

REFERENSI CEPAT NGINX

Server block, proxy, SSL, load balancing, logging

Instalasi

```
Instalasi per OS
Ubuntu / Debian `sudo apt install nginx`
RHEL / CentOS `sudo dnf install nginx`
macOS `brew install nginx`
Alpine `apk add nginx`
Docker `docker run -p 80:80 nginx`
```

Manajemen Layanan

```
sudo systemctl start nginx Mulai Nginx
sudo systemctl stop nginx Hentikan Nginx
sudo systemctl reload nginx Muat ulang konfigurasi (tanpa downtime)
sudo systemctl enable nginx Aktifkan saat booting
nginx -t Uji sintaks konfigurasi
nginx -T Uji dan tampilkan konfigurasi lengkap
nginx -s reload Kirim sinyal reload ke proses yang berjalan
```

Konfigurasi Dasar

```
Lokasi File
/etc/nginx/nginx.conf File konfigurasi utama
/etc/nginx/conf.d/ Konfigurasi site tambahan (*.conf)
/etc/nginx/sites-available/ Konfigurasi site tersedia (Debian)
/etc/nginx/sites-enabled/ Simlink ke konfigurasi aktif
/var/log/nginx/ Log akses dan error
/var/www/html/ Document root default
```

Konfigurasi Minimal

```
server {
    listen 80;
    server_name example.com;
    root /var/www/mysite;
    index index.html;
}
```

Struktur Konfigurasi

```
http {} Pengaturan server HTTP (level teratas)
server {} Definisi virtual host
location {} Blok pencocokan URI
upstream {} Grup server backend
events {} Pengaturan penanganan koneksi
```

Server Block

Virtual Host Berbasis Nama

```
server {
    listen 80;
    server_name site-a.com;
    root /var/www/site-a;
}
server {
    listen 80;
    server_name site-b.com;
    root /var/www/site-b;
}
```

Default & Catch-All

```
server {
    listen 80 default_server;
    server_name _;
    return 444; # putus koneksi
}
```

Redirect ke HTTPS

```
server {
    listen 80;
    server_name example.com;
    return 301 https://$host$request_uri;
}
```

Location Block

```
Prioritas Pencocokan (tinggi ke rendah)
= /path Pencocokan tepat (prioritas tertinggi)
^~ /path Pencocokan prefix, lewat regex
~ regex Regex case-sensitive
~* regex Regex case-insensitive
/path Pencocokan prefix (prioritas terendah)
```

Contoh Location

```
location = /root tepat
location /api {
    proxy_pass http://backend;
}
location ~* \.(jpg|png|gif)$ {
    expires 30d;
}
```

try_files

```
location / {
    try_files $uri $uri/ /index.html;
}
```

Coba file, direktori, lalu fallback – penting untuk SPA

Reverse Proxy

Proxy Dasar

```
location /api/ {
    proxy_pass http://localhost:3000/;
    proxy_set_header Host $host;
    proxy_set_header X-Real-IP $remote_addr;
    proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
    proxy_set_header X-Forwarded-Proto $scheme;
}
```

Proxy WebSocket

```
location /ws/ {
    gzip_pass http://localhost:3000;
    proxy_http_version 1.1;
    proxy_set_header Upgrade $http_upgrade;
    proxy_set_header Connection "upgrade";
}
```

Direktif Proxy

```
proxy_pass URL backend
proxy_set_header Teruskan header kustom ke backend
proxy_read_timeout Timeout respons backend (default 60s)
proxy_buffering off Nonaktifkan buffering respons
proxy_redirect Tulis ulang header Location dari backend
```

SSL / TLS

Server HTTPS

```
server {
    listen 443 ssl;
    server_name example.com;

    ssl_certificate /etc/ssl/certs/example.crt;
    ssl_certificate_key /etc/ssl/private/example.key;
    ssl_protocols TLSv1.2 TLSv1.3;
    ssl_ciphers HIGH:!aNULL:!MD5;
}
```

Let's Encrypt dengan Certbot

```
sudo certbot --nginx -d example.com
sudo certbot renew --dry-run
```

Best Practice SSL

```
ssl_protocols TLSv1.2 TLSv1.3 Nonaktifkan versi TLS lama
ssl_prefer_server_ciphers on Server memilih cipher
ssl_session_cache shared:SSL:10m Reuse sesi untuk performa
add_header Strict-Transport-Security Header HSTS
ssl_stapling on OCSP stapling untuk handshake lebih cepat
```

Load Balancing

Blok Upstream

```
upstream backend {
    server 10.0.0.1:3000;
    server 10.0.0.2:3000;
    server 10.0.0.3:3000;
}
```

```
server {
    location / {
        proxy_pass http://backend;
    }
}
```

Metode Load Balancing

```
(default) Round-robin
least_conn Koneksi aktif paling sedikit
ip_hash Sesi sticky berdasarkan IP client
hash $request_uri Hash konsisten berdasarkan URI
```

Opsi Server

```
weight=3 Kirim 3x lebih banyak traffic
max_fails=3 Kegagalan sebelum ditandai mati
fail_timeout=30s Waktu menandai server sebagai mati
backup Gunakan hanya jika server lain mati
down Tandai server sebagai offline permanen
```

File Statis & Caching

Sajikan File Statis

```
location /static/ {
    alias /var/www/assets/;
    expires 30d;
    add_header Cache-Control "public, immutable";
}
```

Kompresi Gzip

```
gzip on;
gzip_types text/plain text/css application/json application/javascript;
gzip_min_length 1000;
gzip_comp_level 5;
```

Direktif Caching

```
expires 30d Set header Expires dan Cache-Control max-age
expires off Nonaktifkan header expires
etag on Aktifkan header ETag (default)
sendfile on Penyajian file efisien via kernel
tcp_nopush on Optimalkan pengiriman paket
```

Logging

Konfigurasi Log

```
access_log /var/log/nginx/access.log;
error_log /var/log/nginx/error.log warn;
```

```
# Format log kustom
log_format main '$remote_addr - $status '
                '"$request" $body_bytes_sent';
access_log /var/log/nginx/access.log main;
```

Level Log Error

```
debug Verbose (perlu --with-debug)
info Informasional
notice Normal tapi perlu diperhatikan
warn Peringatan
error Error (default)
crit Masalah kritis
```

Logging Kondisional

```
map $status $loggable {
    [23] 0;
    default 1;
}
access_log /var/log/nginx/access.log combined if=$loggable;
Lewati logging respons 2xx/3xx untuk mengurangi volume log
```

Keamanan

Rate Limiting

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

location /api/ {
    limit_req zone=api burst=20 nodelay;
}
```

Kontrol Akses

```
location /admin/ {
    allow 192.168.1.0/24;
    deny all;
}
```

Header Keamanan

```
X-Frame-Options DENY Cegah clickjacking
X-Content-Type-Options nosniff Cegah MIME sniffing
X-XSS-Protection "1; mode=block" Filter XSS (browser lama)
Content-Security-Policy Kontrol sumber pemuatan resource
Referrer-Policy no-referrer Kontrol informasi referrer
```

Pola Umum

SPA (Single-Page App)

```
location / {
    root /var/www/app;
    try_files $uri $uri/ /index.html;
}
```

Header CORS

```
location /api/ {
    add_header Access-Control-Allow-Origin *;
    add_header Access-Control-Allow-Methods
        "GET, POST, PUT, DELETE, OPTIONS";
    if ($request_method = OPTIONS) {
        return 204;
    }
    proxy_pass http://backend;
}
```

Variabel Berguna

```
$host Header Host request
$uri URI saat ini (ternormalisasi)
$request_uri URI asli dengan query string
$remote_addr Alamat IP client
$scheme http atau https
$args Parameter query string
$status Kode status respons
```