



Lab 3.1.2a Create and Configure FreeNAS VM

Introduction

A network lab environment can be used to test upgrades/patches, evaluate new features, or as a training environment for hands-on experience.

Objectives

In this lab the student will:

- Install, configure and manage virtual networking and storage [WECM]

Equipment/Supplies Needed

- Host Computer with VMware Workstation Pro
- Windows Server and both ESXi VM's running as shown in the diagram below
- Reference: VMware ESXi Installation and Setup Guide [17 APR 2018]
<https://docs.vmware.com/en/VMware-vSphere/6.7/vsphere-esxi-67-installation-setup-guide.pdf>

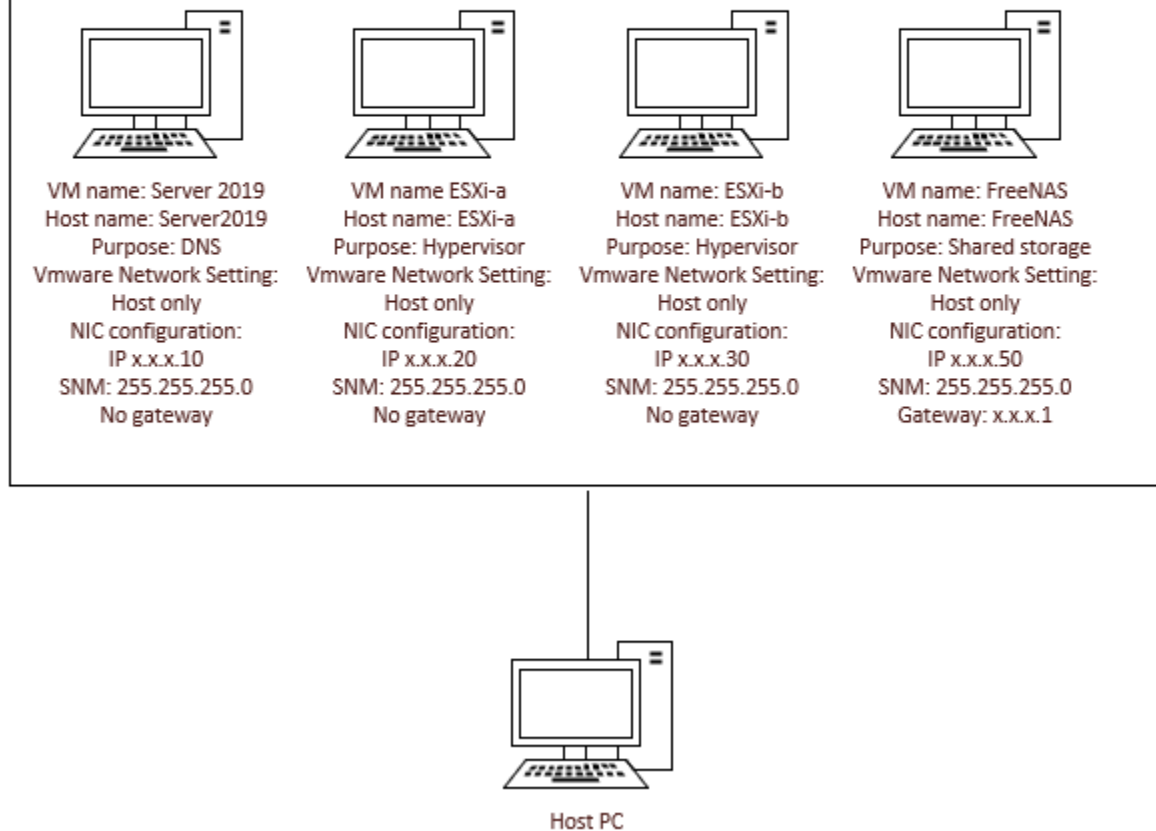
Assignment

Student will install and configure a FreeNAS VM for shared iSCSI storage.

Key activities include installing and configuring the following:

(1) FreeNAS VM

NOTE: X.X.X. in IP address represents the Host only network (VMnet1) on your host PC.



Procedure

1. Open VMware Workstation Pro on your host PC and install a new VM from an ISO. Use the FreeNAS ISO provided by your instructor and configure the VM as follows. It is not necessary to install VMware tools.
 - a. Three hard disks. Disk 1 is 10GB, Disks 2 and 3 are 20GB each.
 - b. Host only network.
 - c. RAM memory should be 8GB.
 - d. One CPU processor and one core.
 - e. Set the same password as used on your other VM's to avoid forgetting the password.
 - f. Select 'Boot via BIOS' during installation unless instructed otherwise by your instructor.
 - g. After installation, reboot FreeNAS VM and configure FreeNAS via its console. Follow the prompts to configure a static IP as shown in the diagram above. Configure network interfaces, default route, and DNS by following the prompts in the console. **SCREENSHOT THE FREENAS CONSOLE SHOWING THE WEB USER INTERFACE IP ADDRESS.**
 - h. Enter Host-only for the Ipv4 interface name.
 - i. Do not configure Ipv6.
 - j. Shutdown the FreeNAS VM to add the other two hard drives. Select default SCSI drives. **SCREENSHOT THIS STEP AFTER ADDING THE OTHER TWO HARD DRIVES.**
 - k. Add an A record in DNS for FreeNAS. **SCREENSHOT THIS STEP SHOWING THE DNS RECORDS ADDED.**

2. Power on FreeNAS and open a browser window to FreeNAS from your host PC using HTTPS. The username is root. We will now begin to configure iSCSI storage in FreeNAS.
 - a. In the left pane click on Storage, Pools.
 - b. Create a new pool named Volume1.
 - c. In the left pane under Available Disks put a check mark in the box to the left of the two 20GB hard drives you added to the VM. They should show as da1 and da2. Click the right facing arrow to move them to the DataVDevs group. (You're selecting the two hard drives to simulate RAID1). After creating the new pool you should see it in the right pane. **SCREENSHOT THE NEW POOL IN THE RIGHT PANE.**
 - d. Click on the 3 dots in the right pane to the right of the new pool to add a new zvol, which is a feature of the Zetabyte file system with the following configuration.
 - i. Zvol name iSCSI-zvol.
 - ii. Size is 12GB. (No more than 80% of zvol space should be allocated). Save the new zvol. **SCREENSHOT THE NEW ZVOL IN THE RIGHT PANE.**
 - e. Click on Services in the left pane and start the iSCSI service, and click to Start Automatically.
 - i. Click on the pencil to the far left of iSCSI in the right pane to configure iSCSI.
 - ii. Click on the Portals tab, then ADD to create a new portal.
 - iii. Description is iSCSI-Portal. Specify the IP Address of 0.0.0.0 to allow connection from any IP. In the real world you would specify the IP's that are allowed to connect. Click SAVE. **SCREENSHOT THE NEW PORTAL.**
 - iv. In the left pane click on Services, click on the pencil to the right of iSCSI in the right pane, then click the Initiators tab.
 - v. Click on ADD and select the box to the left of Allow All Initiators, then SAVE. NOTE: in the real world you would configure only Allowed Initiators.
 - vi. Select the Targets tab and the ADD button.
 - vii. Use iscsi-target1 as Target Name and Alias Name.
 - viii. Click on Portal Group ID and select iSCSI-Portal.
 - ix. Click on Initiator Group ID, Auth Method, and Authentication Group number and select NONE. **SCREENSHOT THE NEW TARGET.**
 - x. Click on the Extents tab to ADD a new resource to share with clients.
 - xi. Extent name is iscsi-extent.
 - xii. Click on Device to select Volume1/iSCSI-zvol.
 - xiii. Click on the Associated Targets tab to ADD a new Target.
 - xiv. Click on Target to select iscsitarget1 as the name.
 - xv. LUN ID should be 1.
 - xvi. Click on Extent to select iscsi-extent. **SCREENSHOT THE NEW EXTENT.**
3. Your iSCSI target is now configured and ready for use. Be sure to remember the base name of your iSCSI target. You can find it by selecting **Sharing > Block Shares (iSCSI)** in the left pane, then click on the **Target Global Configuration** tab in the right pane. The Base Name will look something like: iqn.2005-10.org.freenas.ctl.

4. Place all screenshots in a Word or PDF document and upload that document for grading. Submit the following items for grading as evidence of successful lab completion.

<u>Concerns</u> Working Towards Proficiency	<u>Criteria</u> Standards for This Competency	<u>Accomplished</u> Evidence of Mastering Competency
	Screenshot of step 1g (10 pt)	1 correct answer
	Screenshot of step 1j (10 pt)	1 correct answer
	Screenshot of step 1k (05 pt)	1 correct answer
	Screenshot of step 2c (15 pt)	1 correct answer
	Screenshot of step 2d (15 pt)	1 correct answer
	Screenshot of step 2e, iii (15 pt)	1 correct answer
	Screenshot of step 2e, ix (15 pt)	1 correct answer
	Screenshot of step 2e, xvi (15 pt)	1 correct answer