

TIE-23546 Cloud Platforms  
Exercise 5: Docker Compose  
v1.5

## Exercise 5: Docker Compose

In the exercise four, we used Docker containers. Docker is the de-facto application container technology. In this exercise, we focus on Docker Compose. With Docker Compose you can define and run multi-container Docker applications. Configurations are made to a YAML file. The YAML file is used to define an application's services and includes various configuration options. In this exercise, we use Docker Compose to build a cloud storage service.

### ownCloud

ownCloud is an open source cloud storage service. The user can upload documents, images, and media files to a private ownCloud environment. The environment consist of ownCloud server and client. The server runs on Linux but client application can be installed on Windows, macOS, Linux, Android, and iOS. ownCloud server supports third-party plugins, such as webmail, two-factor authentication, antivirus tools, etc. We use Docker Compose to install OwnCloud. The following instructions are made for Microsoft Windows. If you are using MacOS, then you have to adapt instructions.

1. Take a snapshot [VMware Workstation\ Ubuntu Server 01 -> Snapshot\ Take Snapshot\ Snapshot 5]. [Oracle VirtualBox\ Ubuntu Server 01 -> Snapshot\ Take\ Snapshot 5].
2. Select NAT adapter [VMware Workstation\ Ubuntu Server 01 -> Settings\ Network adapter\ NAT]. [Oracle VirtualBox\ Ubuntu Server 01 -> Settings\ Network\ Adapter 1\ Attached to: Bridge].
3. Turn on the Ubuntu Server 01 and open the SSH connection.
4. Install Docker Compose. Read installation instructions from the [link](#).
5. Install and configure ownCloud compose. Read installation instructions from the [link](#). Create a new project directory and download docker-compose.yml file. Finally, start ownCloud compose.
6. With just a few commands, we have built our own Dropbox.
7. Check IP address of the virtual machine with ifconfig command (interface ens33).
8. Open your browser and enter the IP address in the address bar (http://ip-address:8080). You will be redirected to ownCloud page.
9. Add a new group. Create a new user and specify an email address. Enter x@x.com. Finally, enter the user's password. The password must contain one special character.

## ClamAV installation

ClamAV is an open source antivirus software. You can use it to scan viruses from local hard drives and network drives. In addition, you can use ClamAV to scan viruses from mail servers. This is a useful feature because it filters viruses from incoming and outgoing e-mails. In this exercise, we use ClamAV to filter viruses from ownCloud. When a user uploads a file to ownCloud, ClamAV scans the file for viruses. We use the Docker container to install ClamAV.

1. Install ClamAV container. Read installation instructions from the [link](#).
2. Check ClamAV port number with command “docker ps”.
3. Be patient. ClamAV will update the signature databases after startup. Check ClamAV status with the command “docker logs name\_of\_clamav\_container”.
4. Open ownCloud market page and install Anti-Virus.
5. Open ownCloud security page and configure antivirus. The mode is Daemon, the host is the IP address of the virtual machine, and the port is ClamAV port number.
6. Sign out and sign in with your new username and password.

## Testing of ClamAV

1. Download ClamAV virus file from the [link](#). Save the file to directory C:\Temp.
2. Upload the file to ownCloud. If ClamAV is running and configurations are correct, you will get error “You don’t have permission to upload or create files here”.
3. Open the terminal and type command “docker logs name\_of\_clamav\_container | tail”.
4. Take a screenshot of the console window and add the screenshot to appendix one.

## Finally

1. Delete the virus file under C:\Temp.
2. Shutdown ClamAV container (docker stop name\_of\_clamav\_container).
3. Shutdown ownCloud compose (cd ~/owncloud-docker-server/ && docker-compose down).
4. First, shutdown Ubuntu Server 01 first (sudo poweroff). Then, close VMware software.
5. Do not destroy the virtual machine. We will use it in future exercises.

6. Save the final report to your home directory in Word Doc and Adobe PDF format (Word / File / Save as / PDF).
7. Return the final report in PDF format.
8. Good work! It is time to go for lunch or coffee.

Appendix 1: A screenshot from ClamAV.