

Zoneminder 1.30 FreeBSD Installation and configuration

Notes: All commands used assume you are logged as root; otherwise add **sudo** in front of the commands, where applicable.

I use joe to edit files, you can use whatever you feel comfortable with (i.e.: vi, nano, etc)

This document is a WIP.

Version: 1.00

zoneminder installed and working

Cameras working

1. First things first: Update your ports to ensure you will be installing the updated version of zoneminder and its dependencies.

```
root@freebsd-1:~ # portsnap fetch extract
```

That will download a compressed version of all ports and extract them. It might take awhile, so grab a cup of coffee.

2. Compile zoneminder from ports

```
root@freebsd-1:~ # cd /usr/ports/multimedia/zoneminder
```

```
root@freebsd-1:~ # make install clean
```

Have a mentioned you needed a cup of coffee for the previous step? Well ... compile from ports will take a long time and will have several steps to select the options for installations, so keep an eye on it from time to time. (* Note to self: check for anatended make options *)

In my case it took over two hours to finish:

```
====> Cleaning for p5-DBI-1.636
====> Cleaning for p5-DBD-mysql-4.033_1
====> Cleaning for p5-Date-Manip-6.53
====> Cleaning for p5-Test-LWP-UserAgent-0.030
====> Cleaning for p5-Sys-Mmap-0.17_1
====> Cleaning for p5-LWP-Protocol-https-6.06_1
====> Cleaning for p5-Sys-CPU-0.52_1
====> Cleaning for p5-Sys-MemInfo-0.91_1
====> Cleaning for p5-Data-Dump-1.23_1
====> Cleaning for p5-SOAP-WSDL-3.003
====> Cleaning for p5-Data-UUID-1.221
====> Cleaning for p5-IO-Socket-Multicast-1.12_2
====> Cleaning for ffmpeg-2.8.7_1,1
====> Cleaning for cmake-3.5.2_1
====> Cleaning for gettext-tools-0.19.8.1
====> Cleaning for jpeg-turbo-1.4.2
====> Cleaning for mysql56-client-5.6.30
====> Cleaning for sudo-1.8.16_2
====> Cleaning for zip-3.0_1
====> Cleaning for zoneminder-1.30.0
root@freebsd-1:/usr/ports/multimedia/zoneminder #
```

Just in case, checked the installed packages:

```
root@freebsd-1:/usr/ports/multimedia/zoneminder # pkg info
```

```
.
.
.
zoneminder-1.30.0      Complete security camera solution, fully web based with image
analysis
root@freebsd-1:/usr/ports/multimedia/zoneminder #
```

One of the assumptions of the port maintainer (or creator, sorry not a FreeBSD guy) is that this will run with an existent HTTP/SQL implementation.

For this how-to I'll be configuring a stand alone VM and will install FEMP on it. You can adapt the steps from <https://raw.githubusercontent.com/freebsd/freebsd-ports/master/multimedia/zoneminder/files/README.FreeBSD> to your particular need.

3. FEMP Installation and configuration

3.1. Installation with pkg

```
root@freebsd-1:~ # pkg install nginx mysql56-server php56-mysql php56-pdo_mysql php56-gd fcgiwrap php56-session
```

*** Update outputs below

```
root@freebsd-1:~ # pkg install nginx mysql56-server php56-mysql php56-pdo_mysql php56-gd fcgiwrap
```

Updating FreeBSD repository catalogue...

FreeBSD repository is up-to-date.

All repositories are up-to-date.

The following 20 package(s) will be affected (of 0 checked):

New packages to be INSTALLED:

nginx: 1.8.1_3,2

mysql56-server: 5.6.30

php56-mysql: 5.6.22

php56-pdo_mysql: 5.6.22

php56-gd: 5.6.22

fcgiwrap: 1.1.0_3

pcre: 8.38_1

libXmu: 1.1.2_3,1

libXt: 1.1.5,1

libSM: 1.2.2_3,1

libICE: 1.0.9_1,1

libXaw: 1.0.13,2

libXpm: 3.5.11_4

printproto: 1.0.5

libXp: 1.0.3,1

png: 1.6.21

php56: 5.6.22

php56-pdo: 5.6.22

t1lib: 5.1.2_4,1

fcgi-devkit: 2.4.0_5

The process will require 117 MiB more space.

14 MiB to be downloaded.

Proceed with this action? [y/N]: **Y ← type Y and press ENTER**

3.2. Enable all new services

```
root@freebsd-1:~ # sysrc mysql_server_enable="YES"
mysql_server_enable: -> YES
root@freebsd-1:~ # sysrc fcgiwrap_enable="YES"
fcgiwrap_enable: -> YES
root@freebsd-1:~ # sysrc zoneminder_enable="YES"
zoneminder_enable: -> YES
root@freebsd-1:~ # sysrc mysql_enable="YES"
mysql_enable: -> YES
root@freebsd-1:~ # sysrc nginx_enable="YES"
nginx_enable: -> YES
root@freebsd-1:~ # sysrc php_fpm_enable="YES"
php_fpm_enable: -> YES
```

3.4. Check rc.conf

```
root@freebsd-1:~ # less /etc/rc.conf
```

```
hostname="freebsd-1"
ifconfig_em0="DHCP"
sshd_enable="YES"
# Set dumpdev to "AUTO" to enable crash dumps, "NO" to disable
dumpdev="AUTO"
webmin_enable=YES
mysql_server_enable="YES"
fcgiwrap_enable="YES"
zoneminder_enable="YES"
mysql_enable="YES"
nginx_enable="YES"
php_fpm_enable="YES"
root@freebsd-1:~ #
```

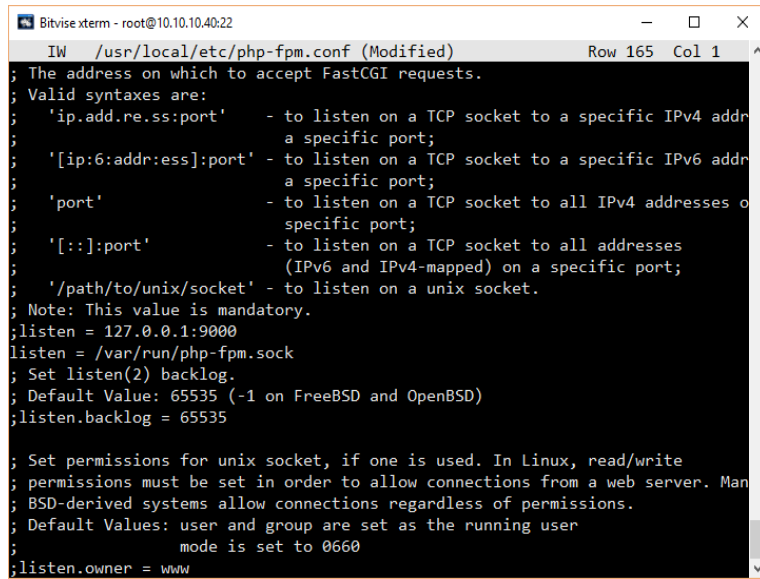
4. Configure php

4.1. Edit php-fpm.conf

```
root@freebsd-1:~ # joe /usr/local/etc/php-fpm.conf
```

- Find the line: **listen = 127.0.0.1:9000**
- Replace with: **listen = /var/run/php-fpm.sock**

Will look like this:



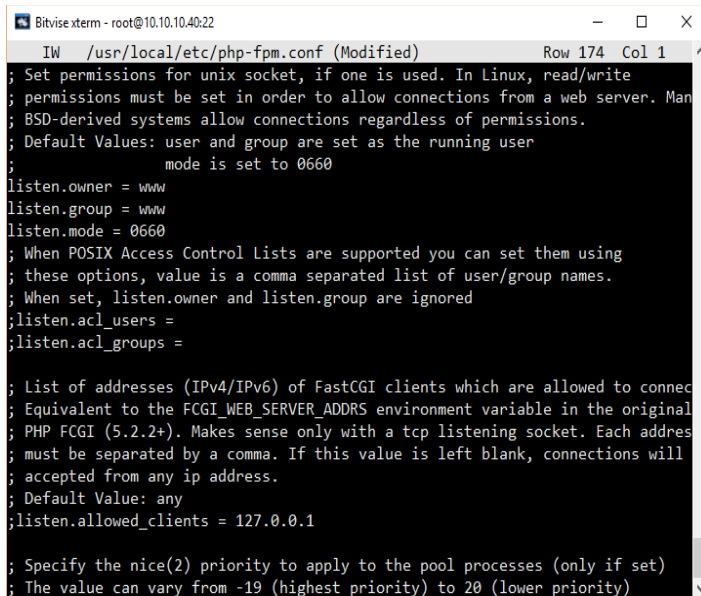
```
Bitvise xterm - root@10.10.10.40:22
IW /usr/local/etc/php-fpm.conf (Modified) Row 165 Col 1
; The address on which to accept FastCGI requests.
; Valid syntaxes are:
;   'ip.add.re.ss:port'   - to listen on a TCP socket to a specific IPv4 address on a specific port;
;   '[ip:6:addr:ess]:port' - to listen on a TCP socket to a specific IPv6 address on a specific port;
;   'port'                - to listen on a TCP socket to all IPv4 addresses on a specific port;
;   '[::]:port'           - to listen on a TCP socket to all addresses (IPv6 and IPv4-mapped) on a specific port;
;   '/path/to/unix/socket' - to listen on a unix socket.
; Note: This value is mandatory.
;listen = 127.0.0.1:9000
listen = /var/run/php-fpm.sock
; Set listen(2) backlog.
; Default Value: 65535 (-1 on FreeBSD and OpenBSD)
;listen.backlog = 65535

; Set permissions for unix socket, if one is used. In Linux, read/write
; permissions must be set in order to allow connections from a web server. Man
; BSD-derived systems allow connections regardless of permissions.
; Default Values: user and group are set as the running user
;                  mode is set to 0660
;listen.owner = www
```

- Two sessions below you will find the permission for unix socket, **uncomment the three lines below:**

```
listen.owner = www
listen.group = www
listen.mode = 0660
```

Will look like this:



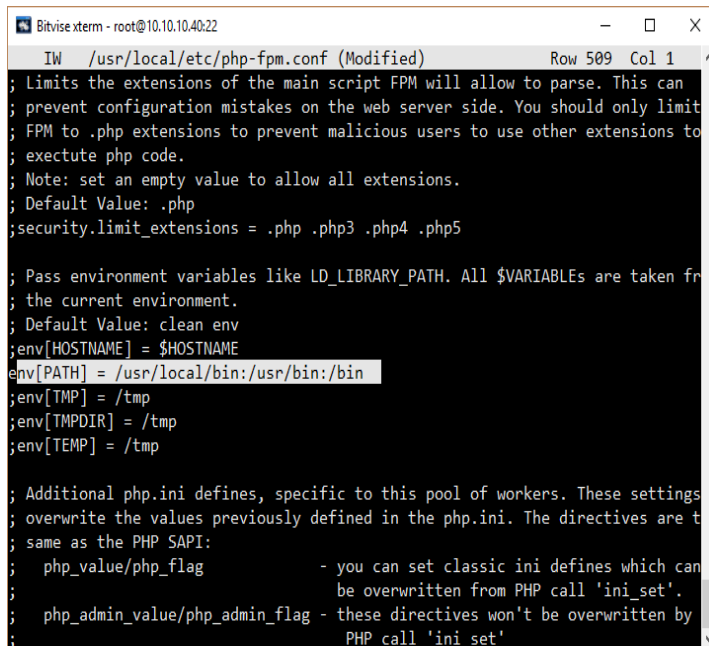
```
Bitvise xterm - root@10.10.10.40:22
IW /usr/local/etc/php-fpm.conf (Modified) Row 174 Col 1
; Set permissions for unix socket, if one is used. In linux, read/write
; permissions must be set in order to allow connections from a web server. Man
; BSD-derived systems allow connections regardless of permissions.
; Default Values: user and group are set as the running user
; mode is set to 0660
listen.owner = www
listen.group = www
listen.mode = 0660
; When POSIX Access Control Lists are supported you can set them using
; these options, value is a comma separated list of user/group names.
; When set, listen.owner and listen.group are ignored
;listen.acl_users =
;listen.acl_groups =

; List of addresses (IPv4/IPv6) of FastCGI clients which are allowed to connect
; Equivalent to the FCGI_WEB_SERVER_ADDRS environment variable in the original
; PHP FCGI (5.2.2+). Makes sense only with a tcp listening socket. Each address
; must be separated by a comma. If this value is left blank, connections will
; accepted from any ip address.
; Default Value: any
;listen.allowed_clients = 127.0.0.1

; Specify the nice(2) priority to apply to the pool processes (only if set)
; The value can vary from -19 (highest priority) to 20 (lower priority)
```

- Uncomment `env[PATH] = /usr/local/bin:/usr/bin:/bin`

Will look like this:



```
Bitvise xterm - root@10.10.10.40:22
IW /usr/local/etc/php-fpm.conf (Modified) Row 509 Col 1
; Limits the extensions of the main script FPM will allow to parse. This can
; prevent configuration mistakes on the web server side. You should only limit
; FPM to .php extensions to prevent malicious users to use other extensions to
; execute php code.
; Note: set an empty value to allow all extensions.
; Default Value: .php
security.limit_extensions = .php .php3 .php4 .php5

; Pass environment variables like LD_LIBRARY_PATH. All $VARIABLEs are taken from
; the current environment.
; Default Value: clean env
env[HOSTNAME] = $HOSTNAME
env[PATH] = /usr/local/bin:/usr/bin:/bin
env[TMP] = /tmp
env[TMPDIR] = /tmp
env[TEMP] = /tmp

; Additional php.ini defines, specific to this pool of workers. These settings
; overwrite the values previously defined in the php.ini. The directives are the
; same as the PHP SAPI:
; php_value/php_flag - you can set classic ini defines which can
; be overwritten from PHP call 'ini_set'.
; php_admin_value/php_admin_flag - these directives won't be overwritten by
; PHP call 'ini_set'
```

- Save and close the file

5. Create php.ini

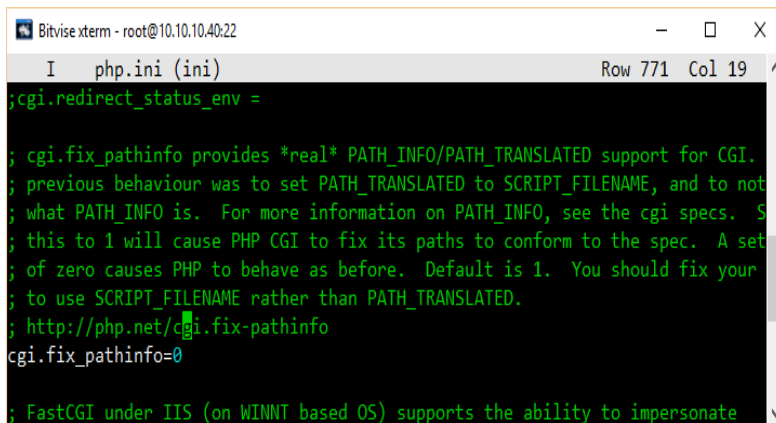
5.1. Copy the sample production file

```
root@freebsd-1: / # cd /usr/local/etc
root@freebsd-1: /usr/local/etc # cp php.ini-production php.ini
```

5.2. Edit the file and set cgi.fix_pathinfo=0

```
root@freebsd-1: / # joe php.ini
```

Will look like this:

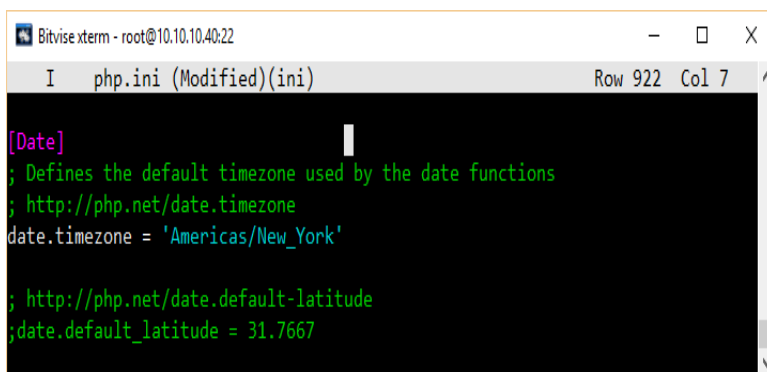


```
Bitvise xterm - root@10.10.10.40:22
I  php.ini (ini) Row 771 Col 19 ^
;cgi.redirect_status_env =
; cgi.fix_pathinfo provides *real* PATH_INFO/PATH_TRANSLATED support for CGI.
; previous behaviour was to set PATH_TRANSLATED to SCRIPT_FILENAME, and to not
; what PATH_INFO is. For more information on PATH_INFO, see the cgi specs. S
; this to 1 will cause PHP CGI to fix its paths to conform to the spec. A set
; of zero causes PHP to behave as before. Default is 1. You should fix your
; to use SCRIPT_FILENAME rather than PATH_TRANSLATED.
; http://php.net/cgi.fix-pathinfo
cgi.fix_pathinfo=0
; FastCGI under IIS (on WINNT based OS) supports the ability to impersonate
```

5.3. Set your date time zone

- Uncomment date.timezone and type your time zone within single quotes (').

Notes: Check your time zone here: <http://php.net/manual/en/timezones.php>
I'm in EST, so will set to 'America/New_York' and will look like this:



```
Bitvise xterm - root@10.10.10.40:22
I  php.ini (Modified)(ini) Row 922 Col 7 ^
[Date]
; Defines the default timezone used by the date functions
; http://php.net/date.timezone
date.timezone = 'Americas/New_York'
; http://php.net/date.default-latitude
;date.default_latitude = 31.7667
```

- Save the file

5.4. Start php

```
root@freebsd-1:/usr/local/etc # service php-fpm start
```

Performing sanity check on php-fpm configuration:

[16-Jun-2016 19:41:24] NOTICE: configuration file /usr/local/etc/php-fpm.conf test is successful

Starting php_fpm.

6. Configure MySQL

6.1. Start the service:

```
root@freebsd-1:/usr/local/etc # service mysql-server start
```

Starting mysql.

```
root@freebsd-1:~ #
```

6.2. Execute installer

```
root@freebsd-1:/usr/local/etc # mysql_secure_installation
```

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MySQL SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MySQL to secure it, we'll need the current password for the root user. If you've just installed MySQL, and you haven't set the root password yet, the password will be blank, so you should just press enter here.

Enter current password for root (enter for none):

- **Press ENTER and set your new password**

Output: (Instructions in **RED** below)

Change the root password? [Y/n] **Y**

New password: **<type your password>**

Re-enter new password: **<retype your password for confirmation>**

Password updated successfully!

Reloading privilege tables..

... Success!

By default, a MySQL installation has an anonymous user, allowing anyone to log into MySQL without having to have a user account created for them. This is intended only for testing, and to make the installation go a bit smoother. You should remove them before moving into a production environment.

- **Press ENTER on all following prompts** (Instructions in **RED** below)

Remove anonymous users? [Y/n] **<ENTER>**

... Success!

Normally, root should only be allowed to connect from 'localhost'. This ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] **<ENTER>**

... Success!

By default, MySQL comes with a database named 'test' that anyone can access. This is also intended only for testing, and should be removed before moving into a production environment.

Remove test database and access to it? [Y/n] **<ENTER>**

- Dropping test database...

... Success!

- Removing privileges on test database...

... Success!

Reloading the privilege tables will ensure that all changes made so far will take effect immediately.

Reload privilege tables now? [Y/n] **<ENTER>**

... Success!

All done! If you've completed all of the above steps, your MySQL installation should now be secure.

Thanks for using MySQL!

Cleaning up...

6.3. Restart MySQL

```
root@freebsd-1:/usr/local/etc # service mysql-server restart
```

Stopping mysql.
Waiting for PIDS: 1427.
Starting mysql.

7. Configuring nginx

7.1. Start nginx

```
root@freebsd-1:/usr/local/etc # service nginx start
```

*Performing sanity check on nginx configuration:
nginx: the configuration file /usr/local/etc/nginx/nginx.conf syntax is ok
nginx: configuration file /usr/local/etc/nginx/nginx.conf test is successful
Starting nginx.*

7.2. Create nginx.conf

Copy sample below to the new file been created:

```
user www;
worker_processes 1;

#error_log logs/error.log;
#error_log logs/error.log notice;
#error_log logs/error.log info;

pid /var/run/nginx.pid;

events {
    worker_connections 1024; ## Default: 1024
}

http {
    include mime.types;
    default_type application/octet-stream;

    log_format main '$remote_addr - $remote_user [$time_local]
"$request" '
                  '$status $body_bytes_sent "$http_referer" '
                  '"$http_user_agent" "$http_x_forwarded_for"';

    sendfile on;
    tcp_nopush on;
    tcp_nodelay on;
    keepalive_timeout 65;
    server_tokens off;

    gzip on;
    gzip_comp_level 4;
    gzip_min_length 1100;
```

```

    gzip_buffers 64 8k;
    gzip_http_version 1.1;
    gzip_proxied any;
    gzip_types text/plain application/xml application/x-javascript
text/css;

```

```

server {
    root /usr/local/www/zoneminder;
    try_files $uri $uri/ /index.php$is_args$args;
    index index.php;
    location = /cgi-bin/nph-zms {
        include fastcgi_params;
        fastcgi_param    SCRIPT_FILENAME
$document_root$fastcgi_script_name;
        fastcgi_pass      unix:/var/run/fcgiwrap/fcgiwrap.sock;
    }

```

```

    location ~ /\.php$ {
        include fastcgi_params;
        fastcgi_param    SCRIPT_FILENAME
$document_root$fastcgi_script_name;
        fastcgi_pass      unix:/var/run/php-fpm.sock;
    }

```

```

    location /api {
        rewrite ^/api/(.+) $ /api/index.php?p=$1 last;
    }
}

```

```

root@freebsd-1:/usr/local/etc # cd /usr/local/etc/nginx
root@freebsd-1:/usr/local/etc/nginx # mv nginx.conf nginx.conf-original
root@freebsd-1:/usr/local/etc/nginx # joe nginx.conf

```

– Save the file

7.3. Create logs directory and empty files

```

root@freebsd-1:/usr/local/etc/nginx # mkdir -p /var/log/nginx
root@freebsd-1:/usr/local/etc/nginx # touch /var/log/nginx/access.log
root@freebsd-1:/usr/local/etc/nginx # touch /var/log/nginx/error.log

```

7.4. Configuring document root

```

root@freebsd-1:/usr/local/etc/nginx # rm /usr/local/www/nginx
root@freebsd-1:/usr/local/etc/nginx # mkdir /usr/local/www/nginx
root@freebsd-1:/usr/local/etc/nginx # cp /usr/local/www/nginx-dist/index.html /usr/local/www/nginx

```

7.5. Test nginx con

```

root@freebsd-1:/usr/local/etc/nginx # nginx -t

```

```

nginx: the configuration file /usr/local/etc/nginx/nginx.conf syntax is ok
nginx: configuration file /usr/local/etc/nginx/nginx.conf test is successful

```

7.6. Restart nginx

```
root@freebsd-1:/usr/local/etc/nginx # service nginx restart
```

```
Performing sanity check on nginx configuration:  
nginx: the configuration file /usr/local/etc/nginx/nginx.conf syntax is ok  
nginx: configuration file /usr/local/etc/nginx/nginx.conf test is successful  
Stopping nginx.  
Waiting for PIDS: 1659.  
Performing sanity check on nginx configuration:  
nginx: the configuration file /usr/local/etc/nginx/nginx.conf syntax is ok  
nginx: configuration file /usr/local/etc/nginx/nginx.conf test is successful  
Starting nginx.
```

8. Configuring Zoneminder

8.1. Copy and paste session highlighted in yellow to the new file: /var/db/mysql/my.cnf

```
[server]
skip-networking
skip-name-resolve
innodb_flush_method = O_DIRECT
skip-innodb_doublewrite
innodb_file_per_table
```

root@freebsd-1: / # **joe /var/db/mysql/my.cnf**

8.2. Restart MySQL

root@freebsd-1: / # **service mysql-server restart**

Stopping mysql.
Waiting for PIDS: 1652.
Starting mysql.

8.3. Configure fcgiwrap

Note: I'll be using 10 cameras, so setting sysrc fcgiwrap_flags="-c 10"

```
root@freebsd-1:/usr/local/etc/nginx # sysrc fcgiwrap_user="www"
fcgiwrap_user: -> www
root@freebsd-1:/usr/local/etc/nginx # sysrc fcgiwrap_flags="-c 10"
fcgiwrap_flags: -> -c 10
root@freebsd-1:/usr/local/etc/nginx # service fcgiwrap restart
fcgiwrap not running? (check /var/run/fcgiwrap/fcgiwrap.pid).
Starting fcgiwrap.
root@freebsd-1:/usr/local/etc/nginx #
```

8.4. Map /tmp to tmpfs

Edit /etc/fstab and add the line below at the end of the file:

```
tmpfs          /tmp          tmpfs rw,nosuid,mode=01777 0 0
```

root@freebsd-1: / # **joe /etc/fstab**

```
# Device      Mountpoint  FStype Options Dump  Pass#
/dev/ada0p2   /           ufs    rw    1    1
/dev/ada0p3   none       swap   sw     0    0
tmpfs         /tmp       tmpfs  rw,nosuid,mode=01777 0 0
```

8.5. Create user and database *(Note the for this example I'm not changing the user or password. You should change it to something only your know, but there are other steps involved to change other configuration files I won't be covering here)*

```
root@freebsd-1:/ # mysql -u root -p  
Enter password: ← type your sql password
```

```
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 1  
Server version: 5.6.30 Source distribution
```

Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> CREATE DATABASE zm;  
Query OK, 1 row affected (0.01 sec)  
mysql> GRANT ALL PRIVILEGES ON zm.* TO 'zmuser'@'localhost' IDENTIFIED BY 'zmpass';  
Query OK, 0 rows affected (0.02 sec)  
mysql> FLUSH PRIVILEGES;  
Query OK, 0 rows affected (0.00 sec)  
mysql> quit;  
Bye  
root@freebsd-1:/ #
```

8.6. Populate the database

```
root@freebsd-1:/ # mysql -u root -p zm < /usr/local/share/zoneminder/db/zm_create.sql  
Enter password:  
root@freebsd-1:/ #
```

8.7. Start zoneminder

```
root@freebsd-1:/usr/local/etc/nginx # service zoneminder start  
root@freebsd-1:/usr/local/etc/nginx #
```

```
root@freebsd-1:/usr/local/etc/nginx # service zoneminder status  
running
```

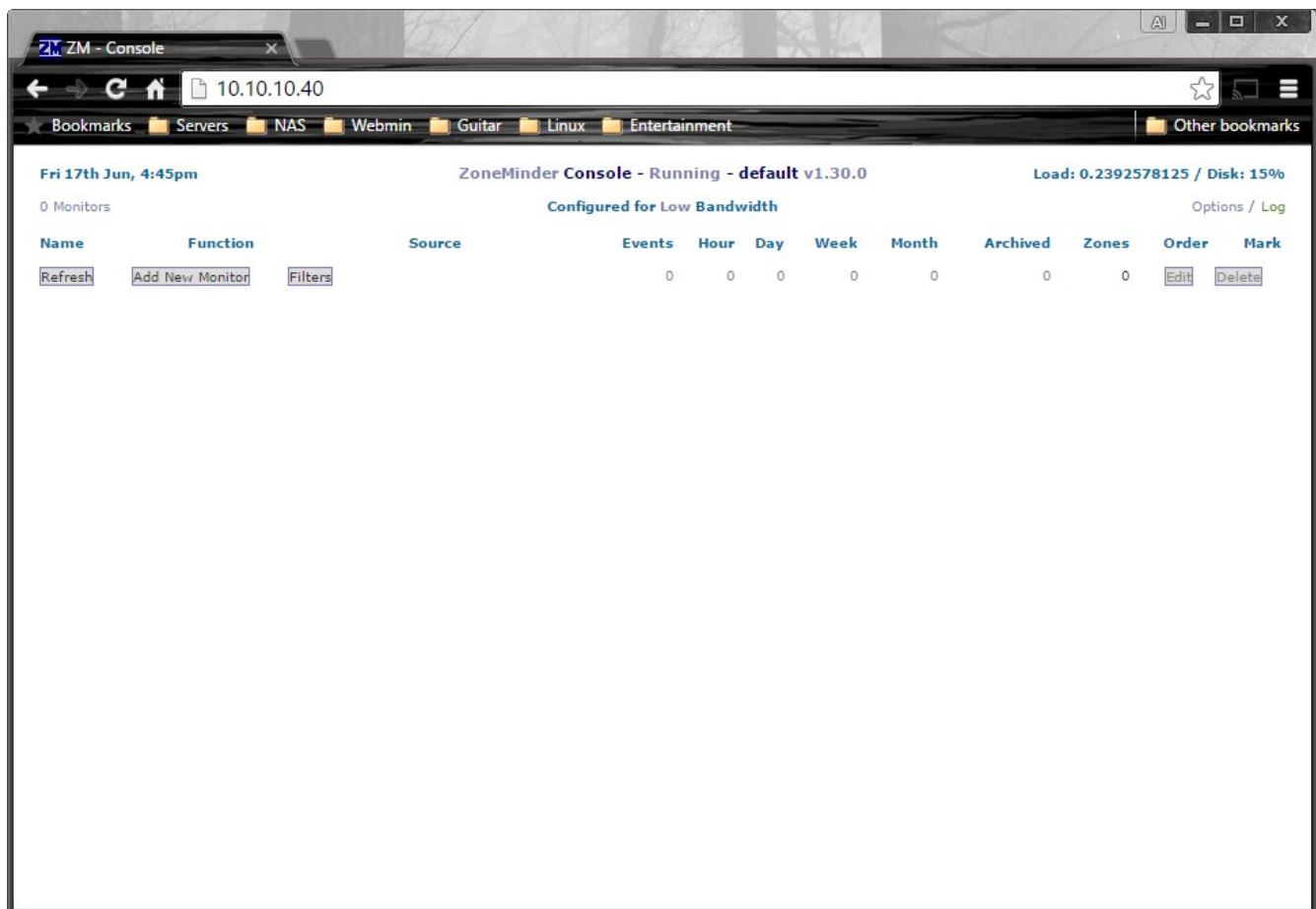
9. Accesssing zoneminder

9.1. Obtain the IP address for your server

You can use any method for this. Below ifconfig showing the interface ID address.

```
root@freebsd-1:/ # ifconfig
em0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> metric 0 mtu 1500
    options=9b<RXCSUM,TXCSUM,VLAN_MTU,VLAN_HWTAGGING,VLAN_HWCSUM>
    ether 08:00:27:8e:96:13
    inet 10.10.10.40 netmask 0xffffffff broadcast 10.10.10.255
    nd6 options=29<PERFORMNUD,IFDISABLED,AUTO_LINKLOCAL>
    media: Ethernet autoselect (1000baseT <full-duplex>)
    status: active
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> metric 0 mtu 16384
    options=600003<RXCSUM,TXCSUM,RXCSUM_IPV6,TXCSUM_IPV6>
    inet6 ::1 prefixlen 128
    inet6 fe80::1%lo0 prefixlen 64 scopeid 0x2
    inet 127.0.0.1 netmask 0xff000000
    nd6 options=21<PERFORMNUD,AUTO_LINKLOCAL>
```

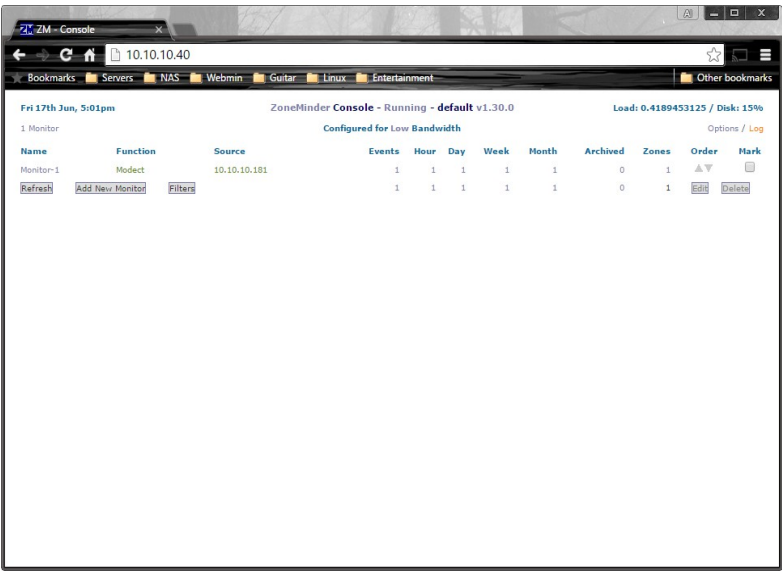
9.2. Type the address on your browser. You should get the screen below:



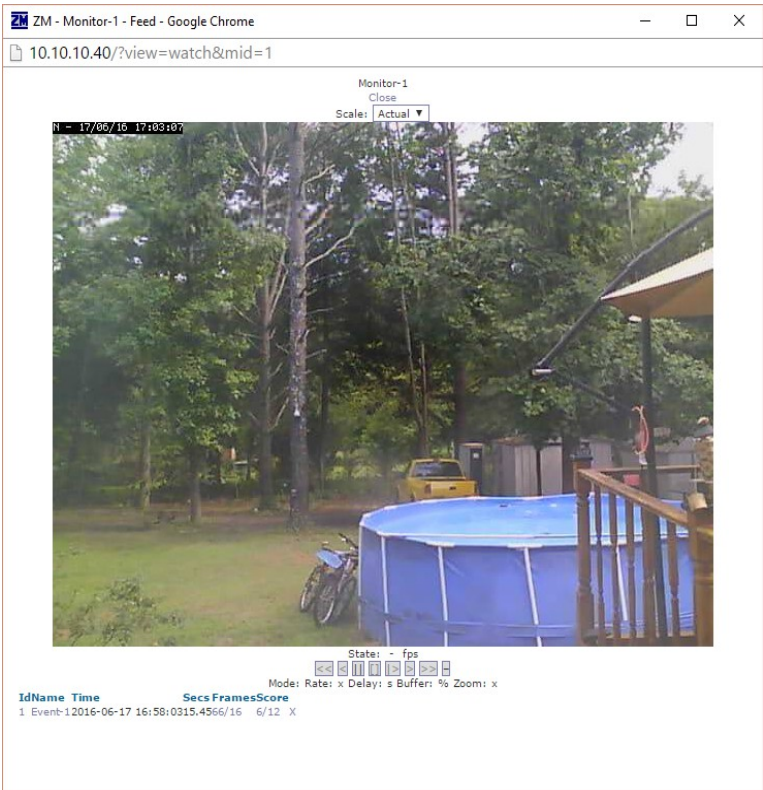
zoneminder running with one camera added

Screens

zoneminder showing one event forced by me moving the camera on my windows



zoneminder camera-1 screen with captured motion event



Final thoughts:

My thanks to Abi (bsd@abinet.ru) and Josua for putting up with my stupid questions while writing this who-to. Special thanks to Abi that spent couple hours chatting in skype to get the final version running.

This how-to was written for someone, from someone, with no knowledge of FreeBSD like me, so some steps will make people LOL. Have in mind that you still need to know how to install and access a FreeBSD server and be comfortable working on its shell. If not google is your best friend, as it is mine.

The main reason it didn't run the first time were:

- Missing dependencies: That was fixed with the addition of all on item 3.1.
- nginx.conf: Missing configuration added to final version on current how-to.
- php56-gd: Added to allow communication with zmninja