



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 some Linux ISOs on flash 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 12/6/2017



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 URL simms-teach.com/cis90calendar.php. The page title is "Rich's Cabrillo College CIS Classes CIS 90 Calendar". On the left sidebar, the "CIS 90" link is highlighted. In the main content area, the "Calendar" link is highlighted. Below the calendar, the "Presentation slides (download)" link is highlighted. At the bottom, the "Enter virtual classroom" link is highlighted.

Lesson	Date	Topics	Link
	9/2	<p>Class and Linux Overview</p> <ul style="list-style-type: none"> Understand how the course will work High-level overview of computers, operating systems and virtual machines Overview of LINUX/Linux market and architecture Using SSH for remote network exits Using terminals and the command line <p>Methods</p> <p>Presentation slides (download)</p> <p>Supplemental</p> <ul style="list-style-type: none"> PowerPoint: Logging into Opus (command) <p>Assignments</p> <ul style="list-style-type: none"> Student Survey Lab 1 <p>CCS Center</p> <p>Enter virtual classroom</p>	
		<p>Quiz 1</p> <p>Commands</p>	

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-II 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 sidebar with navigation options like 'Login', 'Flashcards', 'Admin', and 'CIS 90 (Spring)'. The main area contains a video conference window with a participant named 'Rich-Simms', a 'PARTICIPANTS' list, and a 'CHAT' window. A central window displays a Google map of San Jose, CA, with the title 'Class Activity - Where are you now?'. To the right, a PDF window titled 'cis90lesson01.pdf - Adobe Acrobat Pro' shows a slide titled 'The CIS 90 System Playground'. Below the PDF, a terminal window shows a login prompt for 'Opus' and a password field.

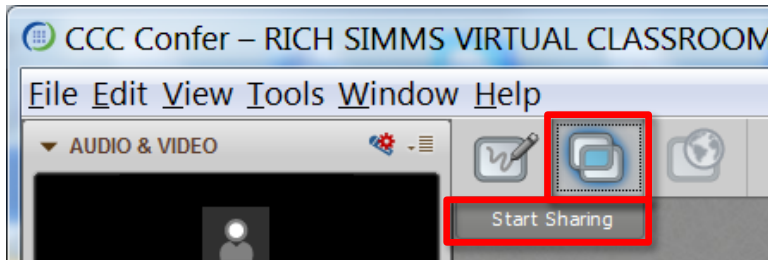
CIS 90 website Calendar page

One or more login sessions to Opus-II

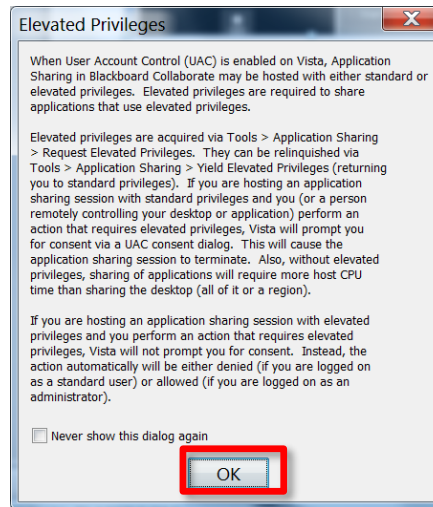


Student checklist for sharing desktop with classmates

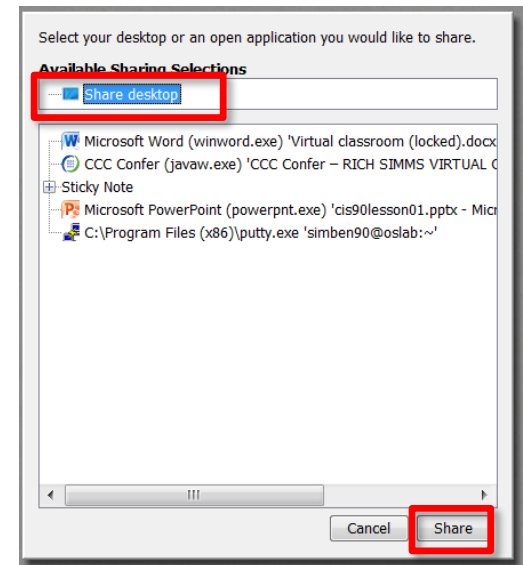
1) Instructor gives you sharing privileges



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



3) Click OK button.



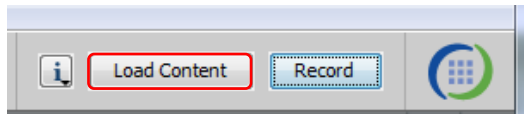
4) Select "Share desktop" and click Share button.



Rich's CCC Confer checklist - setup

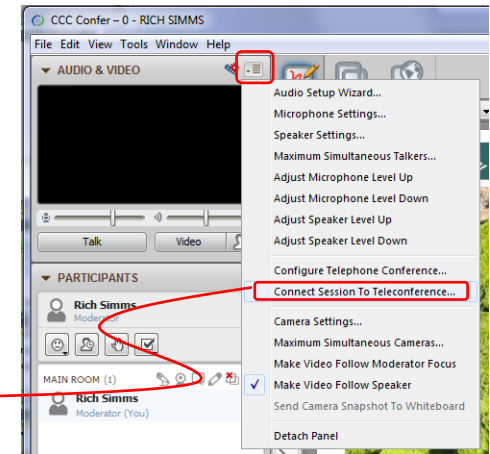
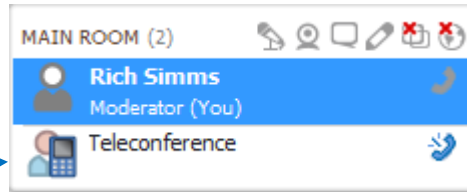


[] Preload White Board

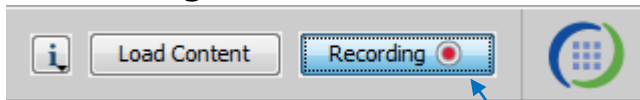


[] Connect session to Teleconference

Session now connected to teleconference



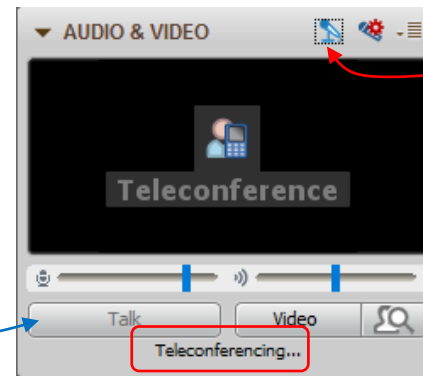
[] Is recording on?



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:

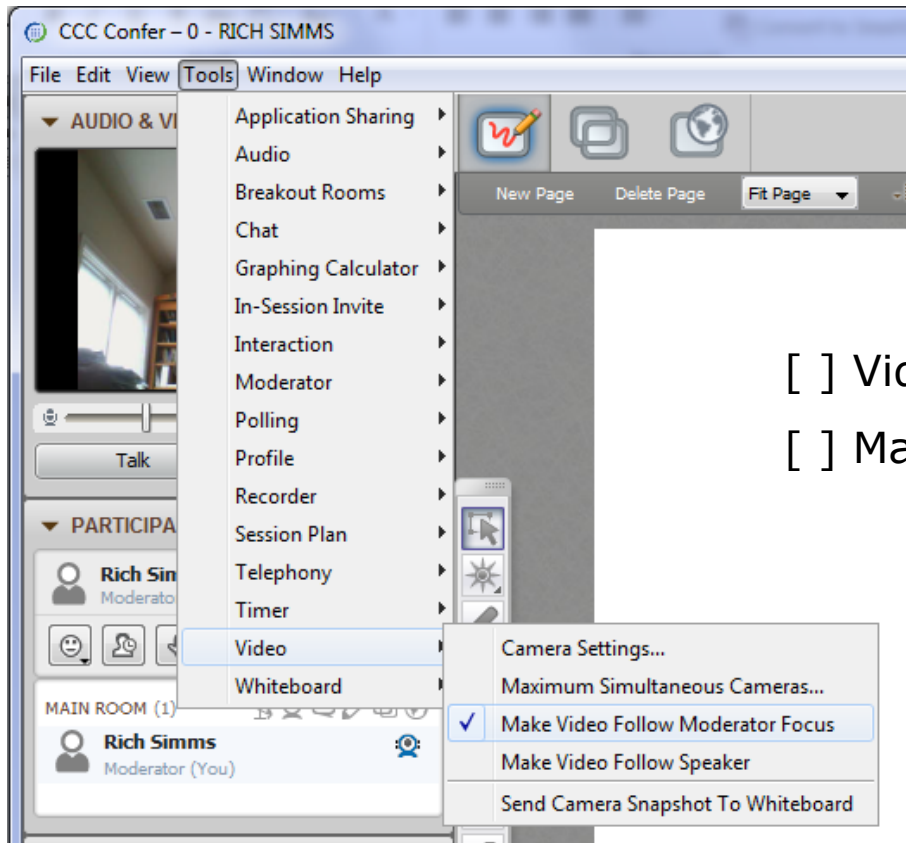
- CCC Confer - 0 - RIC...:** A teleconference window showing a video feed of Rich Simms, a list of participants (Rich Simms as Moderator), and a chat window.
- foxit for slides:** A Foxit Reader window displaying a PDF document titled 'cis90lesson07.pdf'. A red box labeled 'foxit for slides' points to the document.
- chrome:** A Google Chrome browser window displaying a PDF document from 'simms-teach.com/docs/cis90/cis-90-TEST-1-Fall-12.pdf'. A red box labeled 'chrome' points to the browser window.
- putty:** A PuTTY terminal window showing a shell session for 'simben90@oslab:~'. The terminal displays a file tree with directories like 'boot', 'bin', 'etc', and 'sbin', and a prompt 'What command copies th...'. A red box labeled 'putty' points to the terminal window.
- vSphere Client:** A vSphere Client window showing the vCenter inventory for 'CIS VLab' and 'CIS 192'. A red box labeled 'vSphere Client' points to the vSphere Client window.

[] layout and share apps





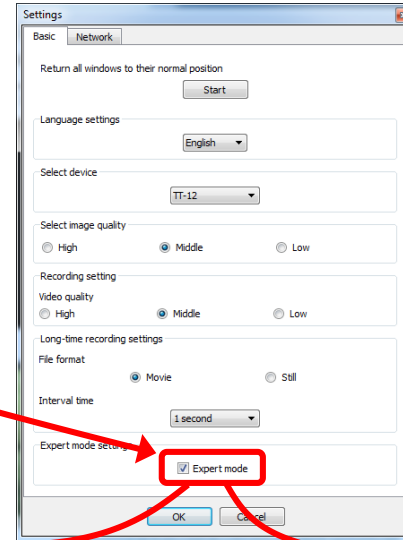
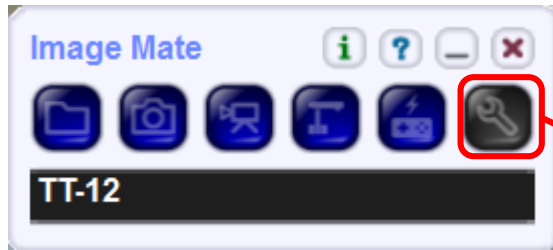
Rich's CCC Confer checklist - webcam setup



- [] Video (webcam)
- [] Make Video Follow Moderator Focus



Rich's CCC Confer checklist - Elmo



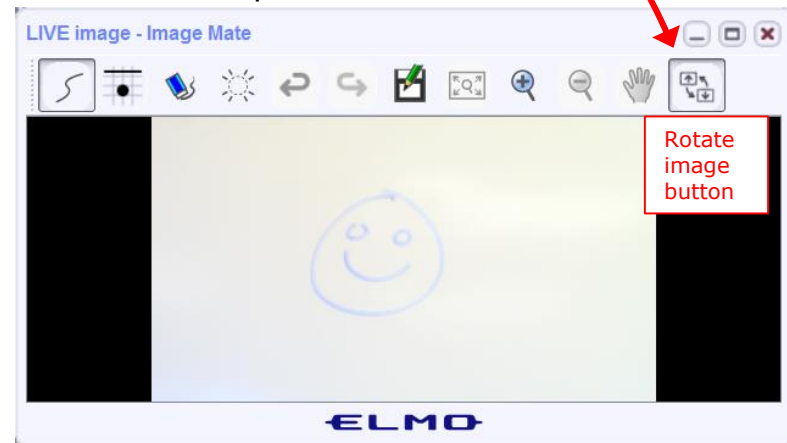
The "rotate image" button is necessary if you use both the side table and the white board.

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

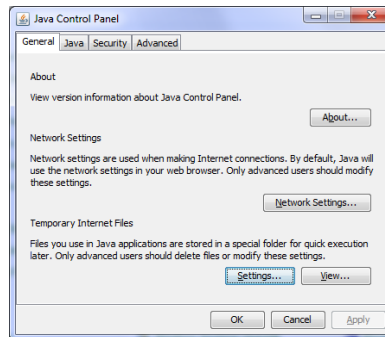
Universal Fix for CCC Confer:

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

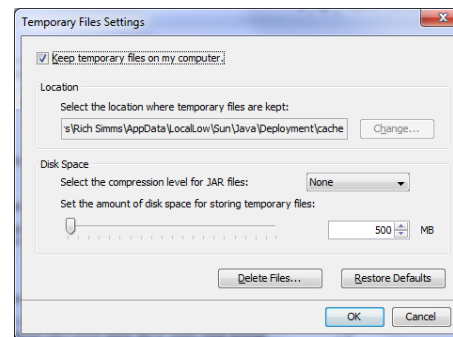
Control Panel (small icons)



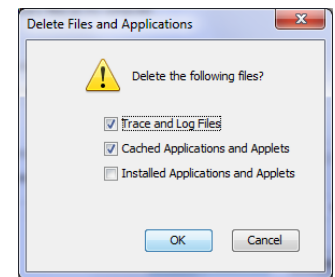
General Tab > Settings...



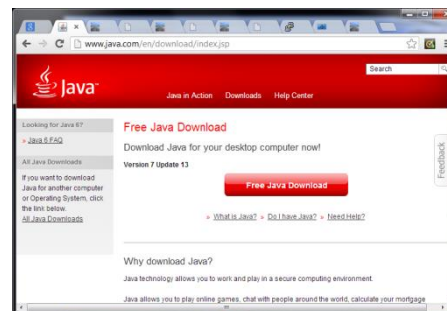
500MB cache size



Delete these

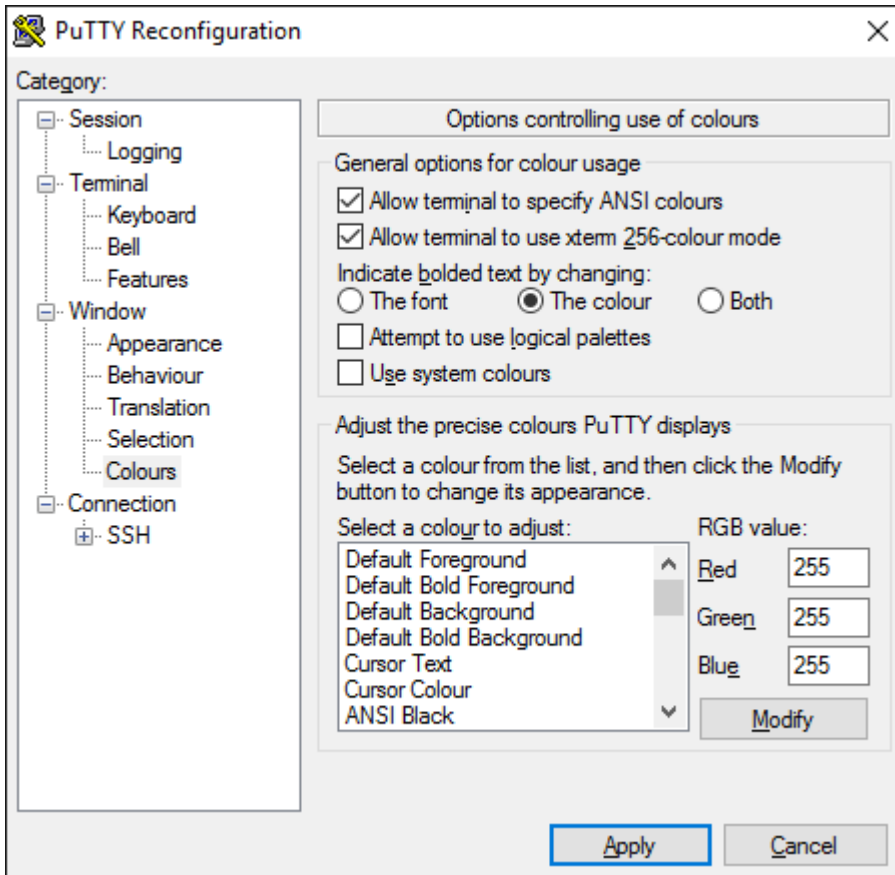


Google Java download





Rich's CCC Confer checklist - Putty Colors



Putty Colors

Default Foreground 255 255 255
 Default Bold Foreground 255 255 255
 Default Background 51 51 51
 Default Bold Background 255 2 85
 Cursor Text 0 0 0
 Cursor Color 0 255 0
 ANSI Black 77 77 77
 ANSI Black Bold 85 85 85
 ANSI Red 187 0 0
 ANSI Red Bold 255 85 85
 ANSI Green 152 251 152
 ANSI Green Bold 85 255 85
 ANSI Yellow 240 230 140
 ANSI Yellow Bold 255 255 85
 ANSI Blue 205 133 63
 ANSI Blue Bold 135 206 235
 ANSI Magenta 255 222 173
 ANSI Magenta Bold 255 85 255
 ANSI Cyan 255 160 160
 ANSI Cyan Bold 255 215 0
 ANSI White 245 222 179
 ANSI White Bold 255 255 255

<http://looselytyped.blogspot.com/2013/02/zenburn-pleasant-color-scheme-for-putty.html>

Before class starts activity

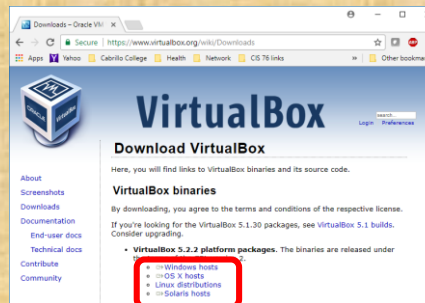
To save time download a CentOS Minimal ISO from:

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



To save even more time download and install VirtualBox from:

<https://www.virtualbox.org/wiki/Downloads>





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**

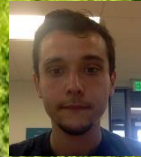
Passcode: **136690**



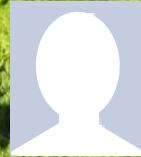
Marvin



William



Vinny



Hayden



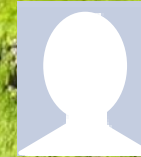
Nick



Ramon



Nicholas



Manuel



Oscar



Daniel P.



Jason



Brian



Vincent



Kyle



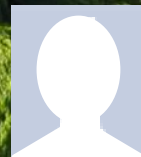
Sam



Jacobs



Emmanuel



Sean



Alejandro



Moises



Joseph



David



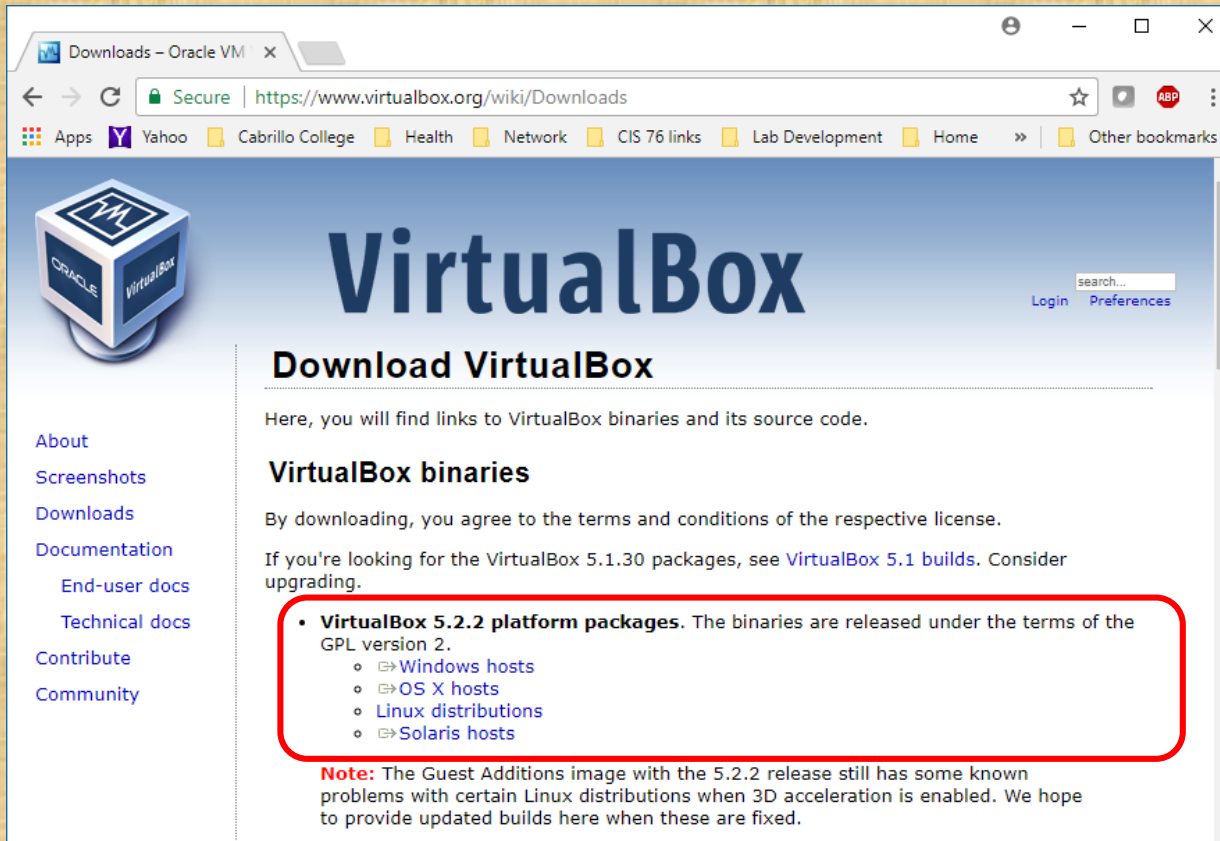
Ben

Quiz

**No Quiz
Today !**

Activity

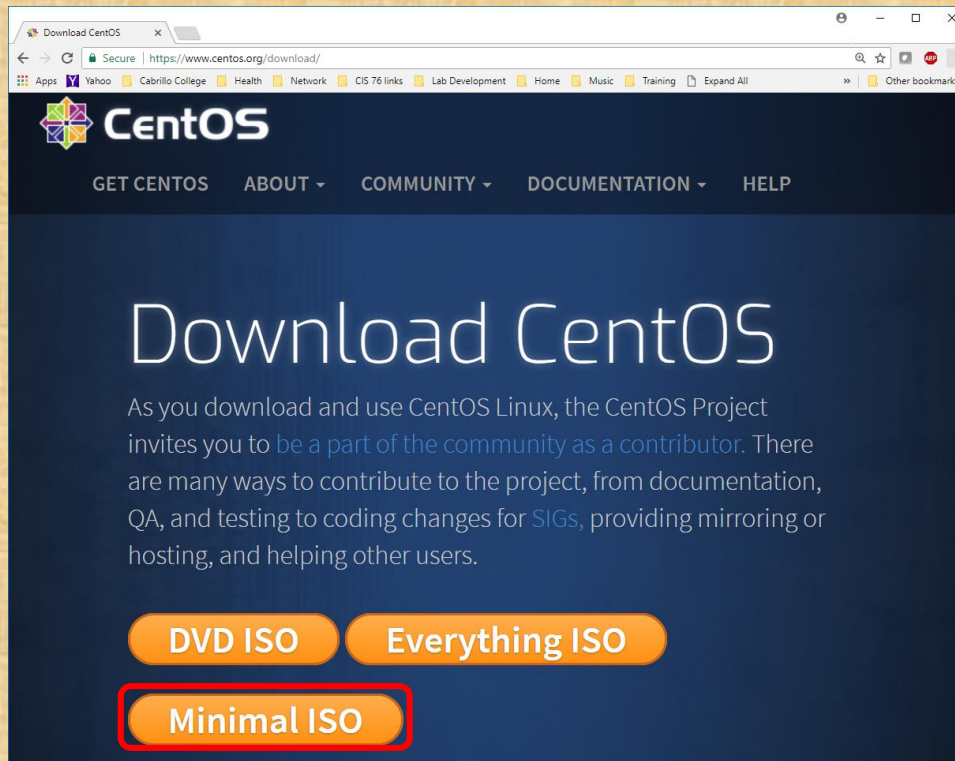
1. Google "virtualbox download"
2. Download and install VirtualBox



The screenshot shows a web browser window with the address bar displaying "https://www.virtualbox.org/wiki/Downloads". The page title is "VirtualBox" and the main heading is "Download VirtualBox". The content includes a navigation menu on the left with links for "About", "Screenshots", "Downloads", "Documentation", "End-user docs", "Technical docs", "Contribute", and "Community". The main content area contains the text "Here, you will find links to VirtualBox binaries and its source code." followed by a section titled "VirtualBox binaries" with the text "By downloading, you agree to the terms and conditions of the respective license." and "If you're looking for the VirtualBox 5.1.30 packages, see [VirtualBox 5.1 builds](#). Consider upgrading." A red box highlights a bullet point: "• **VirtualBox 5.2.2 platform packages.** The binaries are released under the terms of the GPL version 2." followed by a list of links: "Windows hosts", "OS X hosts", "Linux distributions", and "Solaris hosts". Below this, a "Note" states: "The Guest Additions image with the 5.2.2 release still has some known problems with certain Linux distributions when 3D acceleration is enabled. We hope to provide updated builds here when these are fixed."

Activity

1. Google "centos download"
2. Download a Minimal CentOS ISO to the second hard drive.





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-II
- 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 **Monday** May 15th.
- 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.

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

Plagiarizing another author's code is a NO-NO! All points lost!

Scripts that result in unauthorized hacking" is a NO-NO! All points lost!

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

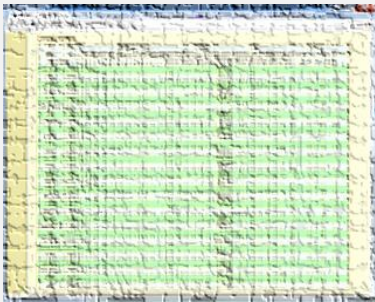
```
/home/cis90/simben/bin $ cp myscript myscript.v3
```

Where to find your grades

Send me your survey to get your LOR code name.

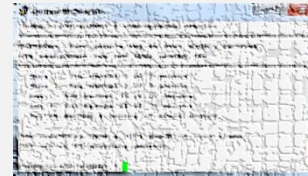
The CIS 90 website Grades page

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



Or check on Opus-II

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 **MONDAY December 11th 1-3:50PM**

Mon	12/11	Test #3 (the final exam)	5 posts Lab X1 Lab X2
		Time <ul style="list-style-type: none"> MONDAY 1:00PM - 3:50PM in Room 828 Materials <ul style="list-style-type: none"> Test (canvas) CCC Confer <ul style="list-style-type: none"> Enter virtual classroom Class archives 	

*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)

FALL 2017 FINAL EXAMINATIONS SCHEDULE DECEMBER 11 TO DECEMBER 16

DAYTIME FINAL SCHEDULE

Daytime Classes: All times in bold refer to the beginning times of classes. **MW/Daily** means Monday alone, Wednesday alone, Monday and Wednesday **or any 3** or more days in any combination. **TTH** means Tuesday alone, Thursday alone, or Tuesday and Thursday. **Classes meeting other combinations of days and/or hours not listed must have a final schedule approved by the Division Dean.**

STARTING CLASS TIME / DAY(S)	EXAM HOUR	EXAM DATE
<i>Classes starting between:</i>		
6:30 am and 8:55 am, MW/Daily	7:00 am-9:50 am	Monday, December 11
9:00 am and 10:15 am, MW/Daily	7:00 am-9:50 am	Wednesday, December 13
10:20 am and 11:35 am, MW/Daily	10:00 am-12:50 pm	Monday, December 11
11:40 am and 12:55 pm, MW/Daily	10:00 am-12:50 pm	Wednesday, December 13
1:00 pm and 2:15 pm, MW/Daily	1:00 pm-3:50 pm	Monday, December 11
2:20 pm and 3:35 pm, MW/Daily	1:00 pm-3:50 pm	Wednesday, December 13
3:40 pm and 5:30 pm, MW/Daily	4:00 pm-6:50 pm	Monday, December 11

6:30 am and 8:55 am, TTh	7:00 am-9:50 am
9:00 am and 10:15 am, TTh	7:00 am-9:50 am
10:20 am and 11:35 am, TTh	10:00 am-12:50 pm
11:40 am and 12:55 pm, TTh	10:00 am-12:50 pm
1:00 pm and 2:15 pm, TTh	1:00 pm-3:50 pm
2:20 pm and 3:35 pm, TTh	1:00 pm-3:50 pm
3:40 pm and 5:30 pm, TTh	4:00 pm-6:50 pm
Friday am	9:00 am-11:50 am
Friday pm	1:00 pm-3:50 pm
Saturday am	9:00 am-11:50 am
Saturday pm	1:00 pm-3:50 pm

CIS 90 Introduction to UNIX/Linux

Provides a technical overview of the UNIX/Linux operating system, including hands-on experience with commands, files, and tools. Recommended Preparation: CIS 1L or CIS 72.

Transfer Credit: Transfers to CSU/UC

Section	Days	Times	Units	Instructor	Room
98169	W	1:00PM-4:05PM	3.00	R.Simms	OL
&	Arr.	Arr.		R.Simms	OL
Section 98169 is an ONLINE course. Meets weekly throughout the semester online during the scheduled times by remote technology with an additional 50 min online lab per week. For details, see instructor's web page at go.cabrillo.edu/online .					
98170	W	1:00PM-4:05PM	3.00	R.Simms	828
&	Arr.	Arr.		R.Simms	OL
Section 98170 is a Hybrid ONLINE course. Meets weekly throughout the semester at the scheduled times with an additional 50 min online lab per week. For details, see instructor's web page at go.cabrillo.edu/online .					

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.**

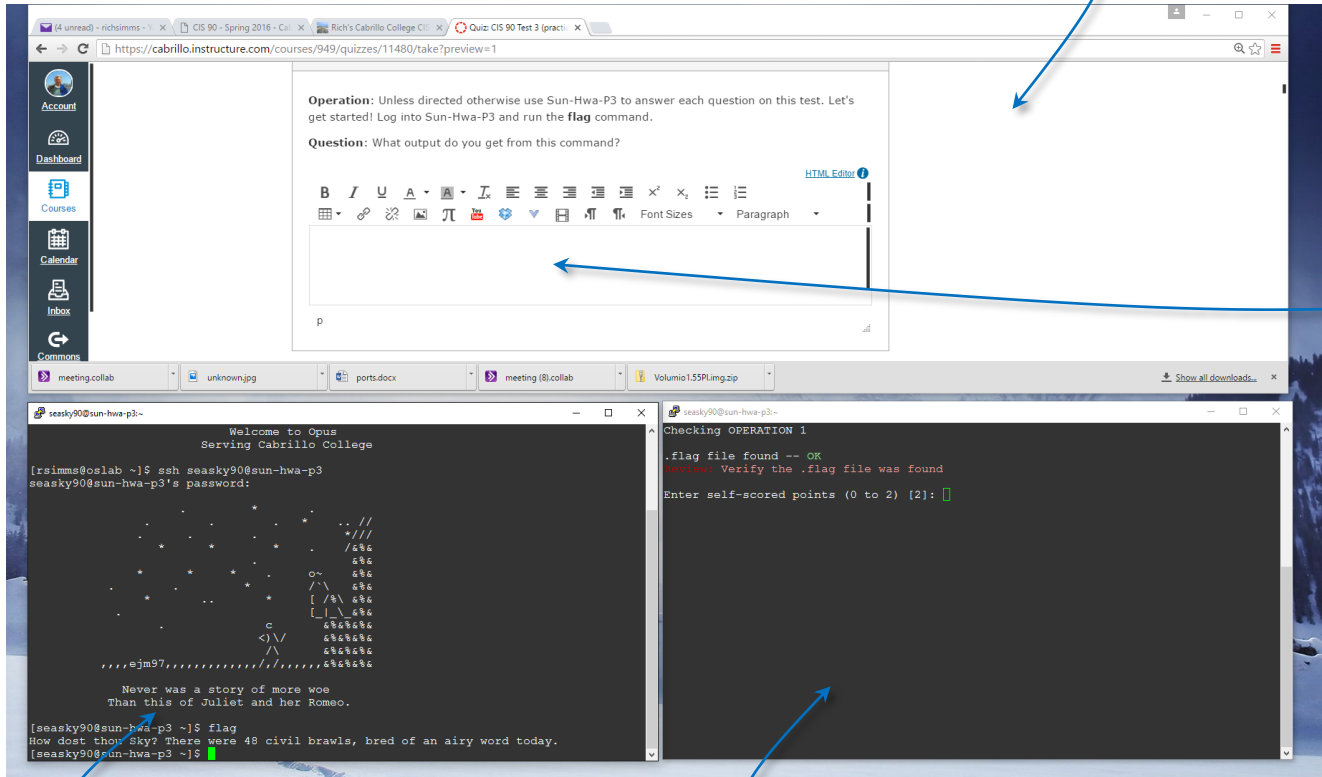
**Use the restore command
for a fresh start.**

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
```

```
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

Ends on
line 311

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 $
```

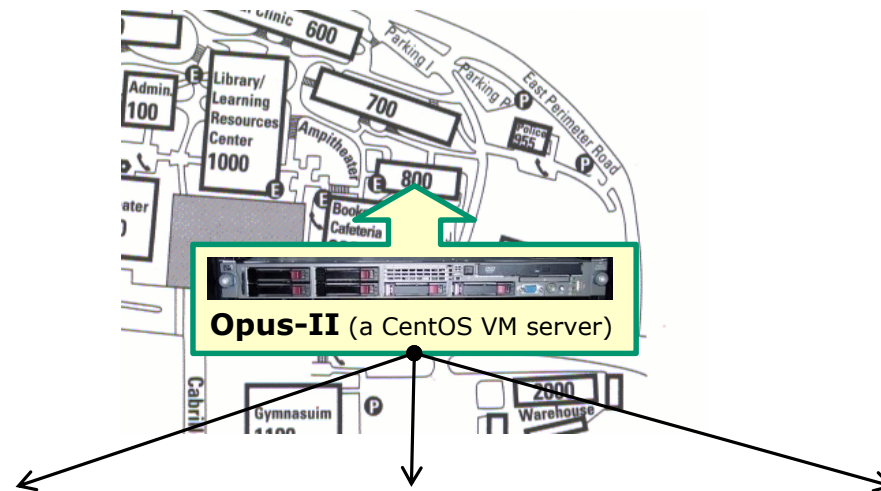
Now we have a one-line script to print the block of text containing the quote



File transfer continued

File Transfer

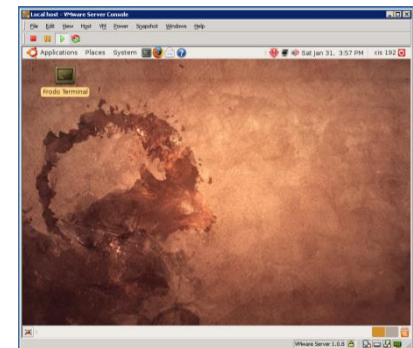
Downloading your Opus-II files to your home computer



Windows



Mac



Linux

First, let's backup your home directory on Opus-II

```
/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
- Between Linux and Linux/Mac:
 - **Filezilla** or related applications
 - **scp** command

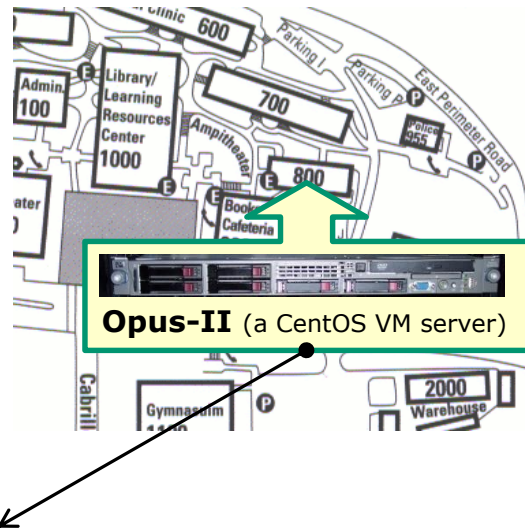


File Transfer To Windows

FileZilla

File Transfer

Downloading your Opus-II 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 ☆ ☰

FileZilla

The free FTP solution

Home

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Other projects
libfilezilla
Octochess

PayPal

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](#) ⓘ

Download and install FileZilla on your Windows PC

FileZilla On Windows, connect to your account on Opus-II

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

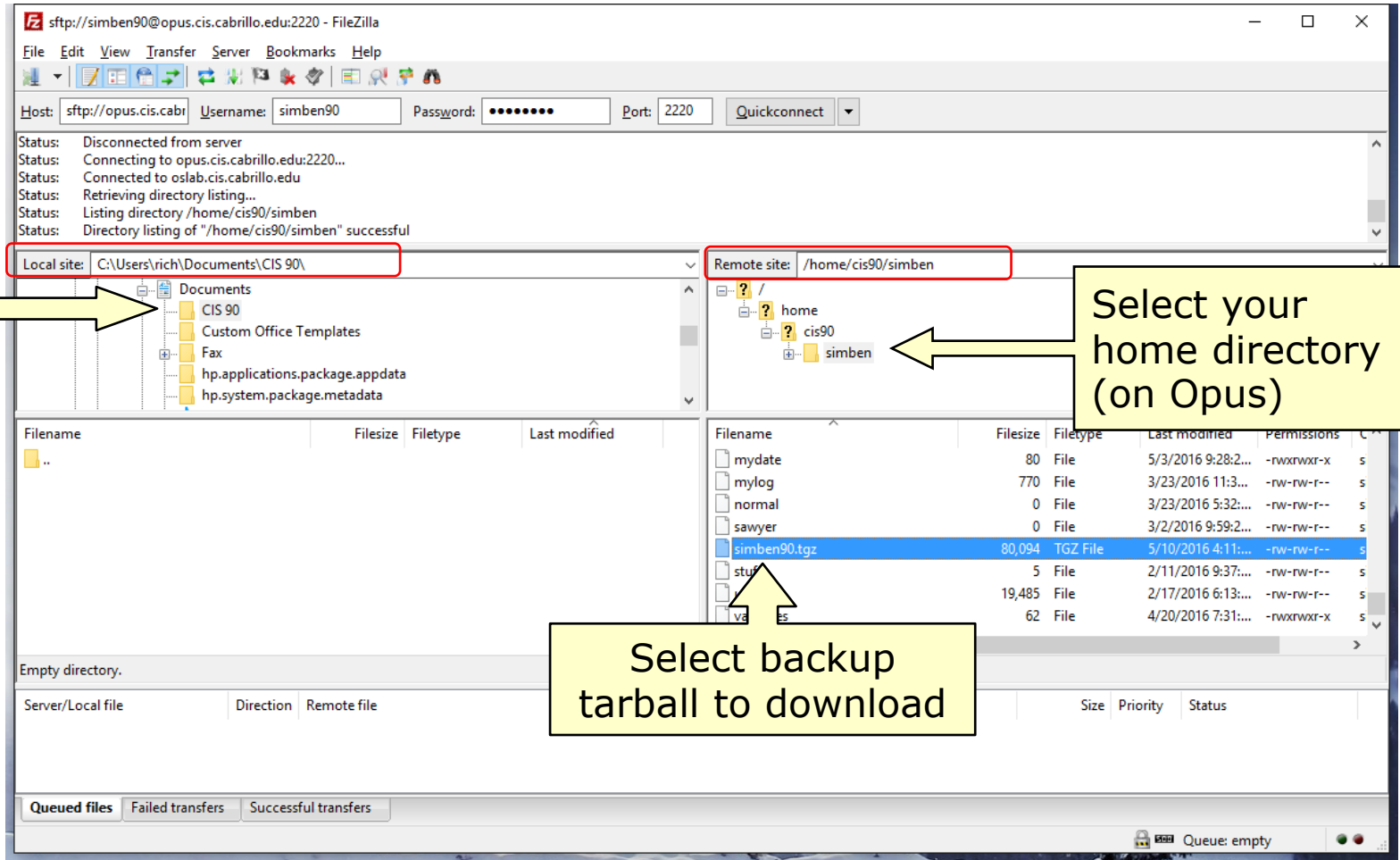
- Opus-II username**: Points to the Username field containing "simben90".
- Port: 2220**: Points to the Port field containing "2220".
- Host: sftp://opus-ii.cis.cabrillo.edu**: Points to the Host field containing "sftp://opus-ii.cis.cabrillo.edu".
- Opus-II Password**: Points to the Password field, which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

The interface shows two local drives on the left and a remote drive on the right. The remote drive contains a directory listing:

Filename	Filesize	Filetype	Last modified	Permissions
..				
Hidden		File folder	2/1/2002 10:14:...	drwxr--r-- si
docs		File folder	3/1/2016 5:40:3...	drwxrwxr-x si
etc		File folder	3/1/2016 6:01:1...	drwxrwxr-x si
island		File folder	3/2/2016 9:48:3...	drwxrwxr-x si
slackware		File folder	3/2/2016 9:50:4...	drwxrwxr-x si
africa		File folder	3/2/2016 9:52:4...	drwxrwxr-x si
..		File folder	3/2/2016 10:16:...	drwxrwxr-x si

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

Select destination and source directories



The screenshot shows the FileZilla interface with the following details:

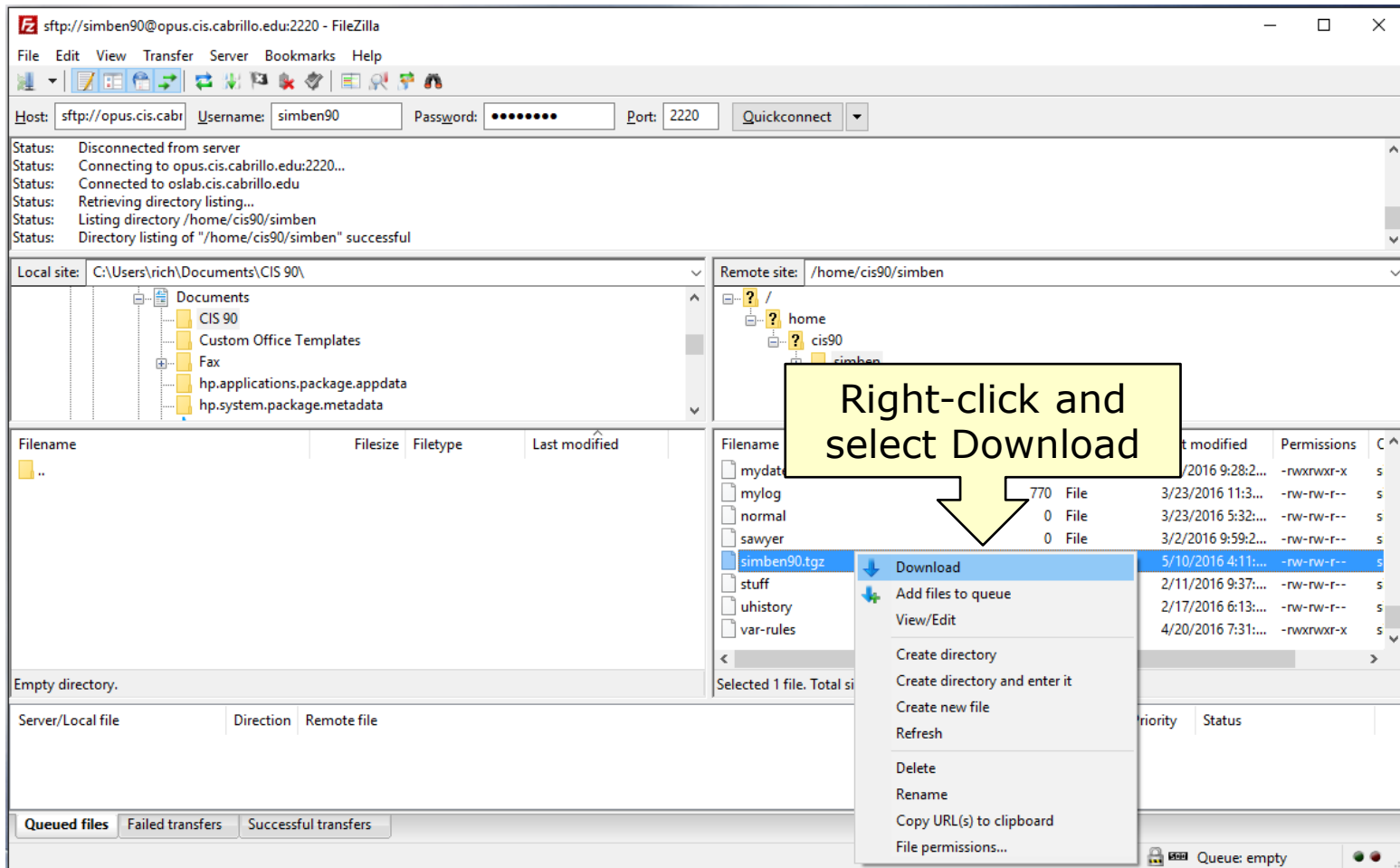
- Local site:** C:\Users\vich\Documents\CIS 90\ (highlighted with a red box and a callout: "Create and select destination folder")
- Remote site:** /home/cis90/simben (highlighted with a red box and a callout: "Select your home directory (on Opus)")
- Local File List:**

Filename	Filesize	Filetype	Last modified
..			
- Remote File List:**

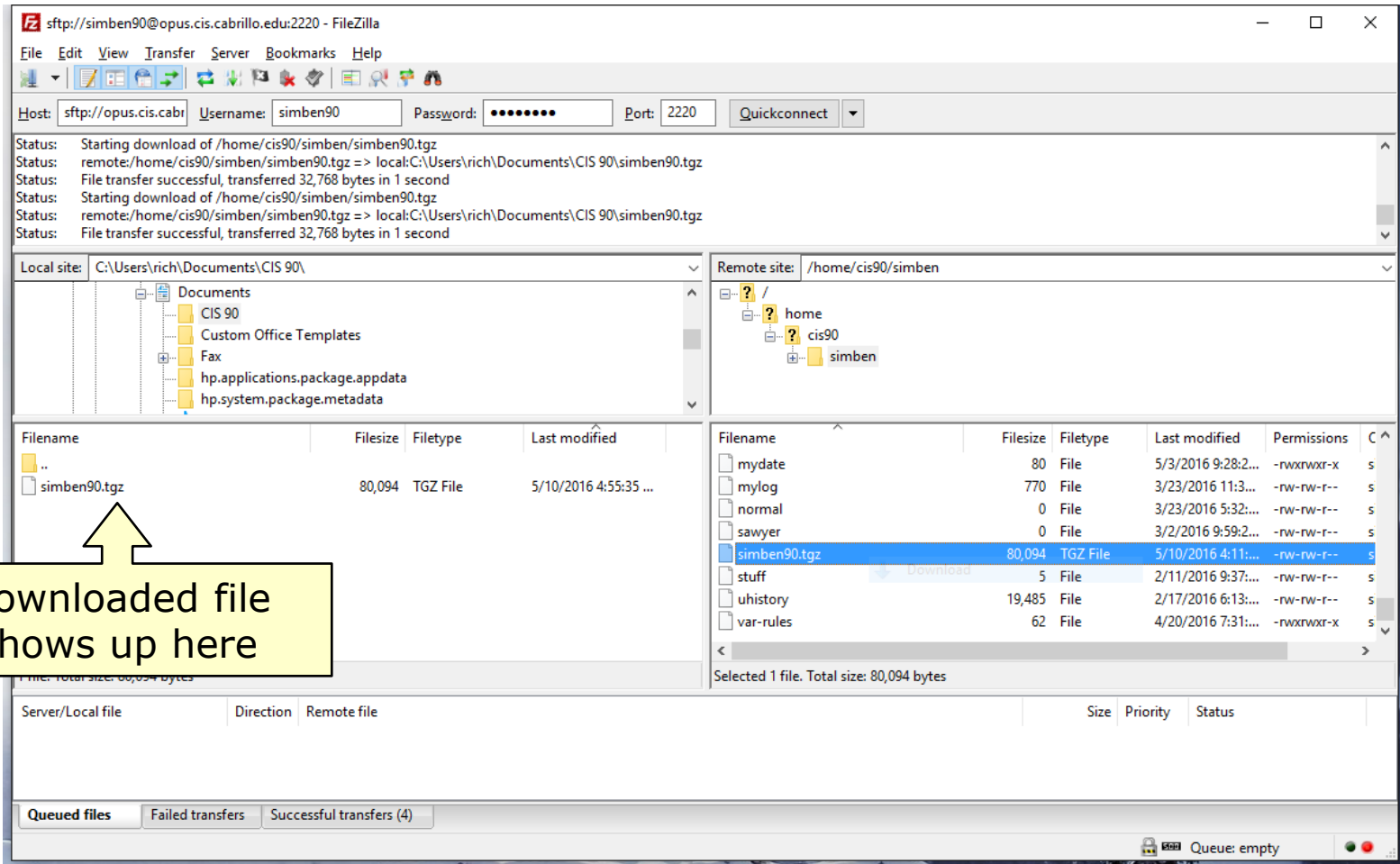
Filename	Filesize	Filetype	Last modified	Permissions
mydate	80	File	5/3/2016 9:28:2...	-rwxrwxr-x
mylog	770	File	3/23/2016 11:3:...	-rw-rw-r--
normal	0	File	3/23/2016 5:32:...	-rw-rw-r--
sawyer	0	File	3/2/2016 9:59:2...	-rw-rw-r--
simben90.tgz	80,094	TGZ File	5/10/2016 4:11:...	-rw-rw-r--
stuf	5	File	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
- Callout:** "Select backup tarball to download" with an arrow pointing to the file `simben90.tgz`.

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

FileZilla Initiate Download



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)

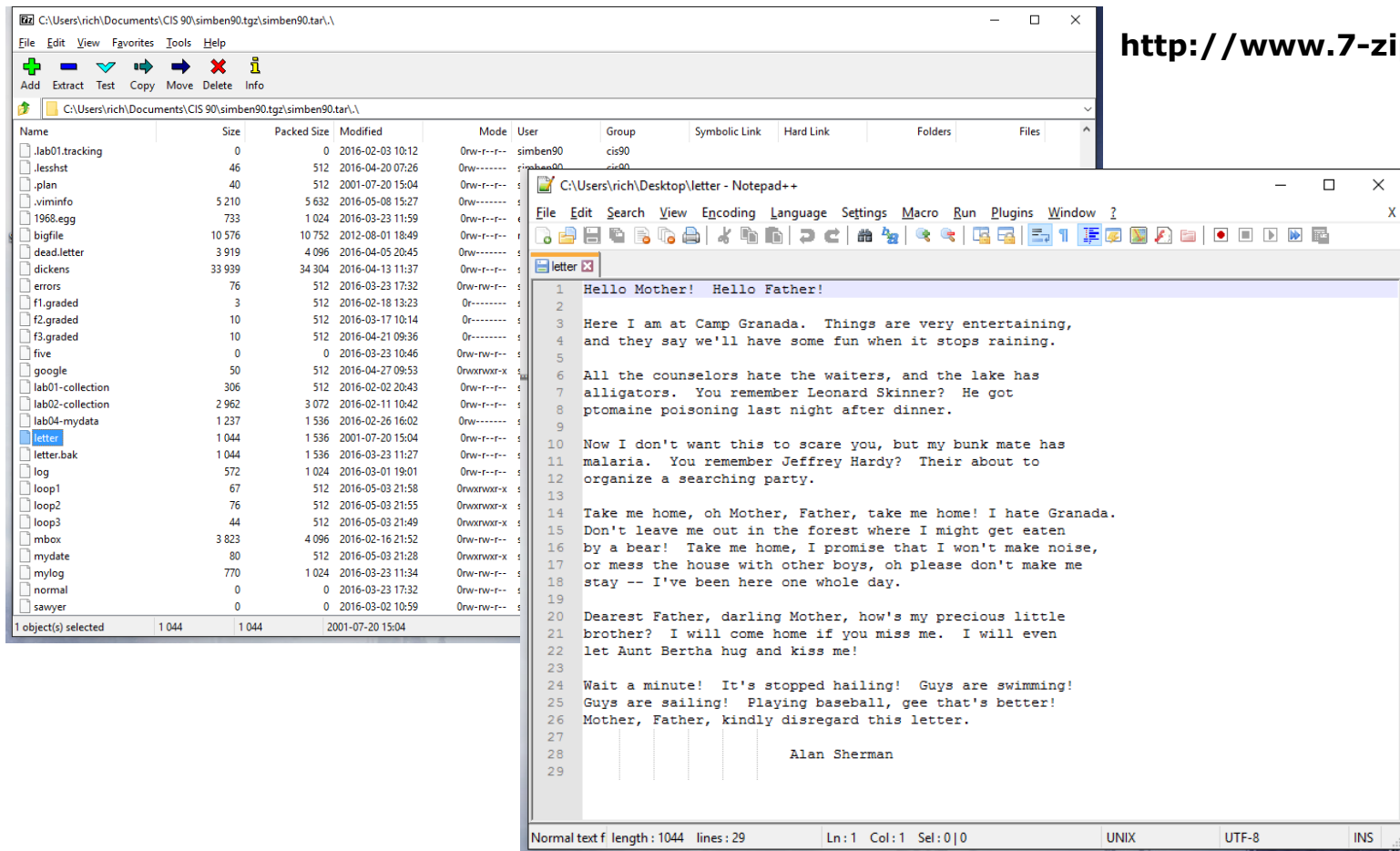
Queue: empty

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 a FileZilla window displaying a directory listing of files extracted from an archive. The 'letter' file is selected. A Notepad++ window is open, showing the contents of the 'letter' file. The text in the Notepad++ window is as follows:

```

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
  
```

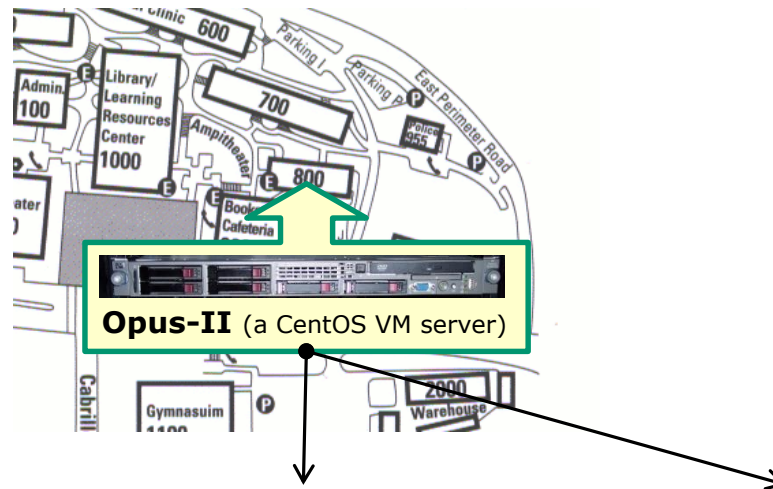
At the bottom of the Notepad++ window, the status bar shows: Normal text f length: 1044 lines: 29 Ln: 1 Col: 1 Sel: 0|0 UNIX UTF-8 INS

File Transfer Linux or Mac

scp

File Transfer

Downloading your Opus-II files to your home computer



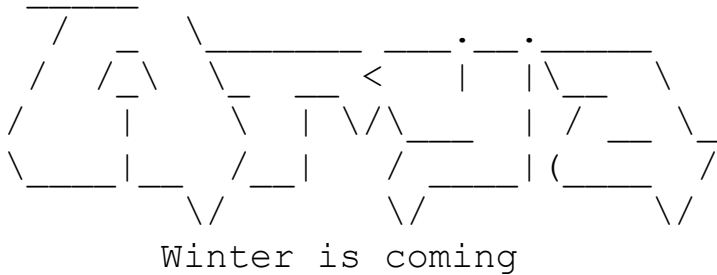
Mac



Linux

File Transfer

Downloading your Opus-II 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-ii.cis.cabrillo.edu:simben90.tgz .
simben90@opus-II.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-II

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



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-II

```
rsimms@opus-ii:~  
login as: rsimms  
rsimms@opus-ii.cis.cabrillo.edu's password:  
Last login: Sat Dec  2 07:39:20 2017 from 2601:647:cb01:755c:d9b:df45:d753:e88c  
  
      (̄v̄)  
    \/-==-\/  
   (\_=_/_)  
    ~ ~ ~  
  
      Welcome to Opus II  
      Serving Cabrillo College  
  
[rsimms@opus-ii ~]$ cat /etc/*-release | grep Core  
CentOS Linux release 7.4.1708 (Core)  
VERSION="7 (Core)"  
PRETTY_NAME="CentOS Linux 7 (Core)"  
CentOS Linux release 7.4.1708 (Core)  
CentOS Linux release 7.4.1708 (Core)  
[rsimms@opus-ii ~]$
```

Opus-II is a CentOS 7.4 Linux system

Ingredients

To make your own Opus-II 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

<https://simms-teach.com/resources.php>

The screenshot shows a web browser window with the URL <https://simms-teach.com/resources.php>. The page title is "Rich's Cabrillo College CIS Classes Resources". The navigation menu includes "Home", "Resources", "Forums", "CIS Lab", and "Canvas". On the left sidebar, there are buttons for "Login", "Flashcards", and "Admin", along with links for "CIS 76", "CIS 90", "Previous Terms", "14 days till term ends!", "Cabrillo College Web Advisor", "VLab (classic)", "VLab (web)", "NETLAB+ PE", "NETLAB+ VE", "Annoying Issue List", and "CIS 76 VLab Pod". The main content area is titled "General Links" and is organized into three columns:

- Instructors**
 - Ed
 - Gerlinde
 - Jeffrey
 - Jim
 - John
 - Michael
 - Marcelo
 - Rick
 - Steve
 - Sam at CCSE
- Departments**
 - CNSA
 - CIS
 - CS
- Getting Linux/UNIX**
 - Linux ISOs
 - Kernels
 - RPMS (rpmfind)
 - RPMS (pbone)
- Academic Software for CIS Students**
 - Microsoft Webstore
 - VMware Webstore
- Virtualization**
 - VirtualBox
 - VMware ESXi and vSphere client
- Standards**
 - IEEE
 - IETF (RFCs)
- Academies**
 - Cisco NetSpace
- Palo Alto Networks**
 - PAN commands
- Making Strong Passwords**
 - Password Haystack
 - Ryan Riley
 - Strong passwords

Shopping for the ingredients



ISO

Get a Linux Distro

<https://simms-teach.com/resources.php>

The screenshot shows a web browser window with the address bar displaying <https://simms-teach.com/resources.php>. The page title is "Rich's Cabrillo College CIS Classes Resources". The navigation menu includes "Home", "Resources", "Forums", "CIS Lab", and "Canvas". On the left sidebar, there are buttons for "Login", "Flashcards", and "Admin", along with links for "CIS 76", "CIS 90", "Previous Terms", and a "14 days till term ends!" banner. The main content area is titled "General Links" and is organized into three columns:

- Instructors**
 - Ed
 - Gerlinde
 - Jeffrey
 - Jim
 - John
 - Michael
 - Marcelo
 - Rick
 - Steve
 - Sam at CCSE
- Getting Linux/UNIX**
 - Linux ISOs** (highlighted with a red box)
 - Kernels
 - RPMS (rpmfind)
 - RPMS (pbone)
- Academic Software for CIS Students**
 - Microsoft Webstore
 - VMware Webstore
- Virtualization**
 - VirtualBox
 - VMware ESXi and vSphere client
- Standards**
 - IEEE
 - IETF (RFCs)
- Academies**
 - Cisco NetSpace
- Palo Alto Networks**
 - PAN commands
- Making Strong Passwords**
 - Password Haystack
 - Ryan Riley
 - Strong passwords

Getting Linux distributions on ISOs

The screenshot shows the LinuxQuestions.org website with the following elements:

- Navigation:** LinuxQuestions.org > ISOs
- Left Sidebar:**
 - LQ ISOs:** Search, Alphabetical List, Latest Releases, Release Notification, Suggest Additions
 - Search:** Input field and Go button
 - 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 section with a search input
- Center Content:**
 - Advertisement: \$0.26/Mbps IP Transit
 - Welcome to LQ ISO
 - Text: 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.
 - Text: 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:**
 - gNewSense 4.0
 - Simplicity Linux 16.04
 - 4MLinux 17.0
 - Voyager Live 16.04
 - GParted Live 0.26.0-1
 - SparkyLinux 4.3
 - Proxmox 4.2 "Virtual Environment"
 - Ubuntu GNOME 16.04
 - Black Lab Linux 7.6
 - Tails 2.3
 - Slackel 6.0.5 "Openbox"
 - Mythbuntu 16.04
 - KaOS 2016.04
 - OpenIndiana 2016.04
 - Ubuntu Kylin 16.04
 - Popular Linux Distributions:**
 - Ubuntu
 - Fedora
 - Linux Mint
 - openSUSE
 - PCLinuxOS
 - Debian
 - Mageia
 - Slackware
 - CentOS** (highlighted with a red box)
 - 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)**
- Right Sidebar:**
 - Main Menu:** Linux Forums, Android Forum, Chrome OS Forum, Linux HCL, Linux Tutorials, Linux Wiki, Distro Reviews, Book Reviews
 - Ad:** VM TURBO advertisement for a free virtual monitor.
- Browser:** Multiple tabs open, including 'CentOS Mirrors'.
- Downloads:** Two download windows are visible at the bottom, both for 'CentOS-7-x86_64-Minimal-ISO.iso', with the second one showing 'Canceled'.

The screenshot shows the LinuxQuestions.org website with the following content:

- Navigation:** LinuxQuestions.org > ISOs > CentOS
- Left Sidebar:**
 - LQ ISOs:** Search, Alphabetical List, Latest Releases, Release Notification, Suggest Additions
 - Search:** Input field with 'Go' button
 - 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**
- Main Content:**
 - 34 versions of CentOS available**
 - SoftLayer® Cloud** advertisement: We Provide the Highest Level of Transparency & Control for Cloud.
 - CentOS Description:** 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** (highlighted with a red box)
 - Email Sign-up:** Would you like to receive an email when a new version of CentOS is released? If so then click here.
 - Version List:**

CentOS 7-1511	Review CentOS 7-1511	1 isos in 1 groups
CentOS 6.7	Review CentOS 6.7	7 isos in 4 groups
CentOS 6.6	Review CentOS 6.6	10 isos in 2 groups
CentOS 5.11	Review CentOS 5.11	10 isos in 2 groups
CentOS 7.0-1406	Review CentOS 7.0-1406	12 isos in 1 groups
CentOS 6.5	Review CentOS 6.5	18 isos in 2 groups
CentOS 5.10	Review CentOS 5.10	6 isos in 2 groups
CentOS 6.4	Review CentOS 6.4	10 isos in 2 groups
CentOS 5.9	Review CentOS 5.9	8 isos in 2 groups
CentOS 6.3	Review CentOS 6.3	10 isos in 2 groups
- Right Sidebar:**
 - Main Menu:** Linux Forums, Android Forum, Chrome OS Forum, Linux HCL, Linux Tutorials, Linux Wiki, Distro Reviews, Book Reviews
 - Ad:** GearBest advertisement with various product images and discounts.



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](#).

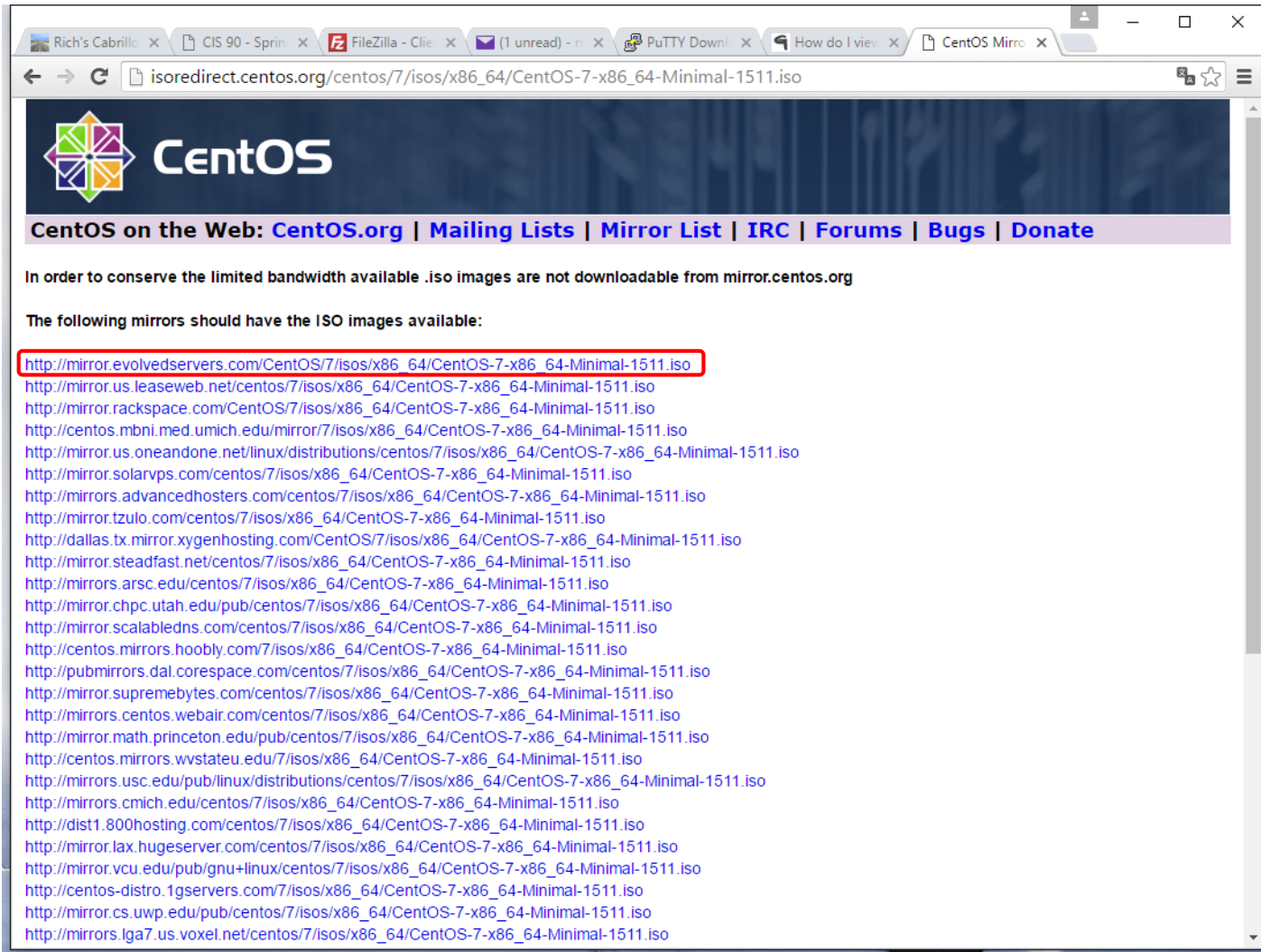
If the above is not for you, [alternative downloads](#) might be.

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

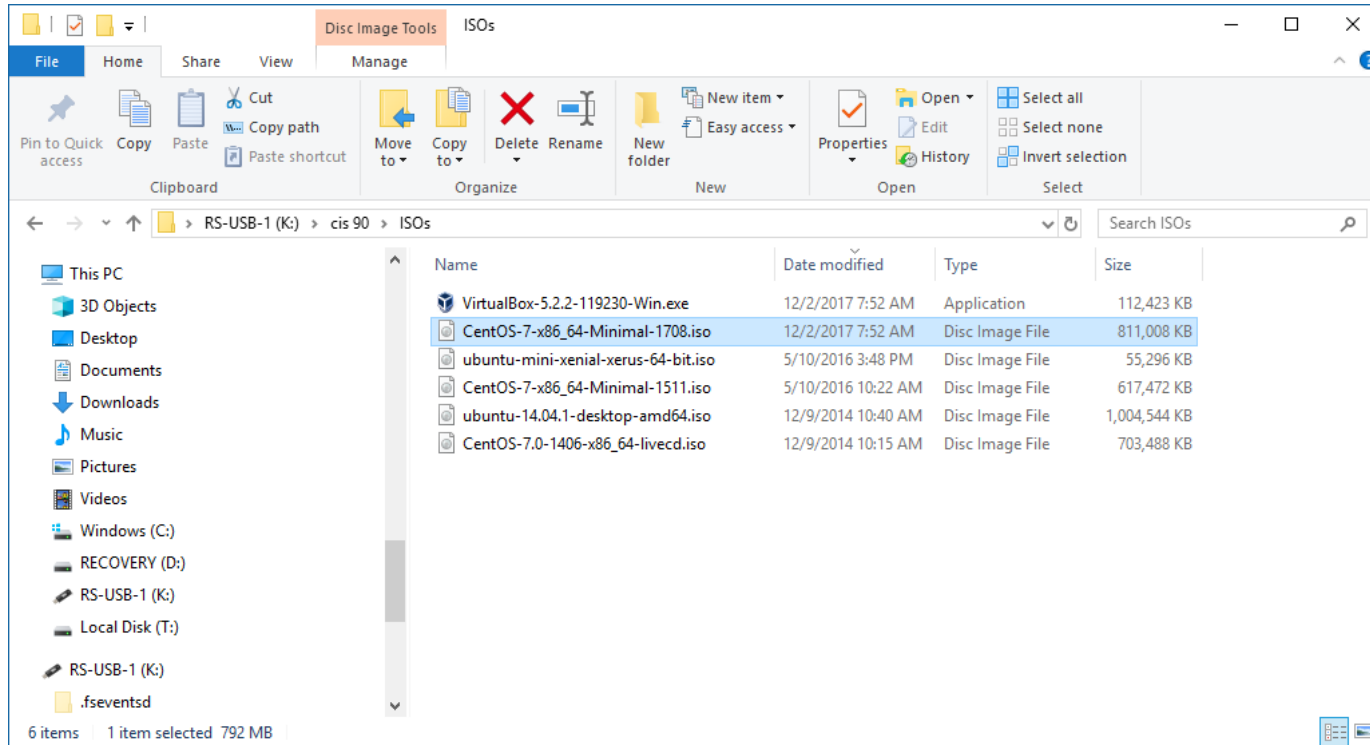
CentOS on the Web: [CentOS.org](#) | [Mailing Lists](#) | [Mirror List](#) | [IRC](#) | [Forums](#) | [Bugs](#) | [Donate](#)

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.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://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.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://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://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://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://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://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://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://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://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.vcu.edu/pub/gnu+linux/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso
- http://centos-distro.1gservers.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://mirrors.lga7.us.voxel.net/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso

Pick a mirror and download ISO file



Downloaded ISO image of the CentOS Linux distribution



Virtual Box

<https://simms-teach.com/resources.php>

Getting
VirtualBox

<https://simms-teach.com/resources.php>

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

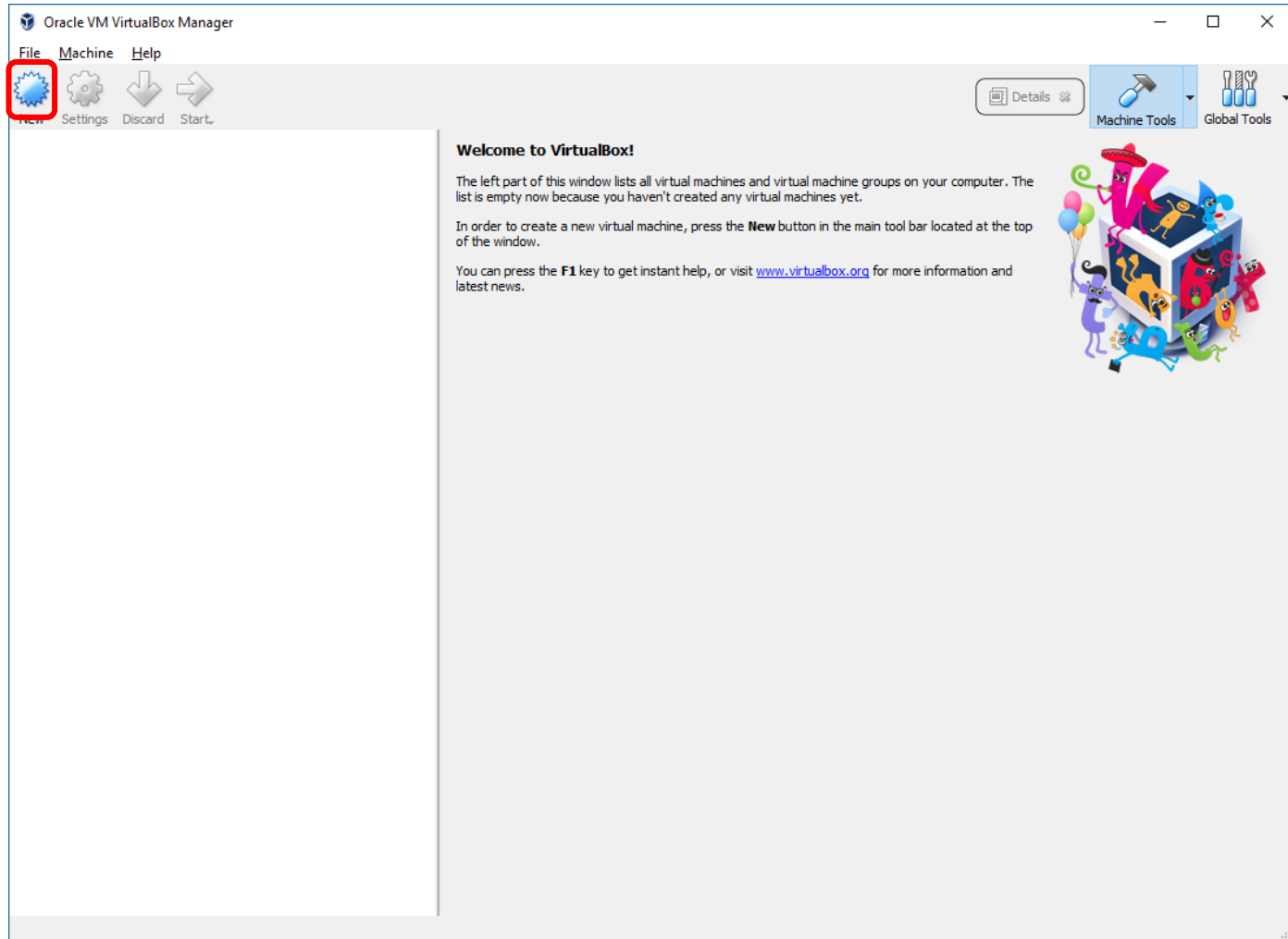
to verify the integrity of downloaded packages.
The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!

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

User Manual

VirtualBox

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



After downloading and installing VirtualBox.

VirtualBox

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

← Create Virtual Machine

Name and operating system

Name: My-Opus

Type: Linux

Version: Red Hat (64-bit)

Memory size

1024 MB

4 MB 16384 MB

Hard disk

Do not add a virtual hard disk

Create a virtual hard disk now

Use an existing virtual hard disk file

Empty

Guided Mode Create Cancel

← Create Virtual Hard Disk

File location

My-Opus

File size

8.00 GB

4.00 MB 2.00 TB

Hard disk file type

VDI (VirtualBox Disk Image)

VHD (Virtual Hard Disk)

VMDK (Virtual Machine Disk)

HDD (Parallels Hard Disk)

QCOW (QEMU Copy-On-Write)

QED (QEMU enhanced disk)

Storage on physical hard disk

Dynamically allocated

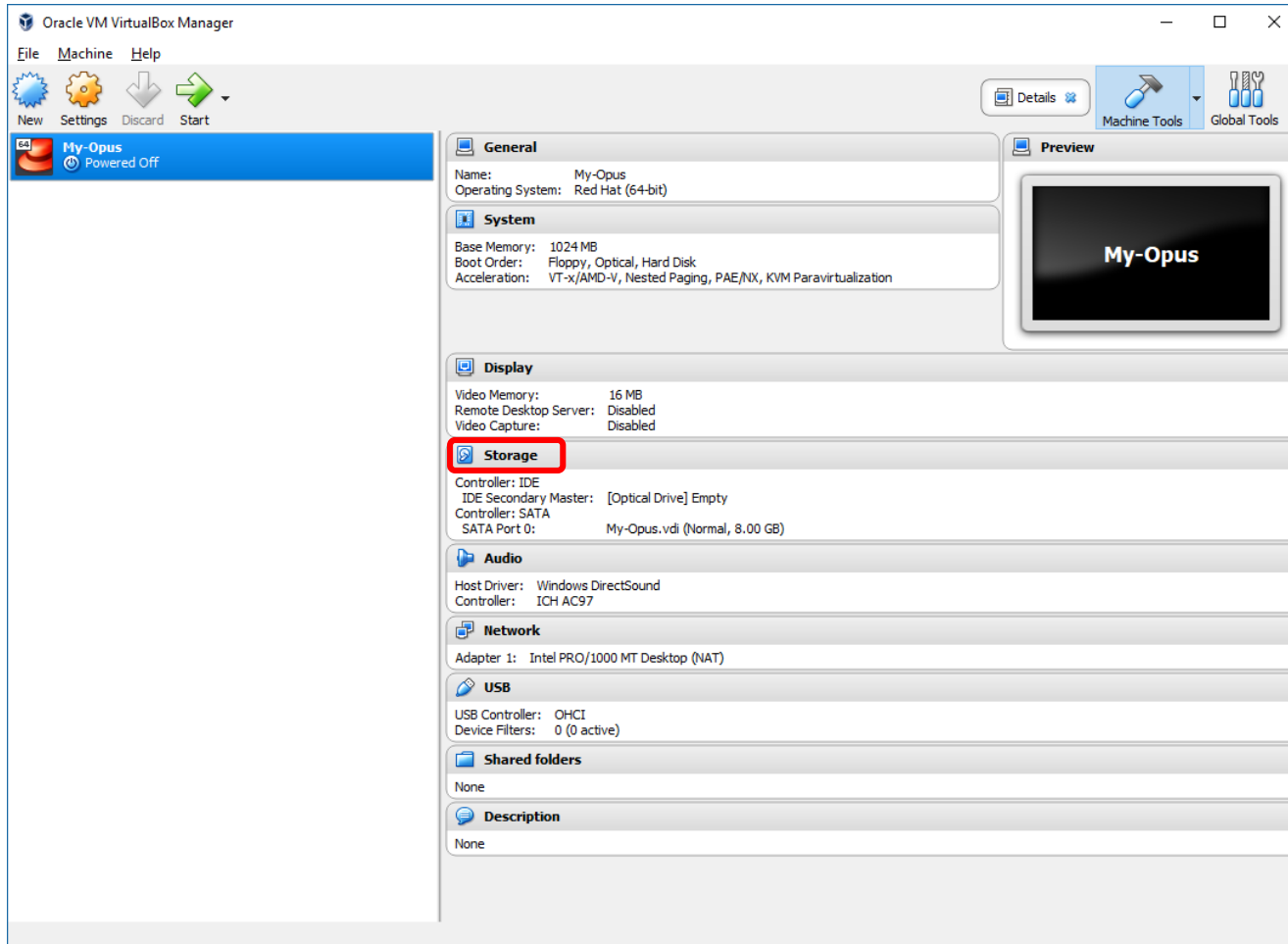
Fixed size

Split into files of less than 2GB

Guided Mode Create Cancel

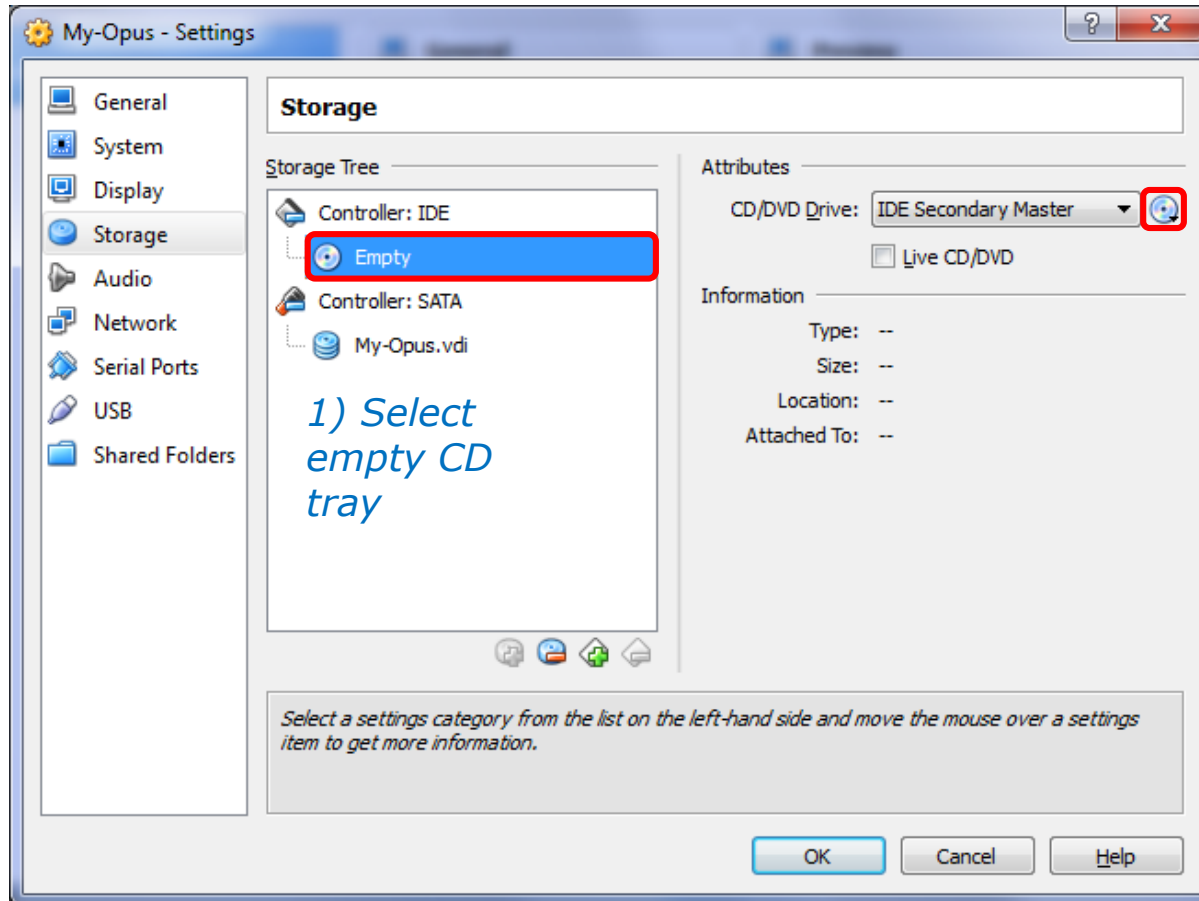
After filling out the Name and operating system, keep pressing Create and take the defaults

VirtualBox



The new VM has no operating system. Click on "Storage".

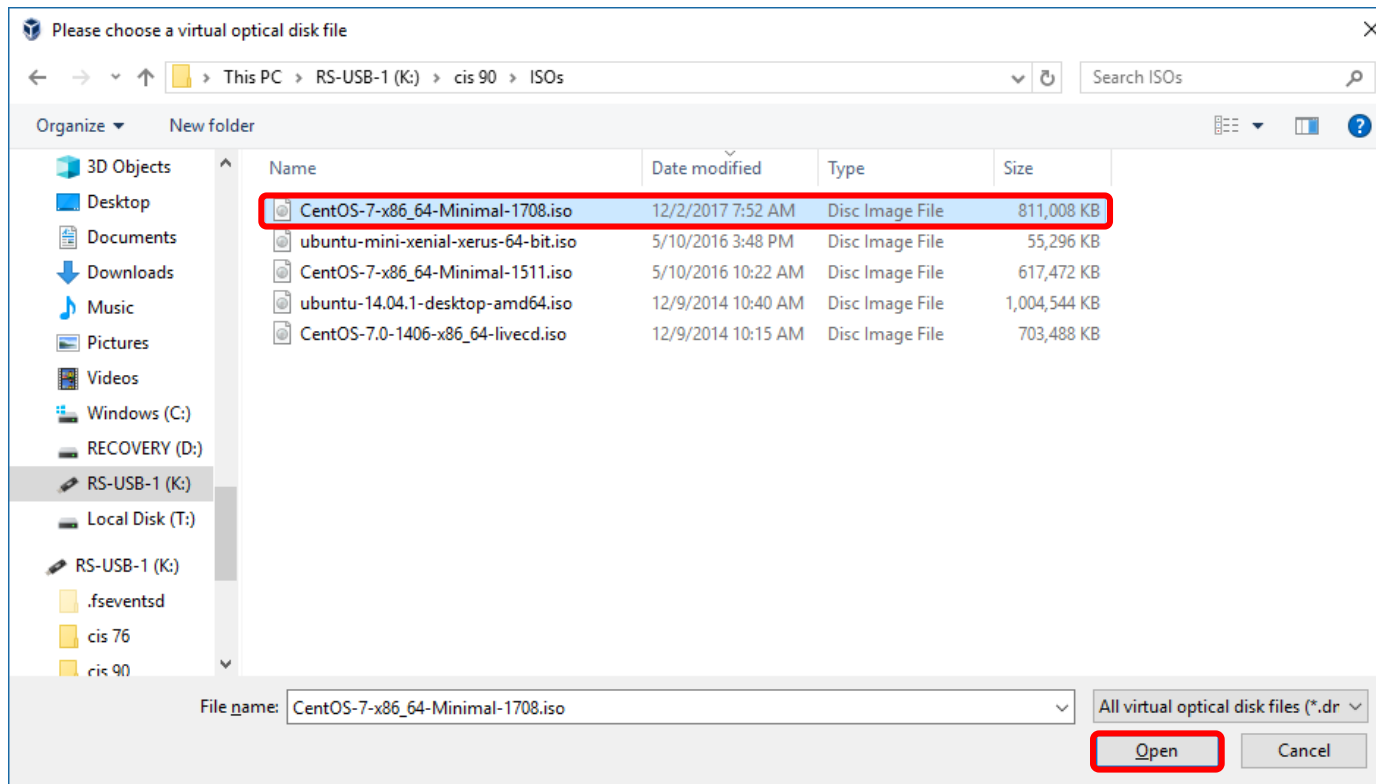
VirtualBox



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

Put the CD ISO image into the virtual CD tray

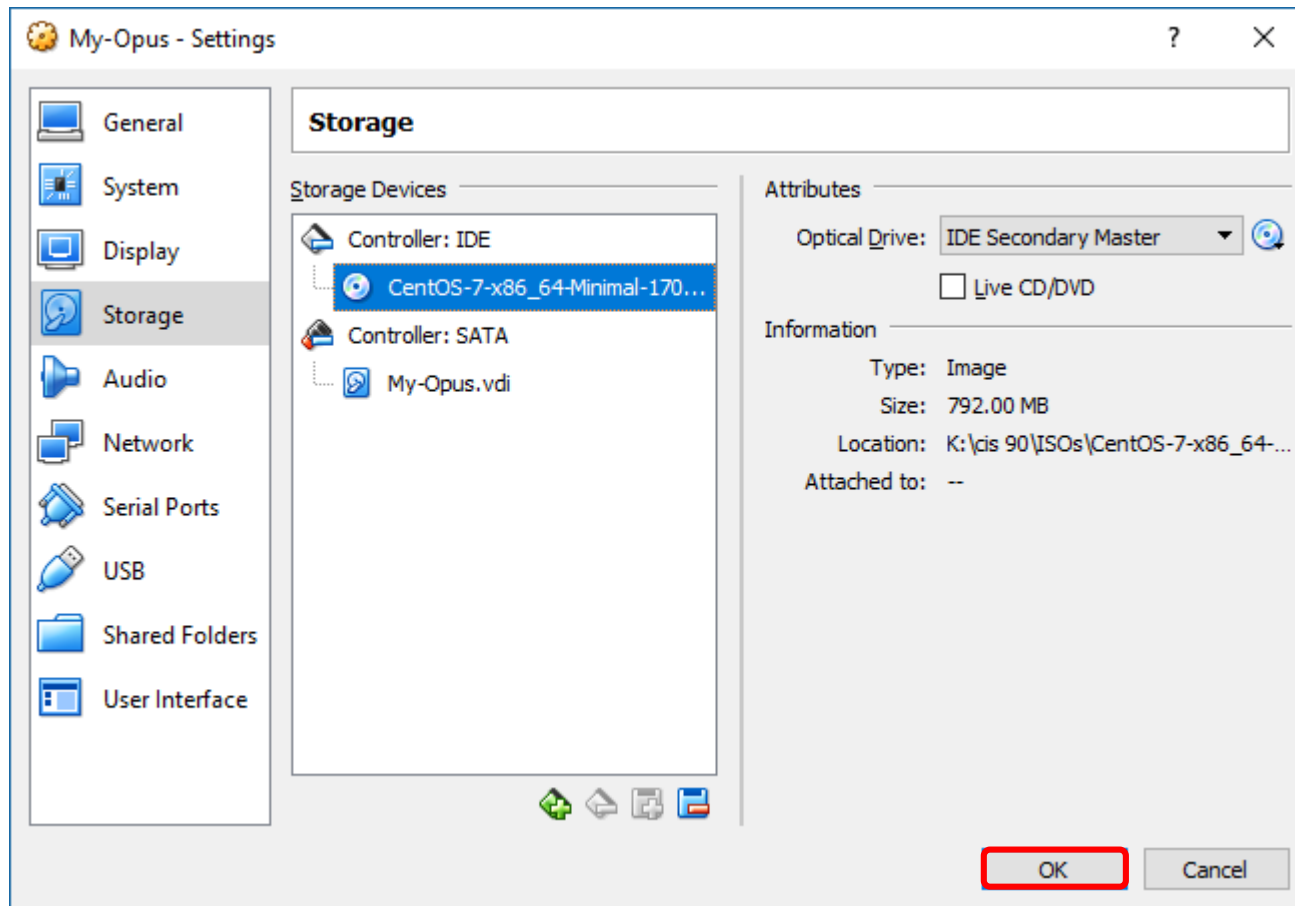
VirtualBox



Locate the ISO image to install

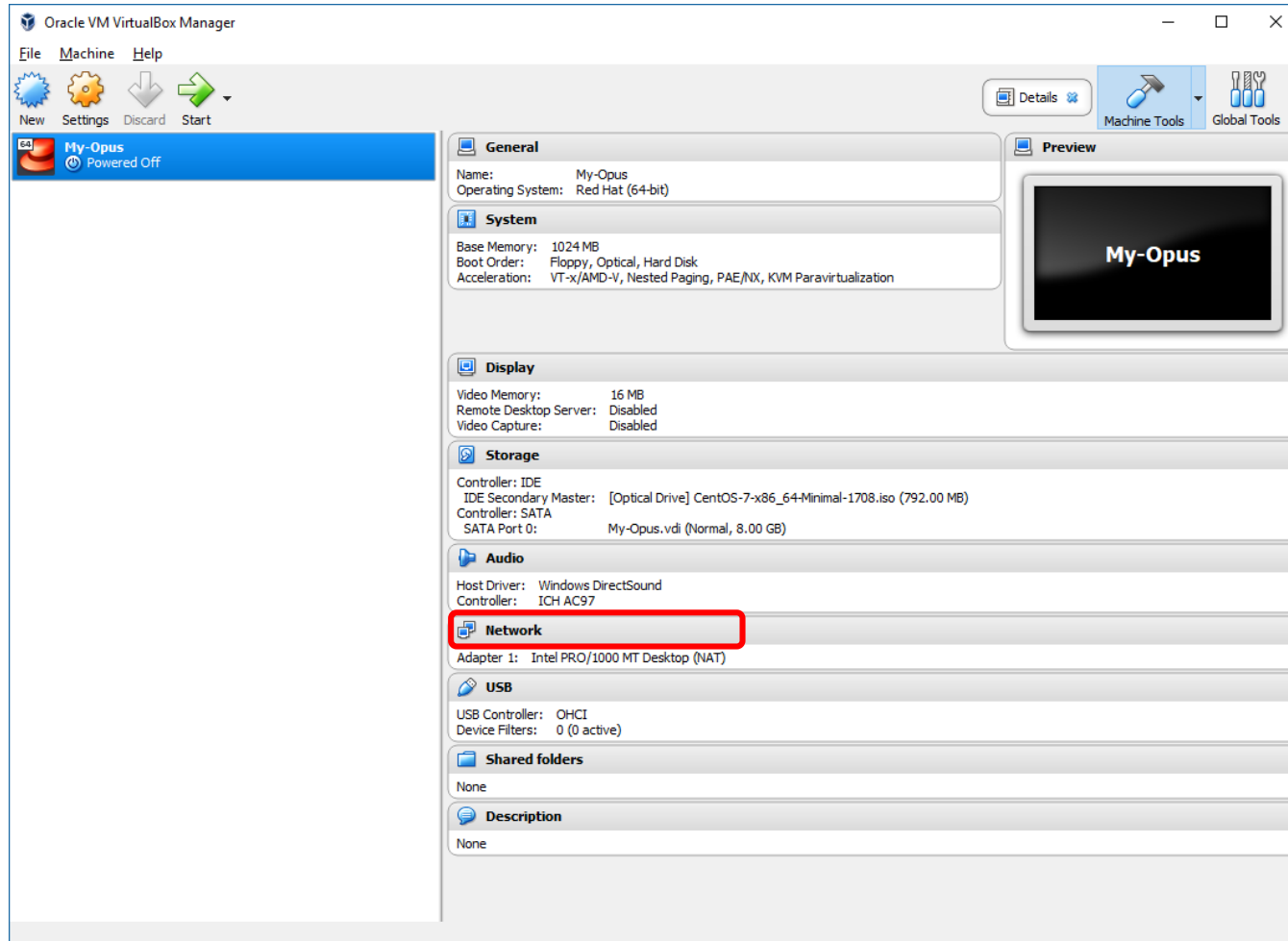
Select the ISO image previously downloaded

VirtualBox

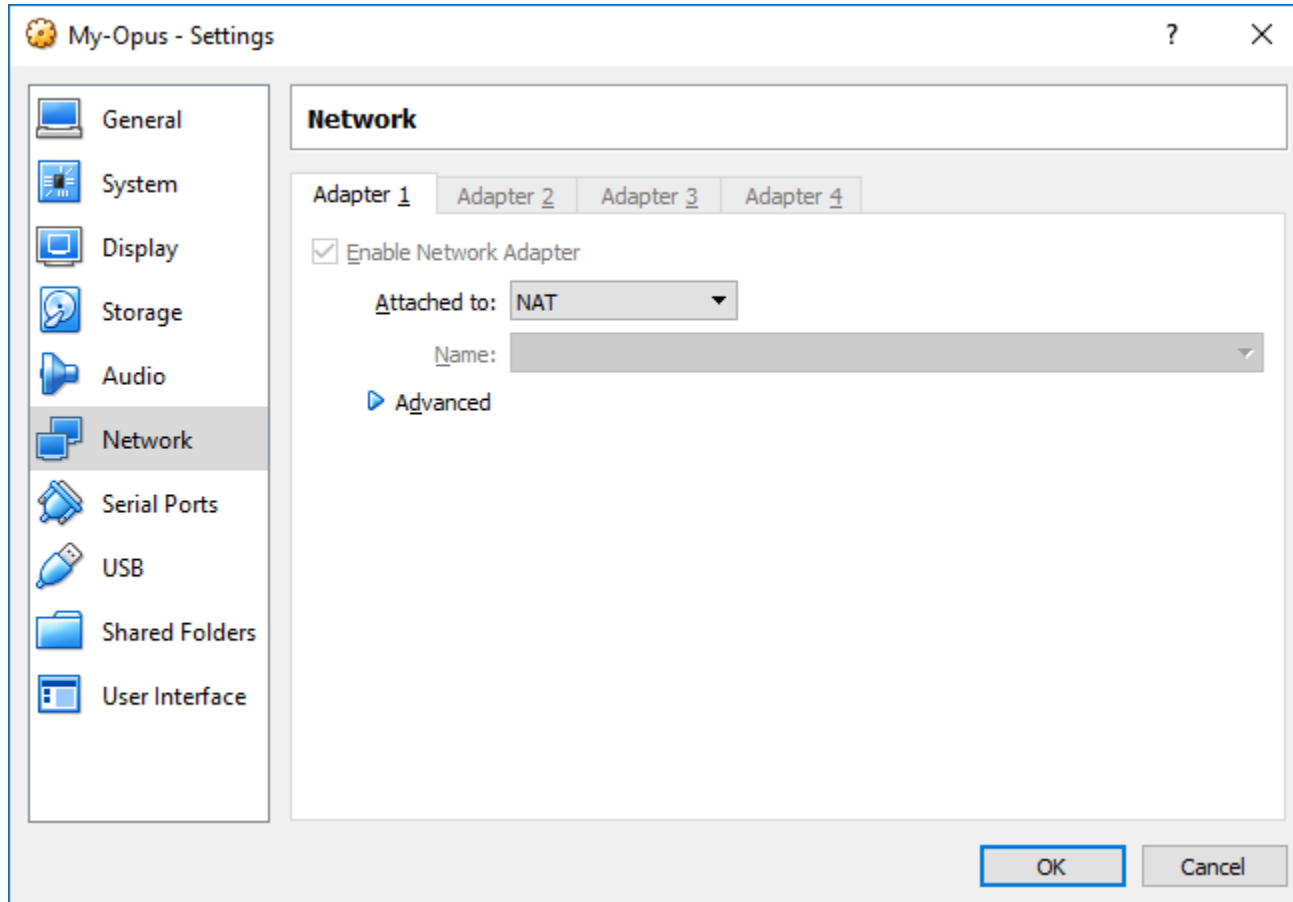


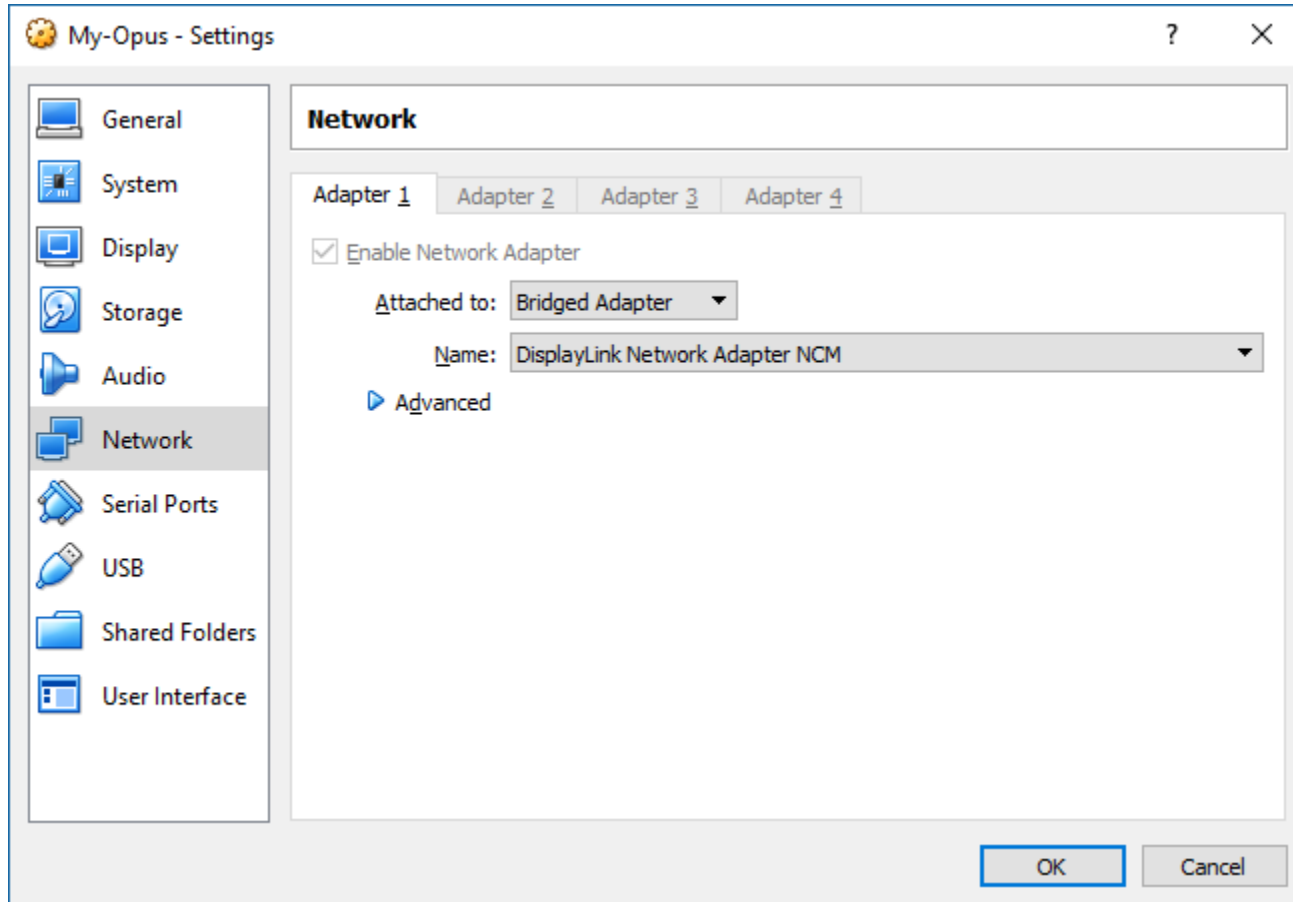
The CD (and ISO image) is now in the virtual CD tray

VirtualBox



*Click on
Network*

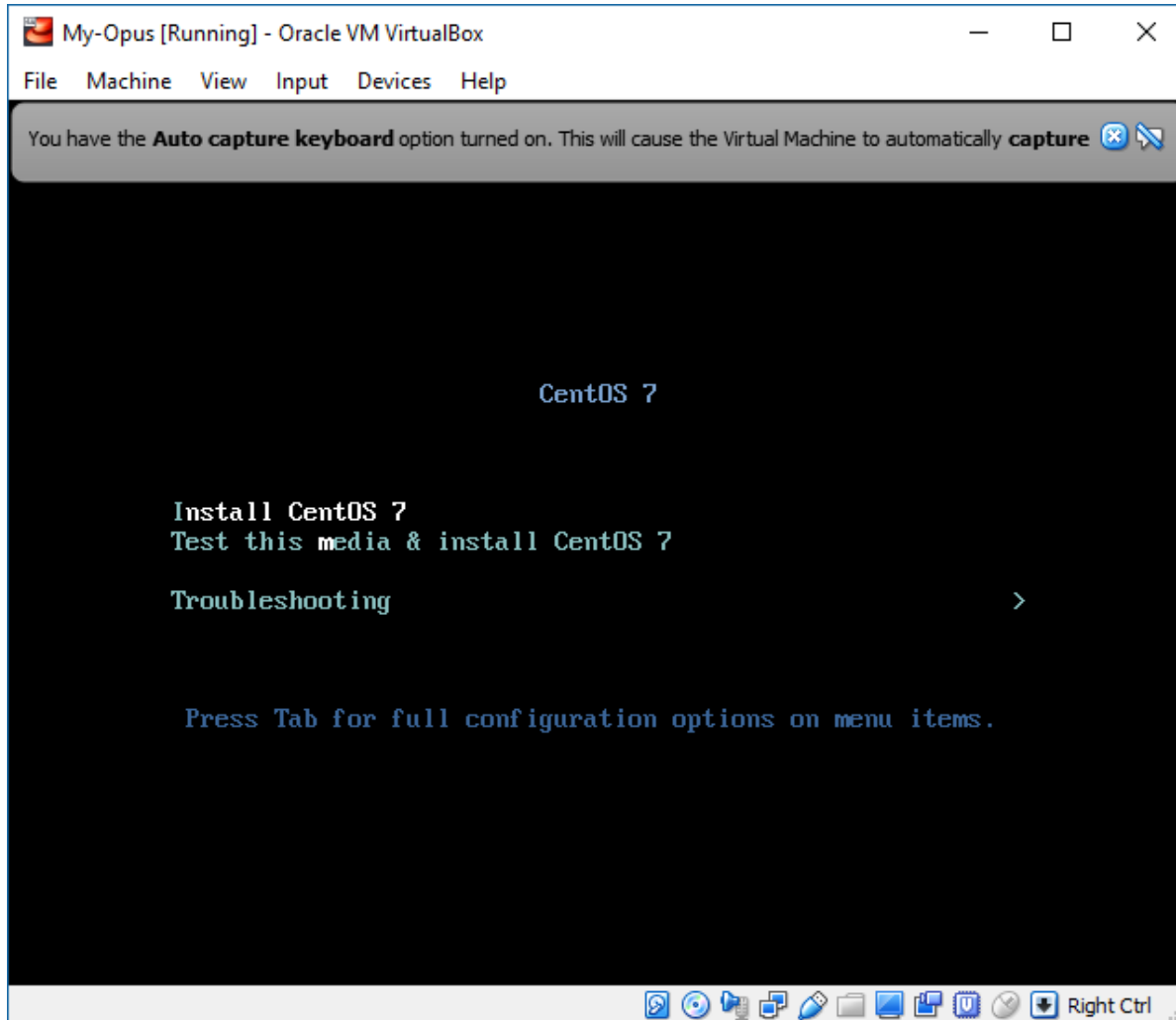




The screenshot displays the Oracle VM VirtualBox Manager interface. The main window title is "Oracle VM VirtualBox Manager". The menu bar includes "File", "Machine", and "Help". Below the menu bar are icons for "New", "Settings", "Discard", and "Show". The "Show" icon, which is a green arrow pointing right, is highlighted with a red square. On the left side, a list of virtual machines is shown, with "My-Opus" selected and its status "Running" indicated by a green arrow. The right side of the window is divided into two panes: "General" and "Preview". The "General" pane shows the following settings:

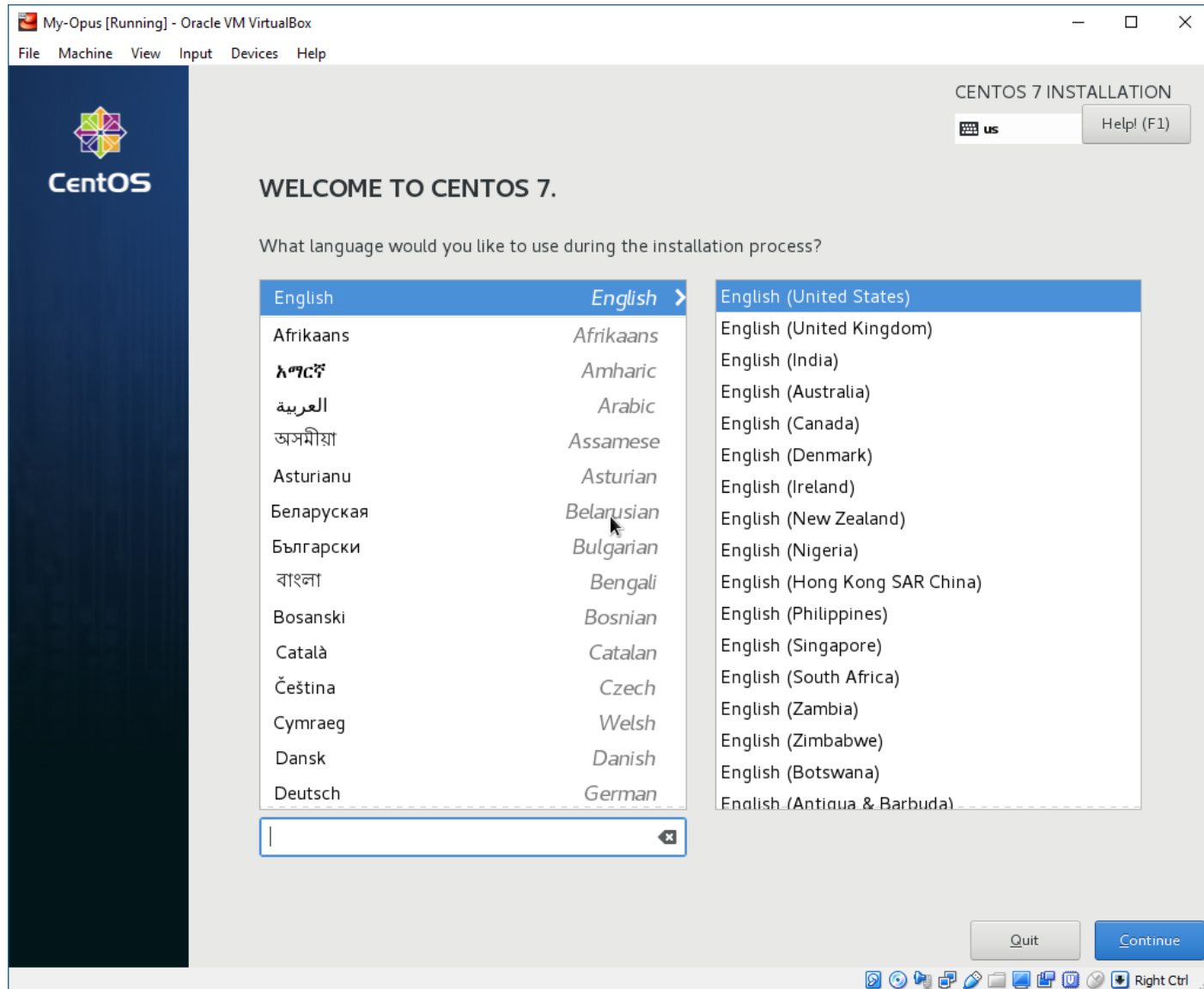
- General**
 - Name: My-Opus
 - Operating System: Red Hat (64-bit)
- System**
 - Base Memory: 1024 MB
 - Boot Order: Floppy, Optical, Hard Disk
 - Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX, KVM Paravirtualization
- Display**
 - Video Memory: 16 MB
 - Remote Desktop Server: Disabled
 - Video Capture: Disabled
- Storage**
 - Controller: IDE
 - IDE Secondary Master: [Optical Drive] Empty
 - Controller: SATA
 - SATA Port 0: My-Opus.vdi (Normal, 8.00 GB)
- Audio**
 - Host Driver: Windows DirectSound
 - Controller: ICH AC97
- Network**
 - Adapter 1: Intel PRO/1000 MT Desktop (Bridged Adapter, DisplayLink Network Adapter NCM)
- USB**
 - USB Controller: OHCI
 - Device Filters: 0 (0 active)
- Shared folders**
 - None
- Description**
 - None

The "Preview" pane shows a black window with some faint text, likely representing the virtual machine's display.



Allow "Capture" of the mouse by the VM. Use right Ctrl to release if needed.

Select and enter Install CentOS 7



The screenshot shows the CentOS 7 installation process. The window title is "My-Opus [Running] - Oracle VM VirtualBox". The menu bar includes "File", "Machine", "View", "Input", "Devices", and "Help". On the left is the CentOS logo. The main text reads "WELCOME TO CENTOS 7." followed by the question "What language would you like to use during the installation process?". A list of languages is displayed in two columns. The first column lists languages with their native scripts, and the second column lists regional variants of English. A search bar is at the bottom of the list. At the bottom right are "Quit" and "Continue" buttons. The system tray at the very bottom shows various icons and "Right Ctrl".

My-Opus [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

CENTOS 7 INSTALLATION

us Help! (F1)

WELCOME TO CENTOS 7.

What language would you like to use during the installation process?

English	English	English (United States)
Afrikaans	Afrikaans	English (United Kingdom)
አማርኛ	Amharic	English (India)
العربية	Arabic	English (Australia)
অসমীয়া	Assamese	English (Canada)
Asturiano	Asturian	English (Denmark)
Беларуская	Belarusian	English (Ireland)
Български	Bulgarian	English (New Zealand)
বাংলা	Bengali	English (Nigeria)
Bosanski	Bosnian	English (Hong Kong SAR China)
Català	Catalan	English (Philippines)
Čeština	Czech	English (Singapore)
Cymraeg	Welsh	English (South Africa)
Dansk	Danish	English (Zambia)
Deutsch	German	English (Zimbabwe)
		English (Botswana)
		English (Antigua & Barbuda)

Quit Continue

Right Ctrl

The screenshot shows the CentOS 7 installation summary screen within a VirtualBox window titled "My-Opus [Running] - Oracle VM VirtualBox". The window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The main content area is titled "CENTOS 7 INSTALLATION" and features a sidebar with the CentOS logo and name. The summary is organized into several sections:

- LOCALIZATION**
 - DATE & TIME**: Americas/New York timezone
 - LANGUAGE SUPPORT**: English (United States)
 - KEYBOARD**: English (US)
- SOFTWARE**
 - INSTALLATION SOURCE**: Local media
 - SOFTWARE SELECTION**: Minimal Install
- SYSTEM**
 - INSTALLATION DESTINATION**: Automatic partitioning selected (marked with a warning icon)
 - NETWORK & HOST NAME**: Not connected (marked with a warning icon)
 - KDUMP**: Kdump is enabled
 - SECURITY POLICY**: No profile selected

At the bottom right, there are "Quit" and "Begin Installation" buttons. A note below them reads: "We won't touch your disks until you click 'Begin Installation'". An orange banner at the very bottom contains a warning icon and the text: "Please complete items marked with this icon before continuing to the next step." The taskbar at the bottom of the window shows various system icons and the text "Right Ctrl".

LOCALIZATION




DATE & TIME
Americas/New York timezone

My-Opus [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

DATE & TIME CENTOS 7 INSTALLATION

Done us Help! (F1)

Region: Americas City: Los Angeles Network Time OFF




09:32 PM 24-hour AM/PM 12 / 02 / 2017

You need to set up networking first if you want to use NTP

Right Ctrl

SYSTEM




INSTALLATION DESTINATION
Automatic partitioning selected

My-Opus [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

INSTALLATION DESTINATION CENTOS 7 INSTALLATION


 US Help! (F1)

Device Selection

Select the device(s) you'd like to install to. They will be left untouched until you click on the main menu's "Begin Installation" button.

Local Standard Disks

8192 MiB




ATA VBox HARDDISK

sda / 8192 MiB free

Disks left unselected here will not be touched.

Specialized & Network Disks

 **Add a disk...**

Disks left unselected here will not be touched.

Other Storage Options

Partitioning

Automatically configure partitioning. I will configure partitioning.


I would like to make additional space available.

Encryption

Encrypt my data. You'll set a *passphrase* next.

[Full disk summary and boot loader...](#)

1 disk selected; 8192 MiB capacity; 8192 MiB free [Refresh...](#)

 Right Ctrl



My-Opus [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

NETWORK & HOST NAME CENTOS 7 INSTALLATION

Done us Help

Ethernet (enp0s3)
Intel Corporation 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop)


Ethernet (enp0s3) ON
Connected

Hardware Address 08:00:27:B8:81:DD
Speed 1000 Mb/s
IP Address 10.0.2.15
Subnet Mask 255.255.255.0
Default Route 10.0.2.2
DNS 192.168.1.1

Configure...

Host name: localhost.localdomain Current host name: localhost Apply

Right Ctrl



SECURITY POLICY
No profile selected

My-Opus [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

SECURITY POLICY CENTOS 7 INSTALLATION

Done US Help (F1)

Change content Apply security policy: ON


Choose profile below:

- Default**
The implicit XCCDF profile. Usually, the default contains no rules.
- Standard System Security Profile**
This profile contains rules to ensure standard security baseline of CentOS Linux 7 system. Regardless of your system's workload all of these checks should pass.
- PCI-DSS v3 Control Baseline for CentOS Linux 7**
This is a *draft* profile for PCI-DSS v3.
- C2S for CentOS Linux 7**
This profile demonstrates compliance against the U.S. Government Commercial Cloud Services (C2S) baseline.

This baseline was inspired by the Center for Internet Security (CIS) CentOS Linux 7 Benchmark, v1.1.0 - 04-02-2015. For the SCAP Security Guide project to remain in compliance with CIS' terms and conditions, specifically Restrictions(8), note there is no representation or claim that the C2S profile will ensure a system is in compliance or consistency with the CIS baseline.
- Red Hat Corporate Profile for Certified Cloud Providers (RH CCP)**

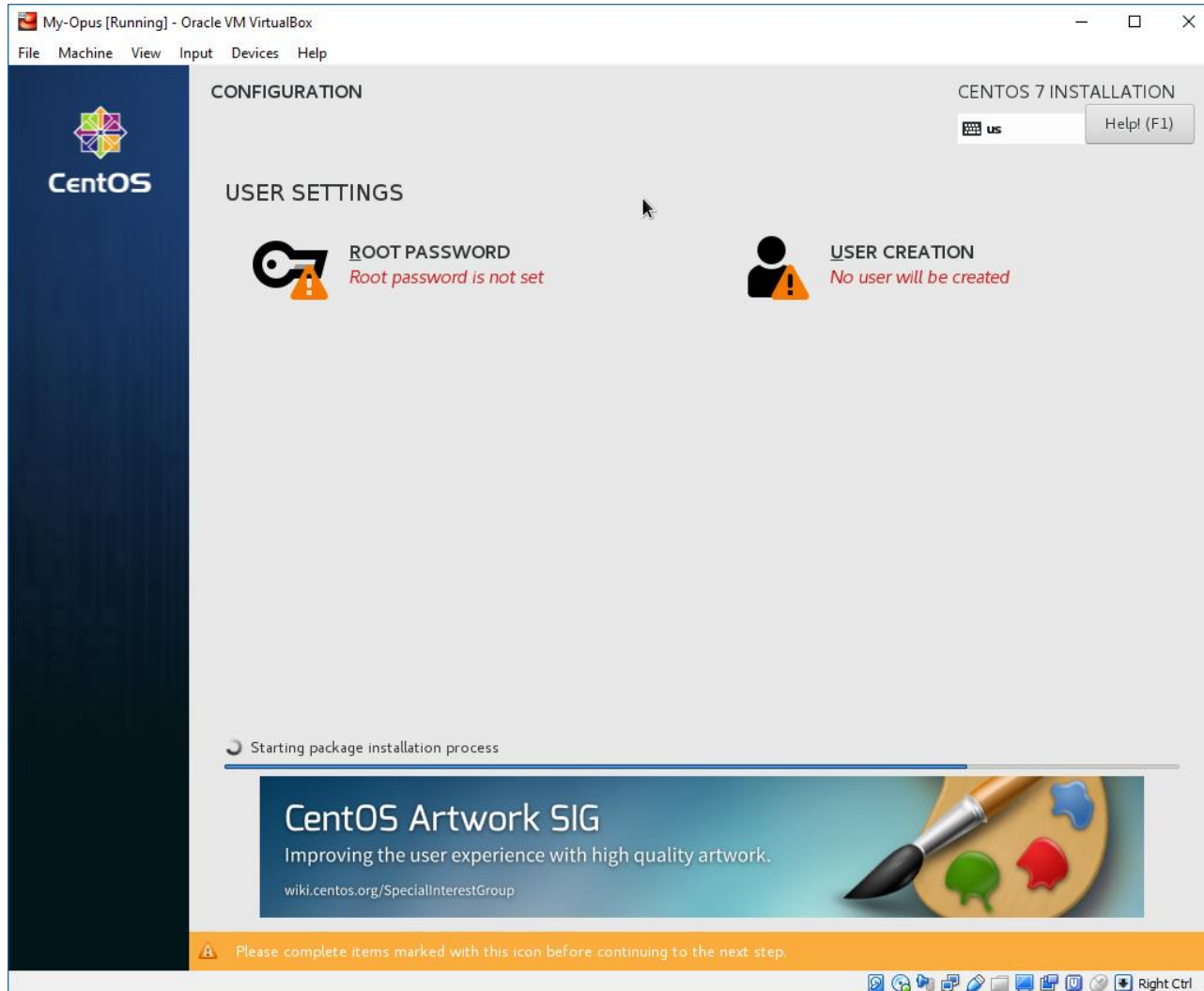
Select profile


Changes that were done or need to be done:

 No profile selected

Right Ctrl

The screenshot shows the CentOS 7 installation summary screen within an Oracle VM VirtualBox window titled "My-Opus [Running] - Oracle VM VirtualBox". The window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". On the left side, there is a dark blue sidebar with the CentOS logo and the text "CentOS". The main area is titled "INSTALLATION SUMMARY" and "CENTOS 7 INSTALLATION". At the top right of the main area, there is a keyboard icon with "us" and a "Help! (F1)" button. The summary is organized into several sections: "LOCALIZATION" includes "DATE & TIME" (Americas/Los Angeles timezone) and "KEYBOARD" (English (US)); "LANGUAGE SUPPORT" is set to "English (United States)"; "SOFTWARE" includes "INSTALLATION SOURCE" (Local media) and "SOFTWARE SELECTION" (Minimal Install); "SYSTEM" includes "INSTALLATION DESTINATION" (Automatic partitioning selected) and "KDUMP" (Kdump is enabled). A "SECURITY POLICY" section at the bottom right is highlighted in blue and says "Everything okay". At the bottom of the window, there are "Quit" and "Begin Installation" buttons. A warning message at the bottom right reads: "We won't touch your disks until you click 'Begin Installation'". The taskbar at the very bottom shows various system icons and the text "Right Ctrl".





ROOT PASSWORD
Root password is not set

My-Opus [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

ROOT PASSWORD CENTOS 7 INSTALLATION

Done us Help! (F1)

The root account is used for administering the system. Enter a password for the root user.

Root Password:

Strong

Confirm:

Right Ctrl

 **USER CREATION**
No user will be created

My-Opus [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

CREATE USER CENTOS 7 INSTALLATION

Done us Help!

Full name: Rich Simms

User name: rsimms

Tip: Keep your user name shorter than 32 characters and do not use spaces.

Make this user administrator

Require a password to use this account

Password: [masked] Strong

Confirm password: [masked]

Advanced...

Right Ctrl

The screenshot shows the Oracle VM VirtualBox window titled "My-Opus [Running] - Oracle VM VirtualBox". The interface is for the "CENTOS 7 INSTALLATION" phase. On the left is a dark blue sidebar with the CentOS logo and name. The main area is divided into sections: "CONFIGURATION" (top right), "USER SETTINGS" (middle left), and "USER CREATION" (middle right). Under "CONFIGURATION", there is a keyboard icon and the text "us" next to a "Help!" button. Under "USER SETTINGS", there is a key icon and the text "ROOT PASSWORD" followed by "Root password is set". The "USER CREATION" section is highlighted in blue and contains a person icon and the text "USER CREATION" followed by "Administrator rsimms will be created". At the bottom, a progress bar indicates "Performing post-installation setup tasks". Below the progress bar is a banner for the "CentOS Promotion SIG" with the text "Promoting CentOS in events, conferences and everywhere!" and the URL "wiki.centos.org/SpecialInterestGroup". The bottom of the window shows a taskbar with various system icons and the text "Right Ctrl".

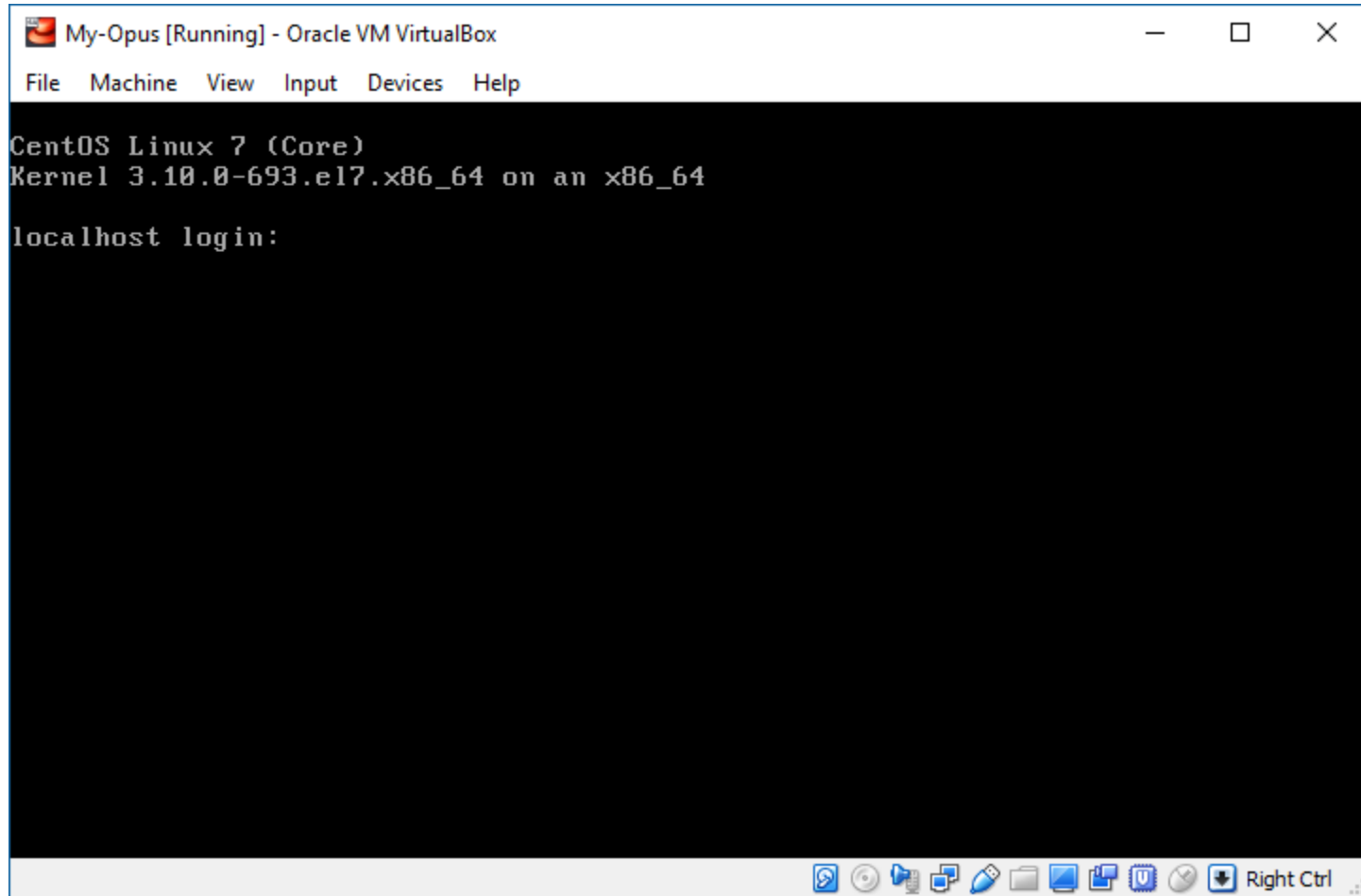
The screenshot shows a virtual machine window titled "My-Opus [Running] - Oracle VM VirtualBox". The window displays the CentOS 7 installation completion screen. On the left is a dark blue sidebar with the CentOS logo and the text "CentOS". The main area is light gray and contains the following sections:

- CONFIGURATION**: Includes "CENTOS 7 INSTALLATION" with a keyboard icon, the text "us", and a "Help! (F1)" button.
- USER SETTINGS**: Contains two panels:
 - ROOT PASSWORD**: Indicated by a key icon and the text "Root password is set".
 - USER CREATION**: Indicated by a person icon and the text "Administrator rsimms will be created".

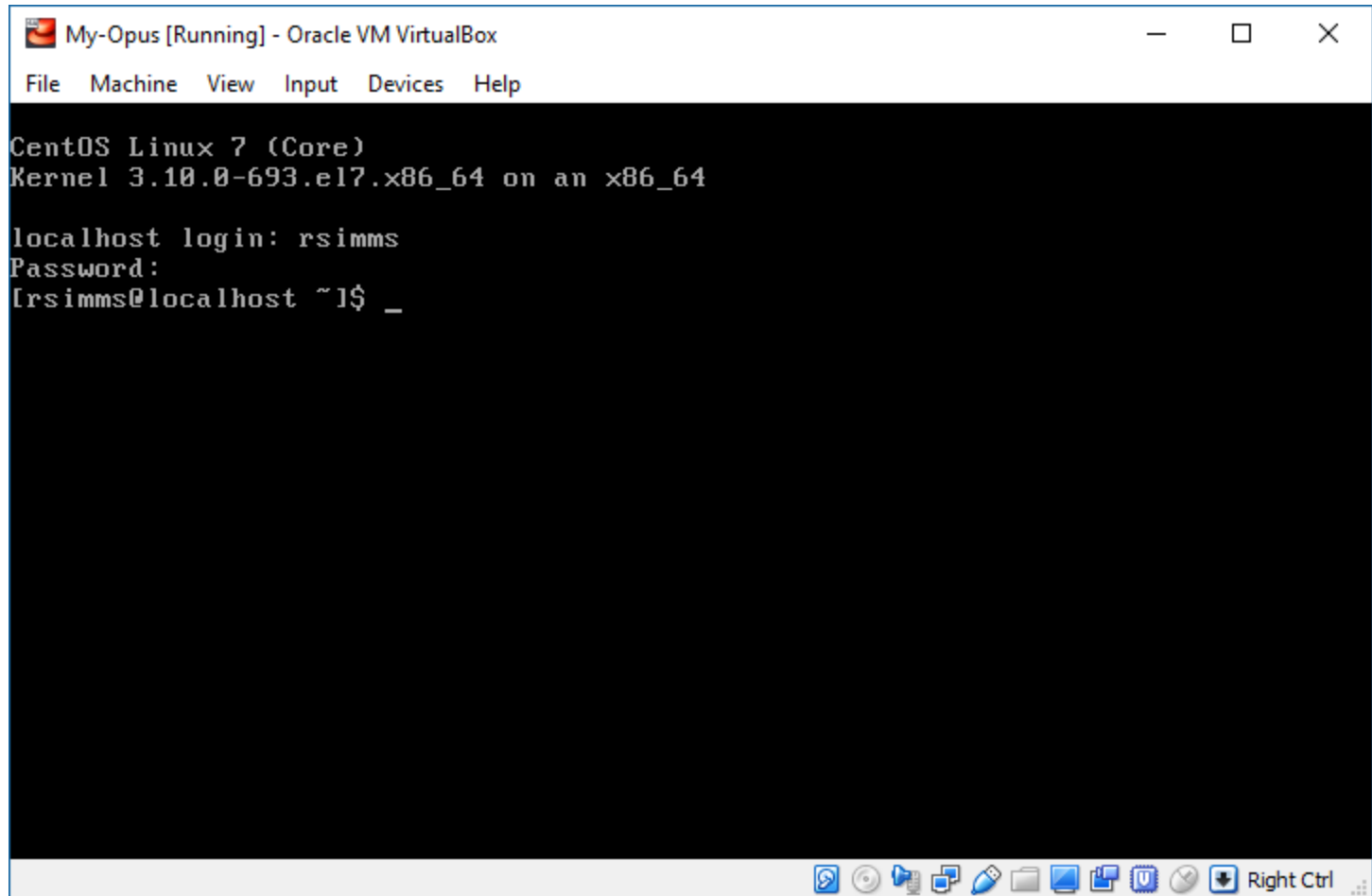
At the bottom of the main area, a progress bar is labeled "Complete!". Below the bar, the text reads: "CentOS is now successfully installed and ready for you to use! Go ahead and reboot to start using it!". A blue "Reboot" button is located to the right of this text.

An orange banner at the very bottom of the window contains a warning icon and the text: "Use of this product is subject to the license agreement found at /usr/share/centos-release/EULA".

The bottom of the window shows a taskbar with various system icons and the text "Right Ctrl".



Login to your new Linux computer



The screenshot shows a window titled "My-Opus [Running] - Oracle VM VirtualBox". The window contains a terminal window with the following text:

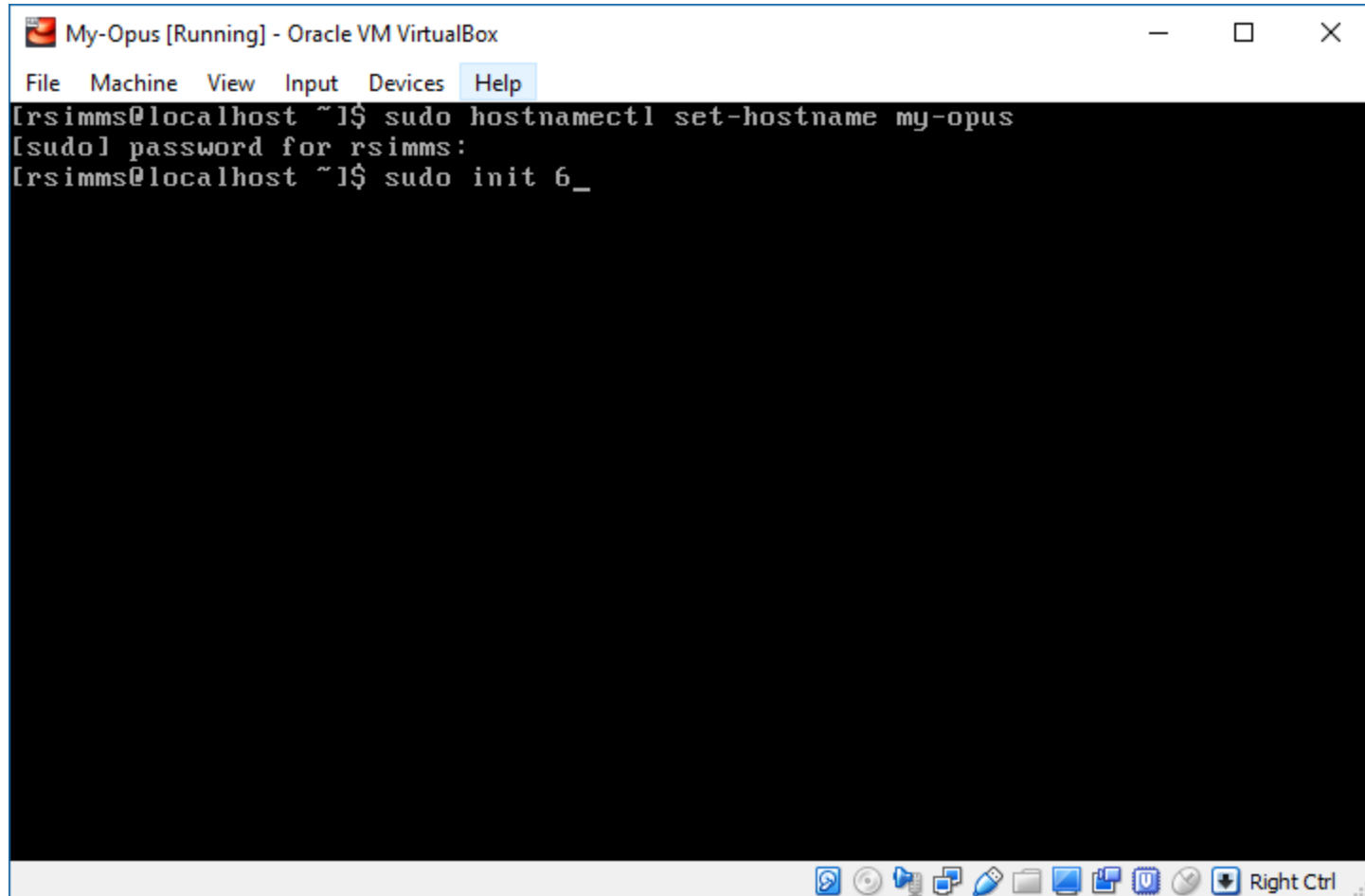
```
CentOS Linux 7 (Core)
Kernel 3.10.0-693.el7.x86_64 on an x86_64

localhost login: rsimms
Password:
[rsimms@localhost ~]$_
```

The terminal window is running on a CentOS Linux 7 (Core) system with kernel 3.10.0-693.el7.x86_64 on an x86_64 architecture. The user 'rsimms' has successfully logged in. The prompt is '[rsimms@localhost ~]\$_'. The window also shows a menu bar with 'File', 'Machine', 'View', 'Input', 'Devices', and 'Help'. The bottom of the window shows a taskbar with various icons and a 'Right Ctrl' button.

Logged in and ready to go

sudo hostnamectl set-hostname my-opus
sudo init 6



The screenshot shows a terminal window titled "My-Opus [Running] - Oracle VM VirtualBox". The terminal content is as follows:

```
[rsimms@localhost ~]$ sudo hostnamectl set-hostname my-opus  
[sudo] password for rsimms:  
[rsimms@localhost ~]$ sudo init 6_
```

The terminal window includes a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The bottom of the window shows a taskbar with various icons and the text "Right Ctrl".

Set the hostname and reboot

ipaddr

The image shows a terminal window titled "My-Opus [Running] - Oracle VM VirtualBox" with a menu bar (File, Machine, View, Input, Devices, Help). The terminal output of the command `ip addr` is as follows:

```

[rsimms@my-opus ~]$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast qlen 1000
   link/ether 08:00:27:b8:81:dd brd ff:ff:ff:ff:ff:ff
   inet 192.168.1.128/24 brd 192.168.1.255 scope global dynamic nopromisc
       valid_lft 599sec preferred_lft 599sec
   inet6 fe80::dc6f:f01a:8f5a:ae14/64 scope link
       valid_lft forever preferred_lft forever
[rsimms@my-opus ~]$ _
  
```

Overlaid on the terminal is the "PuTTY Configuration" dialog box. The "Host Name (or IP address)" field contains "192.168.1.128" and the "Port" field contains "22". The "Connection type" is set to "SSH". The "Saved Sessions" list includes "Default Settings", "172.30.10.x home", "192.168.1.home", "ASUS Router", "EH-Kali-XX", "NAS", and "RHEL7-server". The "Close window on exit" option is set to "Only on clean exit".

SSH using Putty or Mac terminal to your new Linux computer

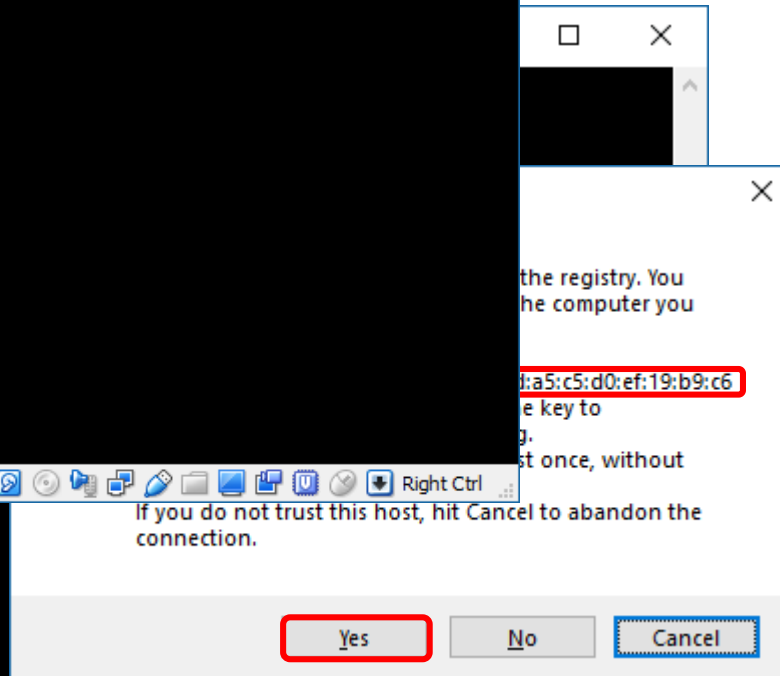


Click yes to indicate you trust the computer you are about to connect to

ssh-keygen -E md5 -lr <(ssh-key-scan my-opus)

```
My-Opus [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[rsimms@my-opus ssh]$ ssh-keygen -E md5 -lf <(ssh-keyscan my-opus)
# my-opus:22 SSH-2.0-OpenSSH_7.4
# my-opus:22 SSH-2.0-OpenSSH_7.4
# my-opus:22 SSH-2.0-OpenSSH 7.4
2048 MD5:74:b2:3c:f9:0f:06:ce:b9:9d:a5:c5:d0:ef:19:b9:c6 my-opus (RSA)
256 MD5:62:7f:ad:69:26:43:18:eb:58:2c:13:00:24:e8:fd:ad my-opus (ECDSA)
256 MD5:7a:de:74:0a:92:b8:f5:5c:12:ad:de:a1:47:6b:d8:aa my-opus (ED25519)
[rsimms@my-opus ssh]$ _
```

If you don't trust it display the actual fingerprints and compare



sudo yum install httpd

y
y

```
rsimms@my-opus- [rsimms@my-opus ~]$ sudo yum install httpd
[sudo] password for rsimms:
Loaded plugins: fastestmirror
base | 3.6 kB 00:00
extras | 3.4 kB 00:00
updates | 3.4 kB 00:00
(1/4): base/7/x86_64/group_gz | 156 kB 00:00
(2/4): extras/7/x86_64/primary_db | 130 kB 00:00
(3/4): base/7/x86_64/primary_db | 5.7 MB 00:01
(4/4): updates/7/x86_64/primary_db | 3.6 MB 00:01
Determining fastest mirrors
 * base: mirror.sjc02.svwh.net
 * extras: mirror.sjc02.svwh.net
 * updates: mirror.sjc02.svwh.net
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.6-67.el7.centos.6 will be installed
--> Processing Dependency: httpd-tools = 2.4.6-67.el7.centos.6 for package: httpd-2.4.6-67.el7.centos.6.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.6-67.el7.centos.6.x86_64
--> Processing Dependency: libaprutil-1.so.0() (64bit) for package: httpd-2.4.6-67.el7.centos.6.x86_64
--> Processing Dependency: libapr-1.so.0() (64bit) for package: httpd-2.4.6-67.el7.centos.6.x86_64
--> Running transaction check
--> Package apr.x86_64 0:1.4.8-3.el7_4.1 will be installed
--> Package apr-util.x86_64 0:1.5.2-6.el7 will be installed
--> Package httpd-tools.x86_64 0:2.4.6-67.el7.centos.6 will be installed
--> Package mailcap.noarch 0:2.1.41-2.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package Arch Version Repository Size
=====
Installing:
httpd x86_64 2.4.6-67.el7.centos.6 updates 2.7 M
Installing for dependencies:
apr x86_64 1.4.8-3.el7_4.1 updates 103 k
apr-util x86_64 1.5.2-6.el7 base 92 k
httpd-tools x86_64 2.4.6-67.el7.centos.6 updates 88 k
mailcap noarch 2.1.41-2.el7 base 31 k

Transaction Summary
-----
Install 1 Package (+4 Dependent packages)

Total download size: 3.0 M
Installed size: 10 M
Is this ok [y/d/N]:
```

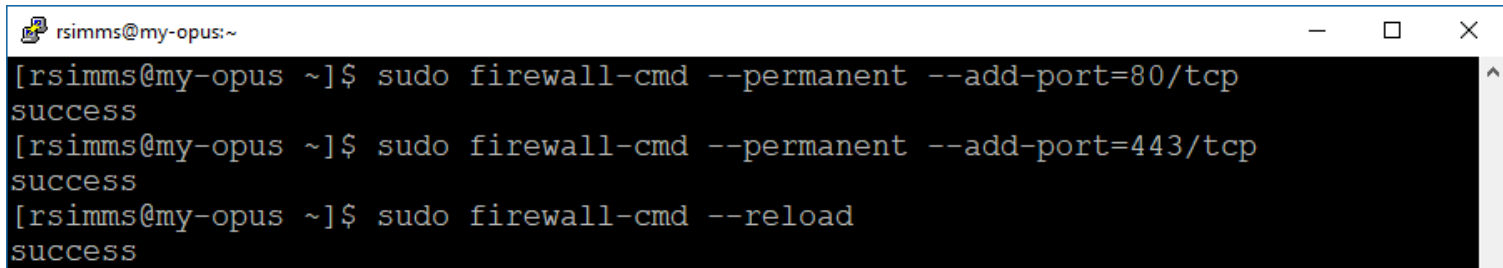
```
rsimms@my-opus- Total download size: 3.0 M
Installed size: 10 M
Is this ok [y/d/N]: y
Downloading packages:
warning: /var/cache/yum/x86_64/7/base/packages/mailcap-2.1.41-2.el7.noarch.rpm:
Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
Public key for mailcap-2.1.41-2.el7.noarch.rpm is not installed
(1/5): mailcap-2.1.41-2.el7.noarch.rpm | 31 kB 00:00
Public key for httpd-tools-2.4.6-67.el7.centos.6.x86_64.rpm is not installed
(2/5): httpd-tools-2.4.6-67.el7.centos.6.x86_64.rpm | 88 kB 00:00
(3/5): apr-util-1.5.2-6.el7.x86_64.rpm | 92 kB 00:00
(4/5): apr-1.4.8-3.el7_4.1.x86_64.rpm | 103 kB 00:00
(5/5): httpd-2.4.6-67.el7.centos.6.x86_64.rpm | 2.7 MB 00:01
-----
Total 2.6 MB/s | 3.0 MB 00:01
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Importing GPG key 0x4A80EB5:
Userid : "CentOS-7 Key (CentOS 7 Official Signing Key) <security@centos.org>"
Fingerprint: 6341 ab27 53d7 8a78 a7c2 7bb1 24c6 a8a7 f4a8 0eb5
Package : centos-release-7-4.1708.el7.centos.x86_64 (@anaconda)
From : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Is this ok [y/N]: y
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : apr-1.4.8-3.el7_4.1.x86_64 1/5
Installing : apr-util-1.5.2-6.el7.x86_64 2/5
Installing : httpd-tools-2.4.6-67.el7.centos.6.x86_64 3/5
Installing : mailcap-2.1.41-2.el7.noarch 4/5
Installing : httpd-2.4.6-67.el7.centos.6.x86_64 5/5
Verifying : mailcap-2.1.41-2.el7.noarch 1/5
Verifying : httpd-2.4.6-67.el7.centos.6.x86_64 2/5
Verifying : apr-util-1.5.2-6.el7.x86_64 3/5
Verifying : apr-1.4.8-3.el7_4.1.x86_64 4/5
Verifying : httpd-tools-2.4.6-67.el7.centos.6.x86_64 5/5

Installed:
httpd.x86_64 0:2.4.6-67.el7.centos.6

Dependency Installed:
apr.x86_64 0:1.4.8-3.el7_4.1 apr-util.x86_64 0:1.5.2-6.el7
httpd-tools.x86_64 0:2.4.6-67.el7.centos.6 mailcap.noarch 0:2.1.41-2.el7

Complete!
rsimms@my-opus- ~]$
```

```
sudo firewall-cmd --permanent --add-port=80/tcp  
sudo firewall-cmd --permanent --add-port=443/tcp  
sudo firewall-cmd --reload
```



```
rsimms@my-opus:~  
[rsimms@my-opus ~]$ sudo firewall-cmd --permanent --add-port=80/tcp  
success  
[rsimms@my-opus ~]$ sudo firewall-cmd --permanent --add-port=443/tcp  
success  
[rsimms@my-opus ~]$ sudo firewall-cmd --reload  
success
```

*Poke holes in the firewall for ports 80 (HTTP) and 443 (HTTPS).
This allows remote users access to your Apache web server*



sudo systemctl start httpd
sudo systemctl enable httpd
sudo systemctl status httpd

```
[rsimms@my-opus ~]$ sudo systemctl start httpd
[rsimms@my-opus ~]$ sudo systemctl enable httpd
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[rsimms@my-opus ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Sat 2017-12-02 13:24:19 PST; 16s ago
     Docs: man:httpd(8)
           man:apachectl(8)
  Main PID: 1265 (httpd)
   Status: "Total requests: 0; Current requests/sec: 0; Current traffic: 0 B/sec"
    CGroup: /system.slice/httpd.service
            └─1265 /usr/sbin/httpd -DFOREGROUND
              └─1266 /usr/sbin/httpd -DFOREGROUND
                └─1267 /usr/sbin/httpd -DFOREGROUND
                  └─1268 /usr/sbin/httpd -DFOREGROUND
                    └─1269 /usr/sbin/httpd -DFOREGROUND
                      └─1270 /usr/sbin/httpd -DFOREGROUND

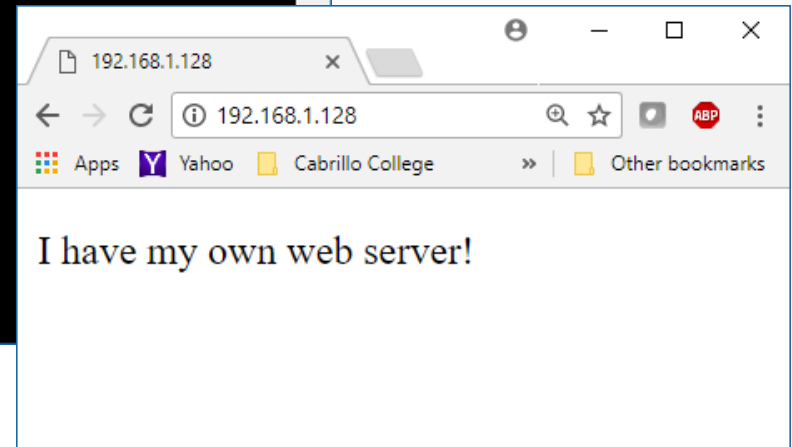
Dec 02 13:24:19 my-opus systemd[1]: Starting The Apache HTTP Server...
Dec 02 13:24:19 my-opus httpd[1265]: AH00558: httpd: Could not reliably det...ge
Dec 02 13:24:19 my-opus systemd[1]: Started The Apache HTTP Server.
Hint: Some lines were ellipsized, use -l to show in full.
[rsimms@my-opus ~]$
```

Start Apache and enable it to start automatically at boot

```
sudo vi /var/www/html/index.html  
cat /var/www/html/index.html
```

```
rsimms@my-opus:~  
[rsimms@my-opus ~]$ sudo vi /var/www/html/index.html  
[rsimms@my-opus ~]$ cat /var/www/html/index.html  
<!DOCTYPE html>  
<html>  
<body>  
  
<p>I have my own web server!</p>  
  
</body>  
</html>  
[rsimms@my-opus ~]$ █
```

Browse to your VM



```
<!DOCTYPE html>  
<html>  
<body>
```

```
<p>I have my own web server!</p>
```

```
</body>  
</html>
```

*Make a little web page
named index.html*

sudo vi /etc/motd

```
rsimms@my-opus:~  
[rsimms@my-opus ~]$ sudo vi /etc/motd  
[sudo] password for rsimms:  
[rsimms@my-opus ~]$ cat /etc/motd  
  
Y ==> MORNINGS  
  
[rsimms@my-opus ~]$
```

Make your MOTD
(Message of the Day) file

The screenshot shows a web browser window with the URL <http://patorjk.com/software/taag/#p=display&f=Graffiti&t=My-Opus>. The page title is "Text to ASCII Art Genera: X". The browser's address bar shows the URL. Below the address bar, there are several navigation links: Apps, Yahoo, Cabrillo College, Health, Network, CIS 76 links, Lab Development, and Other bookmarks. The main content area has a dark theme and includes a "Main Controls" section with the following settings:

- Font: Graffiti
- Character Width: Default
- Character Height: Default

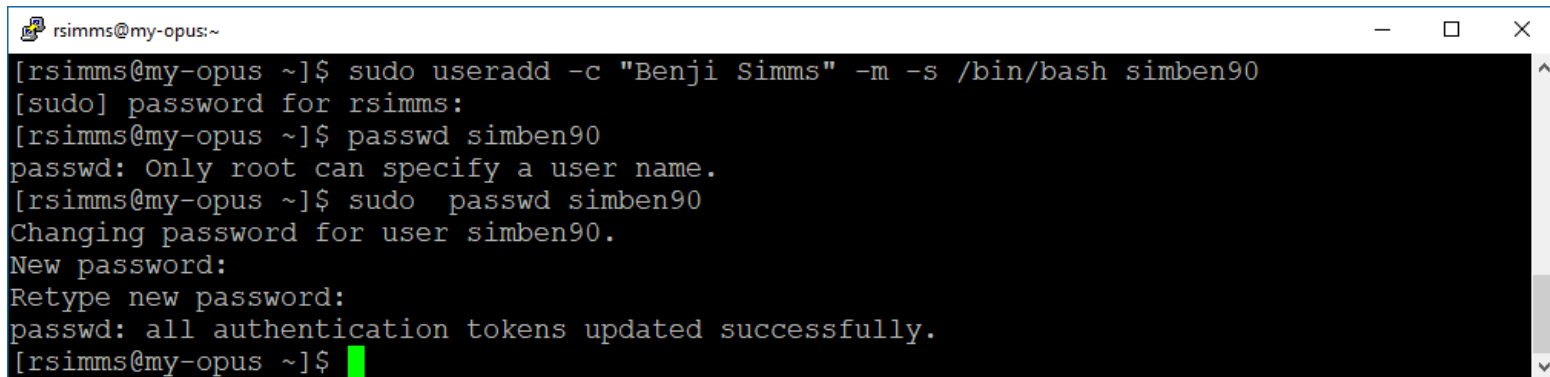
There are buttons for "Test All", "More Opts", and "About". To the right of these controls is a text input field containing "My-Opus". Below the controls, there is a section titled "Other Stuff From patorjk.com That You Might Like:" with a list of links:

- Typing Speed Test
- Keyboard Layout Analyzer
- Text Color Fader
- Snake Game
- Follow Me on Instagram
- Main Page

The main output area displays the ASCII art generated from the input text "Y ==> MORNINGS" using the "Graffiti" font. At the bottom of the page, there are buttons for "Share Link", "Select & Copy", and "Font Info", along with the "patorjk.com" logo.

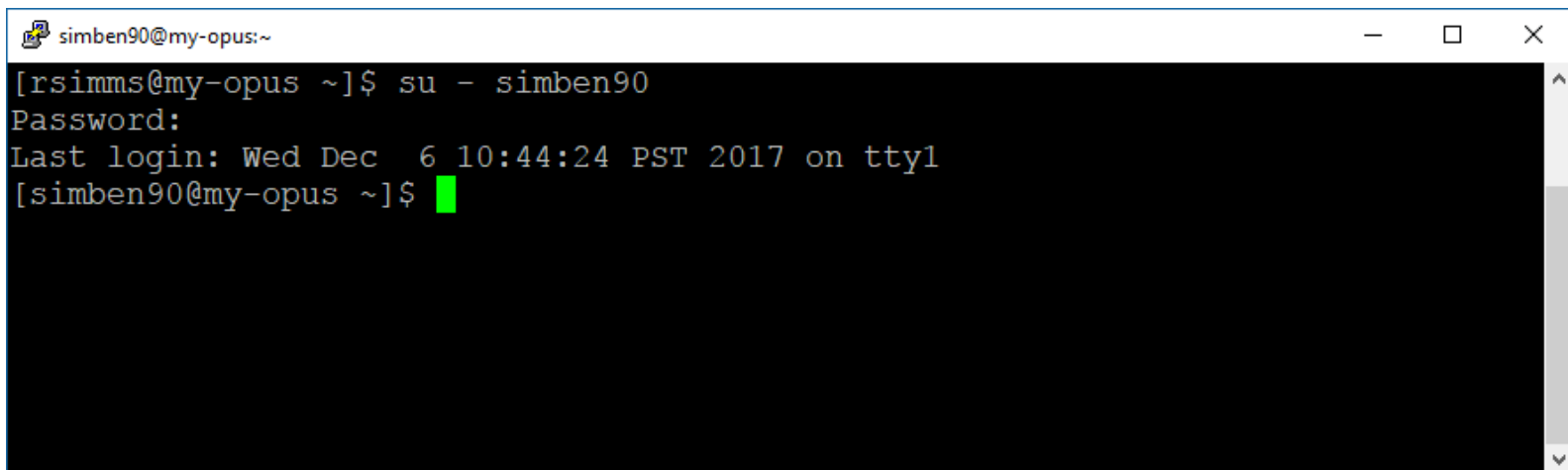
<http://patorjk.com/software/taag>

sudo useradd -c "Benji Simms" -m -s /bin/bash simben90
sudo passwd simben90



```
rsimms@my-opus:~  
[rsimms@my-opus ~]$ sudo useradd -c "Benji Simms" -m -s /bin/bash simben90  
[sudo] password for rsimms:  
[rsimms@my-opus ~]$ passwd simben90  
passwd: Only root can specify a user name.  
[rsimms@my-opus ~]$ sudo passwd simben90  
Changing password for user simben90.  
New password:  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[rsimms@my-opus ~]$
```


su - simben90



```
simben90@my-opus:~  
[rsimms@my-opus ~]$ su - simben90  
Password:  
Last login: Wed Dec 6 10:44:24 PST 2017 on tty1  
[simben90@my-opus ~]$
```

Switch to your CIS 90 account

**scp -r -P 2220 opus-ii.cis.cabrillo.edu:* .
yes**

```

simben90@my-opus:~
[simben90@my-opus ~]$ scp -r -P 2220 opus-ii.cis.cabrillo.edu:* .
The authenticity of host '[opus-ii.cis.cabrillo.edu]:2220 ([2607:f380:80f:f425::244]:2220)
' can't be established.
ECDSA key fingerprint is SHA256:xKmlxeB/u8y3dW61lLYniQzigUQmlpdcPS2mPdd8SV0.
ECDSA key fingerprint is MD5:b3:bc:ad:b3:a9:38:ab:9e:5a:bb:7b:d0:3c:e5:57:e6.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[opus-ii.cis.cabrillo.edu]:2220,[2607:f380:80f:f425::244]:2220
' (ECDSA) to the list of known hosts.
simben90@opus-ii.cis.cabrillo.edu's password:
address                100%    22      1.4KB/s   00:00
badevents              100%  1010    32.8KB/s  00:00
treat5                 100%   795    42.3KB/s  00:00
bigfile                100%   10KB   612.5KB/s 00:00
bigfile.bak           100%   10KB   615.7KB/s 00:00
bigshell               100%    70     3.8KB/s   00:00
enlightenment         100%  3442   150.0KB/s 00:00
treed                  100%   190    11.1KB/s  00:00
zoom                   100%    74     3.4KB/s   00:00
app                    100%   220    14.5KB/s  00:00
hi                     100%   107     7.4KB/s   00:00
I                      100%   375    16.2KB/s  00:00
tryme                  100%   174     7.2KB/s   00:00
banner                 100%   15KB   800.2KB/s 00:00
simple.c                100%   598    27.6KB/s  00:00
simple                  100%  8768   490.9KB/s 00:00
simpleplus.cpp          100%   630    42.3KB/s  00:00

```

Copy your CIS 90 files recursively from Opus-II

ls

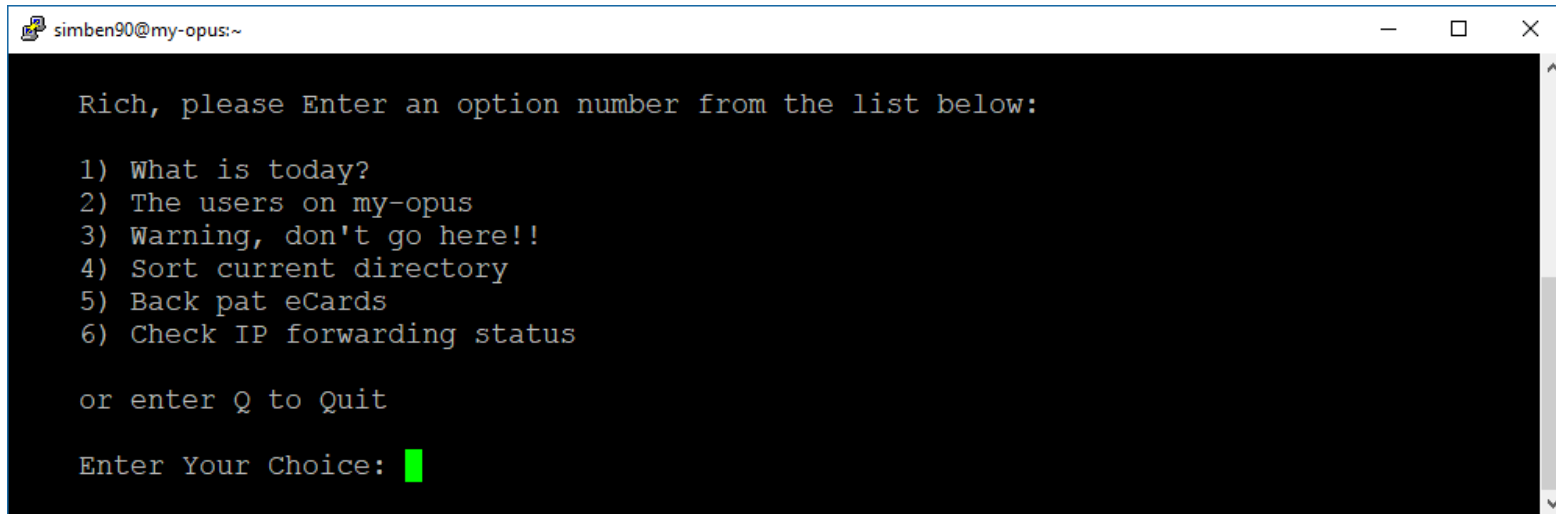
```

simben90@my-opus:~
[simben90@my-opus ~]$ ls
address      dead.letter  f1.graded   lab07       mission     text.fxd
badevents   Directory3   f2.graded   lab08       mylog       timecal
bag          dogs         f3.graded   lab09       poems       trash
bigfile     dogs.tar     files.out   lab09.graded proposal1    treat1
bigfile.bak dulces       Hidden      Lab2.0      proposal2   uhistory
bigshell    dups        jobs        Lab2.1      proposal3   uhistory.bak
bin         edits       lab01.graded labx2       scratch     uhistory.rsimms
bin.tar     empty       lab02-collection letter      sweets      what_am_i
candy      example777  lab04.graded log          text.err    words
cis90_html example808  lab04-mydata Miscellaneous text.fixed
[simben90@my-opus ~]$ █

```

Make sure you got them all

bin/myscript

A terminal window titled 'simben90@my-opus:~' with standard window controls. The terminal output is as follows:

```
Rich, please Enter an option number from the list below:  
  
1) What is today?  
2) The users on my-opus  
3) Warning, don't go here!!  
4) Sort current directory  
5) Back pat eCards  
6) Check IP forwarding status  
  
or enter Q to Quit  
  
Enter Your Choice: █
```

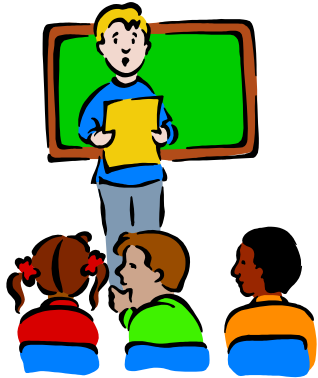
Check you can still run your final project

Activity
(If time permits)

1. Google "virtualbox download"
2. Install VirtualBox
3. Create a new Linux Ubuntu VM named MyOpus
4. Google "centos download"
5. Download a minimal CentOS iso.
6. Put the ISO "into" your CD drive on MyOpus
7. Power up MyOpus and install CentOS



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 panels:

- AUDIO & VIDEO:** Features a video feed for "Rich Simms" (currently blank), volume sliders for "Talk" and "Video", and icons for microphone and video status.
- PARTICIPANTS:** Lists "Benji" and "Rich Simms (Moderator)". Below the list is a row of four icons: a smiley face, a hand raised, a hand with a checkmark, and a checkmark icon. 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) -". The chat area is also highlighted with a red box.

Two blue callout boxes provide instructions:

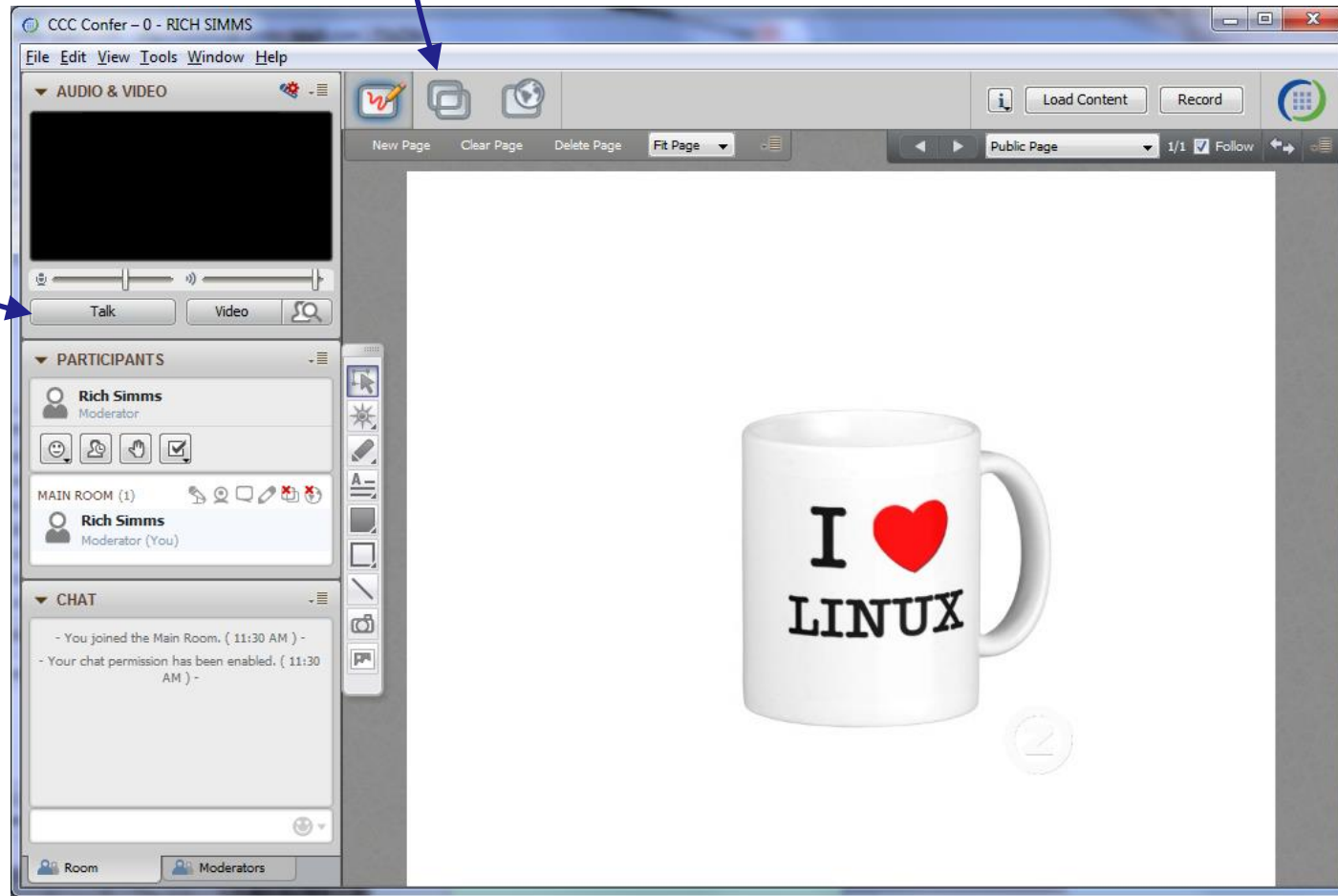
- The top callout box, pointing to the participant control icons, says: "Raise your hand, make gestures, use emoticons and indicate responses using these controls".
- The bottom callout box, pointing to the chat area, says: "Ask public or private questions using the chat area".

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

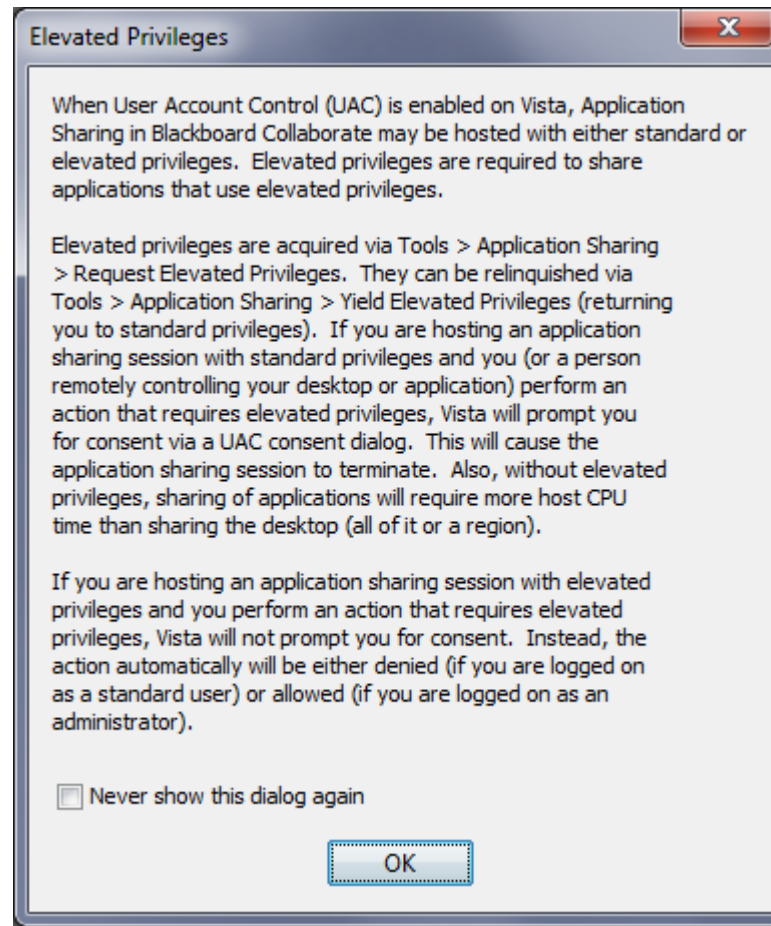
Sharing from CCC Confer

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

Click **overlapping rectangles** to share

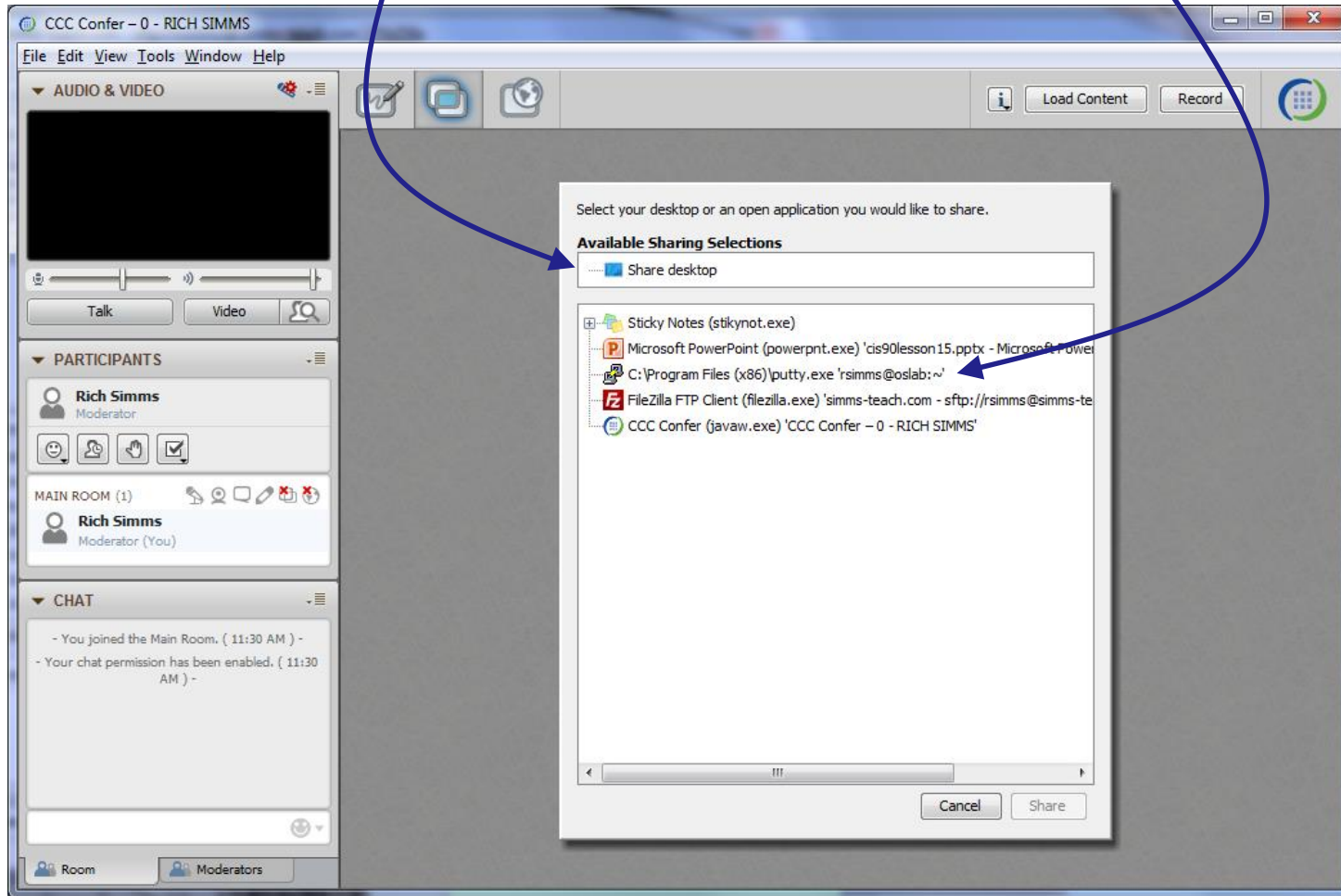


Sharing from CCC Confer



Sharing from CCC Confer

Either share putty/terminal or entire desktop



Sharing from CCC Confer

Click stop symbol to end sharing

The screenshot displays a Windows desktop environment. On the left, a 'CCC Confer - 0 - RIC...' window is open, showing a video player, audio controls, and a list of participants including Rich Simms (Moderator). In the center, a terminal window titled 'rsimms@oslab:~' shows a login sequence for 'rsimms@oslab.cabrillo.edu' and a welcome message: 'Welcome to Opus Serving Cabrillo College'. The terminal prompt is '[rsimms@oslab ~]\$'. On the desktop, there are several image files named 'IMG_1863...', 'IMG_1866...', and 'IMG_1859...', along with a 'New Microsoft...' document icon. The taskbar at the bottom shows various application icons, including Chrome, Firefox, and the confer application. A blue arrow originates from the text 'Click stop symbol to end sharing' and points to the stop button (two vertical bars) in the confer window's taskbar.

Assignment





Notes to instructor

Practice Test System

[] Start: `echo "/root/unlock-cis90; rm /etc/nologin" | at [T-1wk+1hr]`

[] End: `echo "/root/lock-cis90; cp /etc/nologin.bak /etc/nologin" | at [T-30]`

Canvas Practice Test:

[] availability from = `[T-1wk+1hr]`, due & available until = `[T-30]`

[] remove password on real test on Canvas `[T-1wk]`

[] moderate any accommodations

Real Test system

[] Start: `echo "/root/unlock-cis90; rm /etc/nologin" | at [T-0]`

[] End: `echo "/root/lock-cis90; cp /etc/nologin.bak /etc/nologin" | at [splashdown]`

Canvas Real Test:

[] availability from = `[T-0]`, due & available until = `[splashdown]`

[] remove password on real test on Canvas `[T-0]`

[] moderate any accommodations

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