nginx Web server and proxy

CONCEPTS

Always run nginx -t before reload: a broken config is rejected and the old one keeps running.

main user, workers, pid
- **http** shared web settings
  - **server** one virtual host
    - **location** one URL path

Directives are inherited inward; the innermost value wins

listen ip:port
↓ Host header
server_name pick server
↓ URI
location pick best match
↓ handler
root / proxy_pass file or backend

How a request is routed

A directive ends with a semicolon; a block uses braces. A missing semicolon is the classic syntax error.

PROCESS CONTROL

nginx -t
Check config syntax

nginx -T
Test and dump the full config

nginx -s reload
Reload config gracefully

nginx -s quit
Graceful shutdown

nginx -s stop
Fast shutdown

nginx -s reopen
Reopen log files (after rotation)

nginx -V
Show version and build options

SERVER BLOCKS

listen 80;
Port to accept connections on

listen 443 ssl;
Accept TLS on this port

listen 80 default_server;
Catch requests matching no name

SERVER BLOCKS (cont.)

server_name example.com www.example.com;
Hosts this server answers

server_name *.example.com;
Wildcard host match

root *<dir>*;
Document root; URI is appended

index index.html index.htm;
File served for a directory

include *<file>*;
Pull in more config files, globs allowed

error_page 404 /404.html;
Custom page for an error code

client_max_body_size 10m;
Max upload size (default 1m, else 413)

LOCATIONS

location / { }
Prefix match: the catch-all

location = /path { }
Exact match, stops the search

location ^~ /static/ { }
Prefix that skips regex checks

location ~ \.php$ { }
Case-sensitive regex

location ~* \.(jpg|png)$ { }
Case-insensitive regex

alias *<dir>*/;
Replace the location prefix with a path

try_files $uri $uri/ =404;
Try file, directory, then 404

try_files $uri /index.html;
SPA fallback to the index page

return 301 *<url>*;
Redirect permanently

Location matching order

Step	Rule
1	Exact = match ends the search
2	Longest prefix is remembered; ^~ stops here
3	Regex ~ and ~* in file order, first wins
4	No regex hit: first matching predicate $var location (1.31.5+)
5	Nothing else matched: use the remembered prefix

REVERSE PROXY

proxy_pass http://127.0.0.1:8080;
Forward requests to a backend

proxy_pass http://*<upstream>*;
Forward to a named upstream group

proxy_set_header Host $host;
Pass the original host to the backend

proxy_set_header X-Real-IP $remote_addr;
Tell the backend the client IP

proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
Append client IP to the chain

proxy_set_header X-Forwarded-Proto $scheme;
Pass http or https

proxy_read_timeout 60s;
Wait between reads from the backend

upstream *<upstream>* **{ server** *<host:port>*; **}**
Define a backend pool

TLS

ssl_certificate *<file>*;
Certificate (leaf first, then chain)

ssl_certificate_key *<file>*;
Private key, PEM

ssl_protocols TLSv1.2 TLSv1.3;
Allowed TLS versions (the default)

ssl_session_cache shared:SSL:10m;
Share TLS sessions across workers

return 301 https://$host$request_uri;
Redirect HTTP to HTTPS

LOGS AND VARIABLES

access_log /var/log/nginx/access.log;
Request log location

error_log /var/log/nginx/error.log warn;
Error log and minimum level