SYST-8111 – Deploy and Configure Ubuntu Server Image

Overview

In this exercise, you will deploy a Ubuntu image for the purpose of managing storage presented to our virtual environment. This task can be done both through Windows server as well as Linux; however, in the direction of keeping the learning diversified, this guide will illustrate how to present iSCSI (Internet Small Computer System Interface) LUNs (Logical Unit Number) to your virtualized environment. It will also guide you on configuring NFS LUNs to your virtualized environment.

Task 1: Deploy Ubuntu image from ISO

In this task you will deploy a Ubuntu image from an ISO file for the purpose of manipulating, and presenting storage to our virtualized environment.

1. In either Firefox, or Chrome, open a session to our Lab vSphere environment.
2. Once logged in, right click on your management folder, and select “New Virtual Machine”
3. Select the resource folder for this VM, your concord ID, and provide the name <concord\_id-STOR> as the name, select “Next”
4. Select your compute resource (concord\_id)
5. Select your storage folder (concord\_id), then select “Next”.
6. Select “Compatible with “ESXi 7.0 U2 and later” and select “Next”.
7. Guest OS Family: Linux, Guest OS Version: Ubuntu Linux (64-bit), select “Next”.
8. With this VM, we want:
   1. 2 CPU
   2. 4 GB RAM
   3. 100 GB of thin provisioned disk.
   4. First network interface to be associated with VLAN \_01
   5. Add a second network interface to be associated with VLAN \_02 (storage VLAN)
   6. CD/DVD: Datastore ISO file, point to “ubuntu-22.04-live-server-amd64.iso”, and make sure to check “Connected”.
9. Select “OK” to complete the configuration changes and return to the vSphere application
10. Review the summary page, and if all is confirmed, select “Finish”.
11. Power on the VM (connect to console before powering on the VM)

Task 2: Install our new Ubuntu Server

1. Right mouse click on our newly started VM, and select, open remote console.
2. Once connected, power on the VM
3. Once started, select “\* Try / Install Ubuntu”
4. Select the OS Language, English should already be highlight, as such, select “English” by hitting the “Enter” key on the word “English”.
5. Select “Done” with keyboard layout and variant being “English (US)”
6. Base for install should be “Ubuntu Server” not minimized version.
7. Use your cursor control keys to navigate to the network interfaces:
   1. Select Ens160, then “Edit IPv4” (Production Interface)
      1. Select “Manual” and type the IP information, select “Save” when completed. Remember, this information is coming from the excel spreadsheet. When editing the IPv4 information for this interface, this interface will have a defined gateway since it will be sitting on our “routable” VLAN
   2. Select Ens192, then “edit IPv4” (Storage Interface)
      1. Select “Manual” and type the IP information, select “Save” when completed. Remember that this interface is connected to a non-routable VLAN, as such, it will not have defined gateway. Merely the IP address and the netmask.
8. Select “Done”
9. There is no proxy, so select “Done”
10. Allow the default mirror address and select “Done”.
11. Select “Continue without updating”, we will update post installation.
12. Use the default “Entire Disk, and select “Done”.
13. Review the summary page and select “Done”
14. Provide name, server name and login credentials, and select “Done”. I suggest using “Storage Administrator” as the name, username “sadmin” and the password “Vclass123$”. Provide your server name on the server name field.
15. Check “Install OpenSSH server” using the space bar, and select “Done”.
16. By pass additional software by pressing the TAB key, and select “Done”. We will use package manager after the fact to install required software.
17. Installation will commence, when complete, disconnect CD/DVD media, and reboot. Once rebooted, you should be able to log in with the credentials you provided on step 14. This step could take a few minutes as the VM will attempt to install patches.

Task 3: Configure the storage on our new Ubuntu Server

1. First thing we do, is patch by using the following commands: **NOTE:** sudo is a local tool to grant root, or super user authority to a local user without logging in as that user. Any command issued with “sudo” is like using root’s shell to execute the command. Also understand that the super user in all UNIX based environments is “root”. Use the PuTTy client application to access your Ubuntu server. If you do not have that installed yet, you can find the MSI file in our Files tab in our team folder.
   1. sudo apt update
   2. sudo apt dist-upgrade
2. Once complete, initiate a reboot by typing sudo init 6
3. Let’s now install some supplemental software:
   1. sudo apt install net-tools
   2. sudo apt install multipath-tools
   3. sudo apt install targetcli-fb
   4. sudo apt install nfs-kernel-server
4. Next we need to add some storage and use LVM (volume manager) to manipulate and configure storage. Volume manager will allow us to resize a volume (shrink, grow) either by adding new disk to the volume, or removing disks from the volume. Keep in mind that the fundamental size of a volume does not dictate what is allocated or shared. Logical units are carved from a specific volume and are then shared either as raw devices or specific file systems shared over NFS.
   1. Return to you vSphere screen, right click on your “-STOR” VM and select edit settings.
   2. Here, we want to add two more hard drives at 100GB each.
   3. Select “OK’ and wait for the operation to be completed.
   4. Now that storage has been allocated, the operating system needs to be told to look for the newly created hard disks.
      1. Download the scan script from the MS Teams Folder onto your desktop, then upload it to your VM use PSFTP, or WinSCP to transfer the file to your VM.
      2. The scan script does the following:
      3. Once the script is copied to your VM, run this command chmod a+rx scan

for host in /sys/class/scsi\_host/\*; do echo "- - -" | sudo tee $host/scan; ls /dev/sd\* ; done

* + 1. Now lets execute the script. All this script is doing is an activation probe on attached devices. Type ./scan
    2. We can confirm the newly attached disks by typing
       1. sudo fdisk -l or
       2. sudo lvmdiskscan

1. Now that we have our storage, we initialize the new disks for LVM use, we do this by using the command pvcreate. For each new drive:
   1. sudo pvcreate /dev/sdb
   2. sudo pvcreate /dev/sdc
2. Now that the disks have been initialized for LVM, we need to create a volume group so that logical units can be created. A volume using LVM that can be shared for our infrastructure, to do this, we type sudo vgcreate esxi\_data\_vg /dev/sdb /dev/sdc
3. You can use the command vgdisplay to examine the newly created volume.
4. Final step, we are going to create a logical unit to be shared, sudo lvcreate -L 150g -n esxi\_lun\_01 esxi\_data\_vg

Task 4: Create an iSCSI target, and share it

1. Run python script as root using sudo “targetcli”, you will get a prompt that looks like “/>”
2. The following will be what you need to type into targetcli
   1. cd backstores/block
   2. create name=esxi\_lun\_01 dev=/dev/esxi\_data\_vg/esxi\_lun\_01
   3. cd ..
   4. cd ..
   5. cd iscsi
   6. create iqn.2024-01.vclass.local:4444
   7. cd iqn.2024-01.vclass.local:4444/tpg1/luns (here we create 1 target and share it)
   8. create /backstores/block/esxi\_lun\_01
   9. cd ..
   10. cd portals
   11. delete 0.0.0.0 3260
   12. create 192.168.1.101
   13. cd ..
   14. cd acls (here you are going to create iqn approved connections for three computers)
   15. create iqn.2024-01.vclass.local:esxi01:init1
   16. create iqn.2024-01.vclass.local:esxi02:init1
   17. exit
3. Run the following command to enable the new service
   1. systemctl rtslib-fb-targetctl
4. Run the following command verify the new service
   1. systemctl status rtslib-fb-targetctl
5. Check firewall status. I expect the firewall will not be running, but we need to ensure that it is not.
   1. sudo ufw status