

CIS 90 UNIX/Linux Lab Exercise

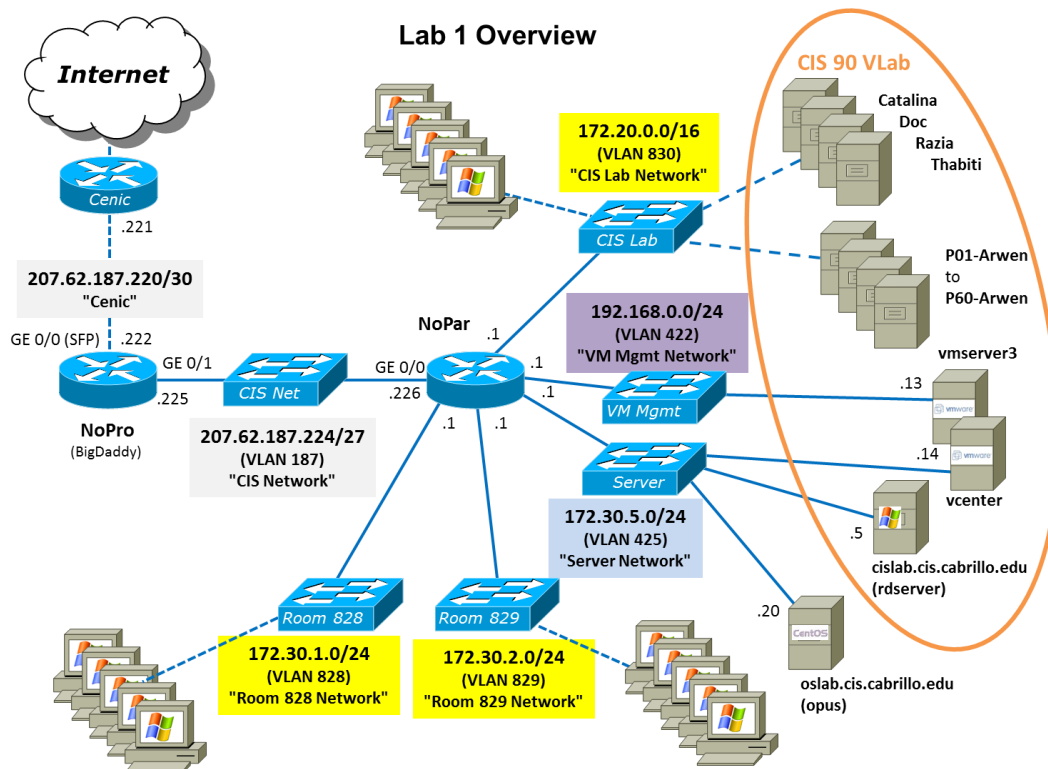
Lab 1: Accessing Linux Systems
Fall 2013

Lab 1: Getting Started

This is the first lab assignment for CIS 90. Get ready to jump in and get some hands-on experience logging in and using a number of UNIX/Linux systems.

Objectives

- Learn how to log into a server.
- Learn how to recognize the shell prompt string.
- Compare a graphical user interface (GUI) with a command line interface (CLI).
- Use the Lesson 1 commands and understand the information they show.
- Use an electronic forum to post information and ask questions.
- Use SSH to access systems.
- Use Remote Desktop Protocol (RDP) to access the CIS Virtual Lab (VLab).
- Understand and create a simple "text" file.



Preparation

1. You will need to know your login credentials for each system used. Your credentials were provided in an email from your instructor. You should also review Lesson 1 material on how to log into systems using SSH and how to get into VLab using RDP.
2. This assignment can be completed using any of the workstations in the CIS Lab (Building 800). You can also complete it remotely from off campus if you can figure out how to do the following on your own computer:
 - Windows users: download and install Putty (<http://goo.gl/kYWU50>)
 - Mac users: download and install CoRD (<http://goo.gl/as9lcq>)
3. Download the lab01.txt template file (<http://simms-teach.com/docs/cis90/lab01.txt>). This TEXT file has the questions you will need to answer to get credit for this lab. Edit this file with a text editor like TextWrangler (Mac) or notepad (Windows). Record your answers to each of the lab questions as you complete the tasks below. Please do NOT use a word processor like Microsoft Word, OpenOffice or LibreOffice.
4. Read the Grading Rubric at the end of this document if you want to see how this lab will be graded.

Lesson 1 commands

Do a quick review of the following commands.

Command	Purpose
date	Show current time and date
cal cal 2013 cal 5 2013 cal <birth-month> <birth-year>	Make a calendar
who who -Hu	Show all the users currently logged into the system and where they logged in from
who am i whoami	Show the username you used to login as
id id rsimms	Show the ID and group information for a user account. This includes the uid and gid numbers.
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 the name of the computer
uname	Show the name of the kernel
cat /etc/issue	Show the name of the Linux distribution
history	Show commands used previously
exit	End the login session

Task 1 - OSLab

SSH into OSLab (also known as Opus) using **Putty** (Windows) or the **ssh** command (Mac). You will need to your unique login credentials. Practice using the Lesson 1 commands over and over till you are comfortable with them. Create a second login session on Opus. Is the command history the same on both while logged in? Does exiting one session exit you from the other?

Task 2 - The CIS Forum

1. Browse to the CIS Forum at <http://oslab.cishawks.net/forum/> and register. Your username must be your first and last name separated by a space. This username must match a name on the class roster or the account will not get activated. You may have to come back to this task a little later since all registrations have to be manually activated by the instructor.
2. Once you have registered and logged in, go to the "CIS 90 - Fall 2013" forum where you will find a welcome message from me and you will see the one rule we have for the forum.
3. Click the little "Subscribe forum" link at the bottom left of the page so you get notifications.
4. Now make your first post. Click the NEWTOPIC button and post a question or comment on the Lesson 1 commands. In your post please identify the Lesson 1 command you think would be the most confusing to users with no Linux experience and why that would be.

Task 3 - Catalina

From Opus, ssh into Catalina as the user cis90. Run through the Lesson 1 commands again on Catalina and take note of any differences. Notice how the **who** command can be used to show where users logged in from. Use the **exit** command to pop back to Opus.

Task 4 - Doc and Pancakes

1. From Opus, ssh into Doc and run through the Lesson 1 commands again. Notice the shell prompt. Don't **exit** yet.
2. When finished, see if you can ssh into Catalina from Doc. Notice the prompt.
3. If you are really brave, see if you can ssh now from Catalina back to Opus. Notice the prompt. Use the **who** command to show both your login sessions. Make sure you can tell which of those two login sessions is your current one and which was the original one.
4. Once you have accomplished that keep using the **exit** command to pop back down to your original Opus login session.

5. The **ssh** command can work like a stack of pancakes. Each time you log into another system it like adding another pancake to the top of the stack. You can do this forever and your stack of pancakes gets pretty tall. Each time you use the **exit** command you pop the top pancake off the stack. Experienced users will use the shell prompt as a clue to which system they are talking to.


Task 5 - VLab (The CIS Virtual Lab)

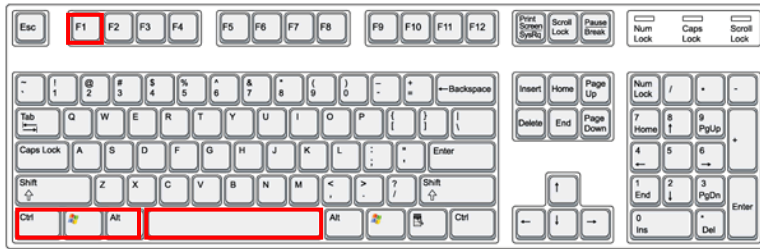
The CIS VLab gives you direct access to servers. This is the same as if you were in the same room with the actual server using the console keyboard and monitor. Up to now you've been using SSH and the CLI (command line interface) so far. Let's try a little GUI (Graphical User Interface) now using some VMware virtualization technology.

- 1) Download the appropriate RDP file at <http://oslab.cishawks.net/> to your desktop and open it. This will do a connection to the CIS VLab using the RDP protocol. Mac users will need to install CoRD first for this to work.
- 2) Log into the CIS VLab using your confidential credentials.
- 3) Refer to: <http://simms-teach.com/docs/cis90/Pod-Assignments-90-fa13.pdf> to identify your specific Arwen VM.
- 4) After you identify your VM, select it and login as "CIS 90 Student". If your system is not powered on you will need to power it up first.
- 5) 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.
- 6) 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?
- 7) 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 (immediately below top icon). Using this "graphical" terminal see if you can use your Lesson 1 commands.
- 8) You can ssh from this graphical terminal to any of the other systems. Can you ssh from your Arwen system to Opus?

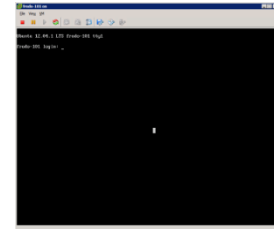
Task 6 - Virtual Terminal Consoles (used for last EXTRA CREDIT question)

This task lets you practice having multiple login sessions on the same system simultaneously. It demonstrates the multiuser aspects of the UNIX/Linux operating system.



1. Log into your assigned Arwen system for this task if needed.
2. 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!
3. From the keyboard, while holding down: **Ctrl** -  - **Alt**, tap **space**, then tap **F1**



Keyboard



Frodo virtual (TTY) terminal

4. 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.
5. Log in using this virtual terminal using the username *cis90* and same password as before. What is the command prompt on Arwen?
6. Use the **who** command to see if any other users are on this system. You should see both of your login sessions.
7. 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 (F1-F8)
8. Log in to virtual terminals *tty2* and *tty5* and verify using the **who** and **who am i** commands.
9. 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?
10. 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 **F8**

Submit your work

Edit the template file you downloaded at the being of the lab and record your answers to each question on it. Attach the completed text file in an email to risimms@cabrillo.edu before the deadline. **Be sure to cc: yourself so you can verify you attached the text file!** 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.

Grading Rubric (30 points)

- 3 points - for using the lab01.txt template.
- 3 points - for emailing the completed lab01.txt as an attached text file.
- 2 points - for each correct answer to questions Q1 through Q12
- 3 points - optional extra credit questions (1 point each).

Points for forum posts are tallied separately. Each post is worth four points up to a maximum of 20 points per quarter of the term.