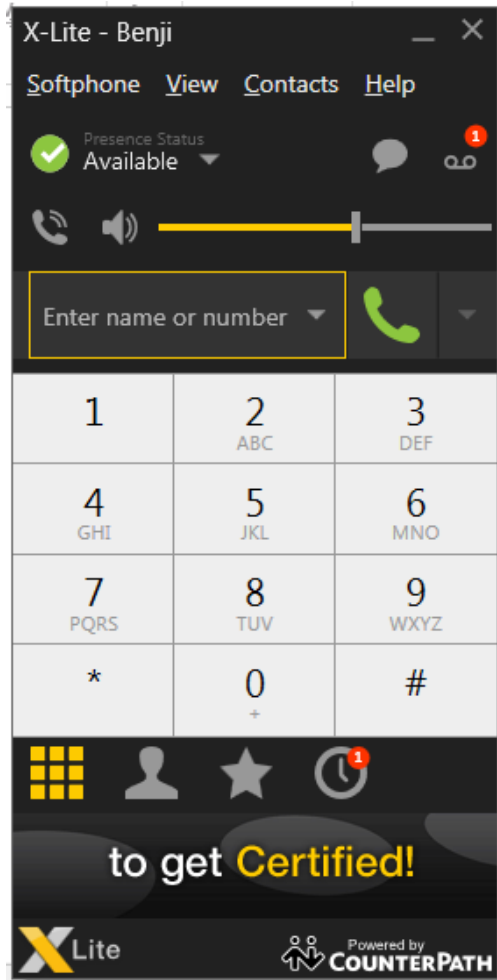
**Try X-Lite for FREE - and try our most popular features of Bria!**

Combining voice and video calls in a user-friendly interface, CounterPath's X-Lite helps you seamlessly transition from a traditional phone environment into the world of Voice over IP.

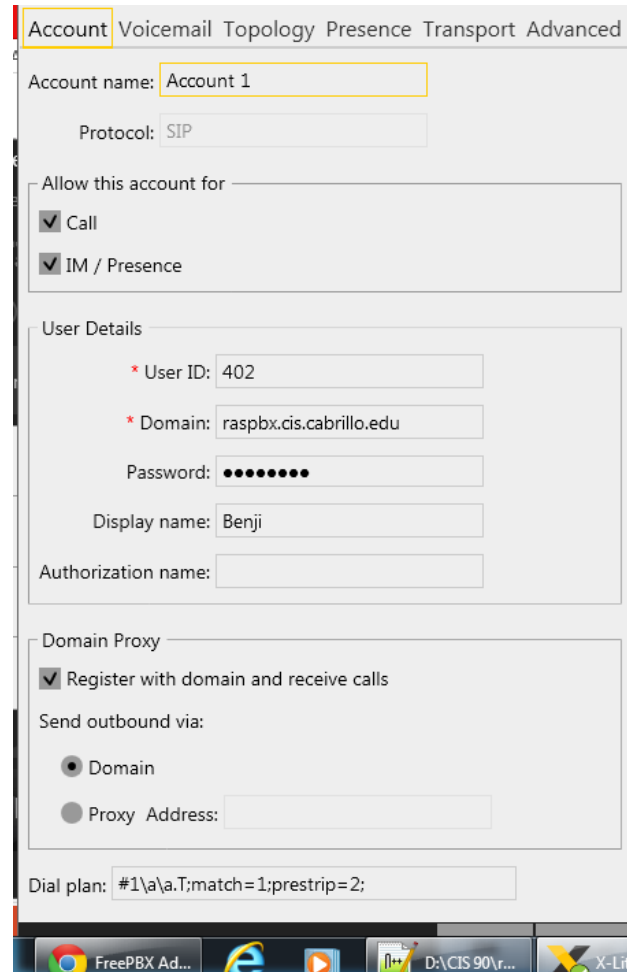
[DOWNLOAD](#)

*Lets you use your PC as an phone extension*

# Configure soft phone as extension



## Softphone > Account Settings



# Configure soft phone as extension



Softphone > Preferences > Devices > [Test Devices]

A screenshot of the "Preferences" window. The left sidebar shows a list of categories: Application, Alerts &amp; Sounds, Devices (highlighted in yellow), Audio Codecs, Video Codecs, and Calls. The main area is titled "Devices" and contains several options: "Automatic gain control" (checked), "Reduce background noise" (checked), "Test Devices" (highlighted in a dashed box), and "Test Camera". Below these are "Headset Mode" (highlighted in yellow) and "Speakerphone" (disabled). Under "Headset Mode", there are dropdown menus for "Speaker:" (set to "Speakers and Headset") and "Microphone:" (set to "Internal Mic (IDT Hi...").

A screenshot of the "Troubleshooting" window. It has a tabbed interface with "Devices" (checked) and "Audio Diagnostics" (with a warning icon). The main content area says "You are currently in: Headset mode" and lists four steps: 1. Select the microphone you want to use: (Microphone (High Definiti... dropdown), with a green checkmark and "Your microphone works" below); 2. Speak into the microphone: (with a grey bar); 3. Select the speakers you want to use: (Speakers (High Definitio... dropdown), with a "Stop" button and "Speakers (High Definition Audio Device)" selected); 4. (Speakers (High Definition Audio Device) 2 dropdown, with a yellow bar and a slider). At the bottom right, there is a "Done" button and a "No Sound?" button with a green bar.

# Troubleshooting





## How to reset used Polycom phone to factory defaults

richsimms - Y x Rich's Cabrill x CIS 90 - Sprin x CIS Lab x FreePBX Adm x Polycom - So x Polycom VoIP x

voipt2.polycom.com

**Polycom | Support**  
Click the ICON to go to Polycom Support pages

### Welcome to the Polycom VoIP Phone Provisioning Server

#### Getting Started

This is a publicly accessible server intended only for use of provisioning, upgrading, or downgrading the software of Polycom IP phones with stock Polycom software and configuration files.

Multiple 'stock' directories exist with different versions of SIP, UC, and BootROM software, and are named according to the SIP or UC software version contained within. These directories are completely **Stock**; no changes should be made to any configuration files within.

Each directory contains an [ABOUT.TXT](#) to indicate which SIP and BootROM software versions exist within that directory.

**To Provision Your Polycom VoIP Phone:**

- From the phone's local menu interface, press **Menu > Settings > Advanced** (default password: 456) > **Administration Settings > Network Configuration > Server Menu**.
- Configure your DHCP menu:  
**On 3.x Phones:** Main Menu > Settings > Advanced > Admin Settings > Network Configuration > DHCP Menu  
**On 4.x/5.x phones:** Main Menu > Settings > Advanced > Admin Settings > Network Configuration > Provisioning Server > DHCP Menu set the following:  
 Boot Server: **Static**  
 BootSrv Type: **IP Address** (Once phone is upgraded, please remove the IP address from the phone!!!)
- From the Provisioning Server menu set: Server Type: **HTTP**
- Next input Server Address as **voipt2.polycom.com** or **IP** Example to load the latest SIP 4.06 = **voipt2.polycom.com/406**
  - Note **voipt2.polycom.com** can be entered in IP form, enter: Example **140.242.64.35/406** for convenience.
- Unless otherwise instructed by VoIP Support, do not change Server User or Password.  
 (Optional): Specify a directory for the SIP or UC software version you wish the phone to provision, as listed below.

**IMPORTANT NOTE:** Using this server to provision your phone will erase all preferences and will restore all settings to their Factory Default Values!  
**ALL SETTINGS WILL BE LOST!!**

*Used phones may have previous configuration on them*





## How to reset used Polycom phone to factory defaults

downloads.polycom.com/voice/voip/sip\_sw\_releases\_matrix.html

### Polycom® UC Software Release Matrix For SoundPoint IP and SoundStation IP Phones

The Polycom UC Software Release Matrix For VXX Phones and SoundStructure VoIP Interface Card can be found [here](#).

Release	Release Notes	IP301	IP320/330	IP321/331	IP335	IP430	IP450	IP501	IP550	IP560	IP600	IP601	IP602
<a href="#">4.1.1 (MS Lync Only) Combined</a>	<a href="#">View</a>	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.1.1 (MS Lync Only) Split</a>		No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.1.0 Rev S (MS Lync Only) Combined</a>	<a href="#">View</a>	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.1.0 Rev S (MS Lync Only) Split</a>		No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.1.0 Rev B (MS Lync only) Combined</a>	<a href="#">View</a>	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.1.0 Rev B (MS Lync only) Split</a>		No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.0.8 Rev C Combined</a>	<a href="#">View</a>	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.0.8 Rev C Split</a>		No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.0.7 Combined</a>	<a href="#">View</a>	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.0.7 Split</a>		No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes
<a href="#">4.0.6 Combined</a>	<a href="#">View</a>	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes



## Freepbx "tampered" error fix

```
amportal chown  
amportal a ma refreshsignatures  
amportal a reload
```

*Updates digital signatures after upgrading modules*

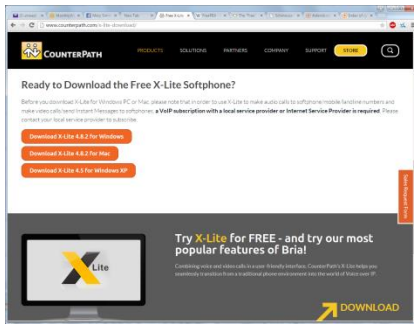
# Miscellaneous



# Student Volunteer Checklist



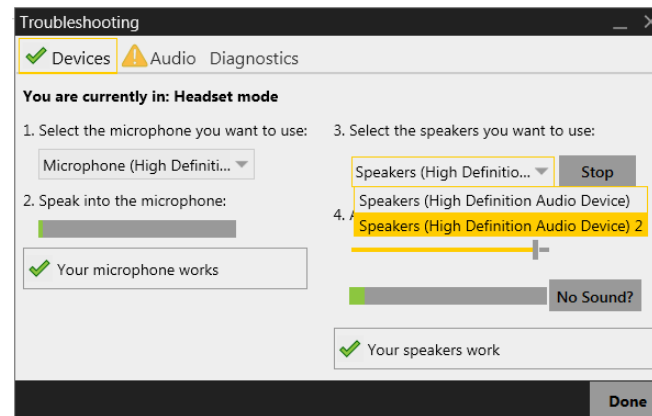
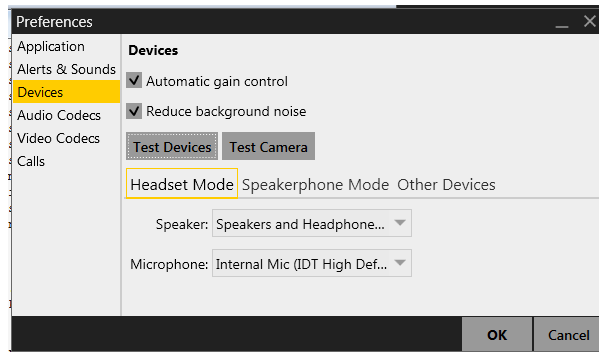
1. Google "x-lite download" and install X-Lite for Windows on workstation (including C++ libraries)



<http://www.counterpath.com/x-lite-download/>



2. Plug in Plantronics headset and configure X-Lite audio speakers  
**Softphone > Preferences > Devices > [Test Devices]**



## Classroom Testing Checklist



1. Install X-Lite on instructor station
2. Connect Poly-01 and Poly-02 to classroom LAN
3. Find IP address of raspbx, poly-01 and poly-02
  - a) raspbx = 172.30.1.34
  - b) poly-01 = 172.30.1.36
  - c) poly-02 = 172.30.1.37
4. Delete all current extensions on PBX
5. Add Rich as x400 for Poly-01 hard phone
6. Add Benji as x412 for Poly-02 hard phone
7. Add Smartphone as x402 for Zoiper soft phone
8. Test x400 <-> x412 <-> 402
  - a) Voice session
  - b) Voicemail
9. Test voice mail. From phone dial own extension and hit \* to enter voice mail. Check for email on each recorded message.

```
NoPar#show ip dhcp binding

ip dhcp pool raspbx-828-wifi
 host 172.30.1.34 255.255.255.0
 client-identifier 01ec.1a59.d62c.c0
!
ip dhcp pool poly-01
 host 172.30.1.36 255.255.255.0
 hardware-address 0004.f224.2960
!
ip dhcp pool poly-02
 host 172.30.1.37 255.255.255.0
 hardware-address 0004.f224.78d7
!
ip dhcp pool volumio
 host 172.30.1.38 255.255.255.0
 hardware-address 40a5.ef09.ae53
 hardware-address b827.ebcf.c47e (eth0)
```

```
Poly-01: 00:04:F2:24:29:60
Poly-02: 00:04:F2:24:78:D7
Raspbx-828 eth0: B8:27:EB:78:79:7D
Raspbx-828-wifi wlan0: EC:1A:59:D6:2C:C0
```

```
Volumio eth0: b8:27:eb:cf:c4:7e
Volumio wlan0: 40:a5:ef:09:ae:53
```



# MACs and IPs

Poly-01: 00:04:F2:24:29:60  
 Poly-02: 00:04:F2:24:78:D7  
 Raspbx-828 eth0: B8:27:EB:78:79:7D  
 Raspbx-828-wifi wlan0: EC:1A:59:D6:2C:C0

Volumio eth0: b8:27:eb:cf:c4:7e  
 Volumio wlan0: 40:a5:ef:09:ae:53

```
NoPar#sh ip dhcp binding
Bindings from all pools not associated with VRF:
IP address          Client-ID/
                   Hardware address/
                   User name
172.20.4.150        0100.5056.65c0.b3    May 10 2015 07:30 PM    Automatic
172.20.9.247        01f0.4da2.4091.81    May 10 2015 07:52 PM    Automatic
172.30.1.31         b827.ebb7.b399      Infinite                Manual
raspbx 172.30.1.32         01b8.27eb.7879.7d    Infinite                Manual
172.30.1.164        01b8.ca3a.83e2.e0    May 10 2015 07:15 PM    Automatic
poly-01 172.30.1.166        0004.f224.2960       May 10 2015 07:22 PM    Automatic
172.30.1.167        0110.1f74.6b62.cc    May 10 2015 08:44 PM    Automatic
172.30.1.168        01f0.4da2.4091.7d    May 10 2015 07:52 PM    Automatic
poly-02 172.30.1.169        0004.f224.78d7       May 10 2015 08:56 PM    Automatic
172.30.1.170        01b8.ca3a.83df.2d    May 10 2015 08:56 PM    Automatic
172.30.1.190        b8ca.3a92.e0fd       May 10 2015 08:18 PM    Automatic
172.30.1.193        01b8.ca3a.7cc8.8a    May 10 2015 07:46 PM    Automatic
172.30.2.212        01f0.4da2.4091.7f    May 10 2015 07:52 PM    Automatic
NoPar#
```

To clear an IP address if reservation fails:  
**clear ip dhcp binding 172.30.1.165**



## PBX command line

```

root@raspbx:~# asterisk -r
Asterisk 11.17.0, Copyright (C) 1999 - 2013 Digium, Inc. and others.
Created by Mark Spencer <markster@digium.com>
Asterisk comes with ABSOLUTELY NO WARRANTY; type 'core show warranty' for details.
This is free software, with components licensed under the GNU General Public
License version 2 and other licenses; you are welcome to redistribute it under
certain conditions. Type 'core show license' for details.
=====
Connected to Asterisk 11.17.0 currently running on raspbx (pid = 4063)
raspbx*CLI> sip show users
Username                Secret                Accountcode           Def.Context           ACL
Forcerport
400                      Cabrillo              from-internal         Yes No
402                      Cabrillo              from-internal         Yes No
407                      Cabrillo              from-internal         Yes No
446                      Cabrillo              from-internal         Yes No
raspbx*CLI>
raspbx*CLI> exit
Asterisk cleanly ending (0).
Executing last minute cleanups

```

*Show configured user extensions*



## PBX command line

```
root@raspbx:~# amportal stop
```

```
Please wait...
```

```
STOPPING ASTERISK
```

```
Waiting for Asterisk to Stop Gracefully...
```

```
Asterisk Stopped
```

```
root@raspbx:~#
```

*Gracefully shutting down asterisk*