

CIS 90 Linux Lab Exercise

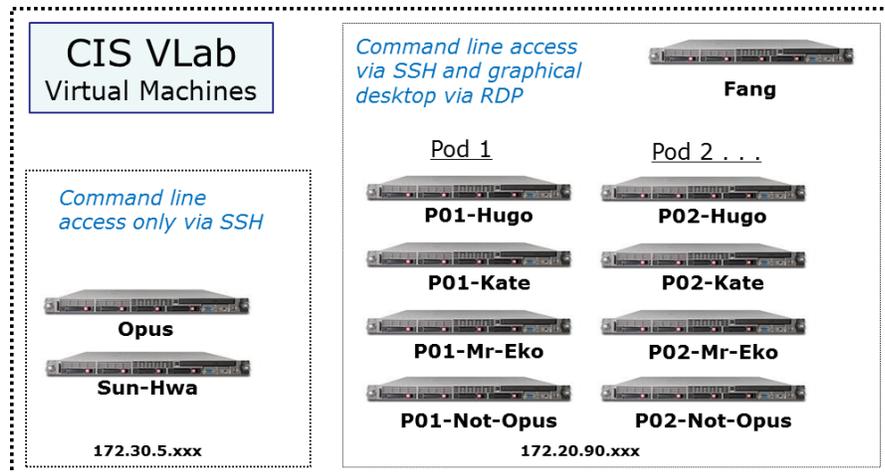
Lab 1: Accessing Linux Systems Fall 2012

Lab 1: Accessing Linux Systems

This lab takes a look at UNIX/Linux through an online experience. In this lab, you will:

- Become familiar with the various CIS 90 Linux systems.
- Practice logging in.
- Perform simple tasks using both commands and graphical icons.
- Use virtual and graphical terminals.
- Use the forum to collaborate with your classmates.
- Exit login sessions.

You will get a chance to use several of the systems below:



This lab is based on the skills covered in Lesson 1. To effectively prepare for doing this lab you may wish to review the Lesson 1 slides and supplemental content on the website Calendar:

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

Step 1 – SSH command line access to Opus



Review if needed how to access Opus using SSH at:

<http://simms-teach.com/howtos/134-opus-access.pdf>

Log into Opus at **oslab.cabrillo.edu (port 2220)** from home or **opus (port 22)** from the CIS Lab. Use your own unique username and password. Notice how the system shell prompts you for entering commands. The shell prompt is a string of text that ends with a \$ symbol. Immediately following the prompt is where you will type a command.

Now type each command below and see what happens:

Command	Purpose
date	Show current time and date
cal	
cal 2012	
cal 3 2012	Make a calendar
cal <birth month> <birth year>	
who	Show all the users currently logged into the computer
who -uH	
who am i	Show the username you used to login as
whoami	
id	Show the ID and group information for a username
id rsimms	
clear	Clear the screen
ps	Show the processes being run by the user. You should see the name of the shell and the ps command.
tty	Show which terminal device is being used to connect to the computer
hostname	Show, respectively, the name of the computer, the name of the kernel, and the name of the distribution.
uname	
cat /etc/issue	
history	Show commands used previously
exit	End the login session

Step 2 – SSH command line access to Hugo in Pod1 via Opus

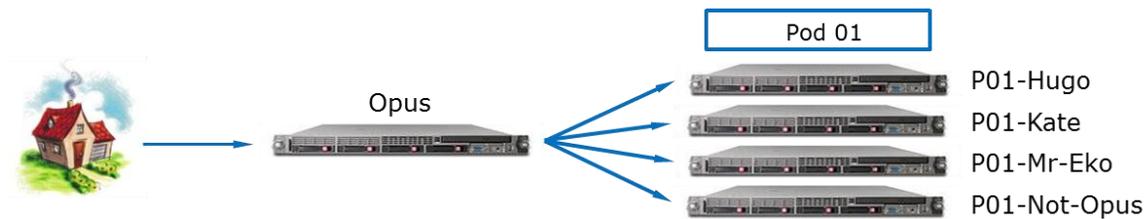


Login to Opus again. From Opus, login as the generic user *cis90* to the Hugo system in Pod 1 with the following command:

```
ssh cis90@p01-hugo
```

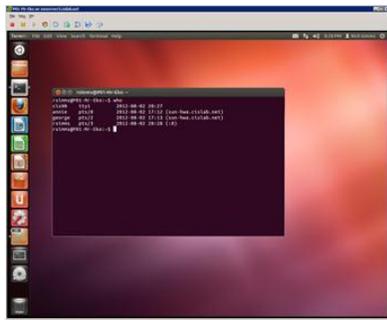
Explore Hugo using the commands you have learned so far. Note both the similarities and differences. When finished use the **exit** command to return back into Opus.

Step 3 – Explore all Pod 1 systems using the command line

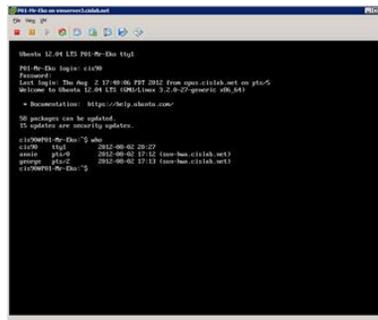


Use the same procedure as before to explore the other systems in Pod 01. Pod 01 has four systems named P01-Hugo, P01-Kate, P01-Mr-Eko and P01-Not-Opus. Visit each system one at a time and try some of the new commands you have learned. Use the **exit** command to return back to Opus.

Step 4 – Explore one of the Mr-Eko systems using the graphical user interface



Mr-Eko graphical desktop



Mr-Eko virtual (TTY) terminal

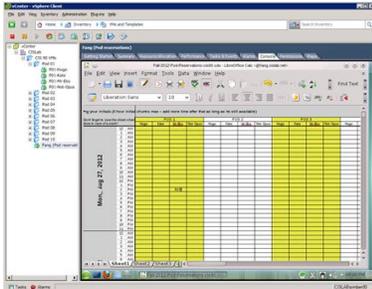
There are ten pods of systems in VLab that can be used by CIS 90 students. Each pod has a Hugo, Kate, Mr-Eko and Not-Opus system. To keep things organized the hostname of each system starts with Pxx- where xx is the pod number. For example, P03-Kate is the Kate system in Pod 03.

Step 4.1 - Login to VLab

Review if needed how to access VLab at:

<http://simms-teach.com/howtos/305-cis-90-vlab-access.pdf>

Step 4.2 – Schedule one of the Mr-Eko computers using the spreadsheet on Fang



Find a free Mr-Eko and reserve it using the Fang VM (Virtual Machine). Reservations are done by putting your initials into the spreadsheet under the VM you want across from the date and time you want to use it. A one hour reservation is more than enough time.

Step 4.3 – Graphical desktops, graphical terminals, and TTY console/virtual terminals

1. The multiuser capabilities of UNIX/Linux are usually exercised by users logging in from different terminals e.g. terminals in various locations around an office building. An added feature of being at the console of a UNIX/Linux system is that you can run multiple login sessions from a single console. Let's do that!
2. From the keyboard, while holding down: **Ctrl -  - Alt**, tap **space**, then tap **F1**



3. This brings up a command-line interface allowing you to login in a non-graphical format. We often call this a terminal interface because it resembles the interface of a standard serial terminal. Sometimes you'll hear the term virtual, TTY, or console terminals used to describe these logon screens because they look and behave as if they were real terminals.
4. Log in using this virtual terminal using the username *cis90* and password as you did above. What is the command prompt on Mr-Eko?
5. Use the **who** command to see if any other users are on this system. You should see both of your login sessions.
6. In general, you can log in to a local UNIX machine from as many virtual terminals as the operating system supports. How many does Linux support? (Hint: Holding down the **Ctrl -  - Alt** keys, tap space, then tap the other function keys (2-9))
7. Log in to virtual terminals *tty2* and *tty5* and verify using the **who** and **who am i** commands.
8. Using the commands you learned above, answer the following questions:
 - Do you have the same uid (user id) on each of the virtual terminal sessions?

- Is your command history the same for all login sessions?
 - How can you distinguish between the different login sessions?
 - If you log off one session, do you get logged off all the sessions?
9. Before graphical user interfaces came out on UNIX, this was the way that users were able to simulate multiple windows. UNIX had this concept of *windows* before Microsoft did, the UNIX community called them *screens*. Let's go back to our graphical session. Do you know how? Hint, while holding down: **Ctrl -  - Alt**, tap **space**, then tap **F7**
 10. A graphical user interface (GUI) is often thought as being easier to use than a command-line interface, because you don't have to memorize commands, and you don't have to type so often. Instead, you use the mouse to look around for meaningful icons and menus, and just point, click and double-click. See if you can accomplish the tasks we did from the command-line by making menu selections from the GUI interface.
 11. Using the desktop GUI, can you:
 - Find the current date?
 - Find a calendar of the current month?
 - Find out who else is on the system?
 - Log off?
 12. Sometimes it's just easier to use a terminal when you know what you want to do. A graphical session allows you to run a graphical terminal session in a separate window. On the left dash panel, select the Terminal application.
 13. A terminal window should now appear so that you can run any UNIX command.
 14. Using **who** and **who am i** commands, what terminal device are you using now?

Step 4.4 – Mr-Eko

1. Exit your graphical terminal on the graphical desktop, log out of each virtual terminal, then log off on the graphical desktop. By logging off everything on your system will be as you found it for the next student.

Step 5 – Submit this lab

Answer the following questions and email them to risimms@cabrillo.edu by the deadline.

- 1) What is the shell prompt string on Opus? Explain briefly how you determined your answer.
- 2) What is the shell prompt string on P3-Kate? Explain briefly how you determined your answer.
- 3) Using the `cal` command on any system, what day of the week were you born on? Explain briefly how you determined your answer.
- 4) Are your user ID (UID) numbers the same on both Opus and on P1-Hugo? Explain briefly how you determined your answer.
- 5) What shell program is being used on Opus? Explain briefly how you determined your answer.
- 6) On Mr-Eko, is the command history always the same between different virtual TTY terminals? Explain briefly how you determined your answer.
- 7) On Mr-Eko, is the user ID (UID) number the same between different virtual terminals? Explain briefly how you determined your answer.
- 8) On Mr-Eko, is the terminal device the same between different virtual terminals? Explain briefly how you determined your answer.
- 9) On Mr-Eko, does logging off one virtual terminal log you off the others? Explain briefly how you determined your answer.

- 10) What are the names of the kernels on Kate and Hugo? Explain briefly how you determined your answer.
- 11) What is the name and version of the Linux distributions running on Kate and Hugo? Explain briefly how you determined your answer.
- 12) What is the hostname of the Not-Opus system in Pod 1? Explain briefly how you determined your answer.
- 13) What other users besides cis90 are logged into P1-Kate? Explain briefly how you determined your answer.
- 14) On Opus, what terminal device are you using? Explain briefly how you determined your answer.
- 15) Can you use the ssh command to log into p01-hugo from p01-mr-eko? Explain briefly how you determined your answer.

Extra credit: There is a system in Pod 1 that Annie and George are logged into. Annie and George logged into that system from another mystery system that we haven't used for this lab. Can you identify the mystery system they logged in from? If so, then log into that system yourself. Once there, use your new skills to answer the following extra credit questions:

- 16) What is the hostname of the mystery system? Explain briefly how you determined your answer.
- 17) What is the name of the distribution of Linux running of the system Annie and George logged in from? Explain briefly how you determined your answer.
- 18) What is your user ID (UID) number on the mystery system? Explain briefly how you determined your answer.

Congratulations! You've completed your first lab.

Step 6 – Forum - <http://oslab.cabrillo.edu/forum/viewforum.php?f=51>

If you haven't already, register and make your first post on the class forum. Post something that you have learned or observed while doing Lab 1. Please include any problems you ran and how you got around them that will help another classmate do the lab. Feel free to post any questions you have as well.

Grading Rubric

30 points total. Two points for each correct answer to the 15 questions. The three extra credit questions are optional and worth one point each. Points for forum posts are tallied separately but each post is worth 4 points up to a maximum of 20 points per quarter of the term.

Remember, **late work is not accepted**. If you can't finish the lab before the deadline then submit what you have completed before the deadline for partial credit.