

**Computer Science 328 -01**

## **Lab Assignment 4**

# **Due Date: Sunday, February 18, 2024 (before midnight)**

## **Objectives:**

1. **Learning File Backup**
2. **Learning Network File System (NFS)**
3. **Learning LAMP server setup**
4. **Learning Cloud File Storage Systems: Owncloud, Nextcloud**

**Task 1: File Backup**

Please refer to the examples from the site below on how to use rsnyc command to do file/directory backup locally and remotely:  
<https://www.tecmint.com/rsync-local-remote-file-synchronization-commands/>

[Incremental backups with rsync command](https://digitalis.io/blog/linux/incremental-backups-with-rsync-and-hard-links/)

Run both Ubuntu VM1 and Kali VM => open a terminal in Ubuntu => create a couple non-empty text files or download something like a couple images into the **Downloads** folder=> use rsync command to backup the whole **Downloads** folder locally into **Documents/backups** folder (note: **backups** subfolder will be created automatically by the rsync command) => take screen shot of the terminal showing the successful backup operation.

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| Insert your screen shot here: |

= > Next use rsync command to backup **/Documents/backups/Downloads** folder from Ubuntu VM into **/Documents/backups** folder of the remote Kali VM => take screen shot to show the successful backup operation

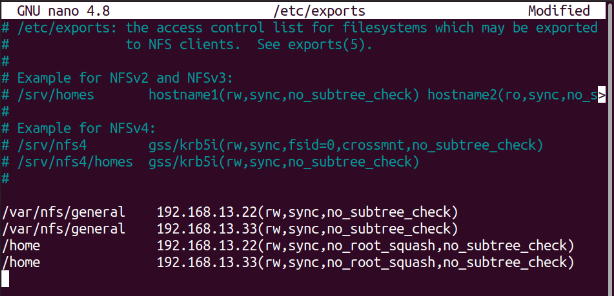
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| Insert your screen shot here: |

= > Next use rsync command to backup **/Documents/backups/Downloads** folder from remote Kali VM into **/tmp** folder of Ubuntu VM => take a screen shot to show the successful backup operation.

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| Insert your screen shot here: |

**Task 2: Learning Network File System (NFS)**

Please refer to “ ***How To Set Up an NFS Mount on Ubuntu.pdf***”:

* Use Ubuntu VM1 as host server, and both Ubuntu VM2 and Kali VM as client servers.
* Follow the instructions from the PDF file with the first client using Ubuntu VM2 (192.168.13.22).
* Next set up the second client (Kali VM) the same way by adding Kali VM’s ip address (192.168.13.33) as the second client into /etc/exports file: 

and by creating two new files with different names like “kaligeneral.test” under the shared /general directory and “kalihome.test” under the shared /home directory.

* At the end, go to host server (Ubuntu VM1), use a command like “ls -l /var/nfs/general” to list the contents of the exported directory. Take a screen shot of the terminal to show the two new files created by both clients.

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| Insert your screen shot here: |

- use the command “ ls -l /home/nfs” to list the contents of the other exported directory. Take a screen of the terminal.

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| Insert your screen shot here: |

**Task 3: LAMP server setup**

* Having a LAMP server setup is the prerequisite requirement for setting up Owncloud and Nextcloud servers in Task 4.
* Follow the steps from“Install LAMP server on Ubuntu 20.04.pdf” file to complete the LAMP server setup on both Ubuntu VM1 and Ubuntu VM2 respectively.
* Open a web browser in Kali VM to access the web server on Ubuntu VM1 by entering an URL: <http://ubuntu-vm1-ip/phpinfo.php>  
    
  Take a screen shot of your Kali VM’s web browser to show the result and insert the screenshot below:

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* Use the same web browser in Kali VM to access the web server on Ubuntu VM2 by entering an URL: <http://ubuntu-vm2-ip/phpinfo.php>

Take a screen shot of your Kali VM’s web browser again to show the result and insert the screenshot below:

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**Task 4: Cloud File Storage Systems: Owncloud, Nextcloud**

**-** Install and configure owncloud server software on Ubuntu VM1

* Follow the instructions from the link below:  
  [How to Install and Configure ownCloud on Ubuntu 20.04 | Linode](https://www.linode.com/docs/guides/install-and-configure-owncloud-on-ubuntu-20-04/)

Please note that LAMP stack should have already installed. So you should start from the step: “create your ownCloud database” with the following changes during the installation:  
\* Step 3 during the database creation: the single “grant”statement should be replaced by two statements like these:

>CREATE USER 'ownclouduser'@'localhost' IDENTIFIED BY 'letmein';

>GRANT ALL ON ownclouddb.\* TO ‘'ownclouduser'@'localhost';

**\***The first line inside the ***owncloud.conf*** file has a typo:  
 <VirtualHost \\*:80> should read <VirtualHost \*:80> instead without the \ character.

* When you finish the installation and configuration of owncloud server, using the host name (owncloud.cosc328.edu) to access your owncloud service with a browser. Take a screen shot of your web browser showing owncloud service, and insert your screen shot below:

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* Log into Kali VM. Open a browser and use an URL like <http://ubuntu-vm1-ip/owncloud/> to access the **owncloud** server from Ubuntu VM1. Take a screen shot of the browser showing owncloud service, and insert your screen shot below:

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* Next install and configure **nextcloud** server software on Ubuntu VM2.
* Follow the same steps for installing and configuring owncloud server software with the following changes:
* Download nextcloud using this url:

$ wget <https://download.nextcloud.com/server/releases/nextcloud-21.0.1.zip>

* Naming changes: owncloud => nextcloud

When you finish the installation and configuration of nextcloud server, you can do a quick testing of your nextcloud service on the same VM with a web browser by entering an URL like <http://localhost/nextcloud/> to access the nextcloud service. Make sure that it works!

* Next go into Kali VM. Open a browser and use an URL like <http://ubuntu-vm2-ip/nextcloud/>) to access the nextcloud server from Ubuntu VM2. Take a screen shot of the browser in Kali VM showing the nextcloud service, and insert your screen shot below:

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**Submitting your work:**

Please export this Word document file with all your answers and embedded screen shots as a PDF file. Submit the PDF file via Lab 4 assignment tab on our Moodle course page by *Sunday, February 18, 2024 (by midnight).*