

Referensi Cepat Nginx

Server block, proxy, SSL, load balancing, logging

Instalasi

Instalasi per OS

Ubuntu / Debian	<code>sudo apt install nginx</code>
RHEL / CentOS	<code>sudo dnf install nginx</code>
macOS	<code>brew install nginx</code>
Alpine	<code>apk add nginx</code>
Docker	<code>docker run -p 80:80 nginx</code>

Manajemen Layanan

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

Konfigurasi Dasar

Lokasi File

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

Konfigurasi Minimal

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

Struktur Konfigurasi

<code>http { }</code>	Pengaturan server HTTP (level teratas)
<code>server { }</code>	Definisi virtual host
<code>location { }</code>	Blok pencocokan URI
<code>upstream { }</code>	Grup server backend
<code>events { }</code>	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)

<code>= /path</code>	Pencocokan tepat (prioritas tertinggi)
<code>^~ /path</code>	Pencocokan prefix, lewati regex
<code>~ regex</code>	Regex case-sensitive
<code>~* regex</code>	Regex case-insensitive
<code>/path</code>	Pencocokan prefix (prioritas terendah)

Contoh Location

```
location = / {
    # hanya 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/ {
    proxy_pass http://localhost:3000;
    proxy_http_version 1.1;
    proxy_set_header Upgrade $http_upgrade;
    proxy_set_header Connection "upgrade";
}
```

Direktif Proxy

<code>proxy_pass</code>	URL backend
<code>proxy_set_header</code>	Teruskan header kustom ke backend
<code>proxy_read_timeout</code>	Timeout respons backend (default 60s)
<code>proxy_buffering off</code>	Nonaktifkan buffering respons
<code>proxy_redirect</code>	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

<code>ssl_protocols TLSv1.2 TLSv1.3</code>	Nonaktifkan versi TLS lama
<code>ssl_prefer_server_ciphers on</code>	Server memilih cipher
<code>ssl_session_cache shared:SSL:10m</code>	Reuse sesi untuk performa
<code>add_header Strict-Transport-Security</code>	Header HSTS
<code>ssl_stapling on</code>	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

<code>(default)</code>	Round-robin
<code>least_conn</code>	Koneksi aktif paling sedikit
<code>ip_hash</code>	Sesi sticky berdasarkan IP client
<code>hash \$request_uri</code>	Hash konsisten berdasarkan URI

Opsi Server

<code>weight=3</code>	Kirim 3x lebih banyak traffic
<code>max_fails=3</code>	Kegagalan sebelum ditandai mati
<code>fail_timeout=30s</code>	Waktu menandai server sebagai mati
<code>backup</code>	Gunakan hanya jika server lain mati
<code>down</code>	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";
}
```

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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