Setting up the Open Source GIS Stack

# Preparing the server:

## Security tools:

#### Unattended upgrades

This will automatically install only security fixes on a continual basis on your server.

sudo apt install unattended upgrades

#### ssh

Disable password authentication for SSH

sudo vim /etc/ssh/sshd\_config

Set this:

PasswordAuthentication no

Then do

sudo systemctl restart sshd.service

#### Crowdsec

<https://crowdsec.net/>

wget -qO - https://s3-eu-west-1.amazonaws.com/crowdsec.debian.pragmatic/crowdsec.asc |sudo apt-key add - && echo "deb https://s3-eu-west-1.amazonaws.com/crowdsec.debian.pragmatic/$(lsb\_release -cs) $(lsb\_release -cs) main" | sudo tee /etc/apt/sources.list.d/crowdsec.list > /dev/null;

sudo apt-get update

sudo apt-get install crowdsec

#### Fail2ban

sudo apt install fail2ban

<https://www.fail2ban.org/wiki/index.php/Main_Page>

#### Firewall

sudo ufw allow ssh

sudo ufw enable

sudo ufw status

Should show something like this:

Status: active

To Action From

-- ------ ----

22/tcp ALLOW Anywhere

22/tcp (v6) ALLOW Anywhere (v6)

We will open more ports as they are needed.

## Status monitoring

**bpytop** is a great console based dashboard for monitoring your server.

sudo snap install bpytop

## Docker

sudo apt install [docker.io](http://docker.io) docker-compose

### Git, rpl and Make

Needed for checking out our docker project and running the various make commands we provide.

sudo apt install git make rpl

# Deploying the server

Note for the unprivileged user throughout here, we use the user name ‘timlinux’ - you should substitute this with your own user.

## User Group

Add yourself to the user group of docker so you don't need to sudo docker commands.

sudo usermod -a -G docker timlinux

Then log out and in again to assume the upgraded permissions.

## Project Checkout

cd /home

sudo mkdir web

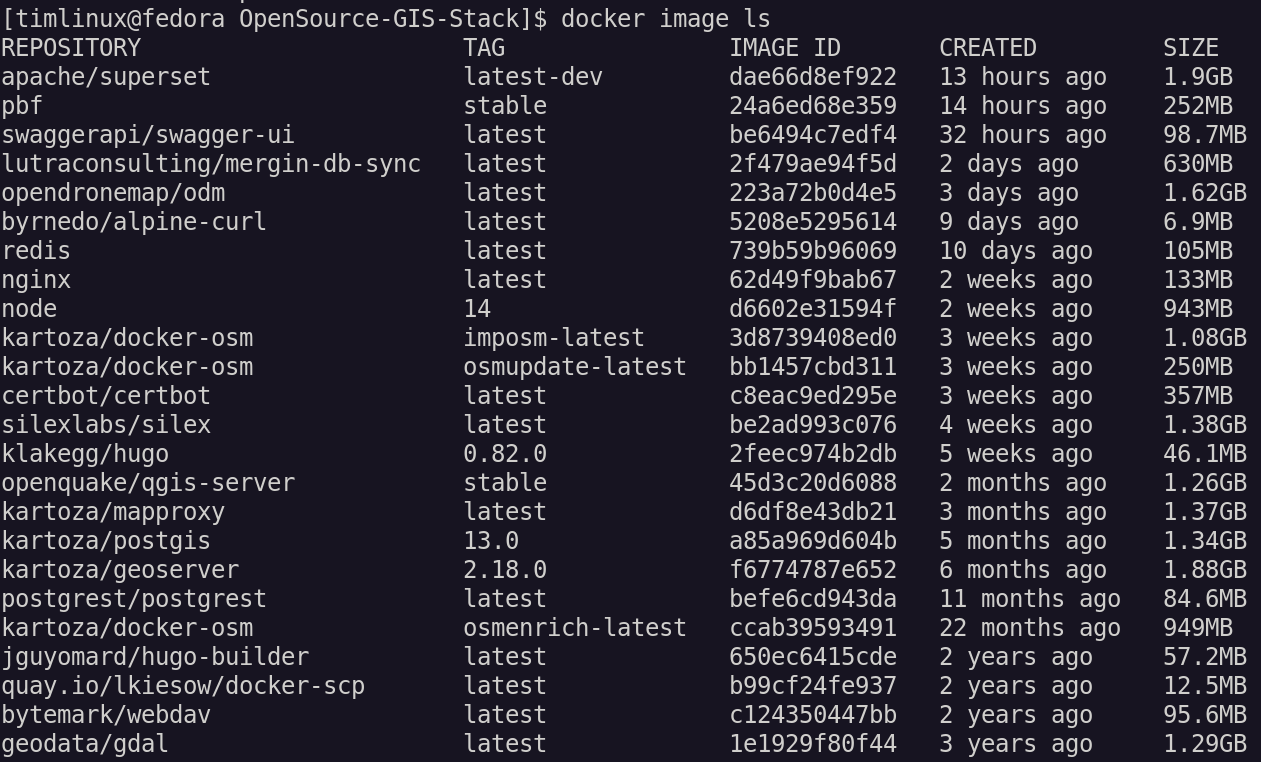
sudo chown [timlinux.timlinux](http://timlinux.timlinux) web

cd web

git clone https://github.com/kartoza/OpenSource-GIS-Stack

cd OpenSource-GIS-Stack

### Fetching Docker Images



### Configuration

Copy the .env boilerplate file and then adjust any settings in it as needed.

cp .env.example .env

Replace terms that should be unique for your installation:

rpl smallholding gis .env

rpl castelo.kartoza.com geoservices.govt.lc .env

rpl castelo.kartoza.com geoservices.govt.lc nginx\_conf/nginx.conf

### SCP File Drop

This is a container intended for users to upload files for publication on the server. It runs on port 2222 so we need to expose that through the firewall:

ufw allow 2222

sudo ufw allow 2222

You can add your public keys from the host e.g.

cat ~/.ssh/authorized\_keys > scp\_conf/gis\_projects

Or copy them in by other means. Each file you create in scp\_conf will be a user name when the scp container runs, with it’s own directory in the storage volume, unless an explicit storage volume has been pre-defined (see list of these below). Each file should contain a list of public keys. If you add a key at some point, or a new user file, you may need to restart the container:

docker-compose profile=scp restart

The following scp shares are made for the various purposes listed below. You need to follow the same pattern of creating a config file for each. These shares each have a dedicated volume associated with it which is also mounted into the associated server container.

|  |  |  |  |
| --- | --- | --- | --- |
| **User Key File in scp\_config** | **Named Volume** | **Mounted To** | **Notes** |
| geoserver\_data | scp\_geoserver\_data | scp, geoserver | Copy vector and raster datasets here for publishing in GeoServer. |
| sftp://geoserver\_data@<hostname>:2222/home/geoserver\_data | | | |
| qgis\_projects | scp\_qgis\_projects | scp, qgis-server | Copy QGIS projects and data here for publishing with QGIS Server. See notes on directory layout below. |
| sftp://qgis\_projects@<hostname>:2222/home/qgis\_projects | | | |
| qgis\_svgs | scp\_qgis\_svgs | scp, qgis-server | Embed SVGs in styles by preference. |
| sftp://qgis\_svgs@<hostname>:2222/home/qgis\_svgs | | | |
| qgis\_fonts | scp\_qgis\_fonts | scp, qgis-server | Copy fonts directly into the root folder. |
| sftp://qgis\_fonts@<hostname>:2222/home/qgis\_fonts | | | |
| hugo\_data | scp\_hugo\_data | scp, hugo\* | Upload markdown files for static site generation with Hugo |
| sftp://hugo\_data@<hostname>:2222/home/hugo\_data | | | |
| odm\_data | scp\_odm\_data | scp, odm \* | Upload imagery data for processing with ODM |
| sftp://odm\_data@<hostname>:2222/home/odm\_data | | | |
| general\_data | scp\_general\_data | scp | General sharing directory. Later we will publish this under nginx for public downloads. Don’t put any sensitive data in here. |
| sftp://general\_data@<hostname>:2222/home/general\_data | | | |

**Note:** Any user connecting to any of these shares will be able to see all other files from all other users. They will only have write access to the folder they are connecting to, for all other shares their access will be read only. If you want to further partition the access to files you can create multiple scp services, each with one of the mount points listed above. In so doing users would not be able to see the other mount points listed above.

Directory layout for the QGIS projects folder. When adding projects to the qgis\_projects folder, you need to follow this convention strictly for the projects to be recognised by QGIS Server:

qgis\_projects/<project\_name>/<project\_name>.qgs

For example:

qgis\_projects/terrain/terrain.qgs

There is a convenience Make target that will copy your .ssh/authorized\_keys file contents into each of the scp\_config user files listed in the table above.

make setup-scp

Starting the container:

docker-compose up -d scp

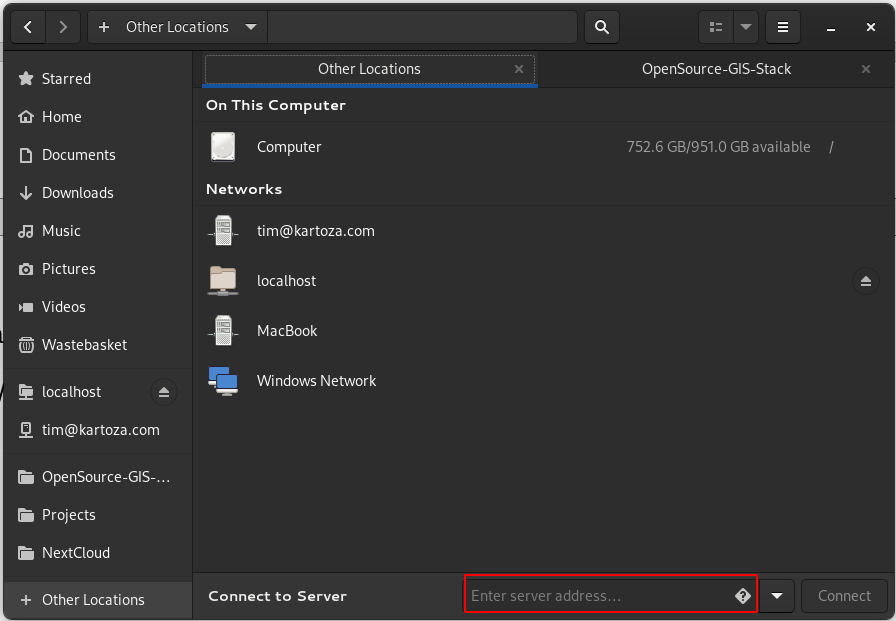
Example copying of data into the container:

scp -P 2222 sample-document.txt localhost:/data//gis\_projects/gis\_projects/gis\_projects

In Nautilus (file manager in Linux Gnome Desktop) you can test by connecting

sftp://<hostname>:2222/data/gis\_projects

into the red highlighted box below:



After that open a second window and you can drag and drop files too and from the folder.

Windows users can use the free WinSCP application to copy files to the server.