



NGINX™

# FreeBSD+nginx

Best WWW server for best OS

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# What is FreeBSD?

The best free operating system in the world.

- Based on BSD UNIX
- Thirty years developments
- Security features
- Modern and scale file systems
- Fast networking
- Unchangeable and complex usability

# What is nginx?

- web server (static content)
- mail (POP3 and IMAP4) proxy server
- failover and balancing
- frontend for apache/FastCGI/memcached/etc.
- accelerate FastCGI remote servers
- www cache proxy server
- may update "on the fly"
- a lot of third-party modules
- primary development platform (yes!) is FreeBSD (see slide 5 for more details)
- supported platforms: FreeBSD (3.x - 9.x), GNU/Linux, Solaris, MacOS X, Windows XP/Server 2003
- 2-clause BSD-like license
- may found in Rambler (AIM:RMG) and Yandex (NASDAQ: YNDX), WordPress, GitHub, SourceForge, TorrentReactor

# nginx brief history

- 9 years of development (and now only 1.x)
- One developer - Igor Sysoev
- Development started in 2002
- First public release in 2004
- nginx Co. (founded in 2011)
  
- W3Techs reports that [8.6% of the top 1 million sites on the web](#)
- Netcraft reports similar [7.29% nginx share of the million busiest sites in September 2011.](#)
- And [51.7%](#) of top Russian sites use nginx

# nginx for FreeBSD, features

Following syscalls may use by nginx under FreeBSD for performance and scalability:

- `select(2)`
- `poll(2)`
- `kqueue(2)` - most effective

Other:

- `open(2)` with `O_DIRECT`
- `sendfile(2)`
- `aio(4)` (`sendfile` should be switched off)
- `accf_data(9)`, `accf_http(9)` (`listen` directive)

# nginx in FreeBSD ports tree

- `www/nginx` - stable version, 1.0.8
- `www/nginx-devel` - development version, 1.1.4
- Support for FreeBSD ports tree 7 years
- Currently supports 35 third-party modules

By default - build vanilla (vendor) version, all third-party modules are disabled.

# www/nginx[-devel] history (nginx in FreeBSD ports)

- 21.10.2004 - Was started as simple port with one distfile (right after the first public release)
- 15.07.2007 - Split into two ports: www/nginx and www/nginx-devel for stable (0.5) and development (0.6) versions
- 23.08.2007 - OPTIONSnify
- 01.07.2008 - Multiprofile support, possible to run from rc.conf "more than one" nginx with different configs
- 29.08.2009 - First add support for third-party module (nginx\_http\_upload module), i.e. 2 distfiles
- 04.04.2011 - Add 28th third-party module (nginx\_substitutions\_filter module)
- 13.07.2001 - Add 35th third-party module (ngx\_chunkin - HTTP/1.1 chunked-encoding support)

# www/nginx anatomy (lua example 1)

PORTNAME= nginx

PORTVERSION= 1.0.4

...

OPTIONS=

...

LUA\_MODULE "3rd party lua module" off \

...

# www/nginx anatomy (lua example 2)

```
.if defined(WITH_LUA_MODULE)
.if !defined(WITH_DEVEL_KIT_MODULE)
IGNORE=      for lua module build devel_kit also should be defined
.endif
USE_LUA=     5.1+
NGINX_LUA_MODULE_VERSION= 0.2.0
GIT_LUA_MODULE_VERSION= 0-g8e7d37e
FETCH_ARGS=  -pRr
MASTER_SITES+= https://github.com/.../v${NGINX_LUA_MODULE_VERSION}:lua
DISTFILES+=   ...:lua
CONFIGURE_ARGS+=--add-module=${WRKDIR}/..lua-...-${GIT_LUA_MODULE_VERSION:S/^0-g//}
EXTRA_PATCHES+= ${PATCHDIR}/extra-patch-chaoslawful-lua-nginx-module::config
.endif
```

# www/nginx anatomy (lua example 3)

## files/extra-patch-chaoslawful-lua-nginx-module::config

```
--- ../chaoslawful-lua-nginx-module-8e7d37e/config.orig 2011-07-12 11:24:16.000000000 +0400
+++ ../chaoslawful-lua-nginx-module-8e7d37e/config      2011-07-12 11:26:45.000000000 +0400
@@ -104,12 +104,12 @@
     if [ $ngx_found = no ]; then
         # FreeBSD
-        ngx_feature="lua library in /usr/local/./lua51/"
-        ngx_feature_path="/usr/local/include/lua51"
+        ngx_feature="lua library in %%PREFIX%%/lua51/"
+        ngx_feature_path="%%PREFIX%%/include/lua51"
         if [ $NGX_RPATH = YES ]; then
-            ngx_feature_libs="-R/usr/local/lib/lua51 -L/usr/local/lib/lua51 -llua -lm"
+            ngx_feature_libs="-R%%PREFIX%%/lib/lua51 -L%%PREFIX%%/lib/lua51 -llua -lm"
         else
-            ngx_feature_libs="-L/usr/local/lib/lua51 -llua -lm"
+            ngx_feature_libs="-L%%PREFIX%%/lib/lua51 -llua -lm"
         fi
     . auto/feature
 fi
```

# www/nginx anotomy (lua example 4)

post-patch:

...

```
.if defined(WITH_LUA_MODULE)
```

```
    @${REINPLACE_CMD} \
```

```
        's!%%PREFIX%%!${PREFIX}!' \
```

```
        ${WRKDIR}/chaoslawful-lua-nginx-module-${GIT_LUA_MODULE_VERSION:S/^0-g//}/config
```

```
.endif
```

...

# nginx third-party module anatomy (nginx\_http\_redis example)

The client connect to nginx server and request /index.html;



nginx find location and request data with key "/index.html" from backend, the redis key-value database;  
get answer from, parse the length of answer and answer to client.

# nginx third-party module anatomy (nginx\_http\_redis example)

```
...
http {

    server {
        listen      80;
        server_name localhost;

        location / {
            set $redis_key "$suri";
            redis_pass 127.0.0.1:6379;
            error_page 404 502 504 = @fallback;
        }

        location @fallback {
            root /usr/local/www/nginx;
            index index.html;
        }
    }
}
...
```

# nginx third-party module anatomy (ngx\_http\_redis example)

```
% telnet 127.0.0.1 6379
```

```
Trying 127.0.0.1...
```

```
Connected to localhost.
```

```
Escape character is '^]'.
```

```
select 0
```

```
+OK
```

```
get /index.html
```

```
$43
```

```
<html><body>Hello from redis!</body></html>
```

```
quit
```

```
+OK
```

```
%
```

# nginx third-party module anatomy (ngx\_http\_redis example)

```
$ telnet 127.0.0.1 80
```

```
GET /index.html HTTP/1.0
```

```
HTTP/1.1 200 OK
```

```
Server: nginx/1.0.5
```

```
Date: Sat, 01 Aug 2011 11:52:39 GMT
```

```
Content-Type: text/html
```

```
Content-Length: 43
```

```
Connection: close
```

```
<html><body>Hello from redis!</body></html>
```

```
Connection closed by foreign host.
```