



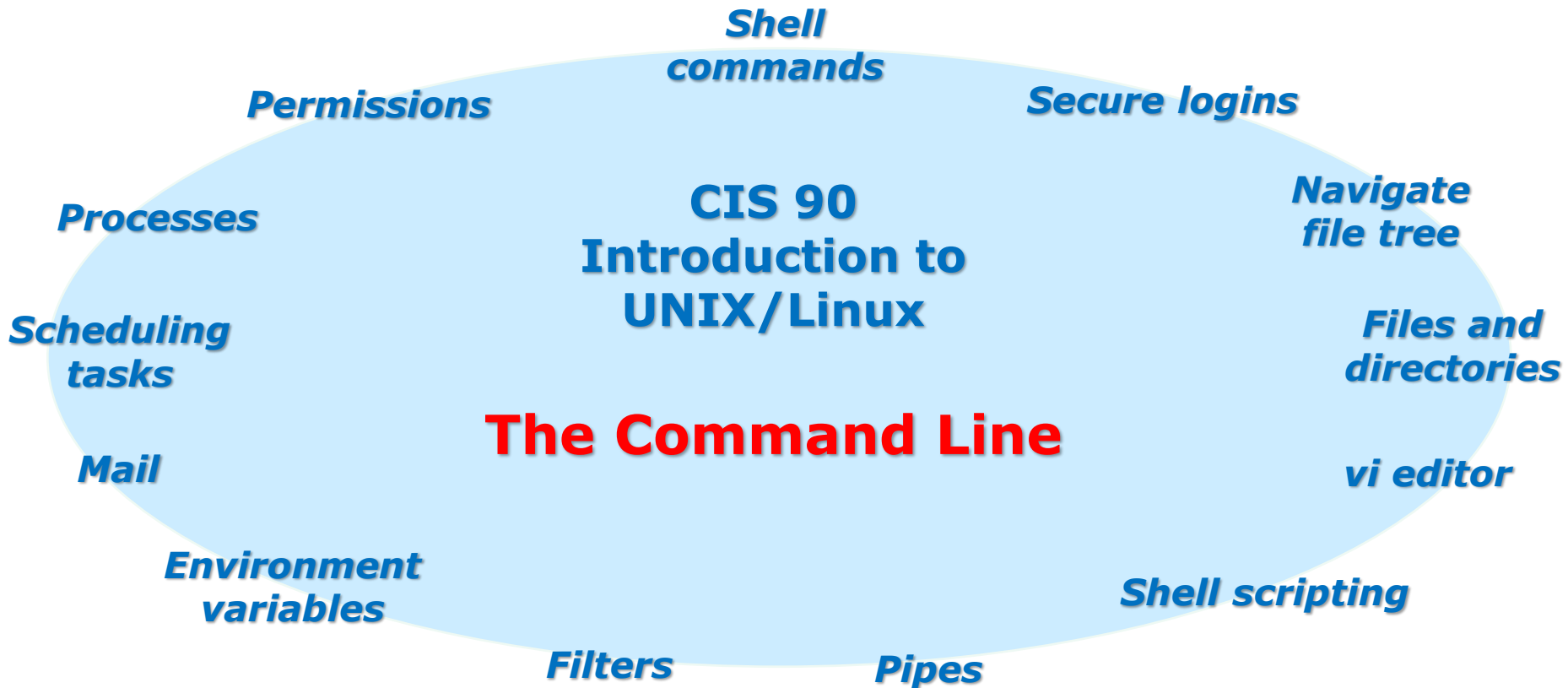
Rich's CCC Confer checklist - setup

Last updated 5/16/2018

- ☐ Zoom recording named and published for previous lesson
- ☐ Slides posted
- ☐ Print out agenda slide and annotate page numbers
- ☐ Flash cards
- ☐ 1st minute quiz
- ☐ Web Calendar updated
- ☐ Bring some Linux ISOs on flash drive
- ☐ Canvas Practice Test 3 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

☐ <https://zoom.us>

- ☐ Putty + Slides + Chrome
- ☐ Enable/Disable attendee sharing
 - ^ > Advanced Sharing Options > Only Host
- ☐ Enable/Disable attended annotations
 - Share > More > Disable Attendee Sharing



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:

<https://web.archive.org/web/20140209023942/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. John's site: <http://teacherjohn.com/>
- Jaclyn Kostner for many webinar best practices: e.g. mug shot page.



Student checklist - Before class starts

The screenshot shows a web browser window with the address bar displaying `simms-teach.com/cis90calendar.php`. The page title is "Rich's Cabrillo College CIS Classes CIS 90 Calendar". On the left sidebar, there are links for "CIS 90", "CIS 90B", "CIS 90C", "CIS 90D", "CIS 90E", "CIS 90F", "CIS 90G", "CIS 90H", "CIS 90I", "CIS 90J", "CIS 90K", "CIS 90L", "CIS 90M", "CIS 90N", "CIS 90O", "CIS 90P", "CIS 90Q", "CIS 90R", "CIS 90S", "CIS 90T", "CIS 90U", "CIS 90V", "CIS 90W", "CIS 90X", "CIS 90Y", "CIS 90Z". The main content area shows the "CIS 90 (Fall 2014) Calendar" with a table of lessons. The "Calendar" link is highlighted. The table has columns for "Lesson", "Date", "Topics", and "Link". The first lesson is "Lesson 1" on "9/2", with topics including "Class and Linux Overview", "Understand how the course will work", "High level overview of computers, operating systems and virtual machines", "Overview of UNIX/Linux market and architecture", "Using SSH for remote network logs", and "Using terminals and the command line". Below the table, there are links for "Presentation slides (download)", "Supplemental", "Assignments", "CIS 90 Syllabus", "Enter virtual classroom", "Quiz 1", and "Comments".

Lesson	Date	Topics	Link
Lesson 1	9/2	Class and Linux Overview - Understand how the course will work - High level overview of computers, operating systems and virtual machines - Overview of UNIX/Linux market and architecture - Using SSH for remote network logs - Using terminals and the command line	Presentation slides (download) Supplemental Assignments CIS 90 Syllabus Enter virtual classroom Quiz 1 Comments

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 ConferZoom.
7. Log into Opus-II with Putty or ssh command.



Student checklist - Before class starts

☐ Google

☐ ConferZoom

☐ Downloaded PDF of Lesson Slides. I like Foxit Reader so I can take notes using annotations.

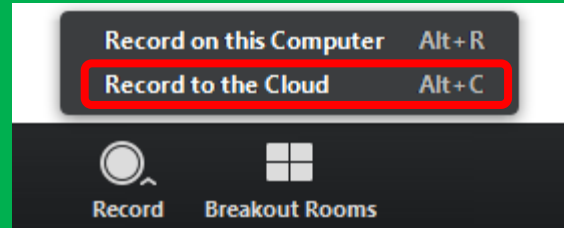
The screenshot displays a Zoom meeting interface. The main video feed shows a white car with the text "Get into the car" overlaid. To the left, a browser window shows the "Rich's Cabrillo College CIS 90 Calendar" page. To the right, a document titled "CIS 90 - Lesson 1" is visible, featuring a stack of papers and a terminal window with code. The Zoom window title is "Zoom Meeting ID: 426-283-384".

☐ CIS 90 website
Calendar page

☐ One or more login
sessions to Opus-II

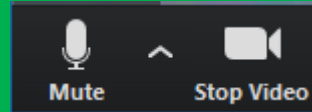


Start



Start Recording

Audio Check



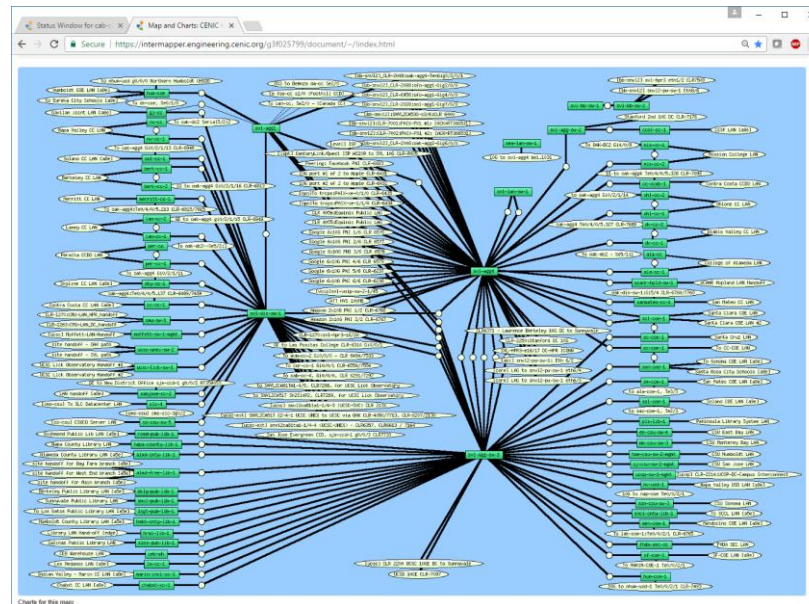
Start Recording

Audio & video Check

Quiz

**No Quiz
Today !**

Network Check



<https://intermapper.engineering.cenic.org/g3f025799/document/~!/index.html>



Instructor: **Rich Simms**
Dial-in: **408-638-0968 (toll)**
Meeting ID: **426 283 384**



Shane



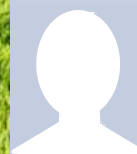
Dan



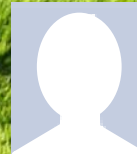
Brandon



Nathan K.



Jo Anne



Darren



Laine



Luís



Nathanael T.



Cesar



Paul



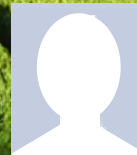
Jetta



Fritz



Jake



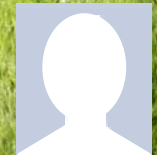
Richard



Nate P.



Ciarán



November



Elena



David



Henry



Edgar



Adam



Clara

Quiz

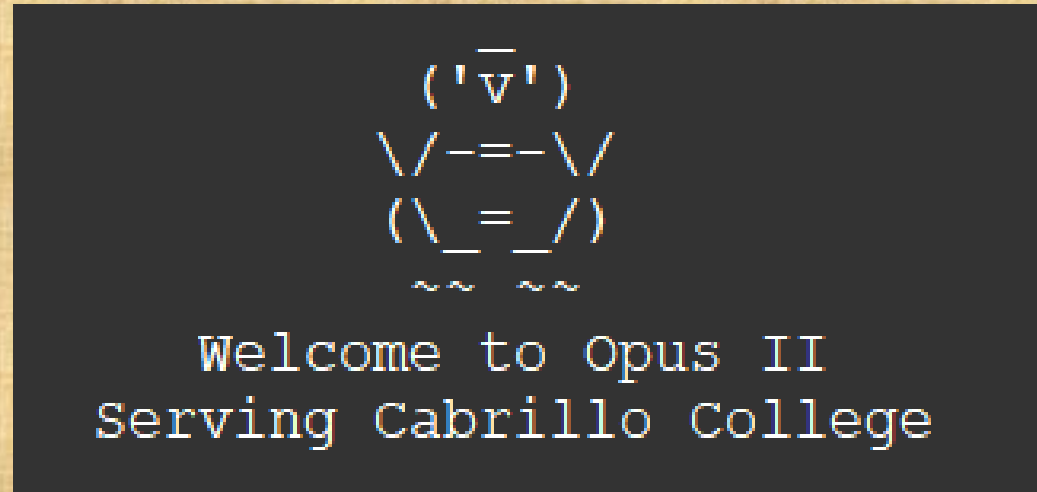
**No Quiz
Today !**



File Transfer and Review

Objectives	Agenda
• Transfer project files to Windows and Linux systems • Prepare for final exam	• 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

Class Activity



If you haven't already,
log into Opus-II

Class Activity

3	2/19	Unit 3 Electronic Mail • Guest speaker: Denise Moore on OTC (On-The-Job) training programs • Learn how to use the LARC communication tools: write and /bin/mail • Overview on and to and mail Materials • Presentation slides (download) Supplemental • Howto #318: Accessing vlab (download) Assignment • Read/skim Lesson 3 slides	Lab 2
---	------	--	-----------------------

<https://simms-teach.com/cis90calendar.php>

If you haven't already,
download the lesson slides

Class Activity

	• <u>Read/skim Lesson 1 slides</u> • <u>Student Survey</u> • <u>Lab 1</u>	
	ConferZoom • <u>Enter virtual classroom</u> • <u>Class archives</u>	
	Quiz 1 Commands • Understand how the UNIX login operation	

<https://simms-teach.com/cis90calendar.php>

If you haven't already, join
ConferZoom classroom

Before class starts activity

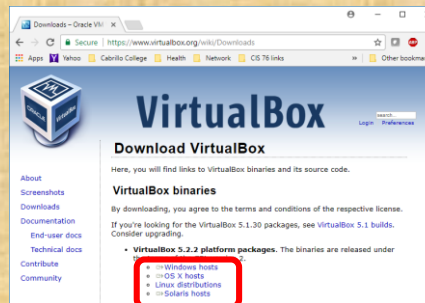
To save time download a CentOS Minimal ISO from:

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



To save even more time download and install VirtualBox from:

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





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。

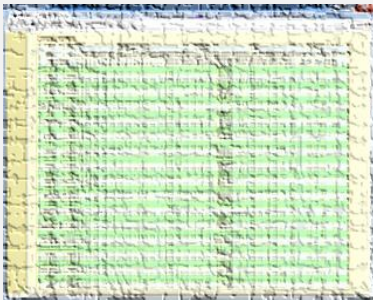
He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever.

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

Extra Credit

On the forum

Be sure to monitor the forum as I may post extra credit opportunities without any other notice!

On some labs

Extra credit (2 points)

For a small taste of what you would learn in CIS 191 let's add a new user to your Arya VM. Once added we will see how the new account is represented in `/etc/passwd` and `/etc/shadow`.

1. Log into your Arya VM as the cis90 user. Make sure it's your VM and not someone else's.
2. Install the latest updates:
`sudo apt-get update`
`sudo apt-get upgrade`
3. Add a new user account for yourself. You may make whatever username you wish. The example below shows how Benji would make the same username he uses on Opus:
`sudo useradd -G sudo -c "Benji Simms" -m -s /bin/bash simben90`

In lesson slides (search for extra credit)



On the website

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

For some flexibility, personal preferences or family emergencies there is an additional 90 points available of extra credit activities.

<http://simms-teach.com/cis90extracredit.php>

• **Website content review** - The first person to email the instructor pointing out an error or typo on this website will get one point of extra credit for each unique error. The email must specify the specific document or web page, pinpoint the location of the error, and specify what the correction should be. Duplicate errors count as a single point. This does not apply to pre-published material that has been updated but not yet presented in class. (Up to 20 points total)

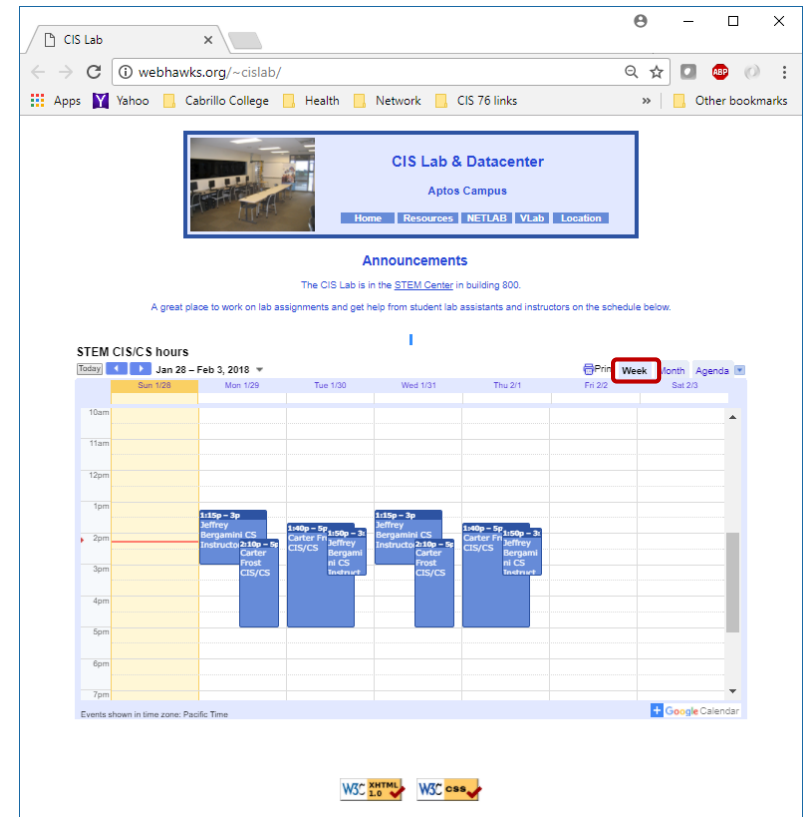
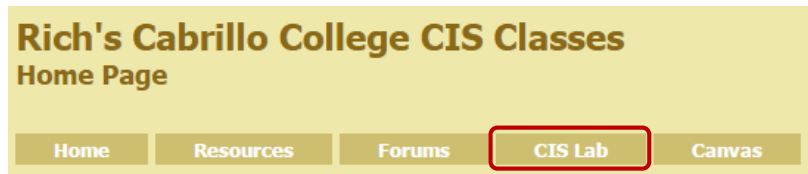
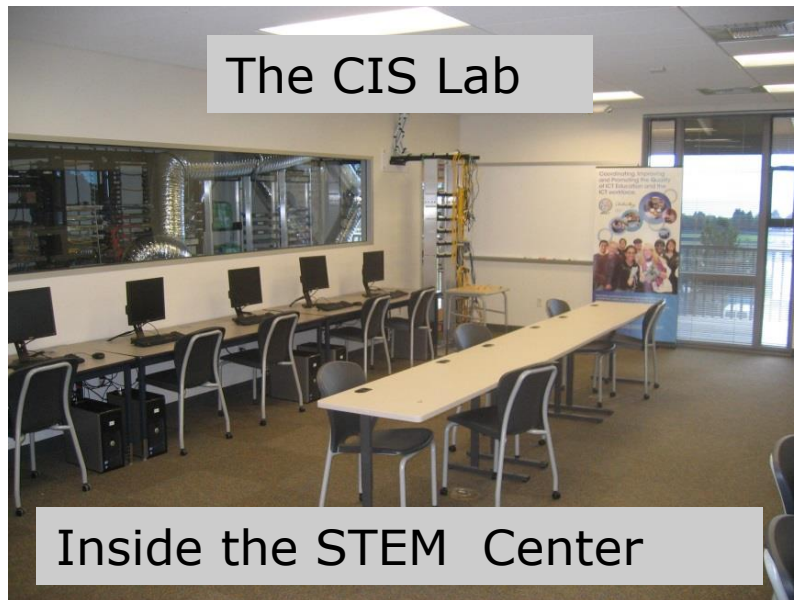
Getting Help When Stuck on a Lab Assignment

- Google the topic/error message.
- Search the Lesson Slides (they are PDFs) for a relevant example on how to do something.
- Post a question on the forum. Explain what you are trying to do and what you have tried so far.
- Talk to a STEM center tutor/assistant.
- Come see me during my office or lab hours. **I will be in the CTC (room 1403) every Wednesday afternoon from 3-5:30.**
- Make use of the Open Questions time at the start of every class.
- Make a cheat sheet of commands and examples so you never again get stuck on the same thing!

Expect to do a LOT of troubleshooting in this course!

Help Available in the CIS Lab

Instructors, lab assistants and equipment are available for CIS students to work on assignments.



To see schedule, click the CIS Lab link on the website and use the "Week" calendar view

CTC - Building 1400 On lower campus



I will be in the CTC (room 1403) every Wednesday
afternoon from 3-5:30

Housekeeping





**Project is
due tonight!**



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

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

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

- Project presentations after lesson material today.
- Final exam is next week **Wednesday** May 23rd.
- Extra credit labs and forum posts due 11:59 PM day of the final exam.
- Practice test for final exam is available after class.
- Practice test server will shutdown 30 minutes before the final exam.

Possible Points	Requirements
30	Implementing all five tasks (6 points each): - Requirements for each task: - Minimum of 12 "original" lines of bash script - Has one or more non-generic comments to explain what it is doing - Has user interaction
24	At least six bash constructs from this list: - Redirecting stdin (4 points) - Redirecting stdout (4 points) - Redirecting stderr (4 points) - Use of permissions (4 points) - Use of filename expansion characters (4 points) - Use of absolute path (4 points) - Use of relative path (4 points) - Use of a PID (4 points) - Use of inodes (4 points) - Use of links (4 points) - Use of color (4 points) - Use of scheduling (4 points) - Use of a GID or group (4 points) - Use of a UID or user (4 points) - Use of a /dev/tty device (4 points) - Use of a signal (4 points) - Use of piping (4 points) - Use of an environment variable (4 points) - Use of /bin/mail (4 points) - Use of a conditional (4 points) - Use of \$(command) The maximum for this section is 24 points.
6	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: - 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-II.
Extra credit	
30	Up to three additional tasks (10 points each)

Grading Rubric for Final Project

Make sure a classmate and run your script using allscripts!

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
```



Final Exam (Test 3)

Heads up on Final Exam

Test #3 (final exam) is **Wednesday May 23rd 7-9:50AM**

Wed	5/23	Test #3 (the final exam) Time - WEDNESDAY 7:00AM - 9:50AM in Room 828 Materials - Presentation slides (download) - Test (canvas) ConferZoom Enter virtual classroom Class archives	5 posts Lab X1 Lab X2
------------	------	--	--

*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 **9:50AM**.
- Working and long distance students can take the test online via ConferZoom 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)

SPRING 2018 FINAL EXAMINATIONS SCHEDULE MAY 21 TO MAY 26

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
------------------------------	-----------	-----------

Classes starting between:

6:30 am and 8:55 am, MW/Daily	7:00 am-9:50 am	Monday, May 21
9:00 am and 10:15 am, MW/Daily	7:00 am-9:50 am	Wednesday, May 23

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
1	W	9:00AM-12:05PM	3.00	R.Simms	OL
&	Arr.	Arr.		R.Simms	OL

Section 1-(102385) is an ONLINE course. Meets weekly throughout the semester online during the scheduled times by remote technology with an additional 50 min arranged online lab per week. For details, see instructor's web page at go.cabrillo.edu/online.

2	W	9:00AM-12:05PM	3.00	R.Simms	828
&	Arr.	Arr.		R.Simms	OL

Section 2-(102386) 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

Screen layout

Screen Layout

Re-size Canvas to show just one question at a time

The screenshot shows a Blackboard quiz interface. The top window displays a quiz question with an 'Operation' section and a 'Question' section. Below the question is an 'HTML Editor' for the answer. The bottom window shows two terminal sessions. The left terminal is a shell session on 'sun-hwa-p3' where the user has logged in and is prompted for a password. The right terminal shows the output of a script, including a 'Checking OPERATION 1' message and a 'flag file found' message.

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
```

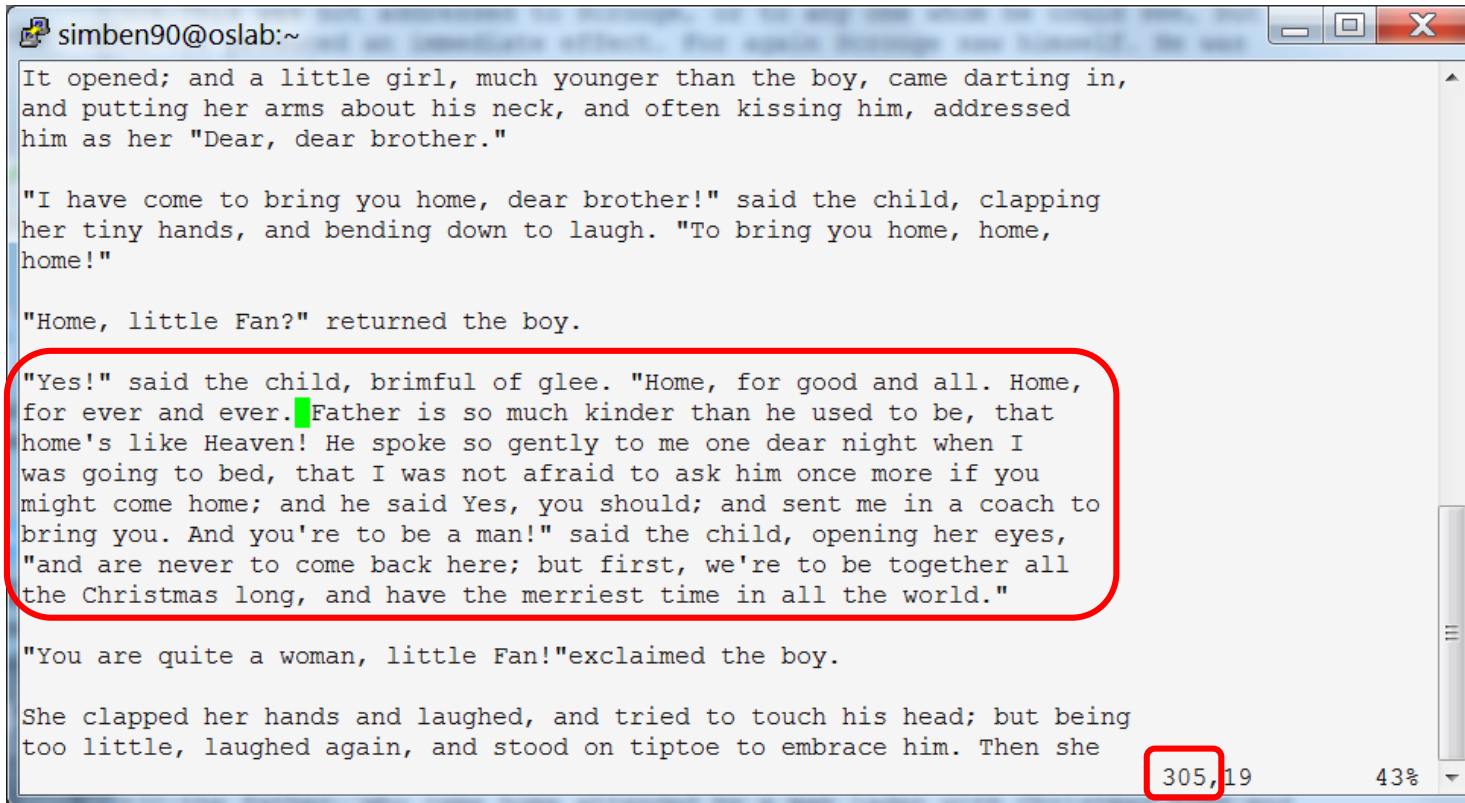
The -n option on grep shows the line number

```
/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
```

304,1

43%

Ends on
line 311

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

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

"Home, little Fan?" returned the boy.

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

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

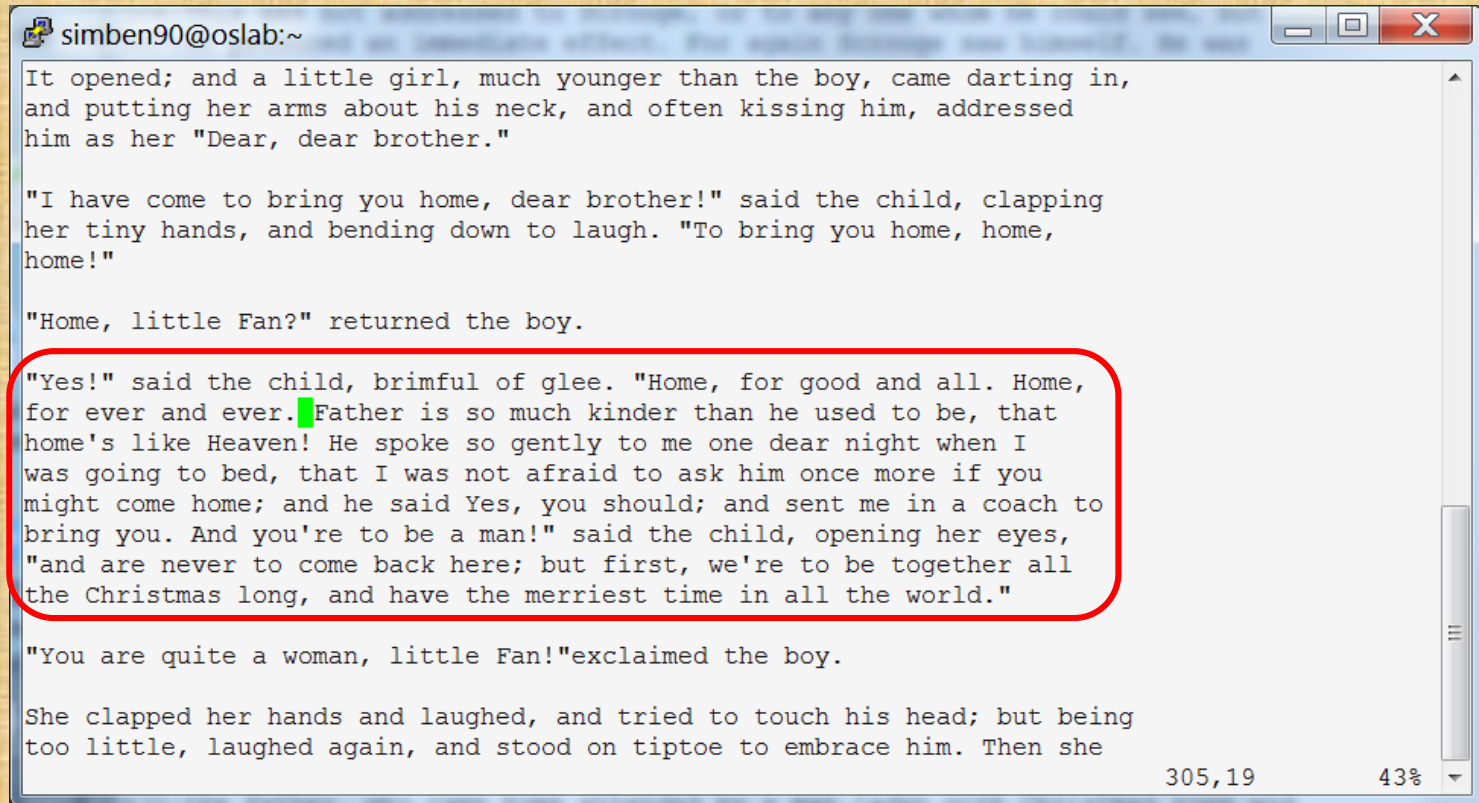
She clapped her hands and laughed, and tried to touch his head; but being
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

311,1

43%

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

/home/cis90/depot/dickens



A terminal window titled 'simben90@oslab:~' displays text from Charles Dickens' 'A Christmas Carol'. The text is as follows:

```
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
```

The terminal window shows a cursor at the end of the last line of text. The bottom right corner of the window displays '305,19' and '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*

*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 $
```

```
/home/cis90/simben $ sed -n '304,311p' ../depot/dickens
```

```
"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 $
```

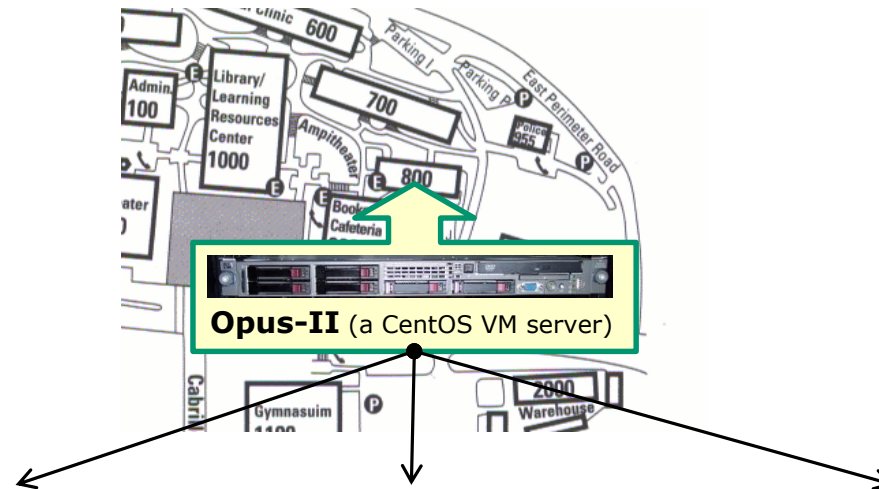
*There is an easier way using the sed (stream editor) command
as shown above*



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

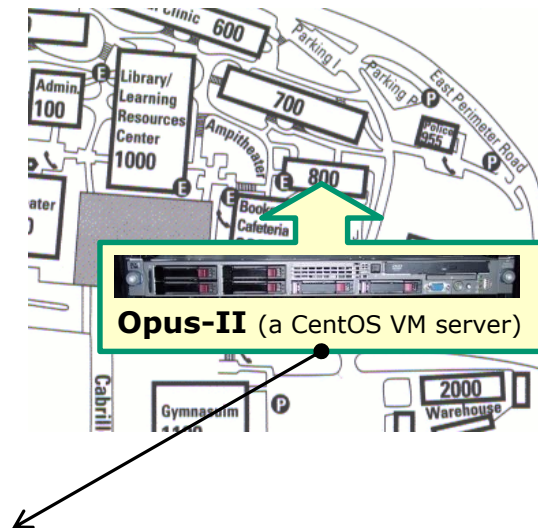
- Between Linux and Windows:
 - **Filezilla** or related applications
- Between Linux and Linux/Mac:
 - **Filezilla** or related applications
 - **scp** command

File Transfer To Windows

FileZilla

File Transfer

Downloading your Opus-II files to your home computer



Using  FileZilla

Windows

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

Client Download

The latest stable version of FileZilla Client is 3.17.0.1

Please select the file appropriate for your platform below.

- Windows (64bit)**
 - [FileZilla_3.17.0.1_win64-setup.exe](#) ⓘ (recommended)
 - [FileZilla_3.17.0.1_win64.zip](#) ⓘ

The 64bit versions of Windows Vista, 7, 8, 8.1 and 10 are supported.
- Windows (32bit)**
 - [FileZilla_3.17.0.1_win32-setup.exe](#) ⓘ (recommended)
 - [FileZilla_3.17.0.1_win32.zip](#) ⓘ

The 32bit versions of Windows Vista, 7, 8, 8.1 and 10 are supported.
- Linux**
 - [FileZilla_3.17.0.1_i586-linux-gnu.tar.bz2](#) ⓘ
 - [FileZilla_3.17.0.1_x86_64-linux-gnu.tar.bz2](#) ⓘ

Built for Debian 8.0 (Jessie). It is highly recommended to use the package management system of your distribution or to manually compile FileZilla if you are running a different flavour of Linux.
- Mac OS X**
 - [FileZilla_3.17.0.1_macosx-x86.app.tar.bz2](#) ⓘ

PayPal

Download and install FileZilla on your Windows PC

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

The screenshot shows the FileZilla client window with the following annotations:

- 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 (masked with dots).
- Click to connect**: Points to the "Quickconnect" button.

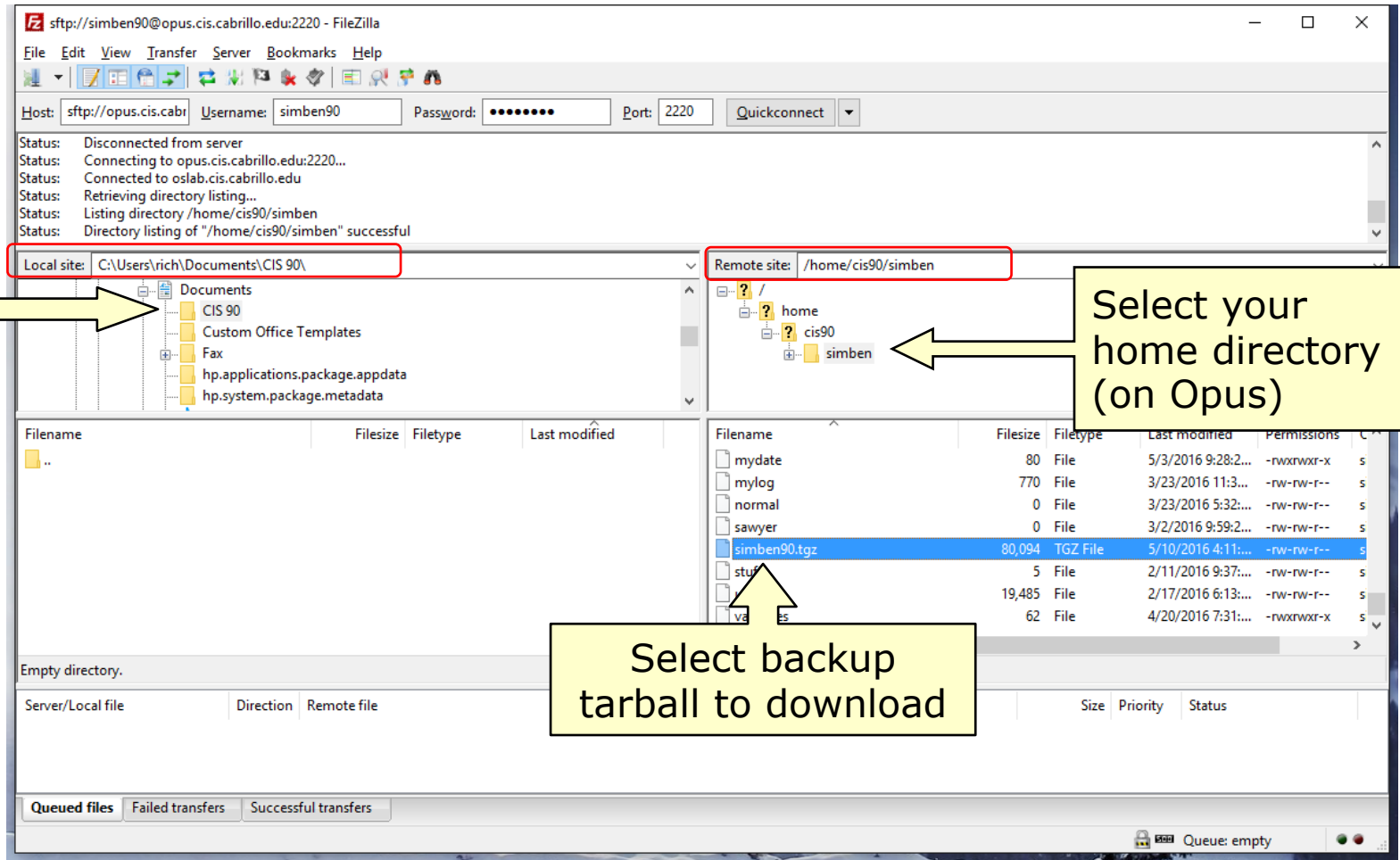
The status bar at the bottom shows "Queue: empty".

Filename	Filesize	Filetype	Last modified	Permissions
..				
z-zz-staging		File folder	6/28/2013 9:13:23 ...	
css		File folder	12/18/2015 4:49:23...	
forum		File folder	12/18/2015 5:00:32...	
includes		File folder	12/18/2015 6:03:45...	
animations		File folder	12/18/2015 6:45:43...	
images		File folder	12/18/2015 7:07:00...	
z-zz-2015-fall		File folder	12/28/2015 4:10:07...	

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

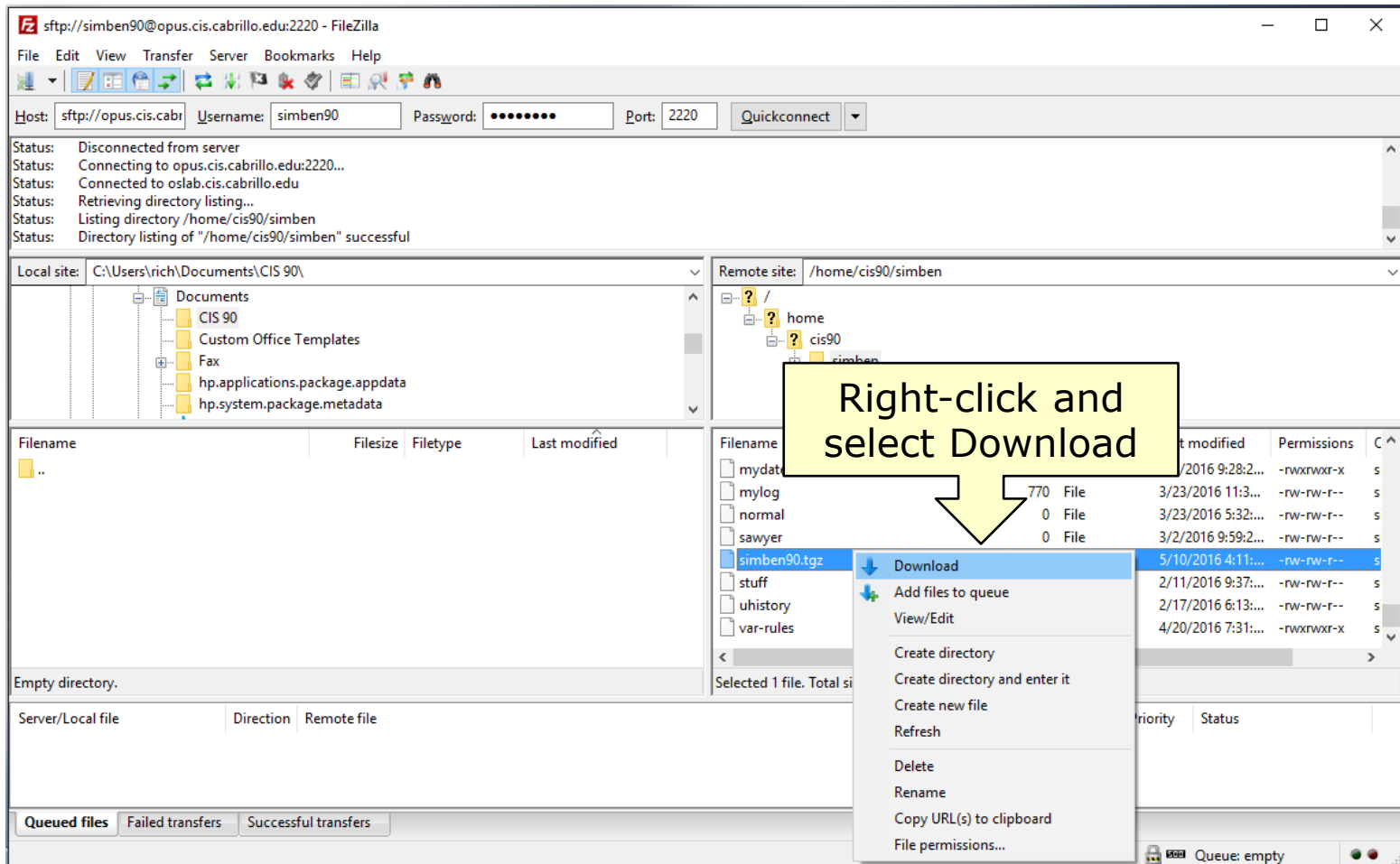


Select destination and source directories



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

Initiate Download





Monitor transfer progress

FileZilla interface showing a successful file transfer from a remote site to a local site.

Host: sftp://opus.cis.cabrillo.edu:2220
Username: simben90
Password: [REDACTED]
Port: 2220

Status Log:

```

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

Downloaded file shows up here

Selected 1 file. Total size: 80,094 bytes

Server/Local file | Direction | Remote file | Size | Priority | Status

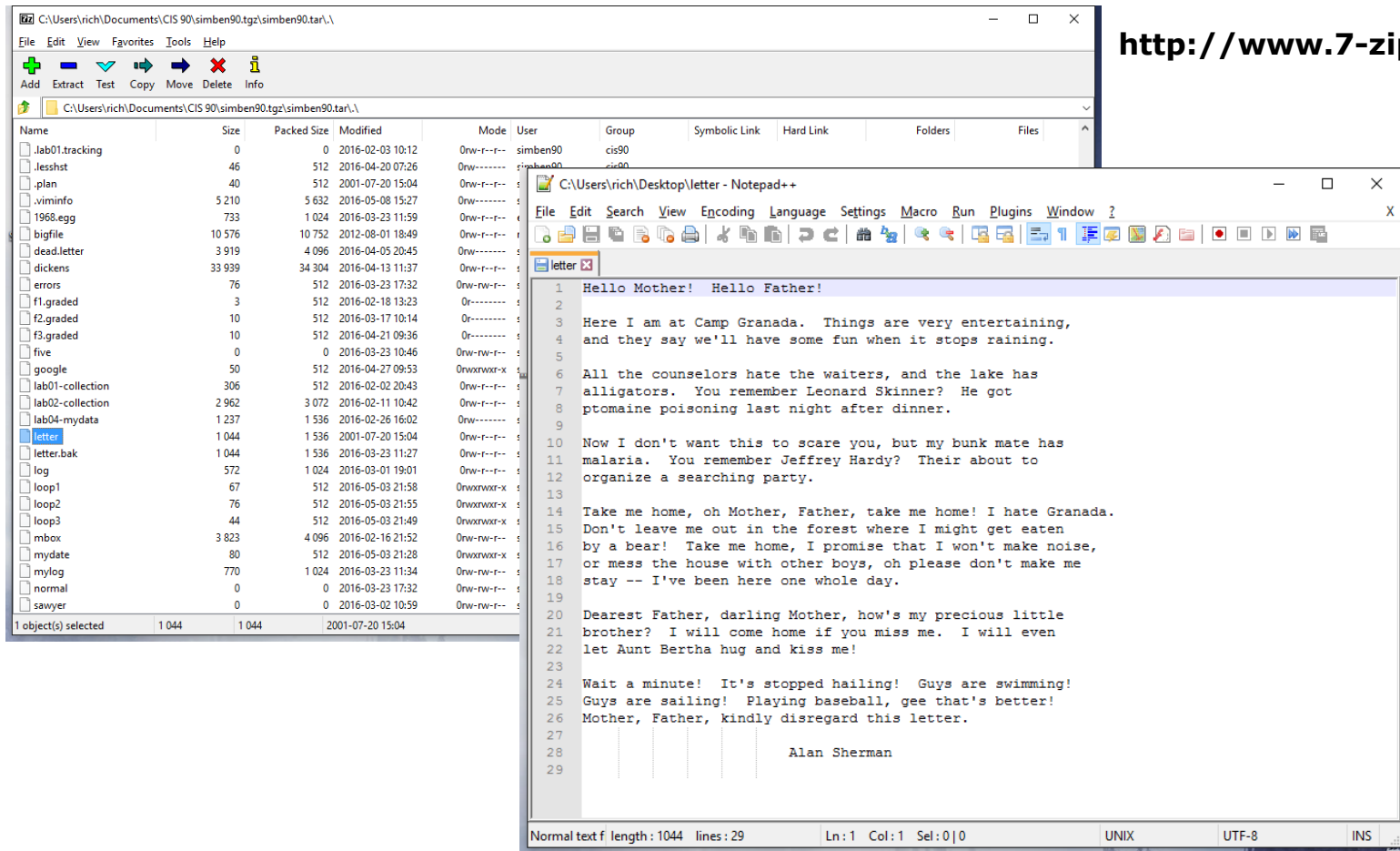
Queued files | Failed transfers | Successful transfers (4)

Queue: empty

File transfers

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

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



The screenshot shows two windows. The top window is FileZilla, displaying a list of files in a directory. The bottom window is Notepad++, showing the contents of a file named 'letter'.

FileZilla File List:

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

Notepad++ Content:

```

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
  
```

Normal text f length: 1044 lines: 29 Ln: 1 Col: 1 Sel: 0|0 UNIX UTF-8 INS

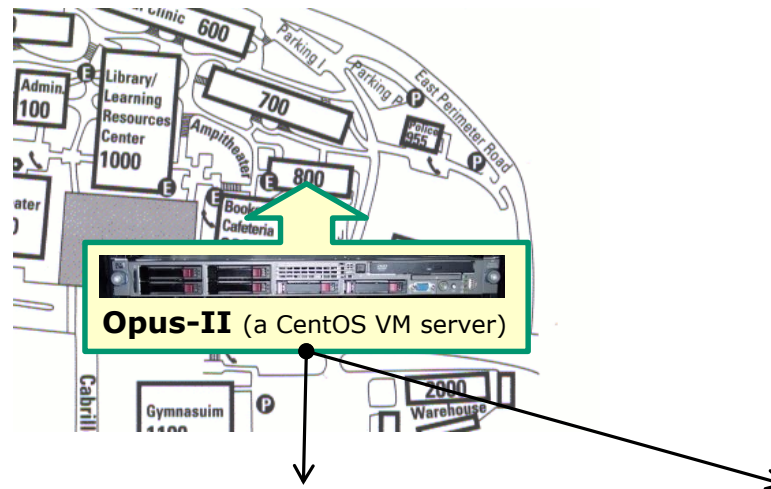
File Transfer

Linux or Mac

scp

File Transfer

Downloading your Opus-II files to your home computer



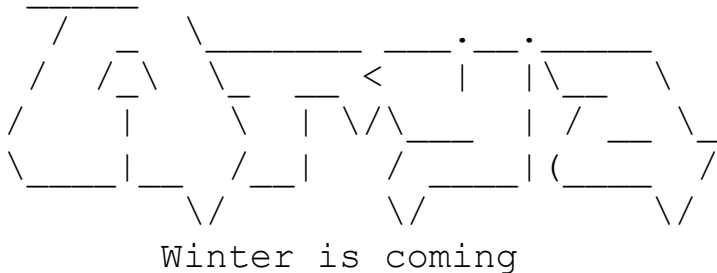
Mac



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

cat /etc/*-release | grep Core

```
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  
  
      ( 'v' )  
    \ /--\ /  
   ( \ _ _ / )  
    ~ ~ ~ ~  
      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>

Rich's Cabrillo College CIS Classes Resources

Home Resources Forums CIS Lab Canvas

Login

Flashcards

Admin

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](#)

[CIS 76 VLab Pod](#)

General Links

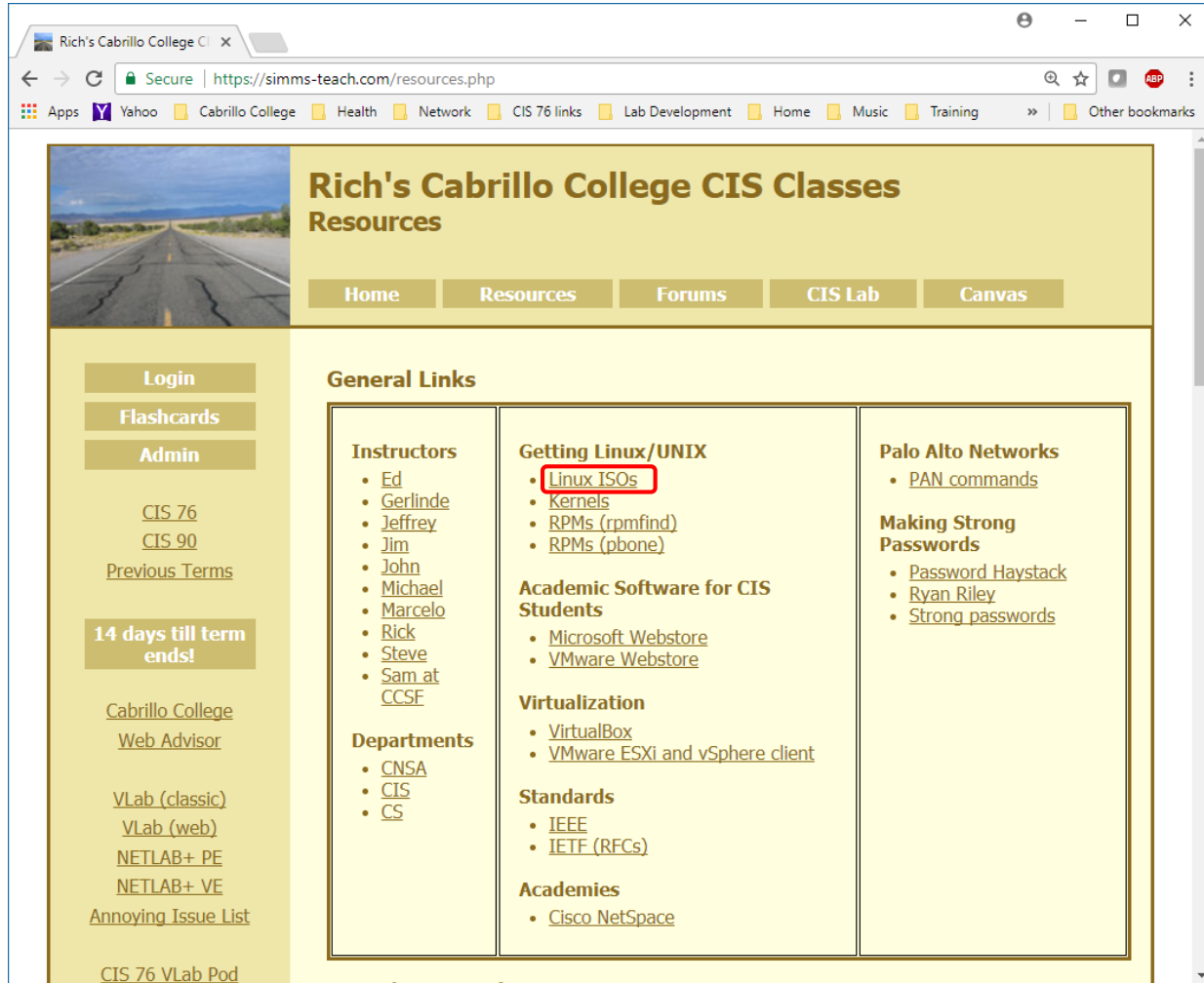
Instructors - Ed - Gerlinde - Jeffrey - Jim - John - Michael - Marcelo - Rick - Steve - Sam at CCSE Departments - CNSA - CIS - CS	Getting Linux/UNIX Linux ISOs - Kernels - RPMs (rpmfind) - RPMs (pbone) Academic Software for CIS Students - Microsoft Webstore VMware Webstore Virtualization VirtualBox - VMware ESXi and vSphere client Standards - IEEE - IETF (RFCs) Academics - 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

Getting Linux Distributions ISOs



Rich's Cabrillo College CIS Classes Resources

Home Resources Forums CIS Lab Canvas

Login
Flashcards
Admin

[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](#)
[CIS 76 VLab Pod](#)

General Links

Instructors • Ed • Gerlinde • Jeffrey • Jim • John • Michael • Marcelo • Rick • Steve • Sam at CCSF 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
---	---	---

Linux Distros (Distributions)

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

- Header:** LinuxQuestions.org logo and navigation links.
- Search:** A search bar with a "Go" button.
- Need Help?:** Links for "Downloading ISOs" and "Burning ISOs".
- Sponsored Links:** A list of links including Ubuntu, Wireless Network, Open Office, Download For Linux, GNU/Linux, Install Windows, and Laptop Deals.
- Statistics:** Distro: 479, Versions: 3069, Mirrors: 1895, Downloads: 75,493,145.
- LQ Job Board:** A section for job listings.
- Welcome to LQ ISOs:** A section with a "0.26/Mbps IP Transit" banner and a "Welcome to LQ ISO" message.
- 15 Latest Linux Distribution Releases:** A list of 15 releases, including 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, and Ubuntu Kylin 16.04.
- Popular Linux Distributions:** A list of popular distributions including Ubuntu, Fedora, Linux Mint, openSUSE, PCLinuxOS, Debian, Mageia, Slackware, CentOS (highlighted with a red box), Puppy, Arch, and MEPIS.
- View by Topic:** Links for Desktop, Server, Security, Mobile, Live, Firewall, and Rescue.
- 15 Most Downloaded Distribution Versions (last 30 Days):** A section for the most downloaded versions.
- 15 Most Downloaded Distributions (Ever):** A section for the most downloaded distributions.
- VM TURBO:** A banner for a free virtual monitor.
- Ad:** A vertical advertisement for VM TURBO.

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

CentOS Distro

The screenshot shows a web browser window with the URL iso.linuxquestions.org/centos/. The page layout includes a top banner for LinuxQuestions.org, a navigation sidebar on the left, a main content area, and a right sidebar with advertisements.

LinuxQuestions.org

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

LQ ISOs

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

Search

Need Help?

- Downloading ISOs
- Burning ISOs

Sponsored Links

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

Statistics

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

LQ Job Board

34 versions of CentOS available

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

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

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

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

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

Main Menu

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

Ad

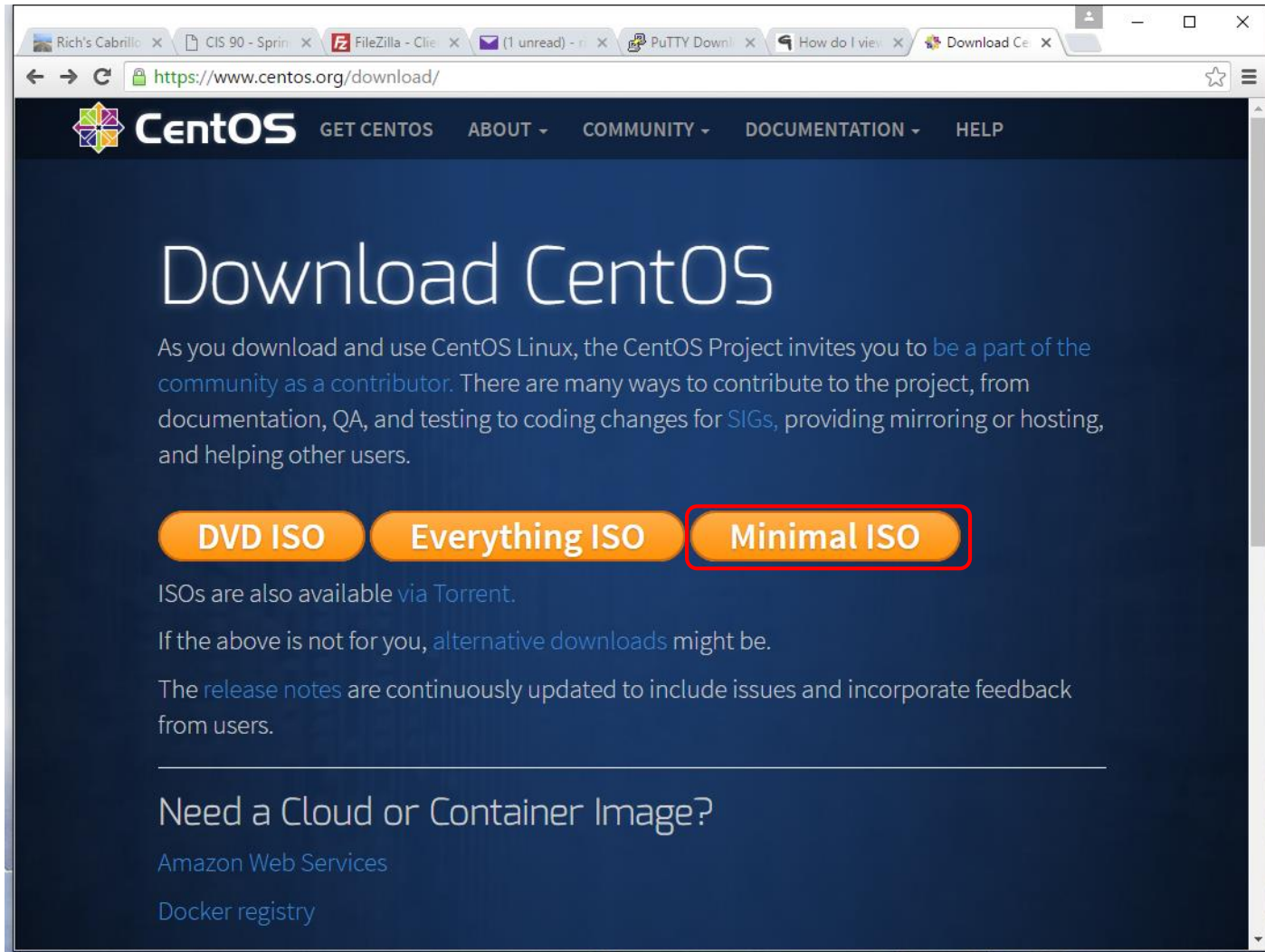
GEARBEST

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

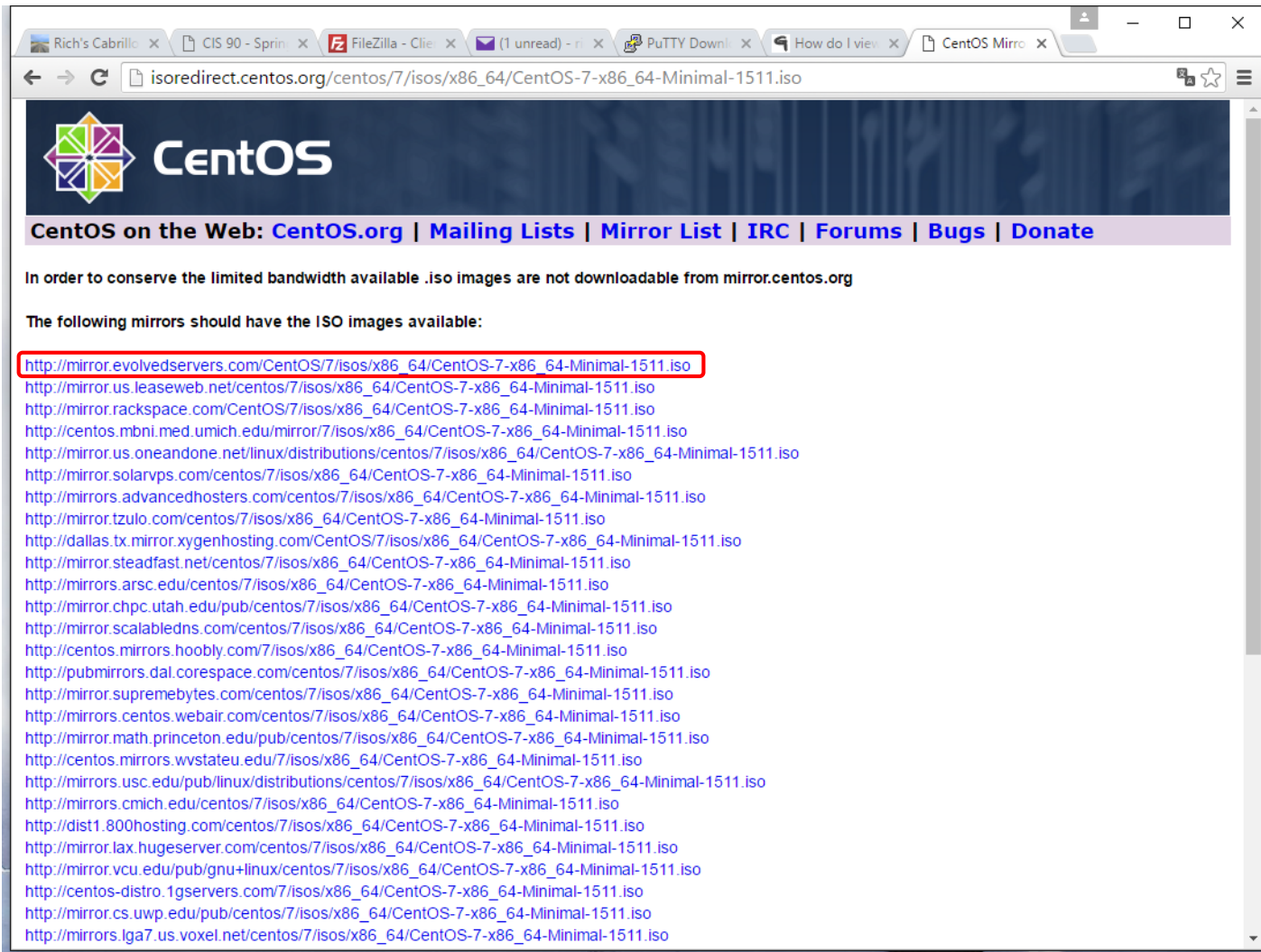
CentOS Official Website



The Minimal ISO



Pick a mirror and download ISO file



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

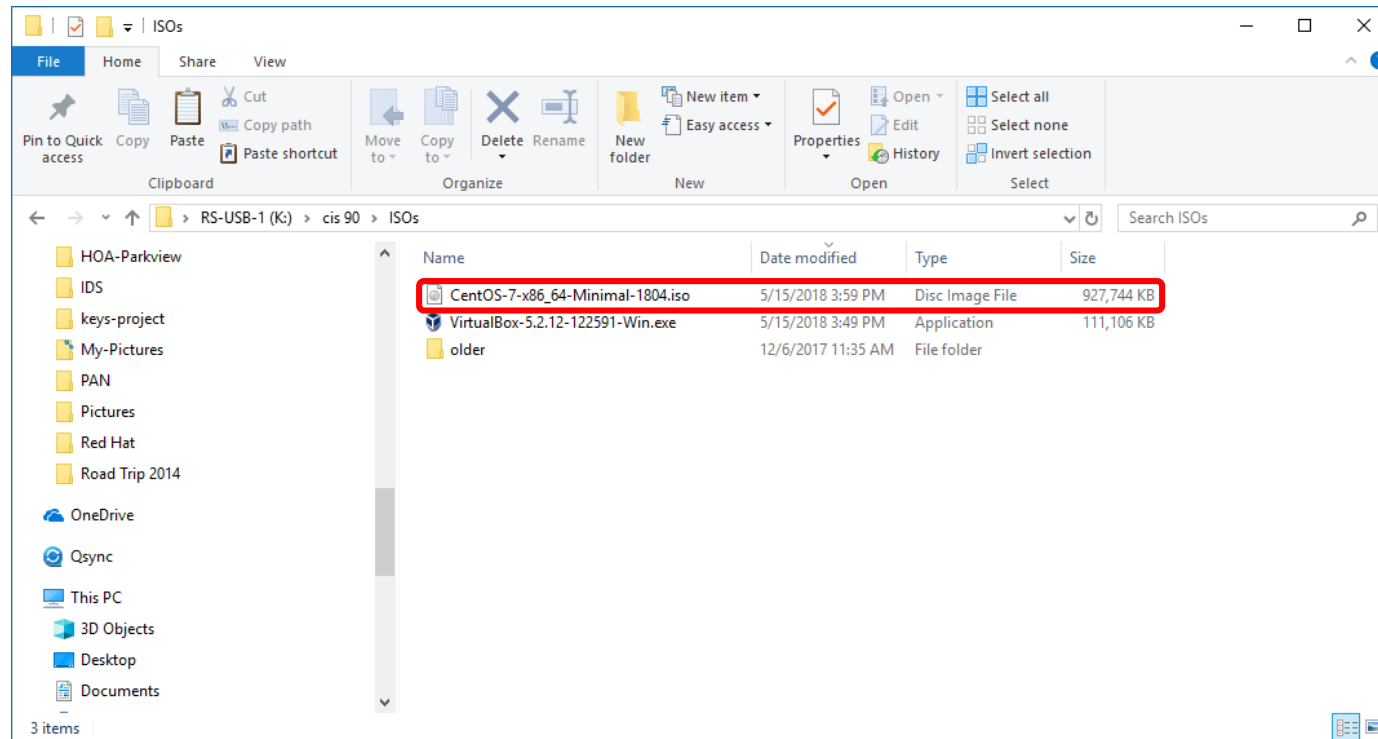
http://mirror.vcu.edu/pub/gnu/linux/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso

http://centos-distro.1gserver.com/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso

http://mirror.cs.uwp.edu/pub/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso

http://mirrors.lga7.us.voxel.net/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1511.iso

Viewing Downloaded CentOS ISO



Downloaded ISO image of the CentOS Linux distribution

Virtual Box

Getting VirtualBox

Rich's Cabrillo College CIS Classes Resources

Home Resources Forums CIS Lab Canvas

Login
Flashcards
Admin

CIS 76
CIS 90
[Previous Terms](#)

14 days till term ends!

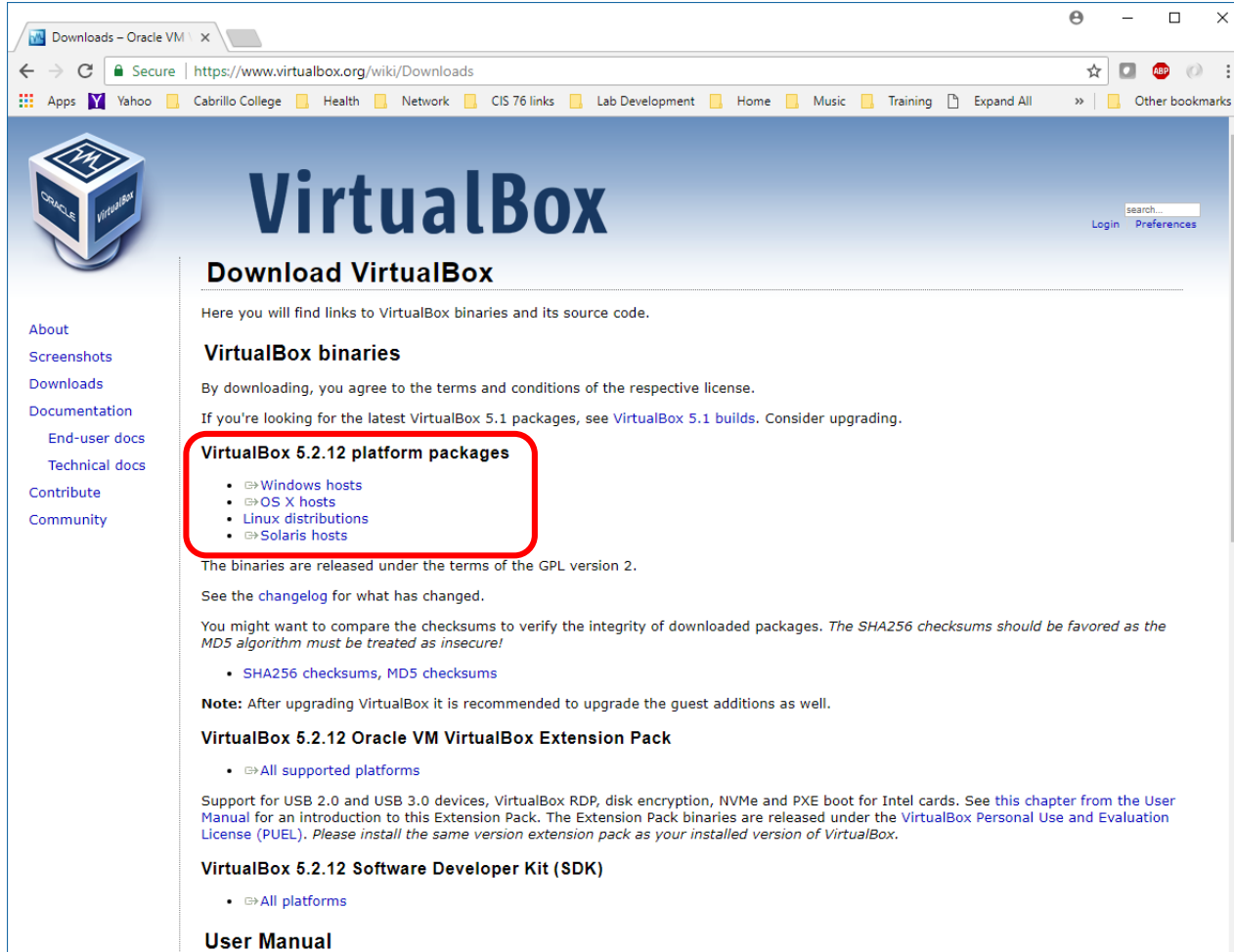
[Cabrillo College Web Advisor](#)

[VLab \(classic\)](#)
[VLab \(web\)](#)
[NETLAB+ PE](#)
[NETLAB+ VE](#)
[Annoying Issue List](#)
[CIS 76 VLab Pod](#)

General Links

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
---	---	---

VirtualBox Download



Downloads - Oracle VM \ X

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

Apps Yahoo Cabrillo College Health Network CIS 76 links Lab Development Home Music Training Expand All Other bookmarks

VirtualBox

search...
Login Preferences

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.

If you're looking for the latest VirtualBox 5.1 packages, see [VirtualBox 5.1 builds](#). Consider upgrading.

VirtualBox 5.2.12 platform packages

- Windows hosts
- OS X hosts
- Linux distributions
- Solaris hosts

The binaries are released under the terms of the GPL version 2.

See the [changelog](#) for what has changed.

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

- [SHA256 checksums](#), [MD5 checksums](#)

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

VirtualBox 5.2.12 Oracle VM VirtualBox Extension Pack

- [All supported platforms](#)

Support for USB 2.0 and USB 3.0 devices, VirtualBox RDP, disk encryption, NVMe 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 same version extension pack as your installed version of VirtualBox.

VirtualBox 5.2.12 Software Developer Kit (SDK)

- [All platforms](#)

User Manual

Enable Virtualization in the BIOS

Boot into your BIOS and enable the following:

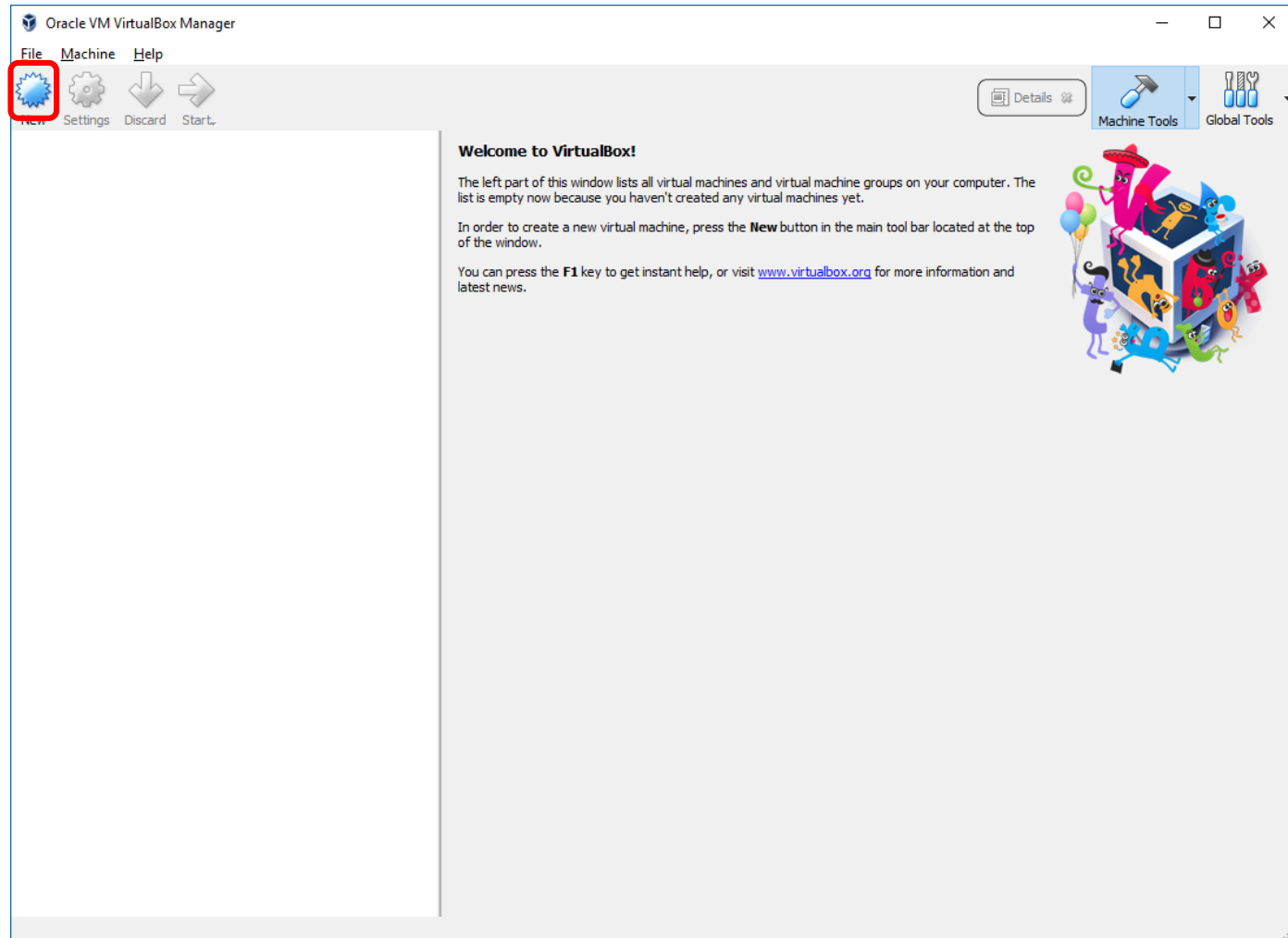
1. Intel Virtualization Technology (also known as Intel VT) or AMD-V.
2. If available, enable Intel VTd or AMD IOMMU.

<http://www.fixedbyvonnice.com/2014/11/virtualbox-showing-32-bit-guest-versions-64-bit-host-os/#.Wvzgw4gvyUI>

https://docs-old.fedoraproject.org/en-US/Fedora/13/html/Virtualization_Guide/sect-Virtualization-Troubleshooting-Enabling_Intel_VT_and_AMD_V_virtualization_hardware_extensions_in_BIOS.html

Create a new VM

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



After downloading and installing VirtualBox.

Name, OS, RAM and Hard Drive

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

4 MB 16384 MB

1024 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

4.00 MB 2.00 TB

8.00 GB

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

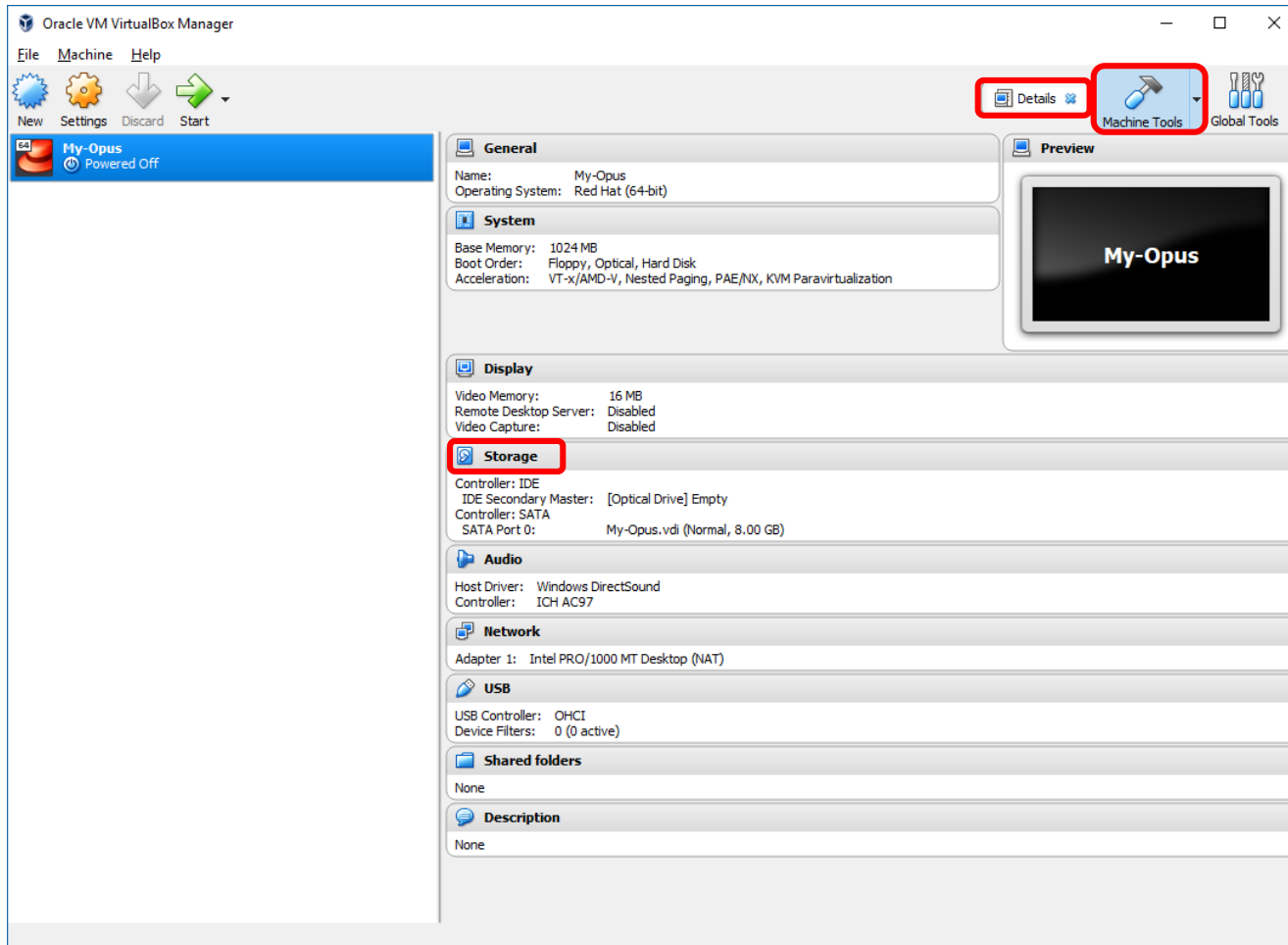
☐ Fixed size

☐ Split into files of less than 2GB

Guided Mode **Create** Cancel

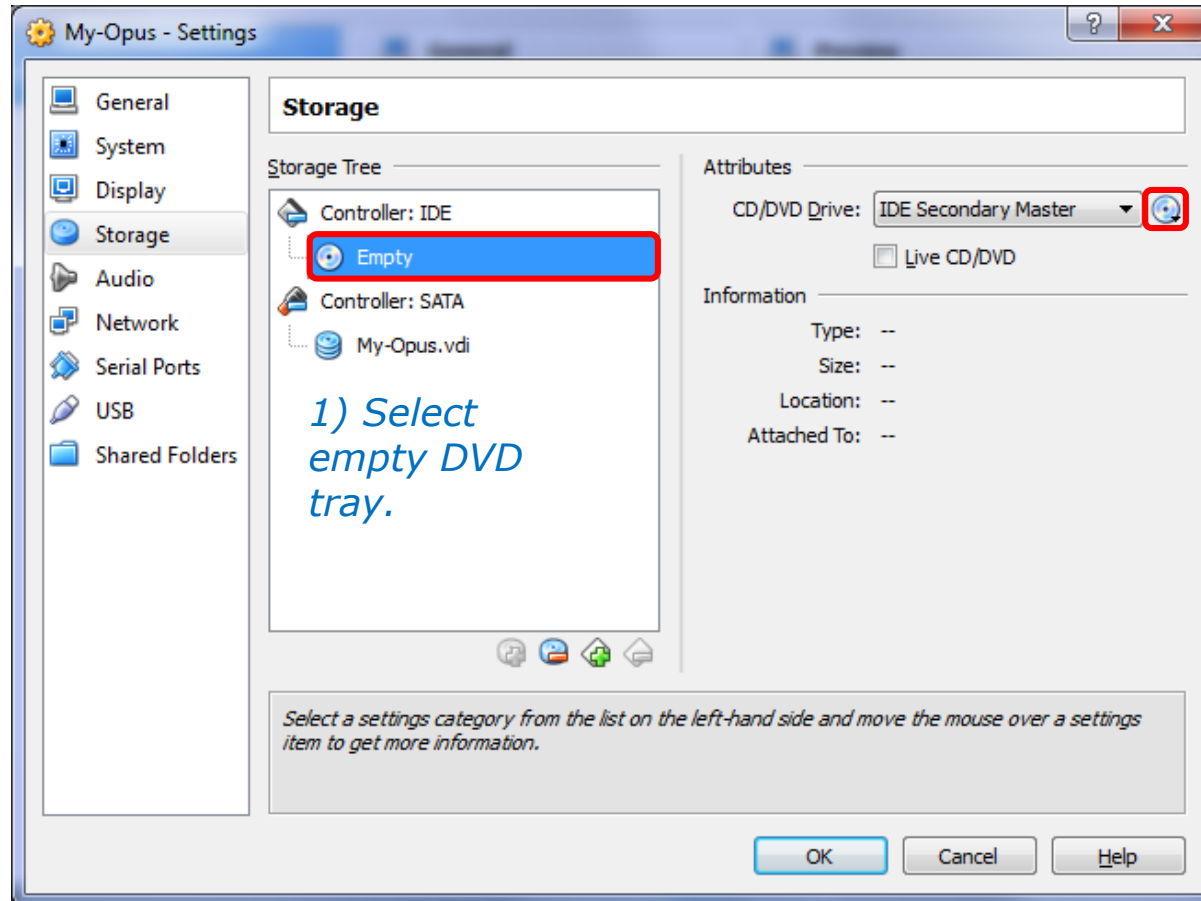
After filling out the Name and operating system, keep pressing Create and take the defaults

Storage: Hard Disk Drive and DVD Drive



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

Load the virtual CentOS "DVD" into the virtual DVD tray

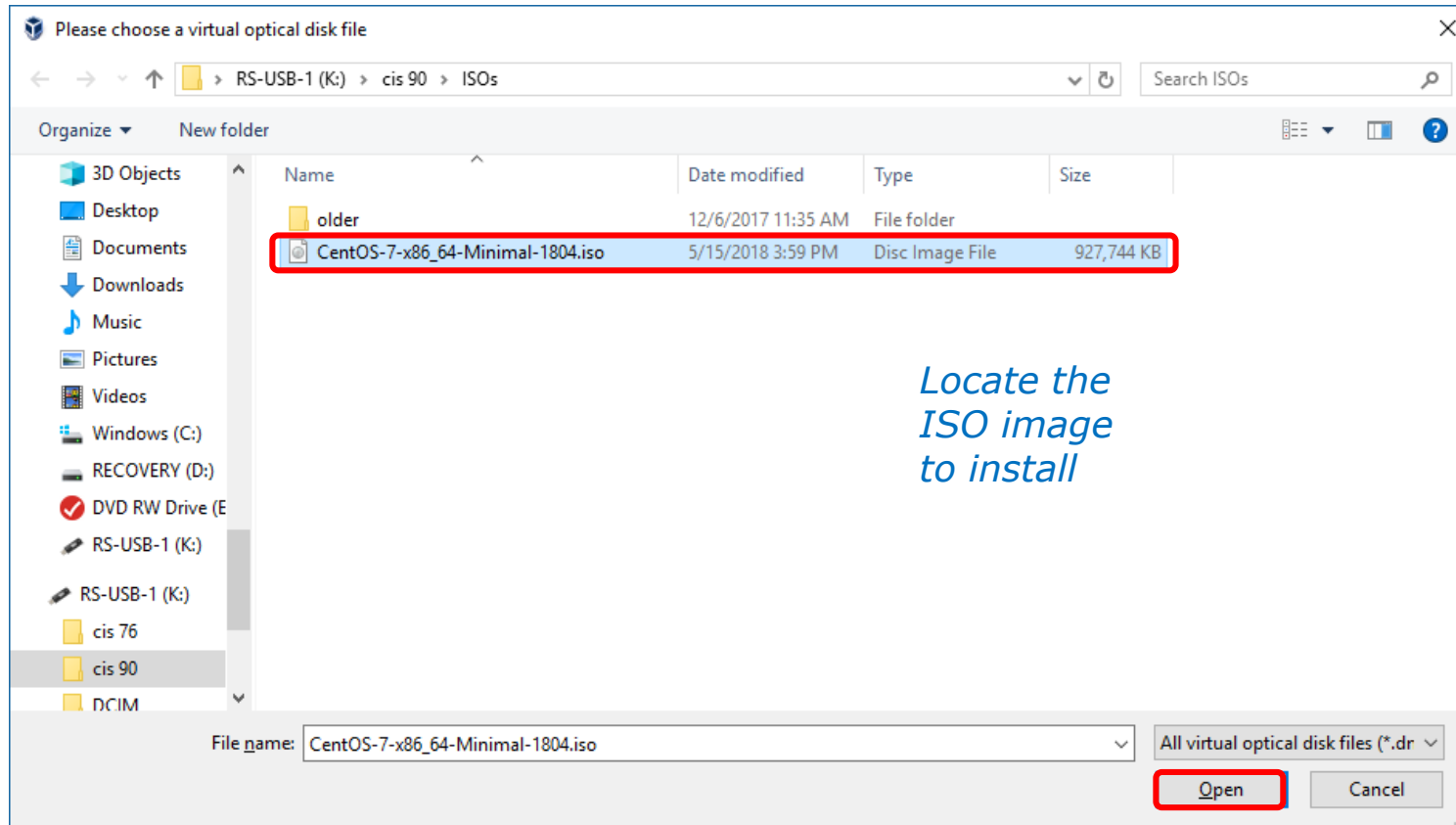


1) Select empty DVD tray.

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

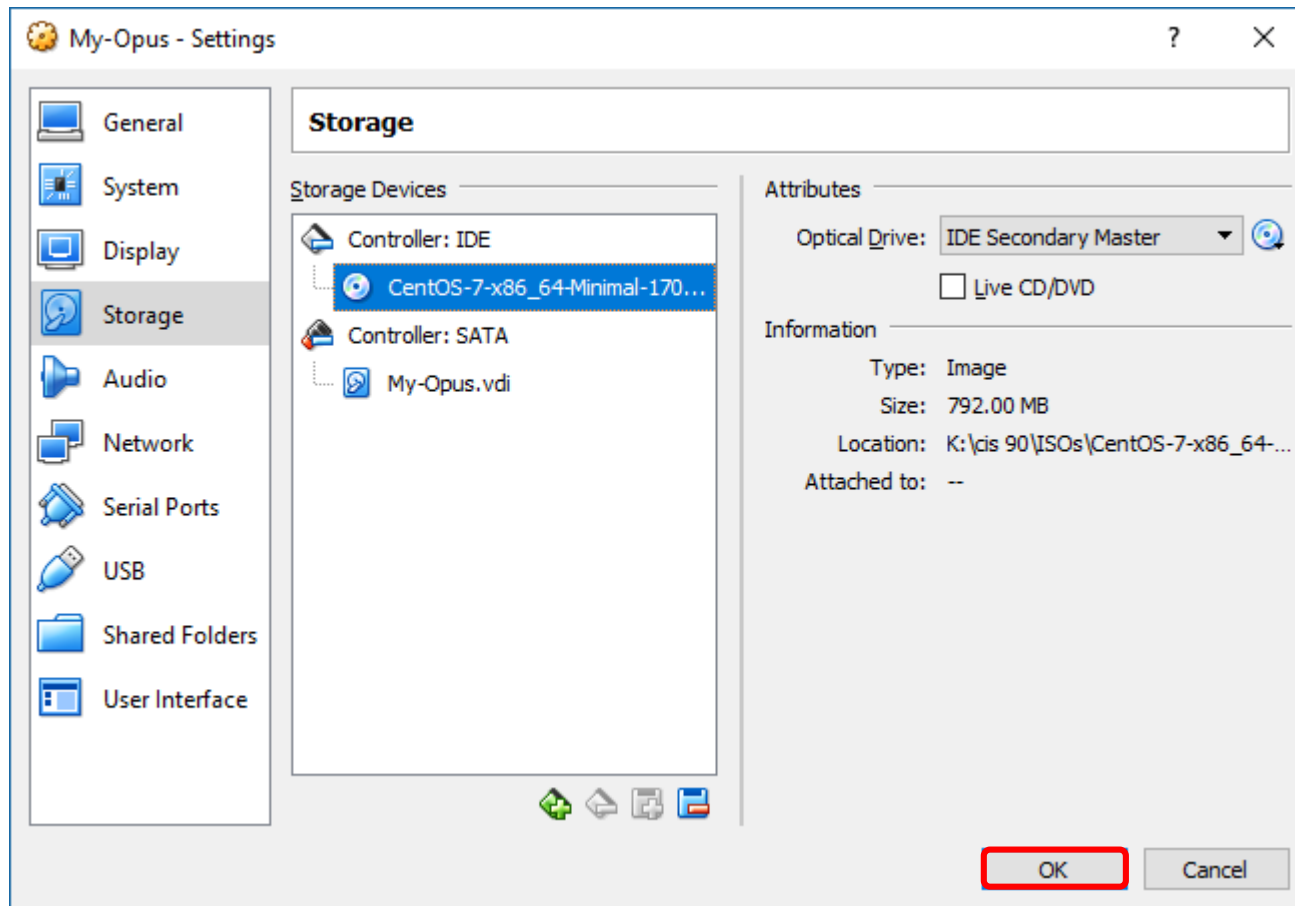
We will be booting from the DVD drive to install the CentOS distro.

Selecting the DVD ISO image



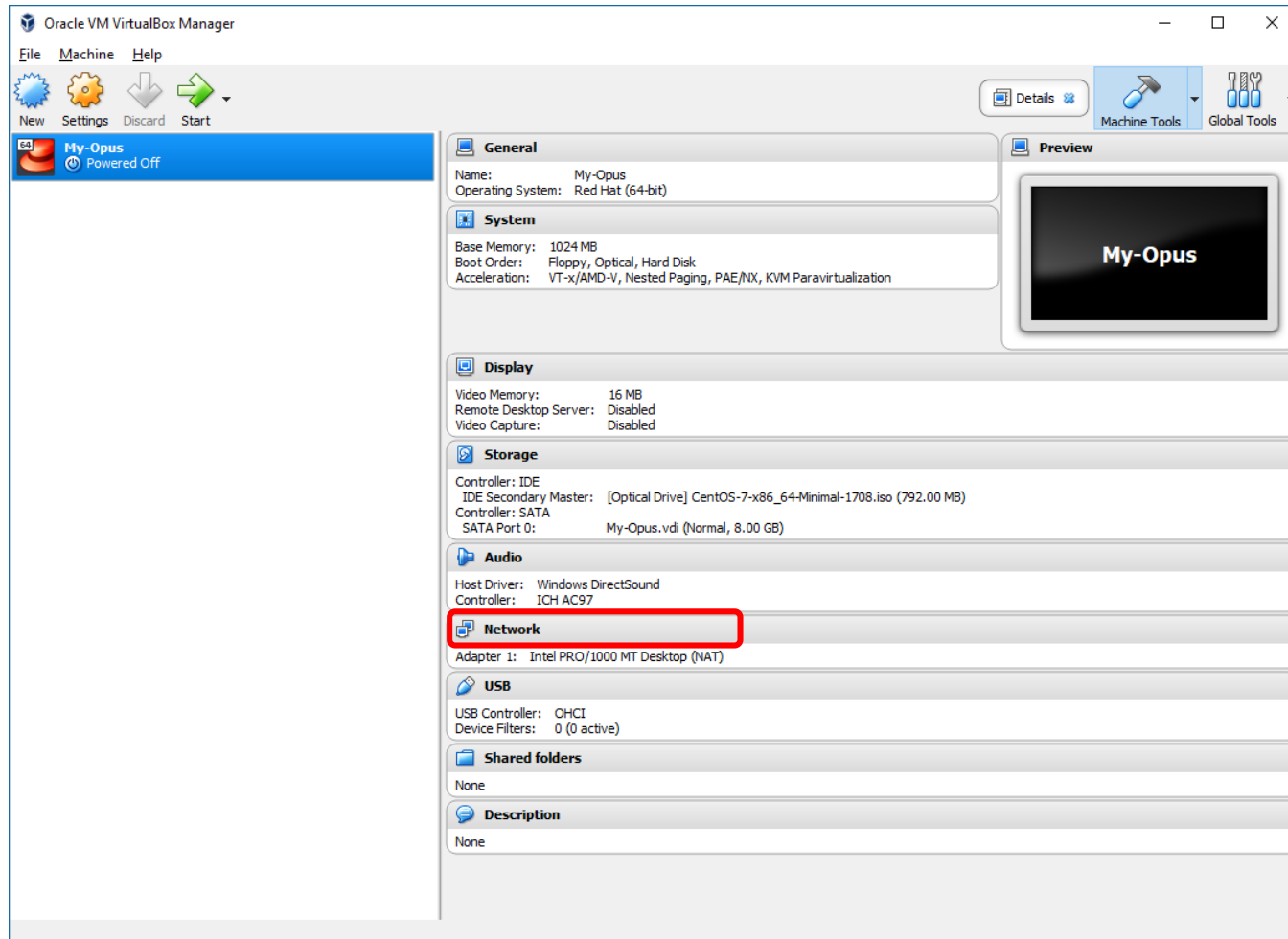
Select the ISO image previously downloaded

The "DVD" is loaded



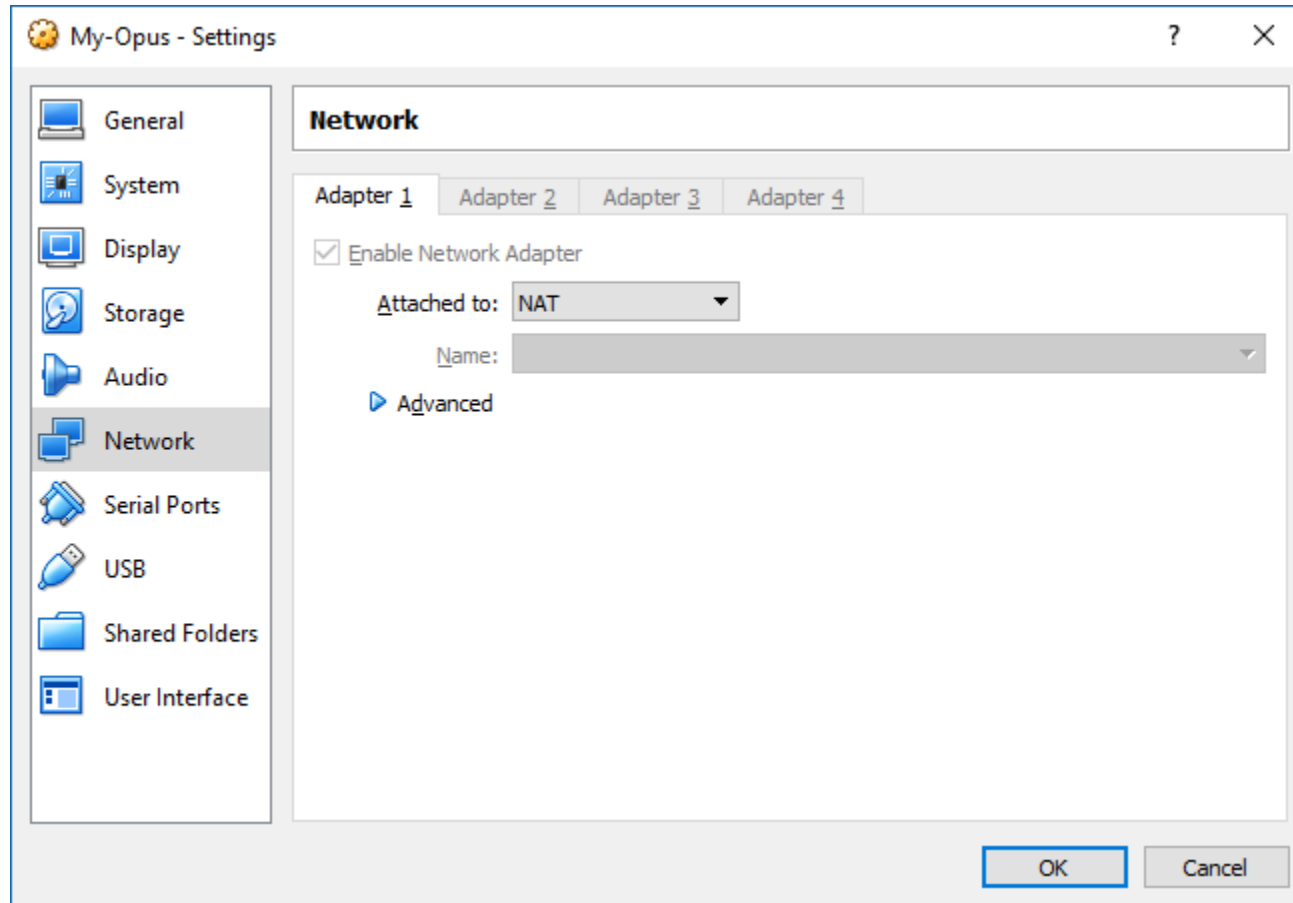
The CD (and ISO image) is now in the virtual CD tray

Network Settings



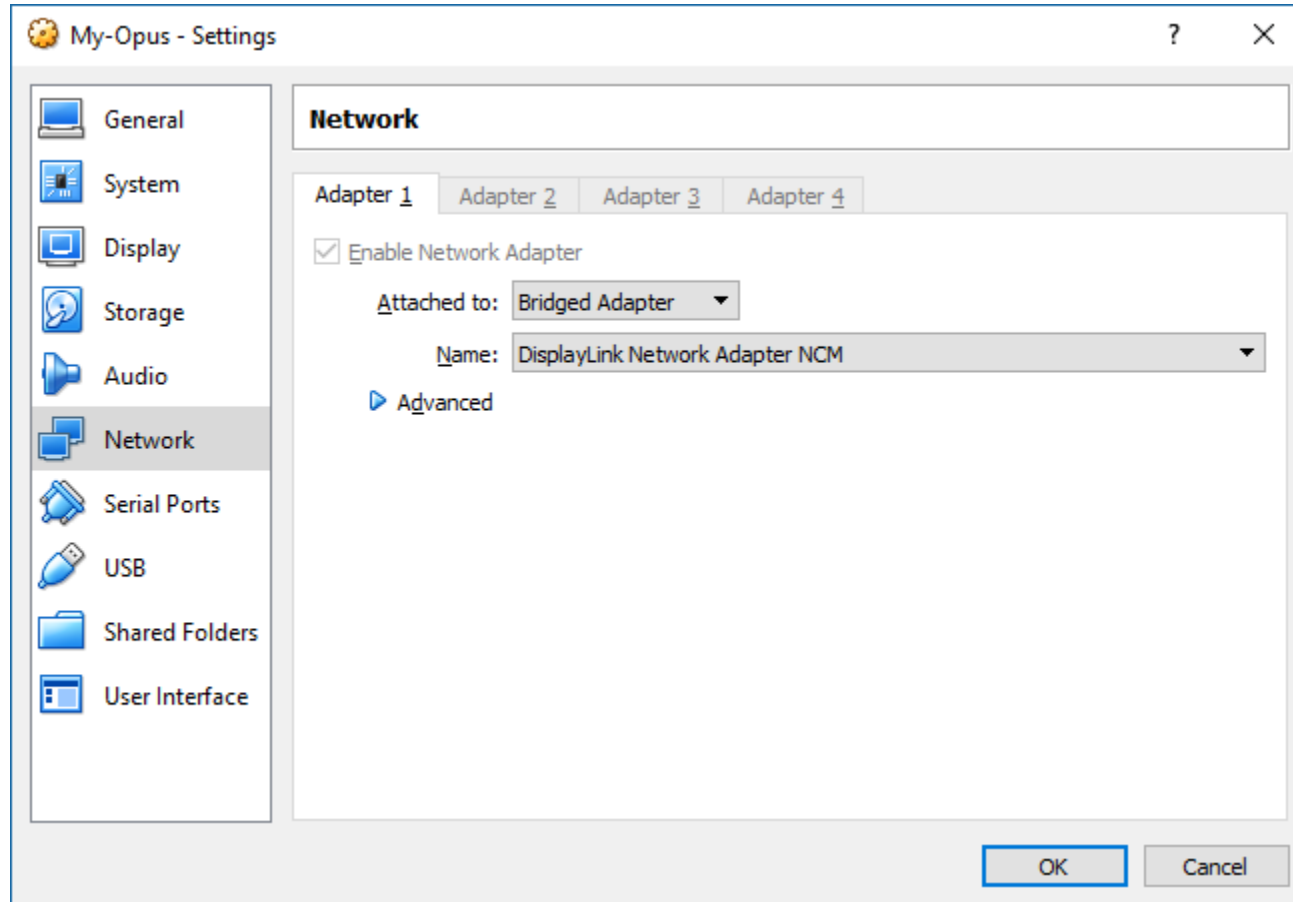
*Click on
Network*

Network Adapter Settings - NAT



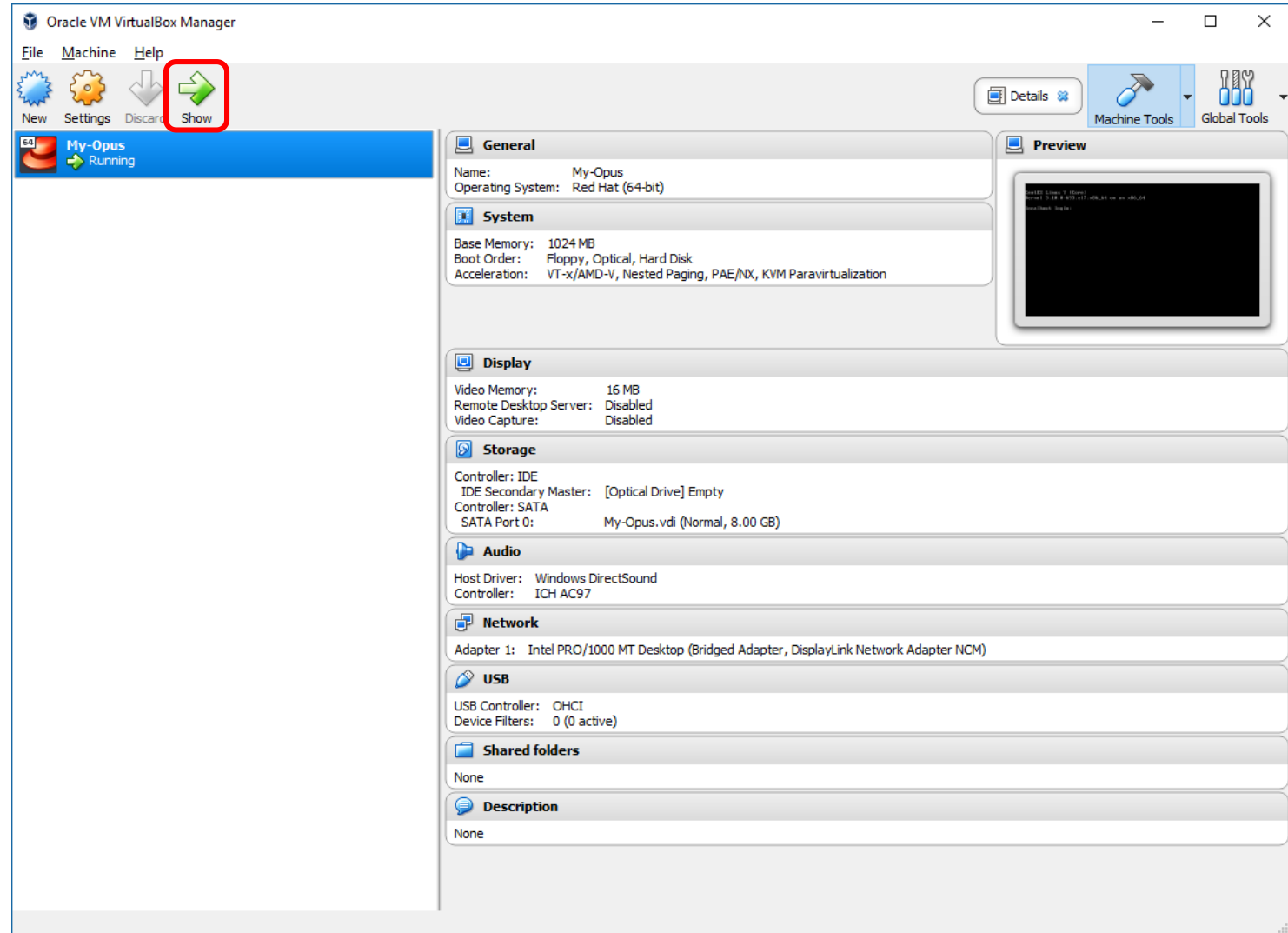
Select NAT (Network Address Translation) so you can connect to network services from a private IP address.

Network Adapter Settings - Bridged

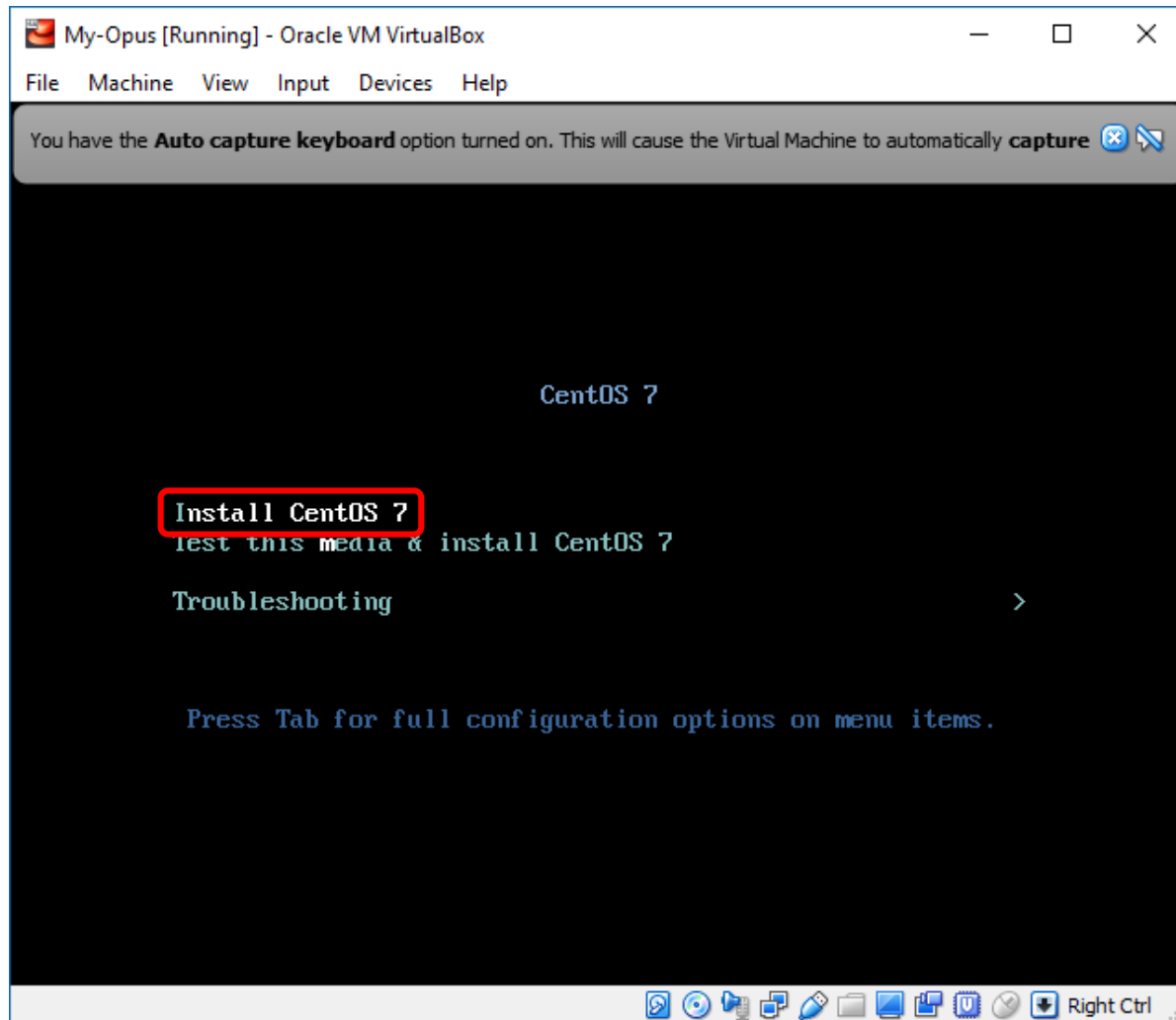


Select Bridged if you want your new VM to be accessible to other systems on the network.

Power on your new VM



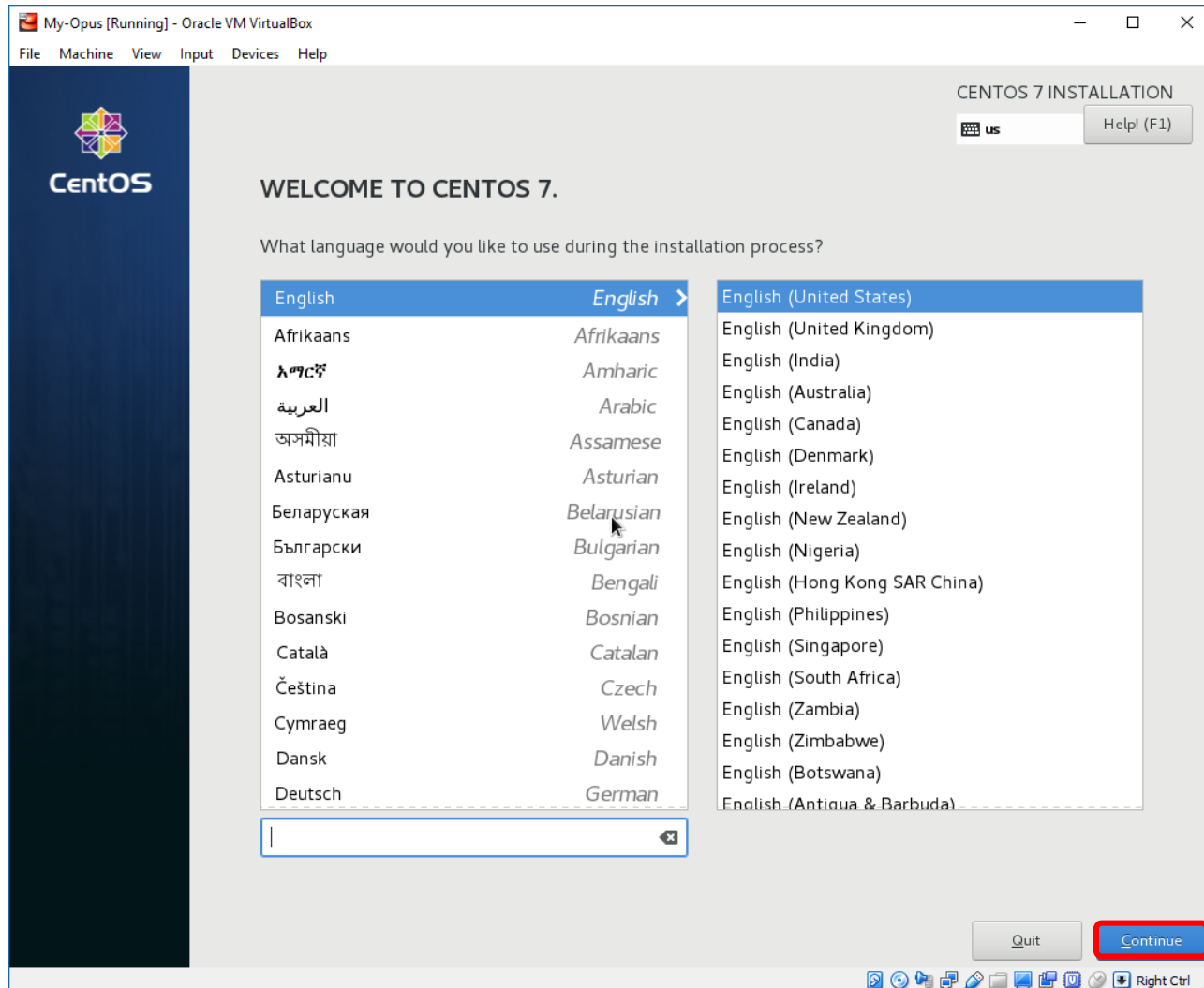
Booting from the installation "DVD"



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

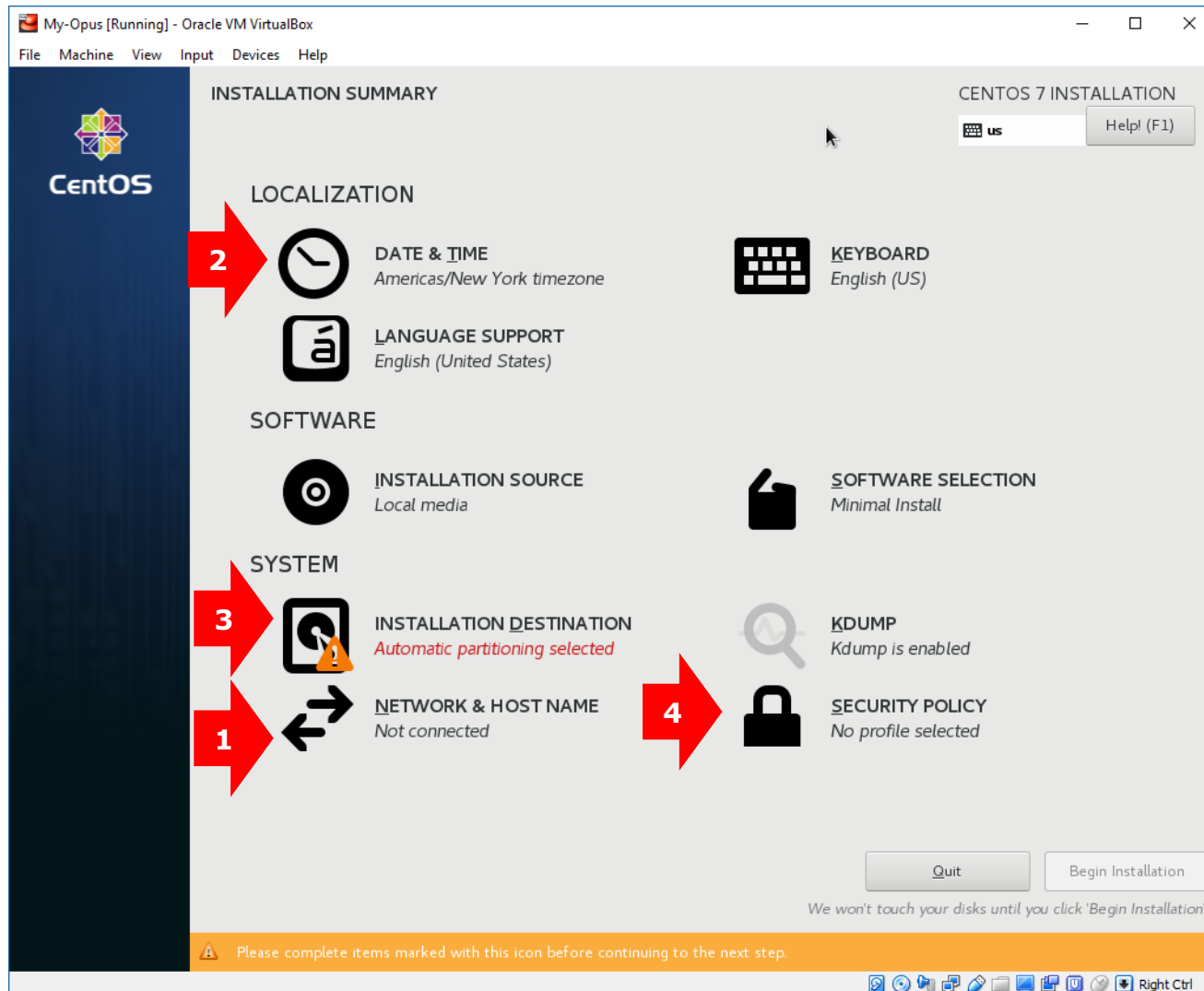
Using arrow keys, select and enter "Install CentOS 7"

Language selection



The English (US) language was selected above

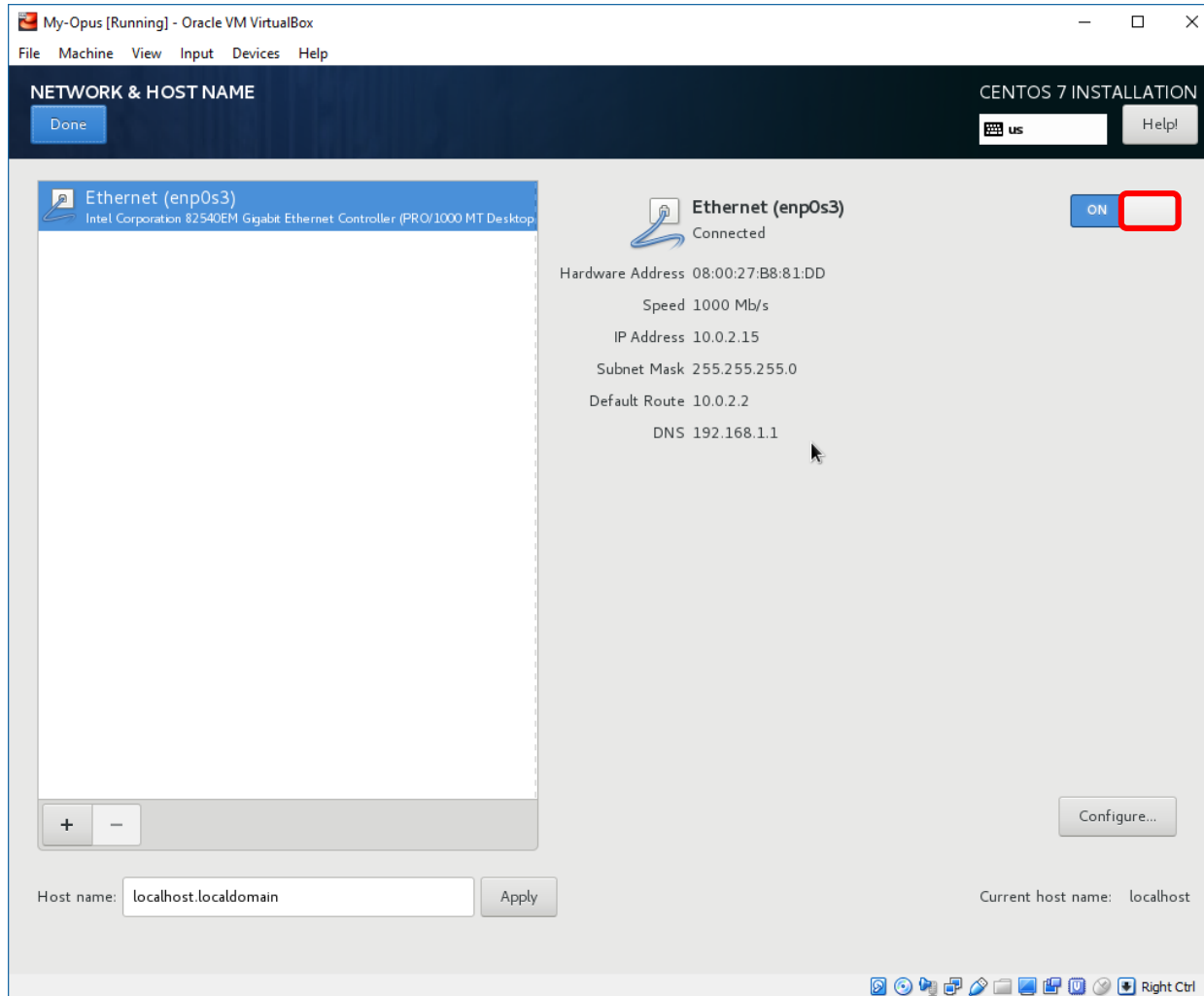
Installation Settings





NETWORK & HOST NAME
Not connected

Configuring the Network Settings



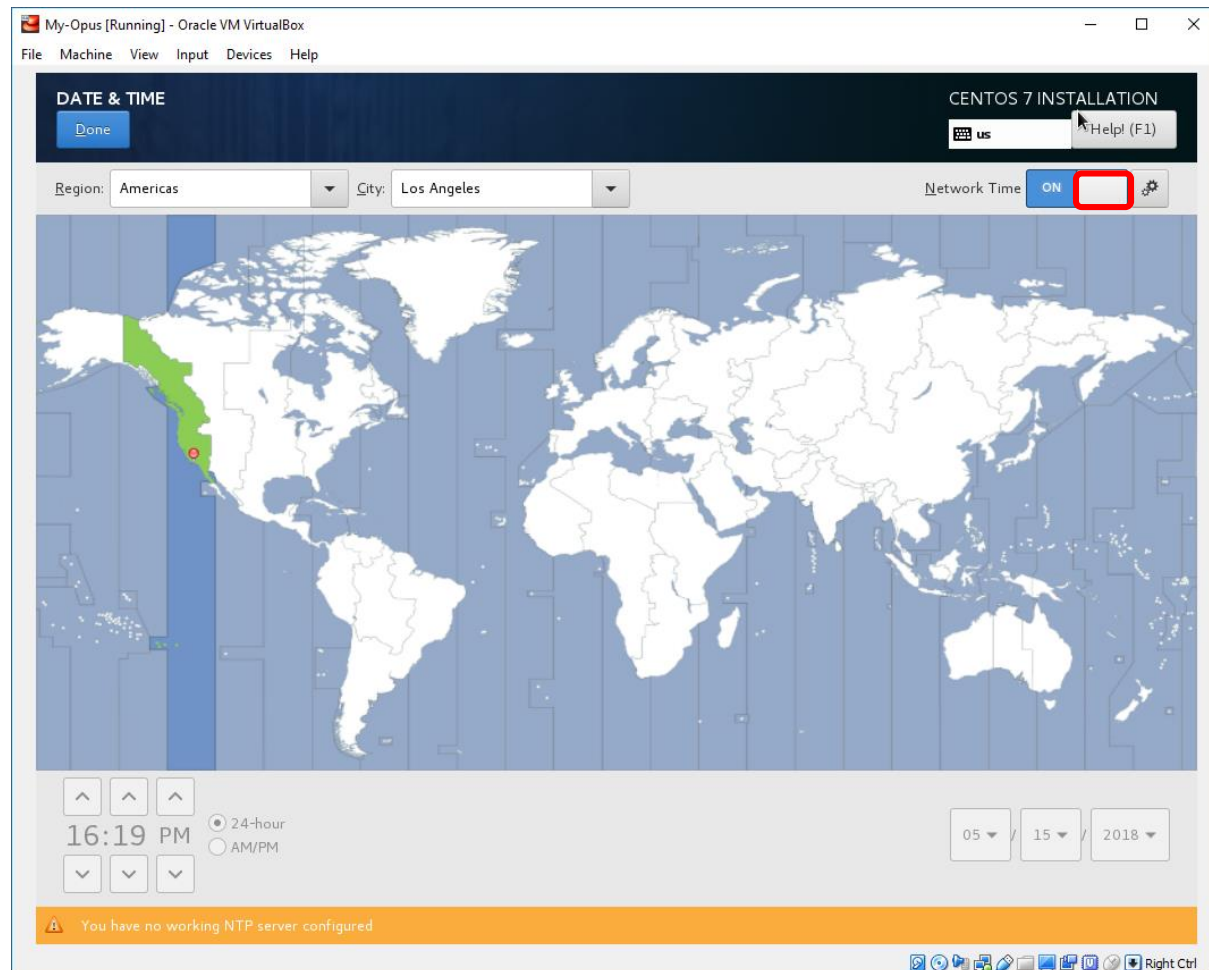
Turn on Network Interface using default settings

LOCALIZATION



DATE & TIME
Americas/New York timezone

Configuring Data & Time



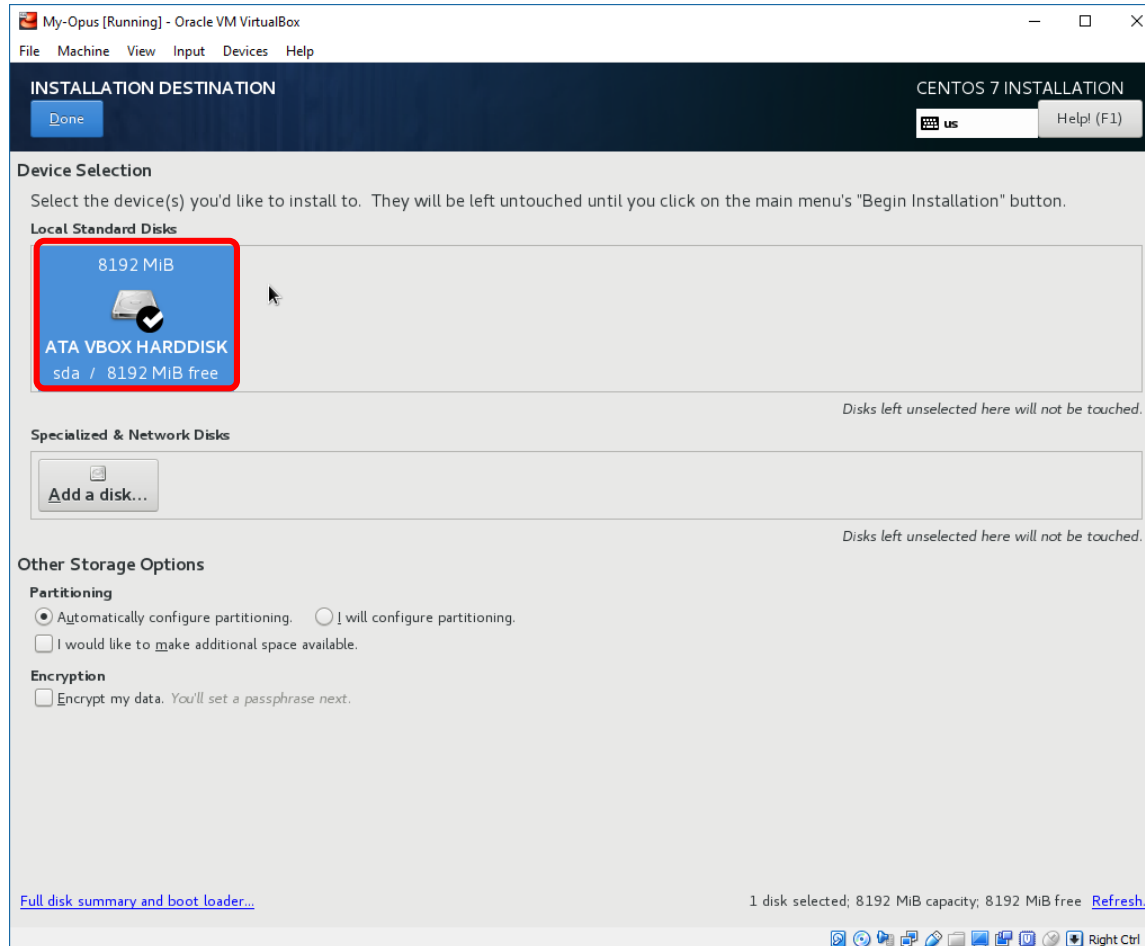
Select your location enable Network Time

SYSTEM



INSTALLATION DESTINATION
Automatic partitioning selected

Configuring the Installation Drive

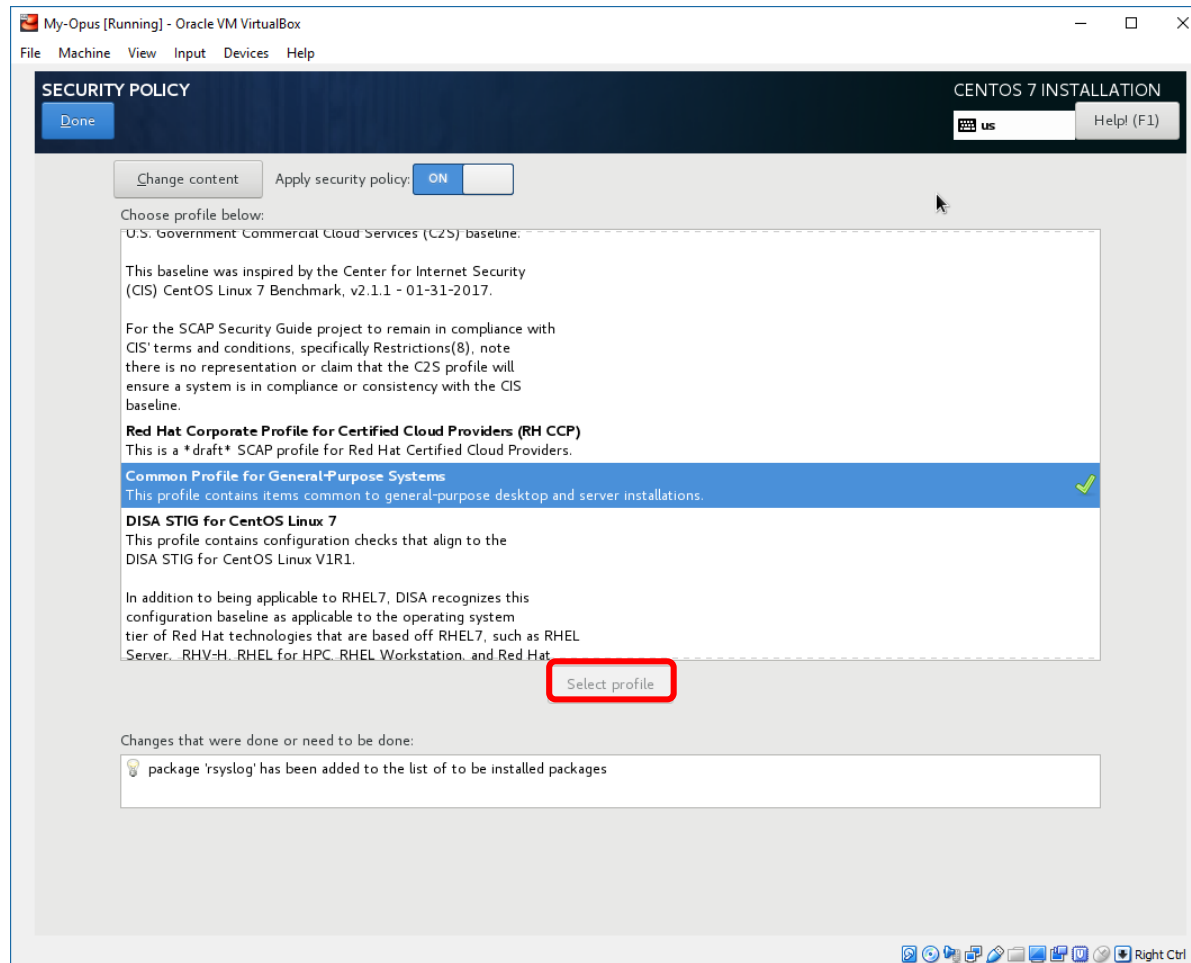


Select the hard drive



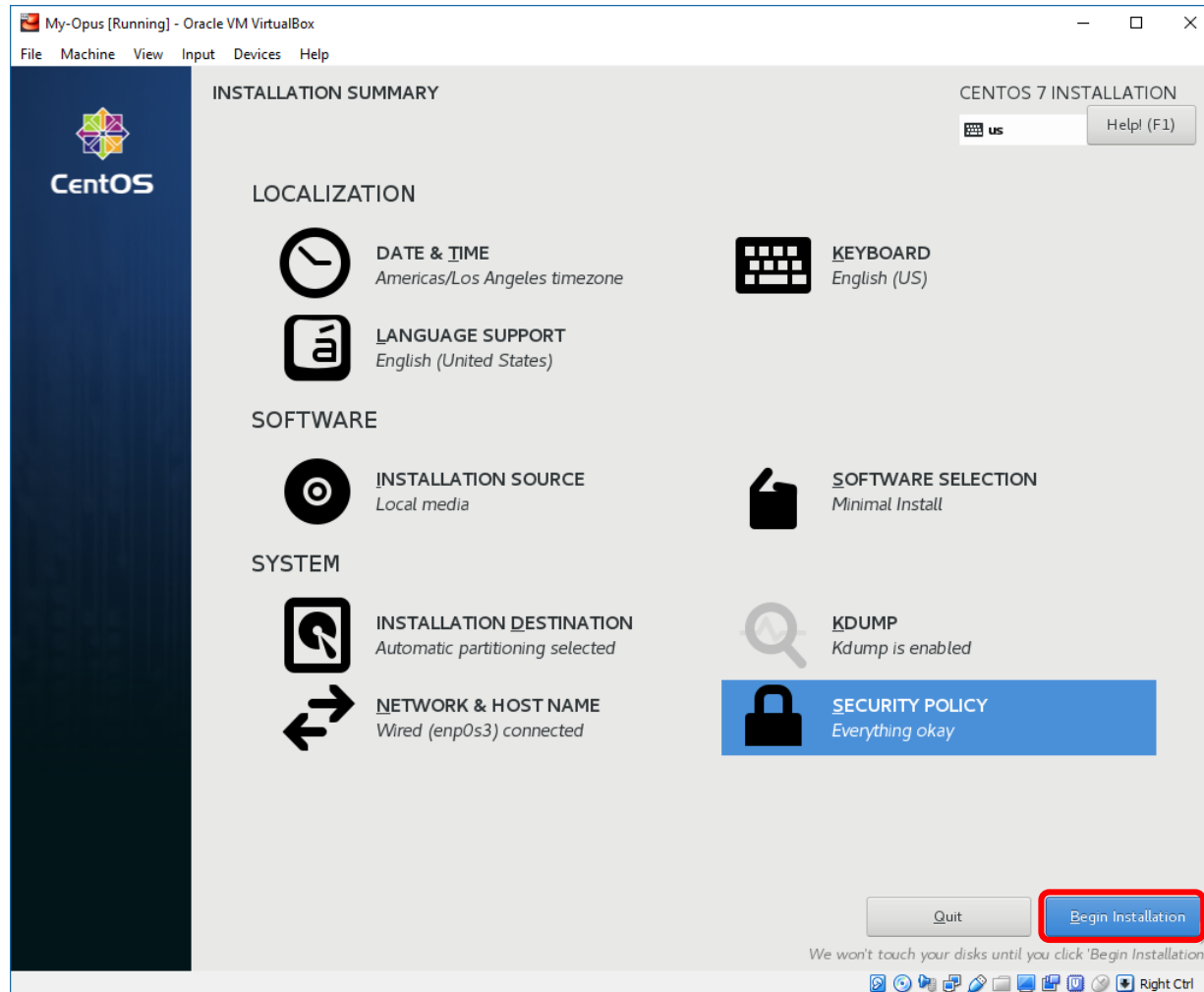
SECURITY POLICY
No profile selected

Configuring the Security Profile



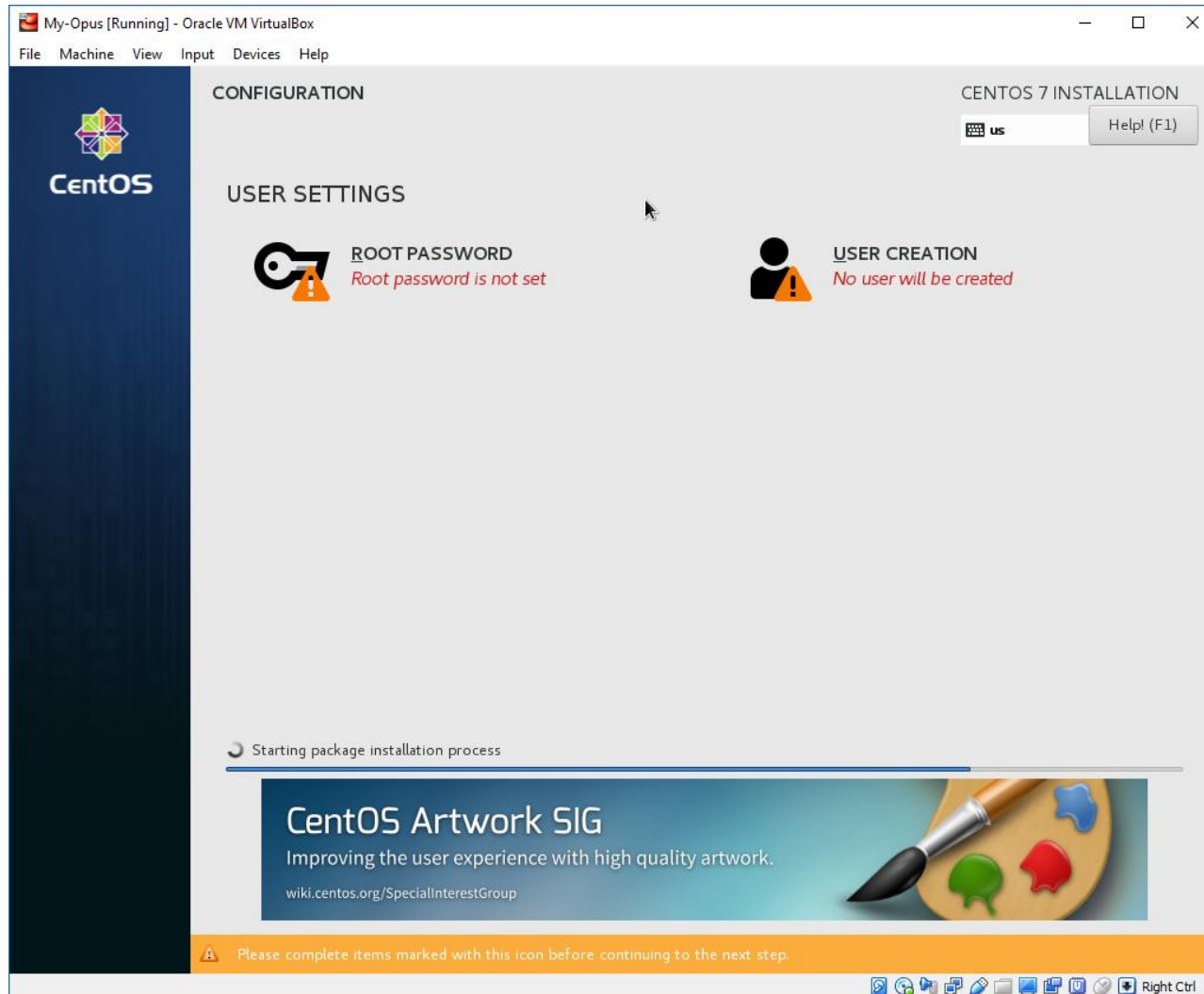
Select Common Profile for General Purpose Systems

Start the Installation



Click the Begin Installation button

Installation Starts



We can set up initial users while installation is proceeding



Set root password

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:

Confirm:

Strong

Right Ctrl



USER CREATION
No user will be created

Create first user

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:|

Strong

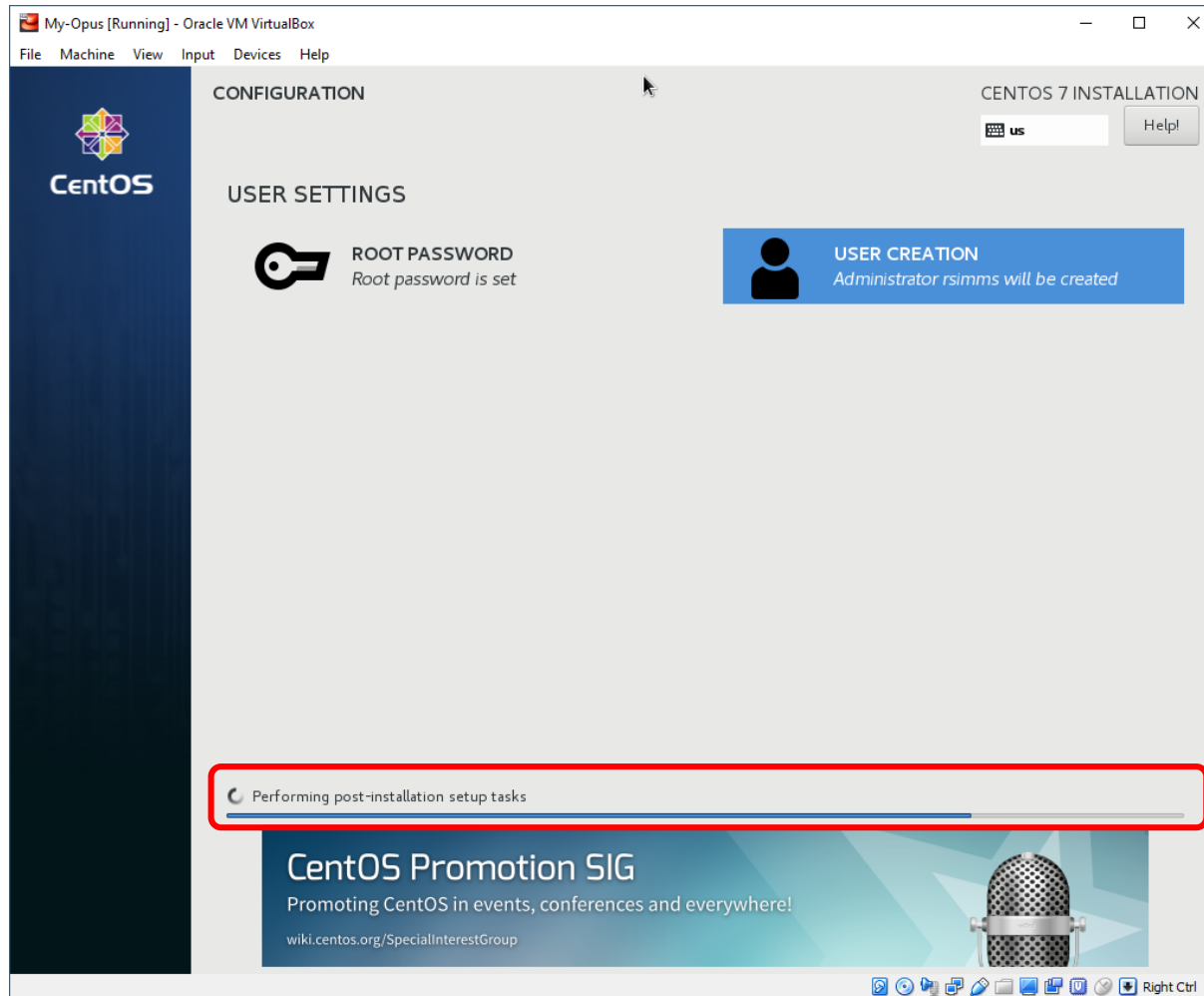
Confirm password:

Advanced...

Right Ctrl

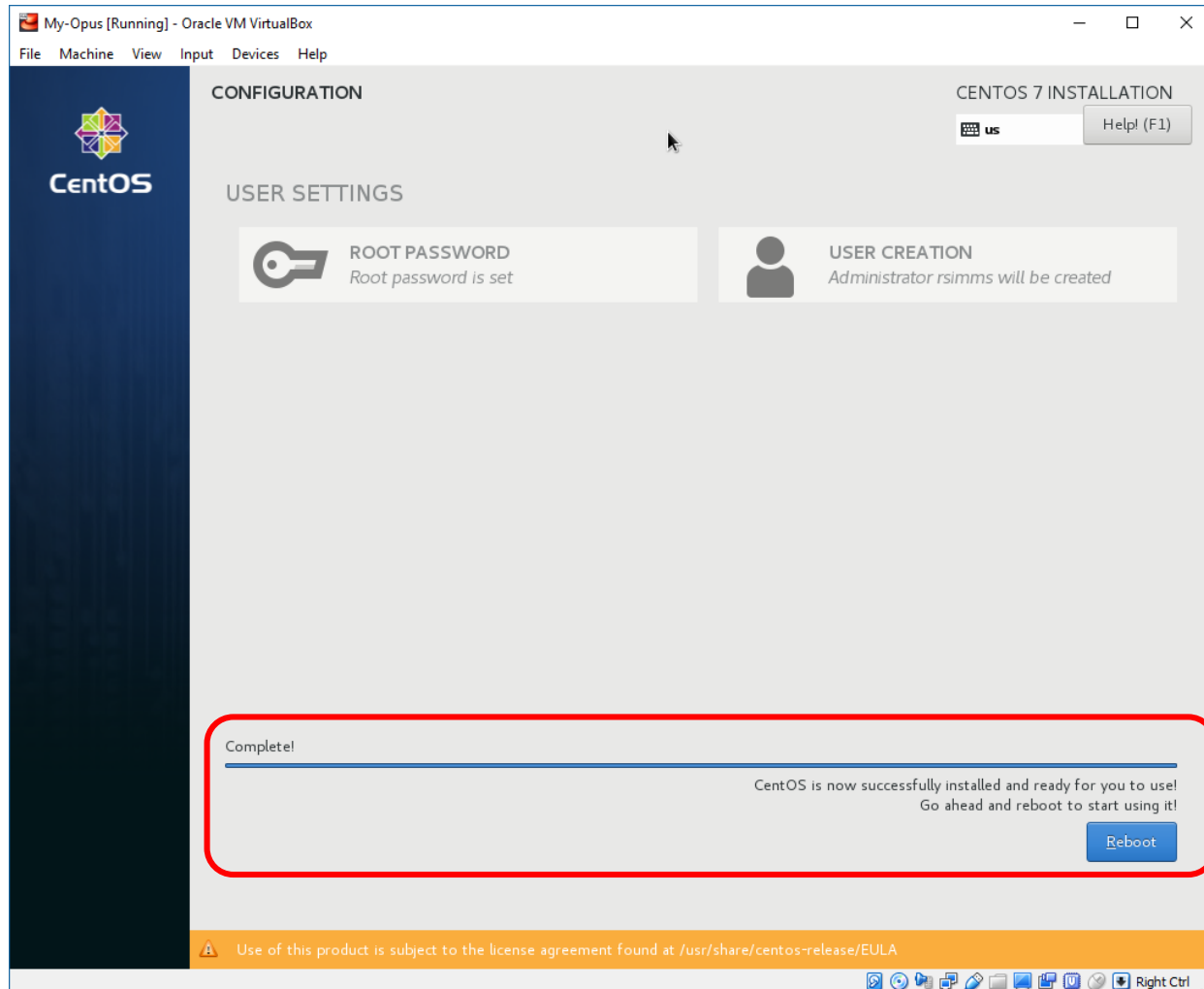
Add yourself as an administrator

Installation Continues



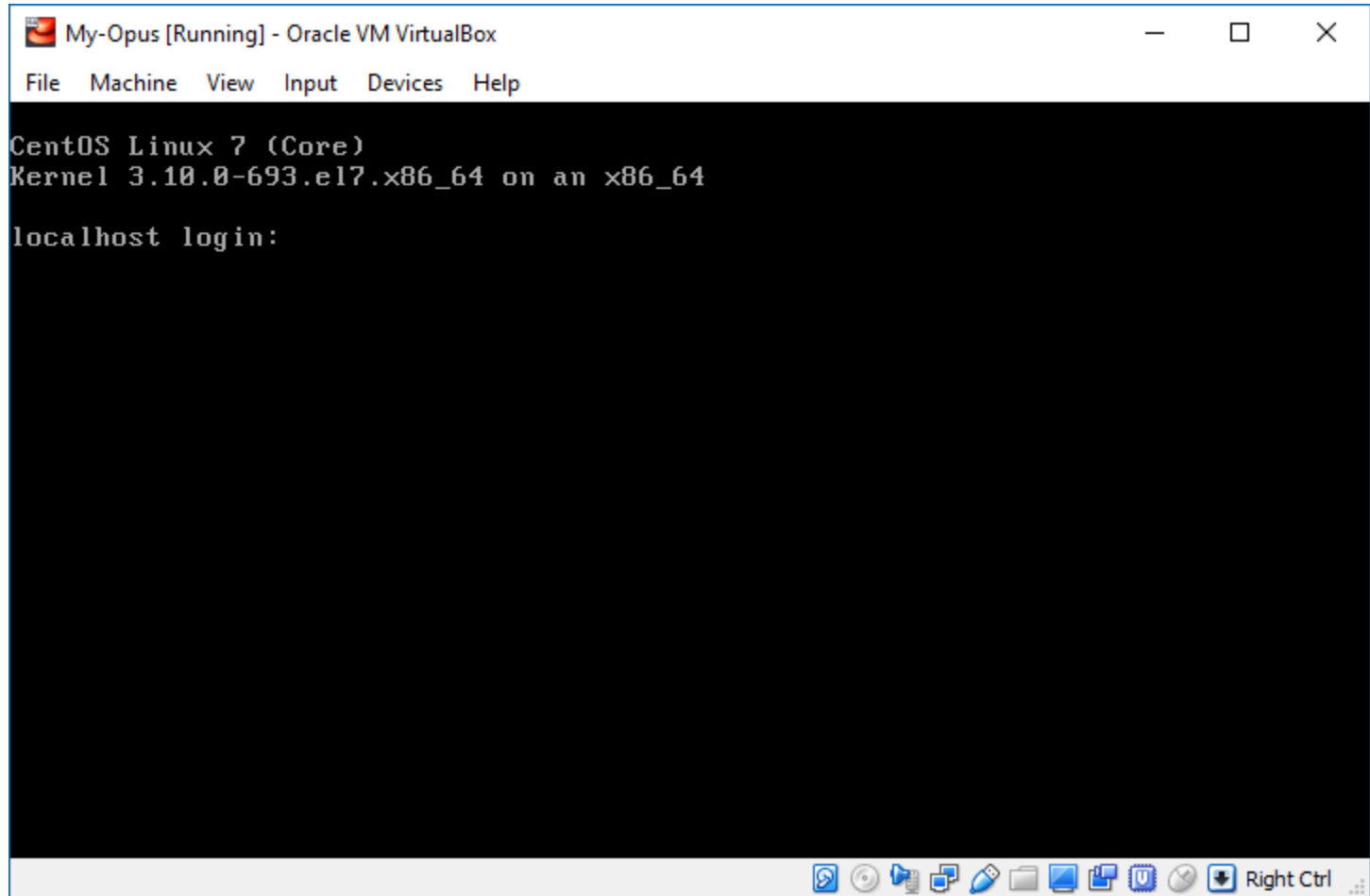
Watch the progress bar moving ...

Installation Completed



Click Reboot button

Login as regular user



*Login to your new Linux server using
the regular user name you configured*

Login as regular user

```
CentOS Linux 7 (Core)  
Kernel 3.10.0-693.el7.x86_64 on an x86_64  
  
localhost login: rsimms  
Password:  
[rsimms@localhost ~]$ _
```

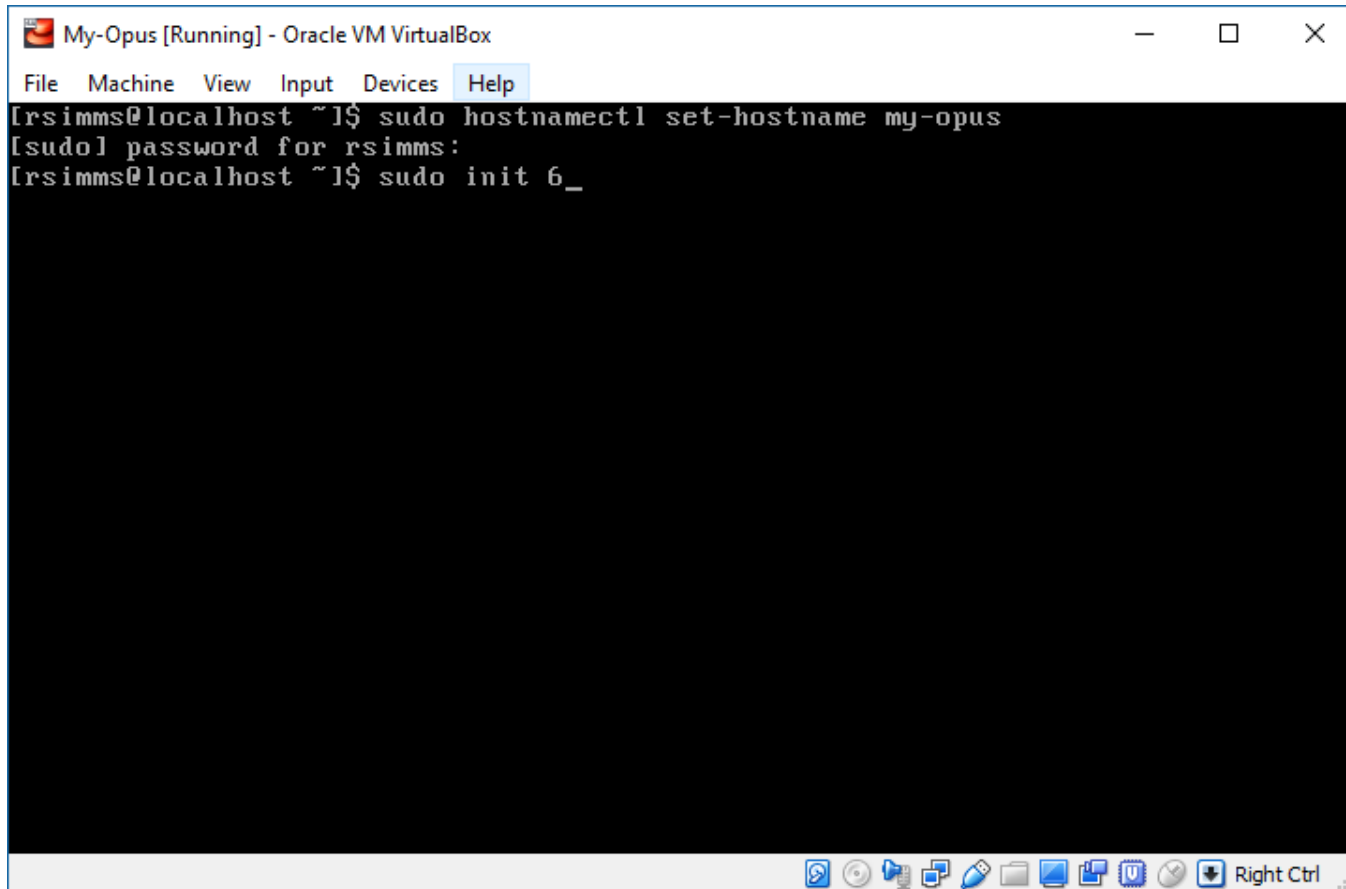
Enter your regular username

Enter password (not echoed)

*Login to your new Linux server using
the regular username you configured*

Configure Hostname

sudo hostnamectl set-hostname my-opus
sudo init 6



The screenshot shows a terminal window titled "My-Opus [Running] - Oracle VM VirtualBox". The terminal has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The command history is as follows:

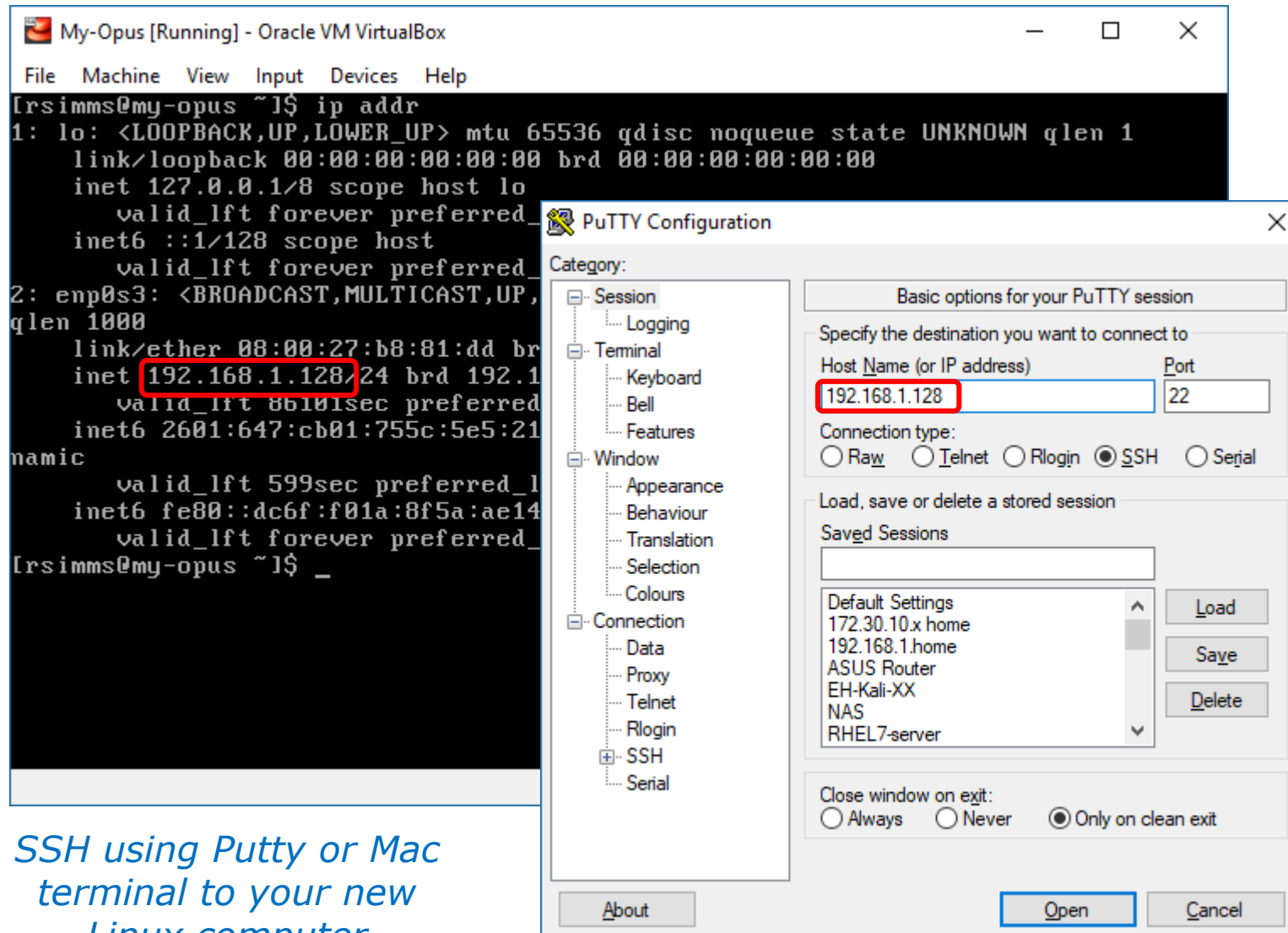
```
[rsimms@localhost ~]$ sudo hostnamectl set-hostname my-opus  
[sudo] password for rsimms:  
[rsimms@localhost ~]$ sudo init 6_
```

The terminal window has a standard Linux desktop environment with a taskbar at the bottom containing icons for applications and system status. The window title bar includes minimize, maximize, and close buttons.

Configure the hostname and reboot

SSH into your new VM (if using bridged adapter)

ip addr



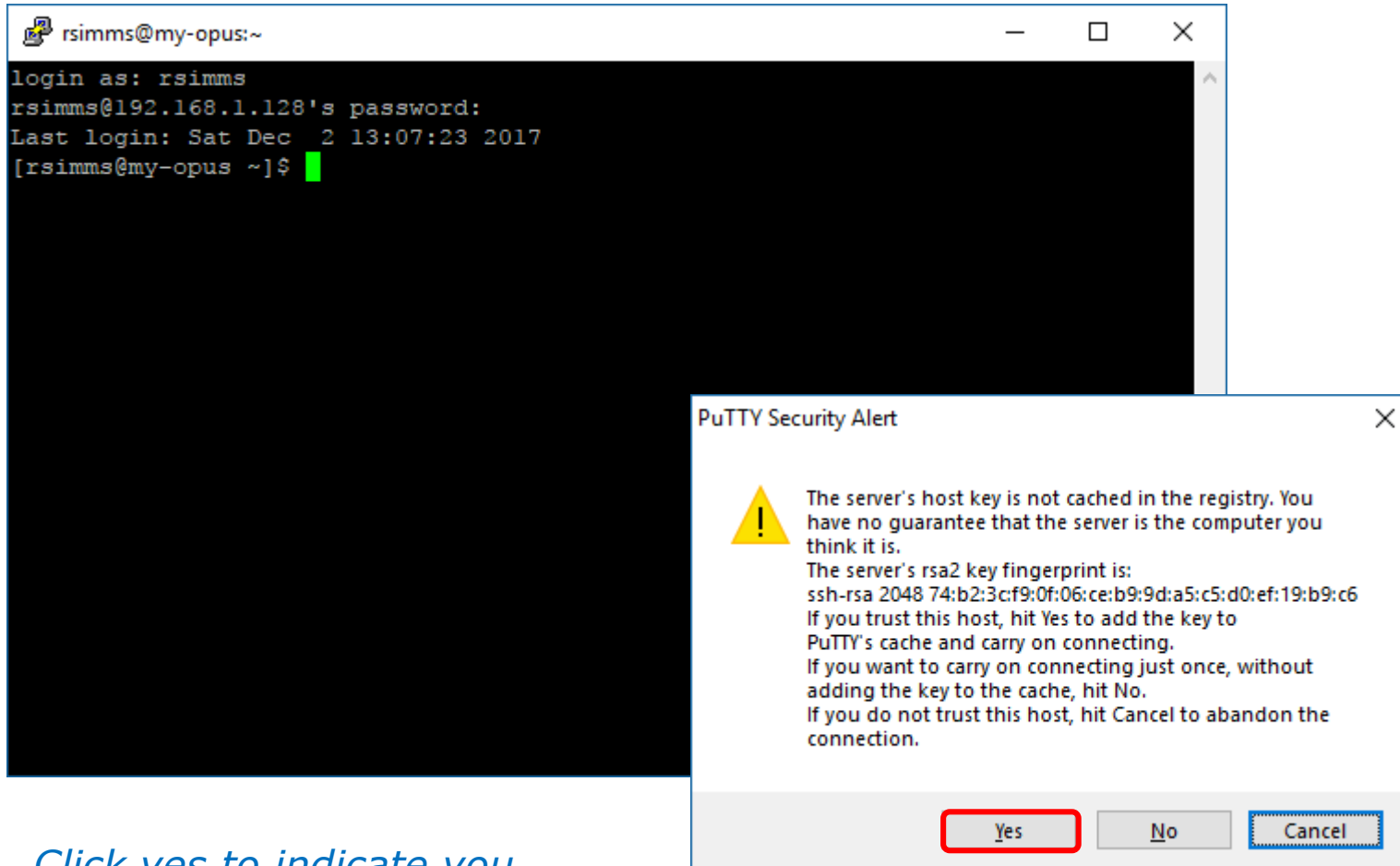
The image shows a screenshot of a virtual machine window titled "My-Opus [Running] - Oracle VM VirtualBox". Inside the VM, a terminal window displays the output of the `ip addr` command. The output shows the network configuration for the `enp0s3` interface, with the IP address `192.168.1.128` highlighted by a red box. Overlaid on the terminal is the "PuTTY Configuration" dialog box. The "Category" list on the left shows "SSH" selected. The "Basic options for your PuTTY session" section shows the "Host Name (or IP address)" field set to `192.168.1.128` and the "Port" field set to `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" options are "Always", "Never", and "Only on clean exit", with "Only on clean exit" selected. The "Open" button is highlighted.

```

[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> 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
        valid_lft 86101sec preferred_lft 86101sec
    inet6 2601:647:cb01:755c:5e5:21::1/64 scope global dynamic
        valid_lft 599sec preferred_lft 599sec
    inet6 fe80::dc6f:f01a:8f5a:ae14/64 scope link
        valid_lft forever preferred_lft forever
[rsimms@my-opus ~]$ _
  
```

SSH using Putty or Mac terminal to your new Linux computer

SSH first time connection warning

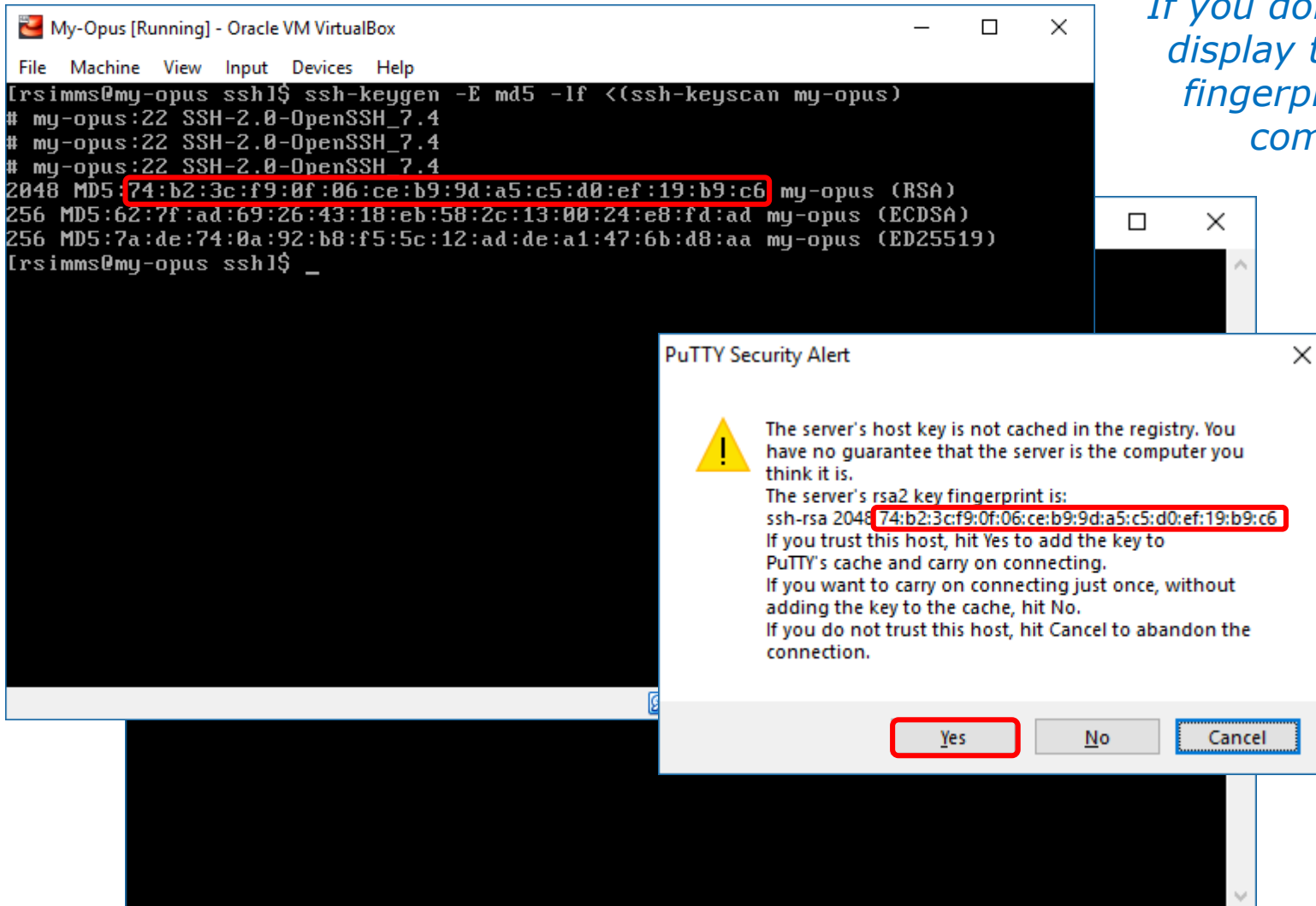


Click yes to indicate you trust the computer you are about to connect to

SSH fingerprint check

ssh-keygen -E md5 -lf <(ssh-keyscan my-opus)

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



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 shows the command `ssh-keygen -E md5 -lf <(ssh-keyscan my-opus)` being executed. The output lists three fingerprints for my-opus: RSA (2048 MD5), ECDSA (256 MD5), and ED25519 (256 MD5). The RSA fingerprint `74:b2:3c:f9:0f:06:ce:b9:9d:a5:c5:d0:ef:19:b9:c6` is highlighted with a red box. Overlaid on the terminal is a "PuTTY Security Alert" dialog box. The dialog box contains a warning icon and text stating that the server's host key is not cached. It displays the server's rsa2 key fingerprint as `ssh-rsa 2048 74:b2:3c:f9:0f:06:ce:b9:9d:a5:c5:d0:ef:19:b9:c6`, which is also highlighted with a red box. The dialog box provides instructions on how to trust the host by adding the key to the cache or how to abort the connection. At the bottom, there are three buttons: "Yes" (highlighted with a red box), "No", and "Cancel".

```

[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]$ _
  
```

PuTTY Security Alert

The server's host key is not cached in the registry. You have no guarantee that the server is the computer you think it is.

The server's rsa2 key fingerprint is:
 ssh-rsa 2048 74:b2:3c:f9:0f:06:ce:b9:9d:a5:c5:d0:ef:19:b9:c6

If you trust this host, hit Yes to add the key to PuTTY's cache and carry on connecting.
 If you want to carry on connecting just once, without adding the key to the cache, hit No.
 If you do not trust this host, hit Cancel to abandon the connection.

Yes **No** **Cancel**

Install Apache Web Server

sudo yum -y install httpd

```
rsimms@my-opus:~$ sudo yum -y install httpd
[sudo] password for rsimms:
Loaded plugins: fastestmirror
Determining fastest mirrors
 * base: linux.mirrors.es.net
 * extras: linux.mirrors.es.net
 * updates: linux.mirrors.es.net
base                                     | 3.6 kB    00:00
extras                                 | 3.4 kB    00:00
updates                               | 3.4 kB    00:00
(1/4): extras/7/x86_64/primary_db      | 125 kB    00:00
(2/4): base/7/x86_64/group_gz          | 166 kB    00:00
(3/4): base/7/x86_64/primary_db        | 5.9 MB    00:00
(4/4): updates/7/x86_64/primary_db     | 1.0 MB    00:00
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.6-80.el7.centos will be installed
--> Processing Dependency: httpd-tools = 2.4.6-80.el7.centos for package: httpd-2.4.6-80.el7.centos.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.6-80.el7.centos.x86_64
--> Processing Dependency: libaprutil-1.so.0()(64bit) for package: httpd-2.4.6-80.el7.centos.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.6-80.el7.centos.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 0:2.4.6-80.el7.centos 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    2.4.6-80.el7.centos  base         2.7 M
Installing for dependencies:
apr                    x86_64    1.4.8-3.el7_4.1      base         103 k
apr-util               x86_64    1.5.2-6.el7          base          92 k
httpd-tools            x86_64    2.4.6-80.el7.centos  base          89 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
Downloading packages:
warning: /var/cache/yum/x86_64/7/base/packages/apr-util-1.5.2-6.el7.x86_64.rpm:
Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
Public key for apr-util-1.5.2-6.el7.x86_64.rpm is not installed
(1/5): apr-util-1.5.2-6.el7.x86_64.rpm | 92 kB    00:00
(2/5): apr-1.4.8-3.el7_4.1.x86_64.rpm | 103 kB   00:00
(3/5): httpd-tools-2.4.6-80.el7.centos.x86_64.rpm | 89 kB    00:00
(4/5): mailcap-2.1.41-2.el7.noarch.rpm | 31 kB    00:00
(5/5): httpd-2.4.6-80.el7.centos.x86_64.rpm | 2.7 MB   00:00
-----
Total                                     5.5 MB/s | 3.0 MB    00:00
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Importing GPG key 0xF4A80EB5:
  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-7-5.1804.el7.centos.x86_64 (@anaconda)
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
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-2.4.6-80.el7.centos.x86_64                  3/5
  Installing : mailcap-2.1.41-2.el7.noarch                             4/5
  Installing : httpd-2.4.6-80.el7.centos.x86_64                        5/5
  Verifying   : httpd-tools-2.4.6-80.el7.centos.x86_64                  1/5
  Verifying   : apr-1.4.8-3.el7_4.1.x86_64                             2/5
  Verifying   : mailcap-2.1.41-2.el7.noarch                             3/5
  Verifying   : httpd-2.4.6-80.el7.centos.x86_64                       4/5
  Verifying   : apr-util-1.5.2-6.el7.x86_64                             5/5

Installed:
  httpd.x86_64 0:2.4.6-80.el7.centos

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 0:2.4.6-80.el7.centos mailcap.noarch 0:2.1.41-2.el7

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

```
rsimms@my-opus:~$ sudo yum -y install httpd
Install 1 Package (+4 Dependent packages)

Total download size: 3.0 M
Installed size: 10 M
Downloading packages:
warning: /var/cache/yum/x86_64/7/base/packages/apr-util-1.5.2-6.el7.x86_64.rpm:
Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
Public key for apr-util-1.5.2-6.el7.x86_64.rpm is not installed
(1/5): apr-util-1.5.2-6.el7.x86_64.rpm | 92 kB    00:00
(2/5): apr-1.4.8-3.el7_4.1.x86_64.rpm | 103 kB   00:00
(3/5): httpd-tools-2.4.6-80.el7.centos.x86_64.rpm | 89 kB    00:00
(4/5): mailcap-2.1.41-2.el7.noarch.rpm | 31 kB    00:00
(5/5): httpd-2.4.6-80.el7.centos.x86_64.rpm | 2.7 MB   00:00
-----
Total                                     5.5 MB/s | 3.0 MB    00:00
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Importing GPG key 0xF4A80EB5:
  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-7-5.1804.el7.centos.x86_64 (@anaconda)
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
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-2.4.6-80.el7.centos.x86_64                  3/5
  Installing : mailcap-2.1.41-2.el7.noarch                             4/5
  Installing : httpd-2.4.6-80.el7.centos.x86_64                        5/5
  Verifying   : httpd-tools-2.4.6-80.el7.centos.x86_64                  1/5
  Verifying   : apr-1.4.8-3.el7_4.1.x86_64                             2/5
  Verifying   : mailcap-2.1.41-2.el7.noarch                             3/5
  Verifying   : httpd-2.4.6-80.el7.centos.x86_64                       4/5
  Verifying   : apr-util-1.5.2-6.el7.x86_64                             5/5

Installed:
  httpd.x86_64 0:2.4.6-80.el7.centos

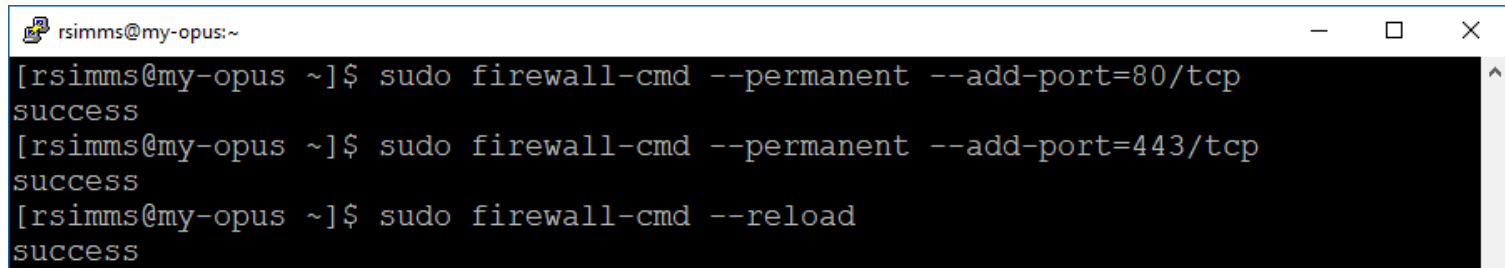
Dependency Installed:
  apr.x86_64 0:1.4.8-3.el7_4.1          apr-util.x86_64 0:1.5.2-6.el7
  httpd-tools.x86_64 0:2.4.6-80.el7.centos mailcap.noarch 0:2.1.41-2.el7

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

The httpd package is the Apache web server

Configure Firewall to allow incoming HTTP requests

```
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*

Start and verify Apache Web Service

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

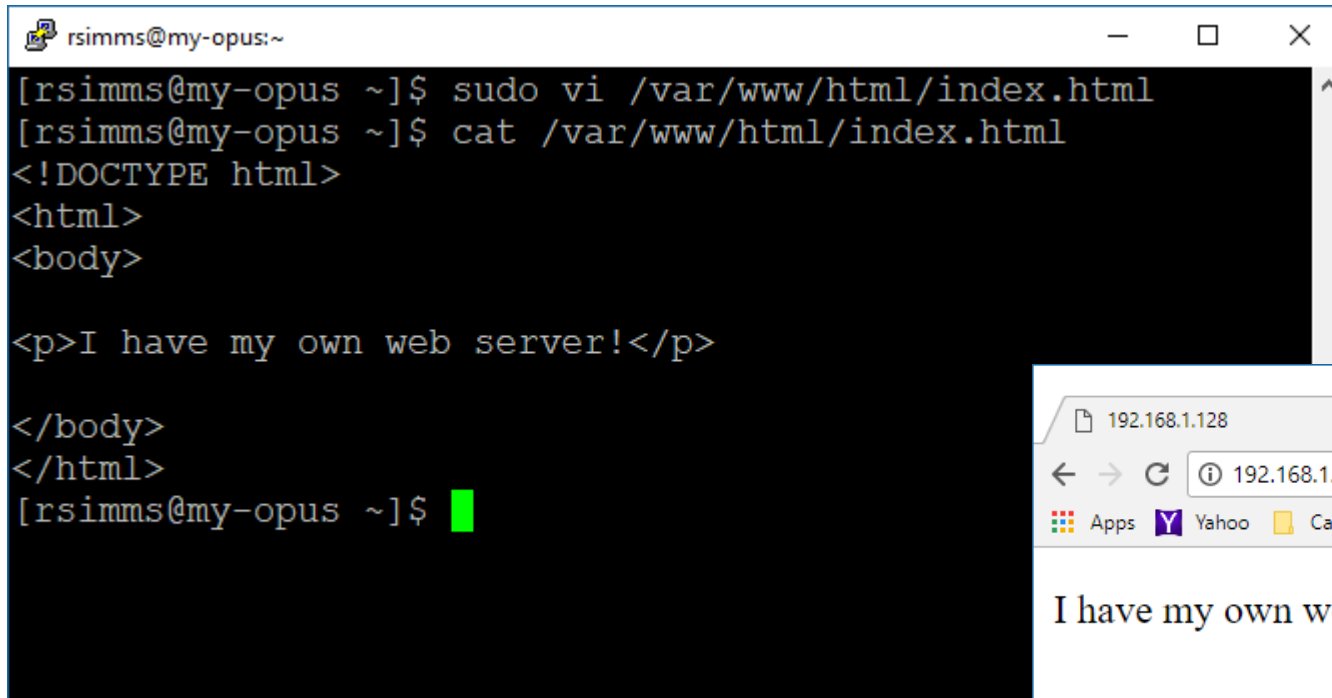
```
[rsimms@my-opus ~]$ sudo systemctl start httpd
[rsimms@my-opus ~]$ sudo systemctl enable httpd
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[rsimms@my-opus ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP 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

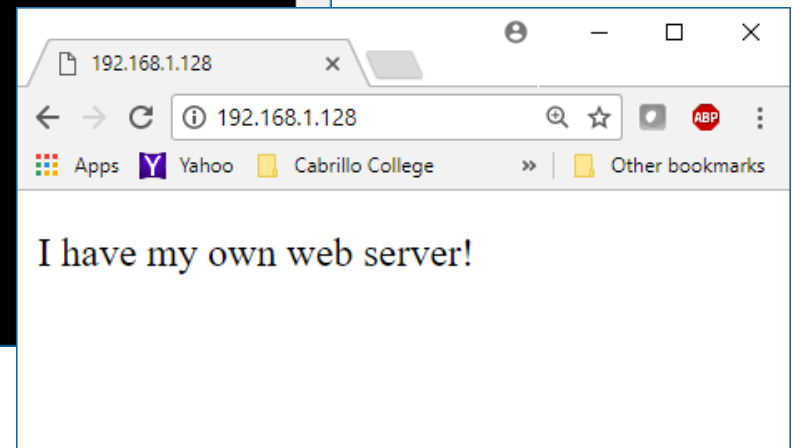
```
sudo vi /var/www/html/index.html  
cat /var/www/html/index.html
```

Make a sample webpage

A terminal window titled 'rsimms@my-opus:~' showing the execution of two commands. First, 'sudo vi /var/www/html/index.html' opens a text editor. Then, 'cat /var/www/html/index.html' displays the contents of the file, which is a simple HTML document. The output is: <!DOCTYPE html>, <html>, <body>, <p>I have my own web server!</p>, </body>, </html>. The prompt returns to the user.

```
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*

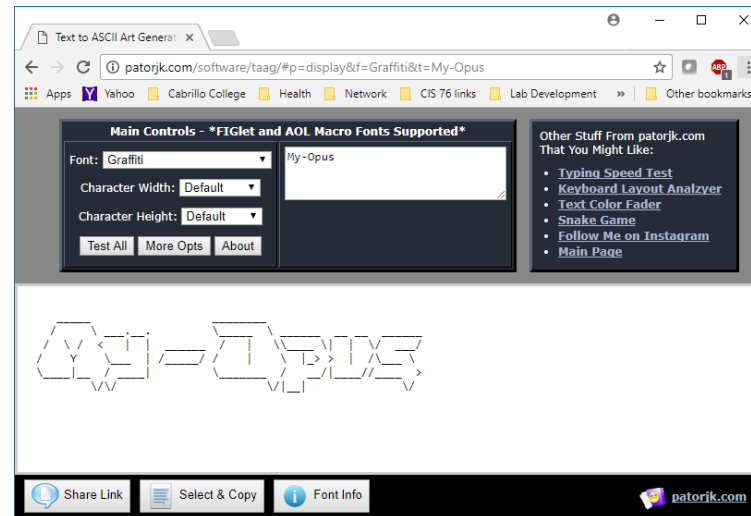
Make a MOTD (Message of the Day)

```
sudo vi /etc/motd
```

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

```
[rsimms@my-opus ~]$
```

*Make your MOTD
(Message of the Day) file*



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

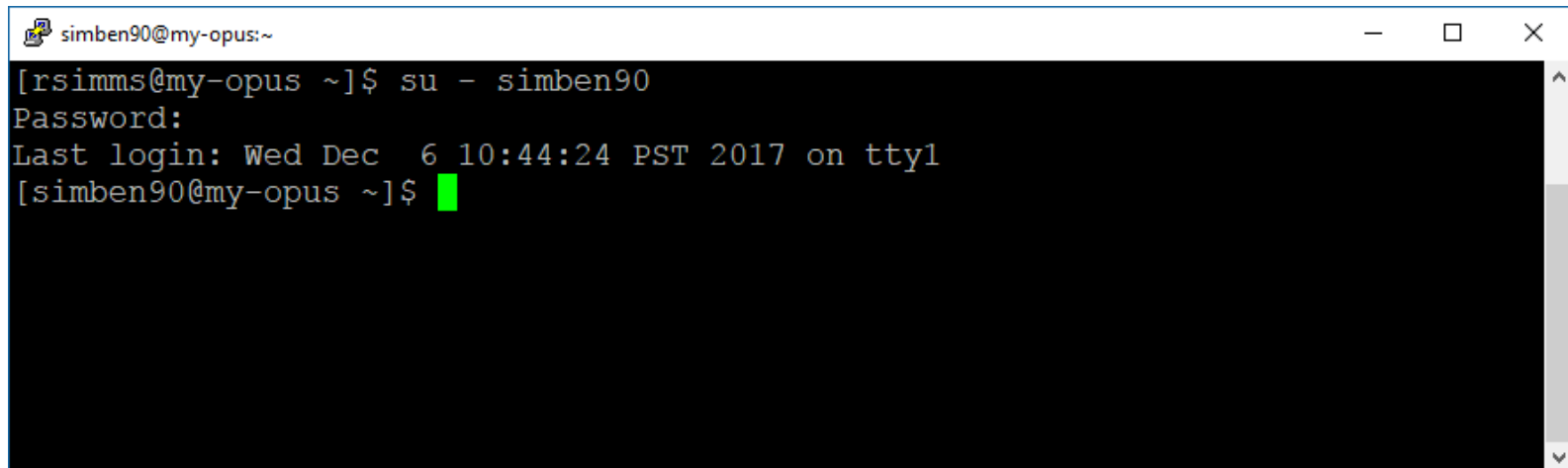
Add your CIS 90 account

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 ~]$
```

Switch to your CIS 90 account

su - simben90

A terminal window titled 'simben90@my-opus:~' with standard window controls. The terminal shows a user 'rsimms' at 'my-opus' in the home directory. They enter the command 'su - simben90'. The prompt changes to 'Password:', and after an invisible password entry, it shows 'Last login: Wed Dec 6 10:44:24 PST 2017 on tty1'. Finally, the prompt changes to '[simben90@my-opus ~]\$' with a green cursor.

```
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

Copy your files on Opus to your new VM

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

Make sure you got them all

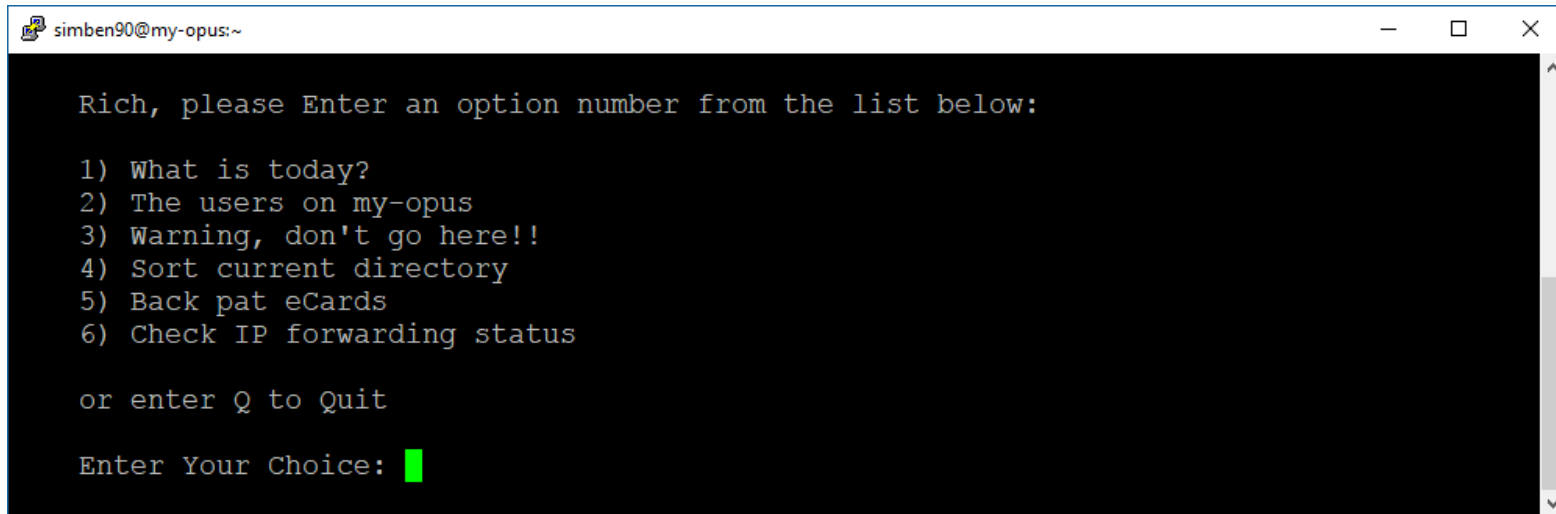
ls

```
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.rsims  
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 ~]$
```

Listing of home directory on new VM

Run your final project

bin/myscript

A terminal window titled 'simben90@my-opus:~' with standard window controls. The terminal output shows a menu-driven script. The prompt 'Rich, please Enter an option number from the list below:' is followed by a numbered list of six options. Below the list, it says 'or enter Q to Quit'. The prompt 'Enter Your Choice:' is followed by a green cursor. The terminal has a black background and white text.

```
simben90@my-opus:~  
  
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: █
```

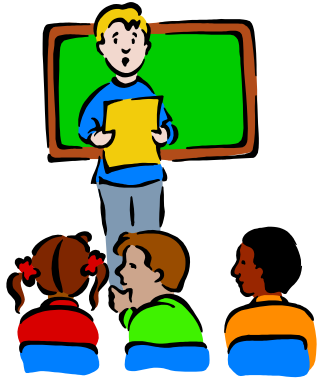
Check you can still run your final project

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 six points:

Remote students - Share desktop when it is your turn.

Classroom students - use the instructor station at the front of the room.

Assignment



Do Practice Test #3

Do Practice Test #3

Do Practice Test #3

Do Practice Test #3

Do Practice Test #3

Five Posts

Lab X1 (extra credit)

Lab X2 (extra credit)



Notes to instructor

Practice Test System

[] Start: `echo "/root/unlock-cis90; rm /etc/nologin" | at [end of L15]`
 [] End: `echo "/root/lock-cis90; cp /etc/nologin.bak /etc/nologin" | at [T-30]`

Canvas Practice Test:

[] availability from = [end of L15], due & available until = [T-30]
 [] remove password on practice test on Canvas [start of L15]
 [] moderate any accommodations 1.5x = +85m 2x=+170m

Real Test system

[] Start: `echo "/root/unlock-cis90; rm /etc/nologin" | at [T-0]`
 [] End: `echo "./lock-cis90-1.0" | at [T+170] 9:50 am`
 [] End: `echo "./lock-cis90-1.5" | at [T+255] 11:15 am`
 [] End: `echo "./lock-cis90-2.0" | at [T+340] 12:40 pm`
 [] End: `echo "cp /etc/nologin.bak /etc/nologin " | at [splashdown + 170 minutes]`

`date -d "07:00 today + xxx minutes" +%H:%M'`

Canvas Real Test:

[] availability from = [T-0], due & available until = [splashdown]
 [] remove password on real test on Canvas [T-0]
 [] moderate any accommodations 1.5x = +85m 2x=+170m

A full-page background image showing a sunset over a beach. The sky is filled with vibrant orange, pink, and purple clouds. The sun is low on the horizon, casting a warm glow. To the right, a dark, silhouetted cliff rises from the beach. The foreground shows the wet sand of the beach reflecting the colors of the sky, with some dark rocks scattered about.

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

End Meeting

End Meeting