NAME: [redacted]
PROJECT #01

Changing to /home/ckelly/it341/[redacted]/reports

Current working directory is: /home/ckelly/it341/[redacted]/reports

-rw-r--r-- 1 [redacted] it341-1G 11795 Feb 14 21:37 report_01.txt

Project 1

Wednesday, January 24th
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* [redacted] and I decided to work together because we were sitting next to each other. We decided to use it24 as our group machine for all projects and signed up for the itvm24-1a slot on the sign up sheet.

* We were left with little time after the lecture and sign up, so we chose to read through the instructions of project 1 completely before starting work on it24

> We finished reading the project 1 instructions, but class ended before we could start work on the project.

Monday, January 29th
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* I met with [redacted] before class started and we spoke about alternating the roles of note taking and using the computer to input commands. [redacted] agreed that we should alternate.

> For project 1 we decided that I would take notes and [redacted] would input commands on the computer

* Before starting to install the VM we checked to make sure that our Cat5 Ethernet cable was connected to the right hand side Ethernet port to ensure that it would be connected to the it.cs.umb.edu network instead of the cs.umb.edu network. The cable was already connected to the right hand side when we checked, so we moved on to the next step of the project.

* The next step required that we begin installing the VM. When we opened VMWare we were prompted with a window that said that VMWare had no key and needed to be activated.

> We used key 4J41J-ZK157-68P95-0R98H-0DCN0 to activate VMWare. This key was the key that was provided for VM activation above the whiteboard.

* Now that VMWare was properly activated we began the process of installing Ubuntu Server.

* We clicked the "Create a New Virtual Machine" button and selected the radio button for a typical installation.

* VMWare now prompted us to install an operating system. We chose to install the operating system later, per project 1 instructions. When prompted to select a guest OS we chose Linux Ubuntu 64-bit.

> We would be later installing a 64-bit version of Ubuntu Server on the machine, which is why we chose 64-bit.

* After selecting the guest OS we were prompted to give the virtual machine a name. We assigned our virtual machine the name itvm24-1a since we were on the it24 computer and were the first group in section 1 to sign up for the machine.

* When prompted for a location to save the VM we chose C:\IT341\section1a to match with our group section. We were then asked to choose a disk size and whether we wanted the VM stored as a single file or as split files. For disk size we left the value at the default 20GB and chose to use split files for the VM so that it would be easier to move.

* With all of our VM options set we then clicked "Finish" to complete setting up the VM.

  > Now that the VM was set up we could now start installing Ubuntu.

* To install Ubuntu we would be using an ISO provided at C:\OS ISOS\Linux\Ubuntu\Server

  > The ISO provided was ubuntu-16.04.03-server-amd64.iso. The instructions mentioned that either 16.04.01 or 16.04.03 were acceptable for this project.

* In order to have the VM recognize the ISO we needed to change the CD/DVD option under Devices to use an ISO instead of auto detect.

  > We chose "Use an ISO image" and navigated to C:\OS ISOS\Linux\Ubuntu\Server\ and selected ubuntu-16.04.03-server-amd64.iso

* We now powered on the virtual machine and began the process of installing Ubuntu server.

* The first window that was displayed asked us to select a language. We chose English per the project instructions. Since the class is in the United States, [redacted] and I noted that most other prompts requiring a language would also be English.

* The Ubuntu main menu was now displayed and we chose the "Install Ubuntu Server" option to begin the process of installing Ubuntu via the ISO.

* Again we were prompted for a language and selected English. The next window requested a country. We chose United States because the class is in the US.

* A keyboard configuration window was then presented to us. We chose not to auto detect the keyboard and selected English (US) for the origin of the keyboard. and again for the keyboard layout

  > English (US) was specific for these prompts because there were multiple other options for English that were non-US.

* After choosing the keyboard options were were prompted for a hostname. We chose itvm24-1a for the same reasons as the VM name listed earlier.

  > We were then asked for a name for a new user. We input sysadmin per instructions. We then again input sysadmin as the username for the account.

  > The password for the user was to be our group name according to the instructions, so we used itvm24-1a as the password.

* We were now prompted to choose whether or not to encrypt the home directory. Per instructions we chose not to encrypt the home directory [redacted] asked why it would matter and I told him that it might have to do with other groups or the professor being able to access our VM, but that I was unsure exactly why.

* Since we are in the same time zone as New York we selected yes when we were asked if our time zone was New York while configuring the clock options.

* A window asking about partitioned disks appeared after the clock configuration. We selected "Guided- use entire disk" to configure the partitions.

  > We chose the default disk partition and selected "yes" when asked if we wanted to write the changes to the disk.

* There was no proxy for the class, so we left the proxy information blank and pressed enter to continue.

* As explained by our professor there would only be one update for systems during the class, so we chose "No automatic updates" when prompted for system updates.

* We chose not to install any software packages other than standard system utilities per project instructions. We would be installing any software needed for the class later by command line so there was no need to install any during the Ubuntu

configuration.

* Per instructions we installed the GRUB loader. I was not sure about what it was and asked [redacted] if he knew. He told me that he did not know and that the GRUB loader was probably mentioned in our Ubuntu book.

* With the GRUB loader now installed we finished the installation and shut down the VM.

> In order to keep the VM from always launching via the ISO we had to change the CD/DVD options back to use physical drive and auto detect for the device.

* Now that the VM was completed and Ubuntu was installed we could launch the machine. We successfully logged in using the sysadmin account with the password itvm24-1a.

* Per instructions we used the ping command to test connectivity to www.yahoo.com:

```
ping -c 5 www.yahoo.com
```

Our ping results came back with 100% of packets received by www.yahoo.com.

* We now performed the sudo apt-get update and sudo apt-get upgrade commands to update our software catalog.

```
sudo apt-get update
[sudo] password for sys admin: itvm24-1a
sudo apt-get upgrade
```

When prompted to continue after using the sudo apt-get upgrade command we entered Y to continue. Both commands completed successfully.

* With our software catalog updated we now installed the ssh server software:

```
sudo apt-get install openssh-server
```

We entered Y at the prompt to continue the installation. The ssh server software installed successfully.

* At this point we were finished working with the server and logged out. Per the instructions we created a snapshot of the VM named "Project 1 - Completed" and detailed in the description that we had successfully installed Ubuntu server as well as ssh server software.

snapshot location?

Project 1 - Questions
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1. What does LTS stand for, and what does that mean? Please explain.

> LTS stands for "Long Term Support" and means that the Ubuntu release will be supported for 5 years. This is important because it means that there is a long (in IT terms) amount of time that the operating system will receive updates. Past that support time there will no longer be updates for the operating system provided by the distributor. Every six months there is a new version of Ubuntu released, whereas LTS versions are released every two years. Ensuring that an LTS version is installed on a company server means that it will be supported for 5 years and there will not be a need to update the server operating system constantly.

Sources: https://www.cs.umb.edu/~ckelly/teaching/common/lecture/linux/sys_admin/03-InstallingUbuntuServer.pdf slide 7

2. What is an LVM? (It stands for "logical volume manager".) Please explain what a logical volume is and what a logical volume manager does.

> A logical volume is way to partition disks such that multiple physical disks are treated as one disk. This provides greater flexibility when creating partitions for an installation. An LVM is the software that allows a system admin to create and manage logical volumes. Using an LVM a system admin can change the size of a partition, mirror partitions, strip partitions, and

even allocate additional disks to the logical volume. LVMs are useful because disk space can be managed in a more nuanced way.

Sources: https://www.centos.org/docs/5/html/Deployment_Guide-en-US/ch-lvm.html and https://www.centos.org/docs/5/html/Cluster_Logical_Volume_Manager/logical_volumes.html

3. Please explain what the sudo command is, how it is used, and why we need it.

> sudo stands for super user do or switch user do. It allows you to run a command as any user. Typically it is used to execute a command as the root, which allows a person to make any changes to the operating system. This includes changes to system configuration files and the installation of any software. The sudo command exists as a measure of security so that only users with sudo permissions can make changes to the system. Without sudo any user would be able make changes to the system, which could lead to catastrophic malfunctions if the user does not know what they are changing.

Sources: man sudo, https://www.computerhope.com/jargon/r/root.htm, https://www.computerhope.com/unix/sudo.htm, and https://www.lifewire.com/what-to-know-sudo-command-3576779

4. Please explain what apt-get is and why we use it.

> apt-get is a command line tool used to install new software on a machine. We use this command because it automatically installs the software and the dependencies of the software without user command. This allows us to easily install new software without having to manually configure and install all components that are needed for the software to run properly.

Source: man apt-get and https://www.computerhope.com/unix/apt-get.htm

5. Please explain what "snapshots" are and why they are useful to us.

> Snapshots are a saved state of a virtual machine at a certain point in time. All of the settings and files on the machine are saved at that point. Snapshots are useful because they allow users to have a restore point if something goes critically wrong and renders their machine unusable. In regards to this class in particular we can use them to restore the virtual machines back to a known working state if we make significant mistakes during projects. Snapshots are saved in the same folder that the VM is saved in. In our case the snapshots are save in C:\IT341\section1a.

Source: https://www.vmware.com/support/ws4/doc/preserve_snapshot_ws.html

Formatting **1.5** = Good, **1** = Acceptable, **0.5** = Needs Improvement, **0** = Unacceptable	1.5	/ 1.5
Writing Quality **1.5** = Good, **1** = Acceptable, **0.5** = Needs Improvement, **0** = Unacceptable	1.5	/ 1.5
Log Content **5** = Excellent, **4** = Good, **3** = Fair, **2** = Needs Improvement, **1** = Poor, **0** = Nothing/Minimal	4.9	/ 5.0
Questions Content **2** = Great, **1.5** = Good, **1** = Fair, **0.5** = Poor, **0** = Nothing/Minimal	2	/ 2.0
TOTAL	~~9.9~~ 10	/ 10.0

The **0.1** deduction was originally because I did not see the snapshot location indicated within the log portion. However, the student pointed out that they indicated it in the fifth discussion question, instead, so I let it count.