

DHIS2 academy setup guide

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Introduction

This guide assumes you have downloaded the configuration files from <https://github.com/simjes/academy>. When the text asks you to copy a configuration file, it will be located in the academy folder that you downloaded from Github. This guide shows a general setup of a DHIS2 academy system, but can be adjusted.

Credentials

If you already have a DHIS2 server from earlier than 21.05.2016 these credentials will be different. Check the folder named 'OldConfig'.

- | | |
|----------------------------------|--|
| • Ubuntu server (login/ssh) | dhisadmin:dhis |
| • Postgres root user
DB root) | N/A ('sudo -u postgres psql postgres' logs you in as |
| • DHIS2 DB user:db-name | dhis:dhis |
| • DHIS2-tools instance name | dhis |
| • Moodle admin user | admin:dhis |
| • Moodle postgres user:db:pw | moodleuser:moodle:dhis |
| • Router admin-user:pw | ubnt:ubnt |
| • UniFi controller user:pw | dhis:dhis |
| • WiFi SSID:login | dhis2:<no password> |

General information

- Server IP: 192.168.1.2.
 - Can ssh to it using 'ssh dhisadmin@192.168.1.2'.
- Domain: dhis.academy
- Can access the server through <http://192.168.1.2> or <http://www.dhis.academy>
- Router admin panel: <http://192.168.1.1>
- Web content location on server: /var/www/
- Clients (connected via WiFi or on the eth4 port on the router) will be on the 192.168.2.0/24 subnet.

Logs

- PostgreSQL: /var/log/postgresql-9.5-main.log
- DHIS2: /var/lib/dhis/<instance name>/logs/*
- Nginx: /var/log/nginx/*

Equipment

- Server: Brix pro, including power adapter.
- EdgeRouter PoE, including power adapter. (48V)
- 2x WiFi access points. One dual band and one 2.4GHz
- 3x Ethernet cables

All of the equipment is marked with numbers, only connect the corresponding numbers so that the equipment is not damaged.

<screenshot>

Server setup

1. Download Ubuntu Desktop LTS 14.04 or 16.04
 - Can use Ubuntu Server, but easier setup with Desktop version.
2. Install to a USB drive
 - Windows: <http://www.linuxliveusb.com/>
 - Mac OSX/Linux <https://goo.gl/fgoM5R>
3. Install Ubuntu on the server
 - Username: dhisadmin
 - Password: dhis
 - Hostname: academyserver
4. Install SSH, Postgresql and Nginx using the terminal.

```
sudo apt-get install ssh
sudo apt-get install postgresql
sudo apt-get install nginx
```

DHIS2 setup

This is a guide for setting up a general DHIS2 academy server. The server will run one DHIS2 instance and Moodle. If you want to add multiple instances or additional services Nginx needs to be configured to handle this.

Installing dhis2-tools:

Option 1

1. Install Java 8:

```
sudo add-apt-repository ppa:webupd8team/java
sudo apt-get update
sudo apt-get install oracle-java8-installer
```

2. Install dhis2-tools:

```
sudo add-apt-repository ppa:simjes91/dhis2-tools
sudo apt-get update
sudo apt-get install dhis2-tools
```

Option 2

1. Install git:

```
sudo apt-get install git
```

2. Clone the dhis2-tools repository from Github:

```
git clone https://github.com/dhis2/dhis2-tools.git
```

3. Run the install script in the dhis2-tools folder that was downloaded from Github.

```
sudo ./install.sh
```

Postgres configuration

1. Copy 'dhis-postgres.conf' into the main folder of postgresql. 'dhis-postgres.conf' is located at 'academy/StandardConfig/postgresql/dhis-postgres.conf'
 - a. Should look similar to this: /etc/postgresql/9.5/main/dhis-postgres.conf
2. Include the dhis-postgres configuration in 'postgresql.conf'
 - a. Open /etc/postgresql/9.5/main/postgresql.conf
 - b. Add the following line: include = 'dhis-postgres.conf'

Set up a DHIS2 instance

This method can be used to create multiple DHIS2 instances. In the examples we will only set up one instance called 'dhis'. If you create more than one instance remember to edit the Nginx configuration as well.

1. Create a DHIS2 admin. Username used here: dhisadmin

```
dhis2-create-admin dhisadmin
```

2. Create a new dhis2 instance. By default, port 8080 is used. You can change port by using '-p <portnumber>' parameter. This is also how you set up multiple instances. Instance name used here: dhis.

```
dhis2-instance-create dhis
```

3. Configure the system to use HTTP instead of HTTPS. Edit the 'server.xml' file located at /var/lib/dhis2/<instance name>/conf/server.xml
 - a. Change 'proxyport' to '80'
 - b. Change 'scheme' to 'http'
4. If you have a database you would like to import, go to the next chapter: 'Restore a database to a DHIS2 instance' before continuing to step 5. If you want an empty database just skip this step.
5. Deploy a WAR file to the DHIS2 instance, here called 'dhis'. This will get the latest stable version of DHIS2, see man pages for options.

```
dhis2-deploy-war dhis
```

6. Configure Nginx with the provided 'academy.conf' located at 'academy/StandardConfig/nginx/academy.conf'

```
sudo dhis2-nginx academy.conf
```

7. Create the web folder and copy the content of the 'academy/StandardConfig/html/' into it.

```
sudo mkdir -p /var/www
sudo chgrp www-data /var/www
sudo cp ./StandardConfig/html/* /var/www/
```

8. You should now be able to access your DHIS2 instance in the browser. Navigate to localhost and click the link to DHIS2. If you add additional instances remember to edit `'/var/www/index.html'` so that the user can navigate to it.

Restore a database to a DHIS2 instance

It is possible to use an existing database for the DHIS2 instance. Sample databases can be found at <https://www.dhis2.org/downloads>. This must be done before deploying a WAR.

```
wget https://www.dhis2.org/download/resources/2.23/dhis2-demo.zip
unzip dhis2-demo.zip
dhis2-restoredb dhis demo.sql
dhis2-startup dhis
```

Moodle setup

The original guide can be found at <https://goo.gl/eDV8kd>, but the following steps should be enough to get it working.

1. Install PHP:

```
sudo apt-get install php5-fpm
sudo apt-get install php5-pgsql
sudo apt-get install php5-curl
sudo apt-get install php5-gd
sudo apt-get install php5-xmlrpc
sudo apt-get install php5-intl

sudo service nginx restart
sudo service php5-fpm restart
```

2. Install Moodle using git in the `/var/www` directory, then change permissions:

```
git clone --depth=1 -b MOODLE_30_STABLE git://git.moodle.org/moodle.git

sudo chown -R root /var/www/moodle
sudo chmod -R 0755 /var/www/moodle
sudo find /var/www/moodle -type f -exec chmod 0644 {} \;
```

3. Create an empty database for Moodle:

```
sudo -u postgres psql postgres

postgres=# CREATE USER moodleuser WITH PASSWORD 'dhis';
postgres=# CREATE DATABASE moodle WITH OWNER moodleuser;
```

4. Create the Moodle data directory where users will upload content:

```
sudo mkdir -p /usr/local/moodledata
sudo chmod 0777 /usr/local/moodledata
```

5. Start installation by navigating to `'localhost/moodle'` in the browser or by using the terminal:

```
sudo chown www-data /var/www/moodle
cd /var/www/moodle/admin/cli
sudo sudo -u www-data /usr/bin/php install.php
sudo chown -R root /var/www/moodle
```

- When setting up Moodle, remember to use the domain name or the IP address of the server, instead of localhost. A sample configuration file can be found in 'academy/StandardConfig/moodle/'.

Change user upload limit

The max upload size in Moodle is by default very low, this needs to be changed in multiple places to increase it. This guide will set the max upload size to 250MB. Edit the following files:

- /etc/php5/fpm/php.ini
 - post_max_size = 250M
 - upload_max_filesize = 250M
- /etc/nginx/sites-available/academy.conf, this is set to 250MB in the academy default file. If you want to change it remember to reload the settings using 'sudo service nginx reload'
 - Client_max_body_size 250M;

To change it in Moodle, use the site administration in the browser. Login in using the administrator credentials for Moodle.

- Go to: Site admin → Security → Site policies and change the 'maximum uploaded file size'.
- Go to: Site admin → plugins → activity modules → assignments → submission plugins → file submissions and change the max upload size here.

DNS setup

DNS server will be running on the server, in this guide we used 'academyserver' as the hostname of the server. If you didn't use 'academyserver' as the hostname, replace it with your server's hostname. The configuration files can be copied from 'academy/StandardConfig/dns/'.

1. Add the domain name to '/etc/hosts'. The file should look like this:

```
127.0.0.1      localhost
192.168.1.2    academyserver.this.academy academyserver
```

2. Install bind9.

```
sudo apt-get install bind9
```

3. Edit '/etc/bind/named.conf.local'. Add forward and reverse zone:

```

zone "dhis.academy" {
    type master;
    file "/etc/bind/db.dhis.academy";
};

zone "1.168.192.in-addr.arpa" {
    type master;
    file "/etc/bind/db.192";
}

```

4. Create and fill in the files that the zones from step 3 points to.

a. Db.dhis.academy:

```

$TTL 604800
@      IN      SOA      academyserver.dhis.academy. dhisadmin.dhis.academy. (
                                4                ; Serial
                                604800           ; Refresh
                                86400            ; Retry
                                2419200          ; Expire
                                604800 )        ; Negative Cache TTL
;
dhis.academy.      IN      NS      academyserver.dhis.academy.
dhis.academy.      IN      A        192.168.1.2
academyserver      IN      A        192.168.1.2
www               IN      CNAME    dhis.academy.

```

b. Db.192:

```

$TTL 604800
@      IN      SOA      academyserver.dhis.academy. dhisadmin.dhis.academy. (
                                3                ; Serial
                                604800           ; Refresh
                                86400            ; Retry
                                2419200          ; Expire
                                604800 )        ; Negative Cache TTL
;
               IN      NS      academyserver.
;@          IN      NS      academyserver.
2          IN      PTR      academyserver.dhis.academy.

```

5. Comment out or delete 'include "/etc/bind/named.conf.default-zones";' from the '/etc/bind/named.conf' file.

For more information about the setup, see this guide:

<http://askubuntu.com/questions/330148/how-do-i-do-a-complete-bind9-dns-server-configuration-with-a-hostname>

Network

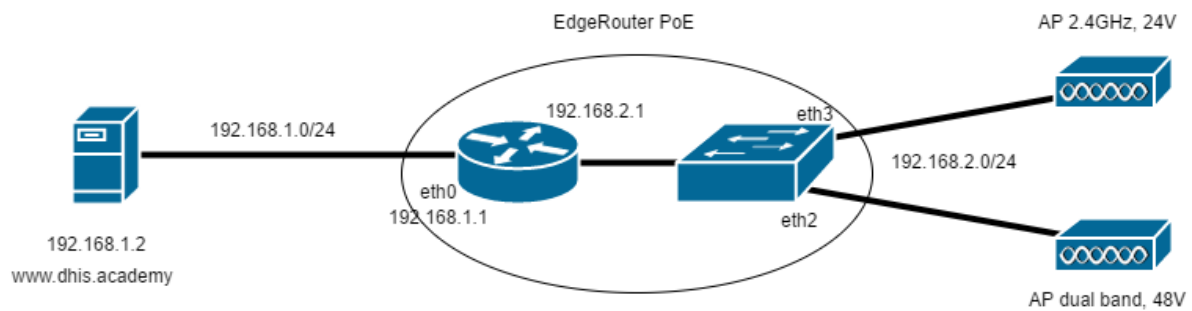


Figure 1: To clarify, the router and switch in this figure is the EdgeRouter PoE in real life.

Edgerouter configuration

Detailed information and new firmware can be found at

<https://www.ubnt.com/download/edgemax/edgerouter-poe>, this guide use firmware version 1.8.0.

Set static IP on your computer, for example IP 192.168.1.100 and Default Gateway 192.168.1.1. If the router has factory settings: Connect your computer to the eth0 port on the Edgerouter and navigate to 192.168.1.1 in your browser. The username and password are both 'ubnt'. Update the firmware of the router. If the router is preconfigured with our setup you will need to connect to eth4 to access the router.

The router configuration and firmware can be imported from 'academy/StandardConfig/edgerouter/', but for the settings remember to change the MAC address to where the static IP should be assigned.

192.168.1.0/24

- Set static IP for the server: 192.168.1.2
- Set the Gateway IP to 192.168.1.1, this will be on port eth0.

192.168.2.0/24

- Set Gateway IP to 192.168.2.1
- Set DHCP for port eth2, eth3 and eth4.
 - Range 10-255
- Set DNS to be 192.168.1.2 (the servers IP).
- Set eth1, eth2 and eth3 to be switched.
- Set eth2 to use PoE 48V.
- Set eth3 to use PoE 24V.

Access point configuration

To configure the access points, you need to use the UniFi controller that can be downloaded from <https://www.ubnt.com/download/unifi/>. When it is installed, plug your computer into the router in port eth4 and start the UniFi controller program. You can import settings from 'academy/unifi/4.8.18.unf'. (Only configured for 2.4GHz AP at the moment)

- Update Firmware
- Turn off DHCP
- Set wireless SSID: dhis
- Set network to 192.168.2.1/24

Troubleshooting

DHIS2 instance and Nginx

Problem	Solution
When you attempt to access the site with your browser it does not connect.	<p>Either there is a network problem or nginx is not running. Check first to see if you can ping the host. If not, you have a network problem. If you can ping the site, the most likely problem is that nginx is not installed or is not running. Verify that nginx is up and running and listening on ports 443 and 80 by typing:</p> <pre>sudo netstat -ntlp</pre> <p>You should see the nginx process listening on those 2 ports</p>
You can access the site but you see a 502 gateway error in your browser.	<p>This means that nginx is unable to connect to your backend dhis2 instance. Either the instance is not running or your nginx location configuration has an error. Running the same netstat command above should show your instance listening on 127.0.0.1 with a port number typically 8080 or whatever you have configured it as.</p> <p>If it's not running, try to start it with <code>dhis2-startup [instance name]</code></p> <p>If it is still not running, check the log file with <code>dhis2-logview [instance name]</code> to see if there is any information indicating why it has failed to start.</p> <p>If it is running and you can see it with netstat then you need to check your nginx configuration file to ensure that the location is correctly mapped.</p>
You can access the site but you see a blank page in your browser.	<p>This usually means that the dhis2 instance is running, but you have forgotten to deploy a war file to it. You need to run <code>dhis2-deploy-war</code> on that instance. See the reference section above for details of options.</p>