

### Ex 3. Study and implementation of Infrastructure as a Service

1. **Aim:** To study and implementation of Infrastructure as a Service
2. **Objectives:** From this experiment, the student will be able to,
  - Understand concepts of virtualization and to use cloud as Infrastructure as a services.
  - Learn the technique and its complexity
  - Understand the importance of this technique from application point of view
3. **Outcomes:** The learner will be able,
  - To match the industry requirements in the domains of Database management, Programming and Networking with limited infrastructure.
  - To analyze the local and global impact of computing on individuals, organizations, and society.
  - To use current techniques, skills, and tools necessary for computing practice.
4. **Hardware / Software Required:** Ubuntu operating system, Virtual machine, WAMP/ZAMP server, Any tool or technology can be used for implementation of web application e.g., JAVA, PHP, etc.
5. **Theory:**
6. **Procedure:**

**Installation Steps:** (<https://docs.openstack.org/devstack/latest/guides/single-machine.html>)

Add user

```
useradd -s /bin/bash -d /opt/stack -m stack
```

```
apt-get install sudo -y
```

```
echo "stack ALL=(ALL) NOPASSWD: ALL" >> /etc/sudoers
```

**login** as stack user

Download DevStack

```
sudo apt-get install git -y || sudo yum install -y git
```

```
git clone https://git.openstack.org/openstack-dev/devstack
```

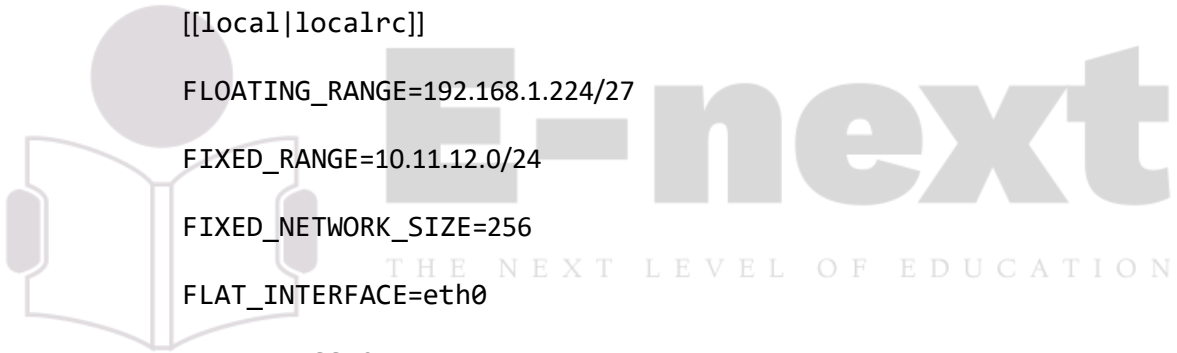
```
cd devstack
```

Run DevStack

Now to configure **stack.sh**. DevStack includes a sample in **devstack/samples/local.conf**. Create **local.conf** as shown below to do the following:

- Set **FLOATING\_RANGE** to a range not used on the local network, i.e. 192.168.1.224/27. This configures IP addresses ending in 225-254 to be used as floating IPs.
- Set **FIXED\_RANGE** and **FIXED\_NETWORK\_SIZE** to configure the internal address space used by the instances.
- Set **FLAT\_INTERFACE** to the Ethernet interface that connects the host to your local network. This is the interface that should be configured with the static IP address mentioned above.
- Set the administrative password. This password is used for the **admin** and **demo** accounts set up as OpenStack users.
- Set the MySQL administrative password. The default here is a random hex string which is inconvenient if you need to look at the database directly for anything.
- Set the RabbitMQ password.
- Set the service password. This is used by the OpenStack services (Nova, Glance, etc) to authenticate with Keystone.

**local.conf** should look something like this:



```
[[local|localrc]]

FLOATING_RANGE=192.168.1.224/27
FIXED_RANGE=10.11.12.0/24
FIXED_NETWORK_SIZE=256
FLAT_INTERFACE=eth0

ADMIN_PASSWORD=supersecret

DATABASE_PASSWORD=iheartdatabases

RABBIT_PASSWORD=flopsymopsy

SERVICE_PASSWORD=iheartksl
```

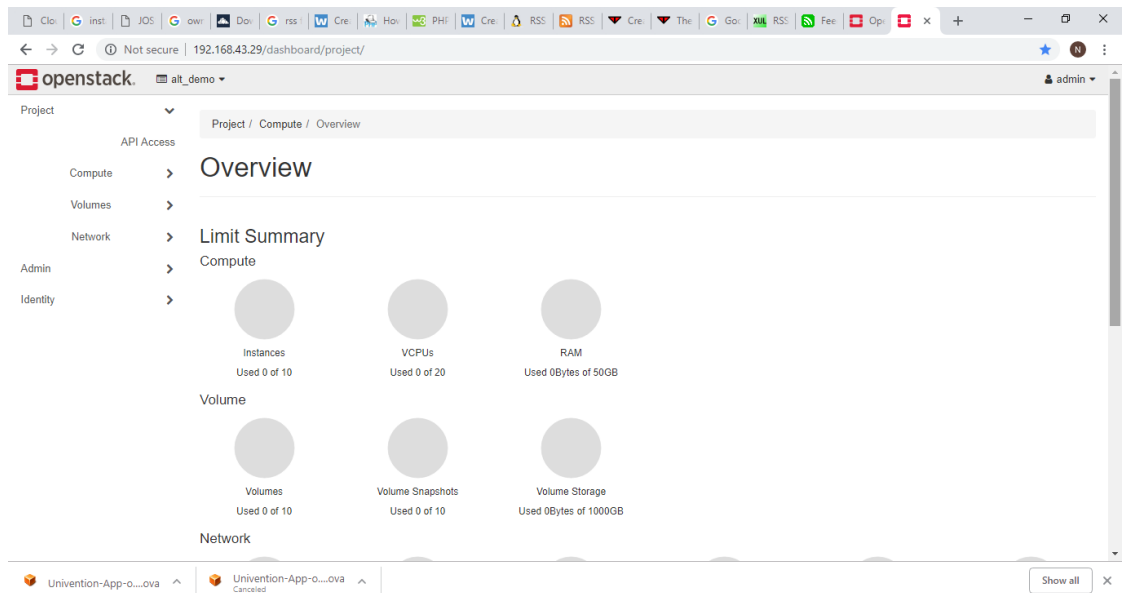
Run DevStack:

```
./stack.sh
```

A seemingly endless stream of activity ensues. When complete you will see a summary of **stack.sh**'s work, including the relevant URLs, accounts and passwords to poke at your shiny new OpenStack.

### Using OpenStack

At this point you should be able to access the dashboard from other computers on the local network. In this example that would be <http://192.168.43.29/> for the dashboard (aka Horizon). Launch VMs and if you give them floating IPs and security group access those VMs will be accessible from other machines on your network.



## 7. Conclusion:

We have installed Ubuntu/Xen as bare metal hypervisor and implemented it. It provides access to computing resources in a virtual environment. With the help of Infrastructure as a service we can build our own IT platform. We can install Windows Operating System on Ubuntu and vice versa.



**E-next**  
THE NEXT LEVEL OF EDUCATION

## Ex 4: Study and implementation of Storage as a Service

1. **Aim:** To study and implementation of Storage as a Service

2. **Objectives:** From this experiment, the student will be able to

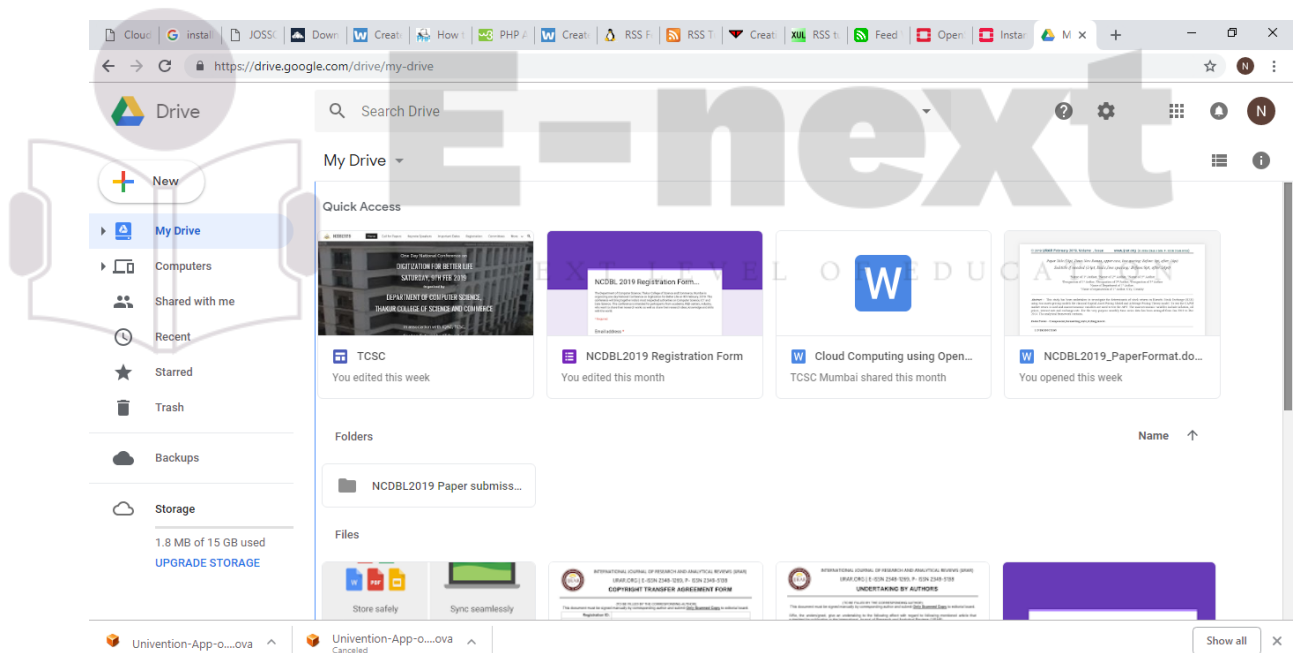
- To make the students understand use of cloud as Platform, Storage as a services.
- To learn the efficient tools to implement the technique

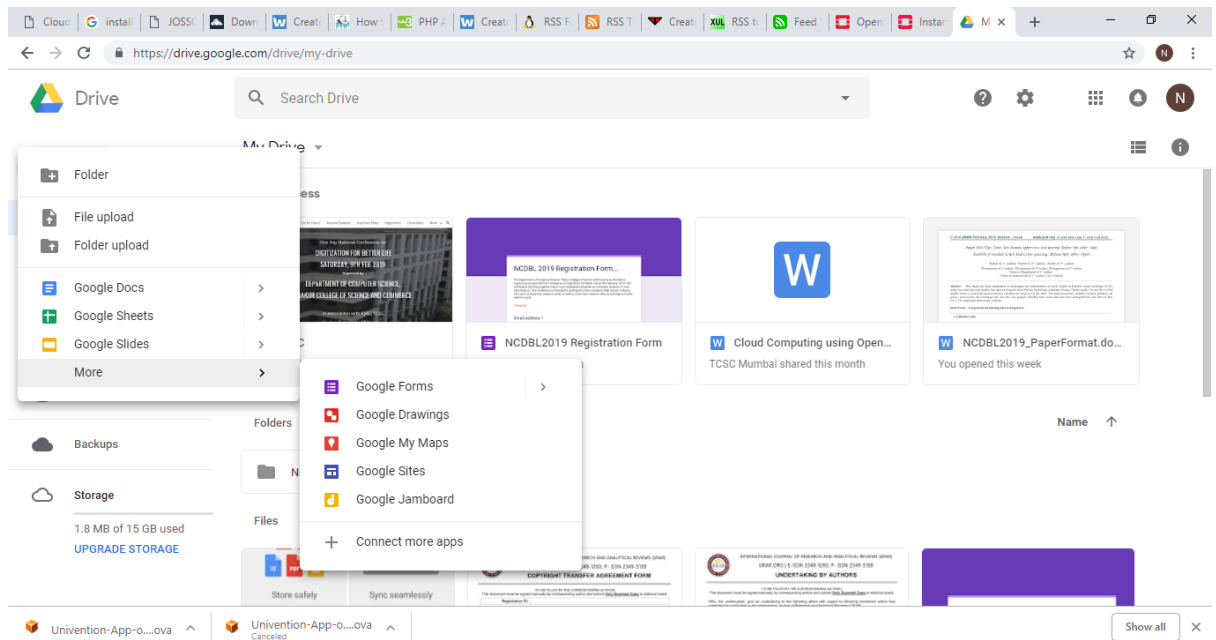
3. **Outcomes:** The learner will be able to

4. **Hardware / Software Required:**

5. **Theory:**

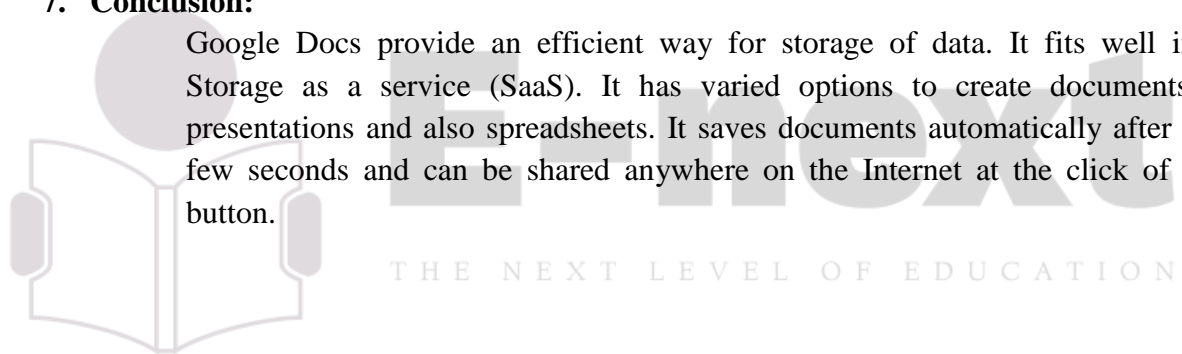
6. **Result:**





## 7. Conclusion:

Google Docs provide an efficient way for storage of data. It fits well in Storage as a service (SaaS). It has varied options to create documents, presentations and also spreadsheets. It saves documents automatically after a few seconds and can be shared anywhere on the Internet at the click of a button.



## **Ex 5: Study and implementation of identity management**

- 1. Aim:** To study and implementation of identity management
- 2. Objectives:** From this experiment, the student will be able to,
  - Understand concepts of virtualization and to use cloud as Infrastructure as a services.
  - Learn the technique and its complexity
  - Understand the importance of this technique from application point of view
- 3. Outcomes:**
- 4. Hardware / Software Required:**
- 5. Theory:**

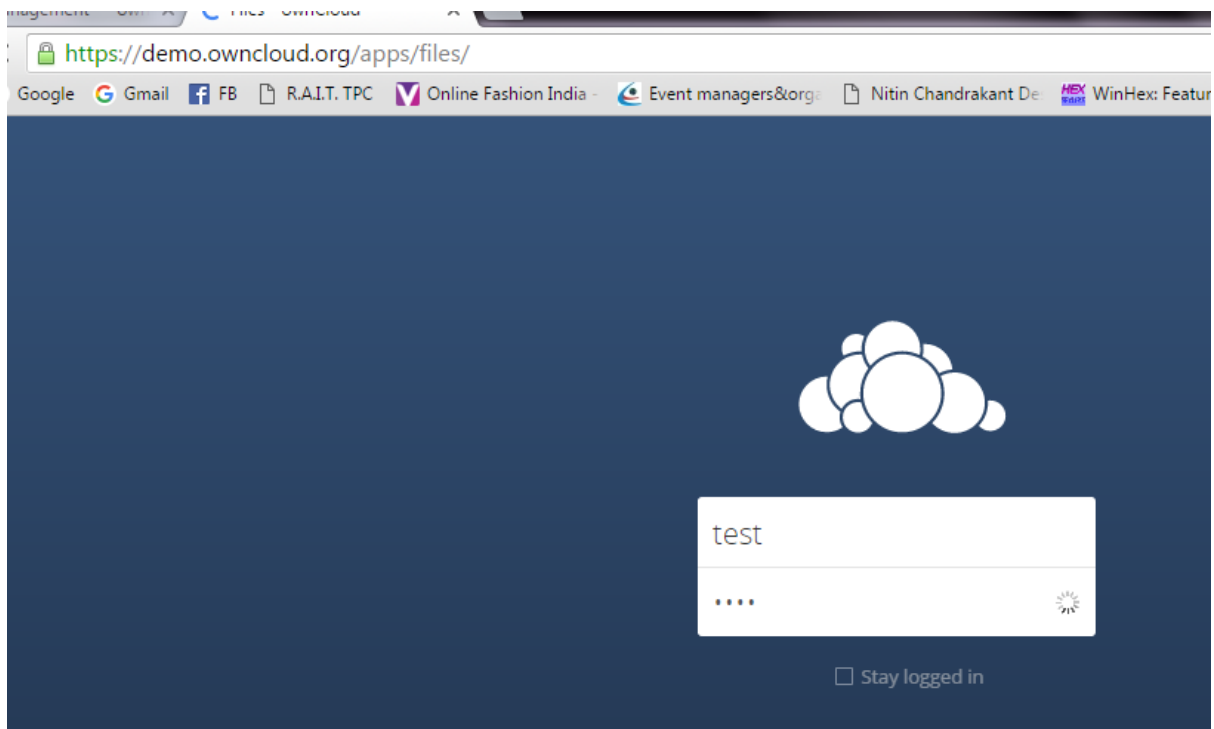
Identity Management

### **6. Procedure:**

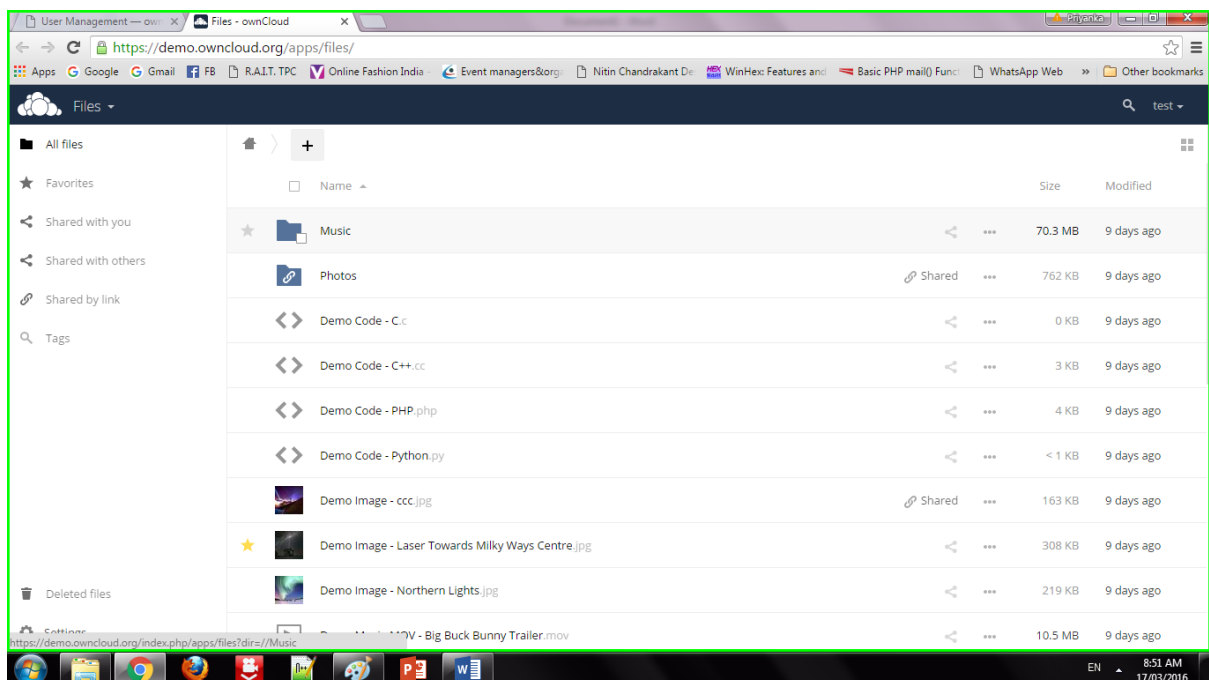
### **7. Result:**

#### SNAPSHOTS

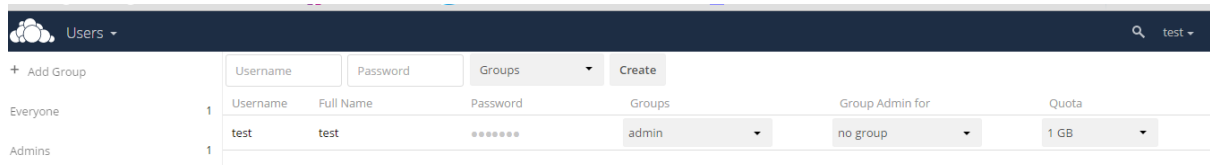
OwnCloud is open source file sync and share software for everyone from individuals operating the free ownCloud Server edition, to large enterprises and service providers operating the ownCloud Enterprise Subscription. ownCloud provides a safe, secure, and compliant file synchronization and sharing solution on servers that you control. You can share one or more files and folders on your computer, and synchronize them with your ownCloud server.



Step 2 : By default, the ownCloud Web interface opens to your Files page. You can add, remove, and share files, and make changes based on the access privileges set by you (if you are administering the server) or by your server administrator. You can access your ownCloud files with the ownCloud web interface and create, preview, edit, delete, share, and re-share files. Your ownCloud administrator has the option to disable these features, so if any of them are missing on your system ask your server administrator.

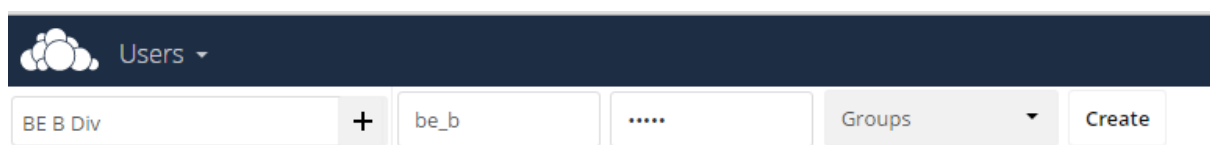


**Step 3: Apps Selection Menu:** Located in the upper left corner, click the arrow to open a dropdown menu to navigate to your various available apps. **Apps Information field:** Located in the left sidebar, this provides filters and tasks associated with your selected app. **Application View:** The main central field in the ownCloud user interface. This field displays the contents or user features of your selected app.



The screenshot shows the 'Users' management page in ownCloud. At the top, there's a header with the ownCloud logo and a search bar. Below the header, there's a '+ Add Group' button. The main content area displays a table of users. The table has columns for Username, Full Name, Password, Groups, Group Admin for, and Quota. There are two rows of data: one for 'test' with a full name of 'test', password of '\*\*\*\*\*', group of 'admin', and a quota of '1 GB'. Another row is partially visible below it.

Username	Full Name	Password	Groups	Group Admin for	Quota
test	test	*****	admin	no group	1 GB



This screenshot shows the 'Create' button and the input fields for adding a new user. The fields include 'BE B Div' (a dropdown menu), a '+' button, a text input field containing 'be\_b', a password field with a strength indicator (dots), a 'Groups' dropdown menu, and a 'Create' button.



This screenshot shows the 'set new password' dialog and the 'Full Name' field. The dialog has a 'set new password' button and a password input field. The 'Full Name' field contains the text 'be\_b' and has a pencil icon next to it, indicating it can be edited.

**Step 4:** Share the file or folder with a group or other users, and create public shares with hyperlinks. You can also see who you have shared with already, and revoke shares by clicking the trash can icon. If username auto-completion is enabled, when you start typing the user or group name ownCloud will automatically complete it for you. If your administrator has enabled email notifications, you can send an email notification of the new share from the sharing screen.



## Sharing

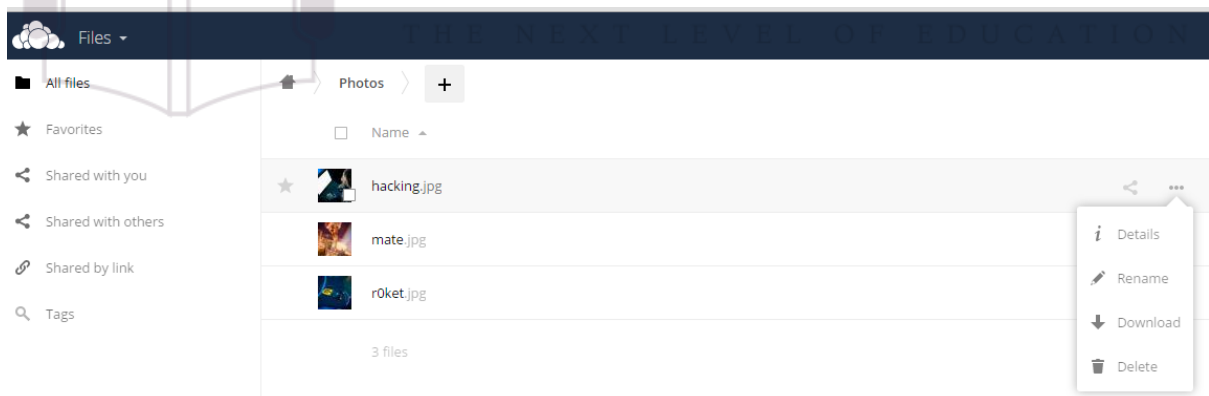
- ☒ Allow apps to use the Share API
- ☒ Allow users to share via link
  - ☒ Enforce password protection
  - ☒ Allow public uploads
  - ☒ Set default expiration date

Expire after  days ☒ Enforce expiration date

- ☒ Allow resharing
- ☒ Restrict users to only share with users in their groups
- ☒ Allow users to send mail notification for shared files
- ☒ Exclude groups from sharing

Groups ▼

These groups will still be able to receive shares, but not to initiate them.





hacking.jpg

★ 228 KB, 9 days ago

Collaborative tags

Activities Comments **Sharing** Versions

Share with users or groups ...

☒ Share link

<https://demo.owncloud.org/s/T0GPHlNNpC5vVp>

☐ Password protect

☐ Set expiration date

Activities Comments **Sharing**

Share with users or groups ...

admin (group) ☒ can share ☒ can edit

admin

Step 5: Five Share permissions are :

Can share; allows the users you share with to re-share.

Can edit; allows the users you share with to edit your shared files, and to collaborate using the Documents app.

Create; allows the users you share with to create new files and add them to the share.

Change; allows uploading a new version of a shared file and replacing it.

Delete; allows the users you share with to delete shared files.

+	Username	Password	Groups	Create		
2	Username	Full Name	Password	Groups	Group Admin for	Quota
1	my_circle	my_circle	*****	users, be_b div	be_b div	5 GB

## 8. Conclusion:

We have studied how to use ownCloud for ensuring identity management of the users. We can create multiple groups and provide privileges to view or modify data as per defined permissions. It also enables simplified look and feel to be used by anyone.



**E-next**  
THE NEXT LEVEL OF EDUCATION