



Optimizing nginx

From Beginner to Expert to Crazy

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A black and white photograph showing a man's profile from the chest up. He is wearing glasses and has a beard. He is looking down at a laptop screen which is partially visible in the lower-left corner. The background is dark and out of focus.

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Old style PHP

default.d/php.conf

```
index index.php index.html index.htm;

location ~ /\.php$ {
    try_files $uri =404;
    fastcgi_intercept_errors on;
    fastcgi_index    index.php;
    include           fastcgi_params;
    fastcgi_param     SCRIPT_FILENAME    $document_root$fastcgi_script_name;
    fastcgi_pass       php-fpm;
}
```

conf.d/php-fpm.conf

```
upstream php-fpm {
    server unix:/run/php-fpm/www.sock;
}
```

Modern PHP

conf.d/vhost.conf

```
server {
    listen 80;
    server_name localhost;

    root /var/www/html;

    location / {
        try_files $uri @php;
    }

    location @php {
        fastcgi_pass    php-fpm;
        include          fastcgi_params;
        fastcgi_param    REQUEST_URI $document_uri;
        fastcgi_param    SCRIPT_FILENAME /var/www/php/index.php;
    }
}
```

Load Balancing

conf.d/php-pool.conf

```
upstream php-pool {  
    server unix:/run/php-fpm/www.sock max_cons=10;  
  
    server 192.168.1.1:9000 weight=5;  
    server 192.168.1.2:1345 max_fails=3 fail_timeout=30s;  
    server 192.168.1.3:9000 down;  
  
    server 192.168.1.4:9000 backup;  
}
```

Keep Alive

conf.d/php-pool.conf

```
upstream php-pool {  
    server 192.168.1.1:9000;  
    server 192.168.1.2:9000;  
  
    keepalive 10;  
}
```

conf.d/vhost-pool.conf

```
server {  
  
    # ...  
  
    location @php {  
        fastcgi_pass php-pool;  
        fastcgi_keep_conn on;  
    }  
}
```

GZip all the things

conf.d/gzip-vhost.conf

```
server {  
    listen 80;  
    server_name localhost;  
  
    root /var/www/html;  
  
    location / {  
        gzip_static on;  
        try_files $uri @php;  
    }  
  
    location @php {  
        gzip on;  
        gzip_types application/xhtml+xml;  
  
        # ...  
    }  
}
```

Explicit Cache Control for static files

conf.d/static.conf

```
location ~* \.(?:ico|gif|png|svg|jpe?g|eot|ttf|woff|woff2)$ {  
    expires 7d;  
}
```


Built-In Tracking

conf.d/tracking.conf

```
location = /_.gif {  
    empty_gif;  
    access_log /var/log/tracking_log;  
}
```

Language based routing

conf.d/map.conf

```
map $http_accept_language $lang {  
    default en;  
    ~de de;  
    # ...  
}  
  
server {  
    location = / {  
        index index.$lang.html;  
    }  
}
```

A/B Testing

conf.d/abtesting.conf

```
split_clients "${remote_addr}AAA" $variant {  
    0.5%  A;  
    2.0%  B;  
    *     C;  
}  
  
server {  
    location @php {  
        # ...  
        fastcgi_param  SCRIPT_FILENAME  /var/www/php/${variant}/index.php;  
    }  
}
```

A/B Testing

conf.d/abtesting.conf

```
split_clients "${remote_addr}AAA" $variant {
    0.5%  A;
    2.0%  B;
    *     C;
}

server {
    location @php {
        # ...
        fastcgi_param  X-Variant  $variant;
        fastcgi_param  SCRIPT_FILENAME  /var/www/php/index.php;
    }
}
```

Lage File Uploads

conf.d/upload.conf

```
server {  
    # ...  
    location /upload {  
        limit_except POST          { deny all; }  
  
        client_body_temp_path      /var/www/data/uploads;  
        client_body_in_file_only   on;  
        client_body_buffer_size    1024K;  
        client_max_body_size       10G;  
  
        # ...  
  
        fastcgi_pass_request_headers on;  
        fastcgi_pass_request_body   off;  
        fastcgi_ignore_client_abort on;  
        fastcgi_param  X-UPLOAD-FILE $request_body_file;  
  
        # ...  
    }  
}
```

Lage File Uploads

/var/www/html/upload.js

```
// ...  
  
let file = formElement.querySelector('input[type=file]').files[0];  
let xhr = new XMLHttpRequest();  
  
xhr.open('POST', '/upload', true);  
xhr.setRequestHeader('X-Original', file.name);  
xhr.send(file);  
  
// ...
```

Download as Attachment

conf.d/attachment.conf

```
location ~ /download/ {  
    if ($request_filename ~ "^.*/(.+\.jpg)$") {  
        set $fname $1;  
        add_header Content-Disposition 'attachment; filename="$fname"';  
    }  
}
```

Download with Auth Check

conf.d/auth-download.conf

```
server {  
    # ...  
    location / {  
        try_files $uri @php;  
    }  
    location @php {  
        # ...  
    }  
}
```


Download with Auth Check

DownloadQuery.php

```
class DownloadQuery {  
    // ...  
    public function execute(): Response {  
        if ($this->acl->isAccessGranted($this->file) {  
            return new DownloadResponse($this->base . '/' . $this->file);  
        }  
        return new AccessDeniedResponse();  
    }  
}
```

DownloadResponse.php

```
class DownloadResponse implements Response {  
    // ...  
    public function send() {  
        header('X-Accel-Redirect: ' . $this->file);  
    }  
}
```

Api Rate Limits

conf.d/ratelimit.conf

```
limit_req_zone $binary_remote_addr zone=apilimit:10m rate=10r/s;

location /api/ {
    limit_req zone=apilimit burst=20 nodelay;
    limit_req_status 403;

    # ...
}
```

Api Rate Limits

conf.d/auth-ratelimit.conf

```
server {  
    # ...  
  
    location /api/ {  
        # ...  
        fastcgi_param  SCRIPT_FILENAME  /var/www/api/gateway.php;  
    }  
  
    location @api {  
        add_header X-Ratelimit-Limit $upstream_http_x_ratelimit_limit;  
        add_header X-Ratelimit-Remaining $upstream_http_x_ratelimit_remaining;  
        add_header X-Ratelimit-Reset $upstream_http_x_ratelimit_reset;  
  
        # ....  
    }  
}
```

Api Rate Limits

gateway.php

```
<?php

$limit = new LimitClient(new RedisClient(), new TokenStore());
$usage = $limit->getUsageFor($_SERVER['HTTP_AUTHORIZATION'] ?: $_SERVER['REMOTE_ADDR']);

if ($usage->isWithinLimit()) {
    header('X-Accel-Redirect: @api');
} else {
    http_response_code(403);
}

header('X-RateLimit-Limit: ' . $usage->getTotalLimit());
header('X-RateLimit-Remaining: ' . $usage->getRemaining());
header('X-RateLimit-Reset: ' . $usage->getResetTime()->getTimestamp());

die();
```

Ring Down Chain

conf.d/chain.conf

```
server {  
    location @php {  
        # ...  
  
        fastcgi_intercept_errors on;  
        recursive_error_pages on;  
  
        error_page 404 = @NextInLine;  
    }  
  
    location @NextInLine {  
        # ...  
    }  
}
```

Client Side Certificates

conf.d/ssl-certs.conf

```
server {
    listen 443 http2;

    # ...

    ssl on;
    ssl_certificate /etc/ssl/certs/not_self_signed.crt;
    ssl_certificate_key /etc/ssl/private/not_self_signed.key;
    ssl_session_timeout 5m;

    ssl_client_certificate /etc/ssl/ca/certs/ca.crt;
    ssl_crl /etc/ssl/ca/private/ca.crl;
    ssl_verify_client on;

    location / {
        fastcgi_param VERIFIED $ssl_client_verify;
        fastcgi_param DN $ssl_client_s_dn;
        include fastcgi_params;
    }
}
```

Access by Lua

main.conf

```
server {  
    resolver 127.0.0.1;  
  
    location /login {  
        proxy_pass http://login.local/;  
    }  
  
    location /service {  
        lua_code_cache off;  
        access_by_lua_file /var/www/lua/access.lua;  
  
        proxy_set_header X-Real-IP $remote_addr;  
        proxy_set_header Cookie '';  
        proxy_pass http://service.local.dev/;  
    }  
}
```

Access by Lua

access.lua

```
local uuid = ngx.var.cookie_uuid;
if not uuid then
    ngx.redirect('/login');
end

local redis = require "resty.redis"
local red = redis:new()
red:connect("127.0.0.1", 6379)
local res, err = red:get(uuid)
if res == ngx.null then
    ngx.redirect('/login');
end

ngx.header["uuid"] = nil
ngx.req.set_header("X-UUID-INFO", uuid);
ngx.req.set_header("X-USER-INFO", res);
```


Thank you!

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