# ==================================================================

# PRODUCTION-READY APACHE LOAD BALANCER CONFIGURATION

# ==================================================================

# Basic Server Configuration

ServerRoot "D:/Software/ApacheHttpd/Apache24"

PidFile logs/httpd.pid

Timeout 60

KeepAlive On

MaxKeepAliveRequests 100

KeepAliveTimeout 5

# Multi-Processing Module (MPM) - Windows

LoadModule mpm\_winnt\_module modules/mod\_mpm\_winnt.so

<IfModule mpm\_winnt\_module>

ThreadsPerChild 150

MaxRequestWorkers 8000

ThreadLimit 64

</IfModule>

# Core Modules

LoadModule authz\_core\_module modules/mod\_authz\_core.so

LoadModule dir\_module modules/mod\_dir.so

LoadModule mime\_module modules/mod\_mime.so

LoadModule rewrite\_module modules/mod\_rewrite.so

# Proxy and Load Balancer Modules

LoadModule proxy\_module modules/mod\_proxy.so

LoadModule proxy\_http\_module modules/mod\_proxy\_http.so

LoadModule proxy\_balancer\_module modules/mod\_proxy\_balancer.so

LoadModule lbmethod\_byrequests\_module modules/mod\_lbmethod\_byrequests.so

LoadModule lbmethod\_bytraffic\_module modules/mod\_lbmethod\_bytraffic.so

LoadModule lbmethod\_heartbeat\_module modules/mod\_lbmethod\_heartbeat.so

# SSL Module

LoadModule ssl\_module modules/mod\_ssl.so

# Security Modules

LoadModule headers\_module modules/mod\_headers.so

LoadModule security2\_module modules/mod\_security2.so

# Monitoring Modules

LoadModule status\_module modules/mod\_status.so

LoadModule info\_module modules/mod\_info.so

# ==================================================================

# BASIC SERVER SETTINGS

# ==================================================================

# Listening Ports

Listen 80

Listen 443 ssl

# Server Information (Hide for security)

ServerTokens Prod

ServerSignature Off

# Document Root

DocumentRoot "D:/Software/ApacheHttpd/Apache24/htdocs"

# Directory Security

<Directory />

AllowOverride none

Require all denied

</Directory>

<Directory "D:/Software/ApacheHttpd/Apache24/htdocs">

Options -Indexes -FollowSymLinks

AllowOverride None

Require all granted

</Directory>

# MIME Types

TypesConfig conf/mime.types

# ==================================================================

# SECURITY CONFIGURATION

# ==================================================================

# Hide Apache Version

Header always unset Server

Header unset X-Powered-By

# Security Headers

Header always set X-Content-Type-Options nosniff

Header always set X-Frame-Options SAMEORIGIN

Header always set X-XSS-Protection "1; mode=block"

Header always set Referrer-Policy "strict-origin-when-cross-origin"

# Hide .htaccess files

<Files ".ht\*">

Require all denied

</Files>

# Disable TRACE method

TraceEnable off

# ==================================================================

# LOGGING CONFIGURATION

# ==================================================================

# Error Logging

LogLevel warn

ErrorLog logs/error.log

# Custom Log Format with Load Balancer Info

LogFormat "%h %l %u %t \"%r\" %>s %O \"%{Referer}i\" \"%{User-Agent}i\" %D %{BALANCER\_WORKER\_ROUTE}e" combined\_balancer

LogFormat "%h %l %u %t \"%r\" %>s %O %D" common\_timed

# Access Logs

CustomLog logs/access.log combined\_balancer

# Separate logs for load balancer

CustomLog logs/balancer.log "%t [%{BALANCER\_WORKER\_ROUTE}e] %h \"%r\" %>s %D" env=BALANCER\_WORKER\_ROUTE

# ==================================================================

# LOAD BALANCER CONFIGURATION

# ==================================================================

# Main Application Load Balancer

<Proxy "balancer://app-cluster">

# Backend Servers with Health Check and Performance Settings

BalancerMember http://10.0.1.10:8080 route=app-server-1 retry=30 timeout=5 connectiontimeout=3 ping=10 loadfactor=100

BalancerMember http://10.0.1.11:8080 route=app-server-2 retry=30 timeout=5 connectiontimeout=3 ping=10 loadfactor=100

BalancerMember http://10.0.1.12:8080 route=app-server-3 retry=30 timeout=5 connectiontimeout=3 ping=10 loadfactor=100

# Hot Standby Server (only used if all primary servers fail)

BalancerMember http://10.0.1.13:8080 route=app-server-standby status=+H retry=60 timeout=10 loadfactor=50

# Load Balancing Method and Settings

ProxySet lbmethod=byrequests

ProxySet stickysession=JSESSIONID

ProxySet hcmethod=GET

ProxySet hcuri=/health

</Proxy>

# Database Connection Pool Load Balancer (if needed)

<Proxy "balancer://db-cluster">

BalancerMember http://10.0.2.10:3306 route=db-master retry=60 timeout=10 loadfactor=100

BalancerMember http://10.0.2.11:3306 route=db-slave-1 status=+H retry=60 timeout=10 loadfactor=75

BalancerMember http://10.0.2.12:3306 route=db-slave-2 status=+H retry=60 timeout=10 loadfactor=75

ProxySet lbmethod=bytraffic

</Proxy>

# Global Proxy Settings

ProxyTimeout 10

ProxyPreserveHost On

ProxyRequests Off

# Connection Pooling for Performance

ProxyPassMatch ^/(.\*)\.(js|css|png|jpg|jpeg|gif|ico|svg)$ !

ProxyPass /static !

# ==================================================================

# HTTP VIRTUAL HOST (Redirect to HTTPS)

# ==================================================================

<VirtualHost \*:80>

ServerName your-domain.com

ServerAlias www.your-domain.com

# Redirect all HTTP to HTTPS

RewriteEngine On

RewriteCond %{HTTPS} off

RewriteRule ^(.\*)$ https://%{HTTP\_HOST}%{REQUEST\_URI} [R=301,L]

# Health check endpoint (allow HTTP for load balancer health checks)

ProxyPass /health-check balancer://app-cluster/health

ProxyPassReverse /health-check balancer://app-cluster/health

</VirtualHost>

# ==================================================================

# HTTPS VIRTUAL HOST (Main Application)

# ==================================================================

<VirtualHost \*:443>

ServerName your-domain.com

ServerAlias www.your-domain.com

# SSL Configuration

SSLEngine on

SSLCertificateFile conf/ssl/your-domain.com.crt

SSLCertificateKeyFile conf/ssl/your-domain.com.key

SSLCertificateChainFile conf/ssl/intermediate.crt

# Modern SSL Settings

SSLProtocol -all +TLSv1.2 +TLSv1.3

SSLCipherSuite ECDHE-ECDSA-AES128-GCM-SHA256:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-RSA-AES256-GCM-SHA384:ECDHE-ECDSA-CHACHA20-POLY1305:ECDHE-RSA-CHACHA20-POLY1305:DHE-RSA-AES128-GCM-SHA256:DHE-RSA-AES256-GCM-SHA384

SSLHonorCipherOrder off

SSLSessionTickets off

SSLUseStapling on

SSLStaplingCache "shmcb:logs/ssl\_stapling(32768)"

# HSTS (HTTP Strict Transport Security)

Header always set Strict-Transport-Security "max-age=31536000; includeSubDomains; preload"

# Application Load Balancer Proxy

ProxyPass /load balancer://app-cluster/load/load

ProxyPassReverse /load balancer://app-cluster/load/load

# API Load Balancer Proxy

ProxyPass /api balancer://app-cluster/api

ProxyPassReverse /api balancer://app-cluster/api

# Static Content (bypass load balancer)

Alias /static "D:/webapp/static"

<Directory "D:/webapp/static">

Require all granted

ExpiresActive On

ExpiresDefault "access plus 1 month"

</Directory>

# Health Check Endpoint

ProxyPass /health balancer://app-cluster/health

ProxyPassReverse /health balancer://app-cluster/health

# WebSocket Support (if needed)

ProxyPass /ws balancer://app-cluster/ws

ProxyPassReverse /ws balancer://app-cluster/ws

RewriteEngine on

RewriteCond %{HTTP:UPGRADE} ^WebSocket$ [NC]

RewriteCond %{HTTP:CONNECTION} Upgrade$ [NC]

RewriteRule .\* ws://backend%{REQUEST\_URI} [P]

# Error Pages

ErrorDocument 502 /error/502.html

ErrorDocument 503 /error/503.html

ErrorDocument 504 /error/504.html

</VirtualHost>

# ==================================================================

# MONITORING AND MANAGEMENT

# ==================================================================

# Balancer Manager (Restrict Access)

<Location "/balancer-manager">

SetHandler balancer-manager

Require ip 10.0.0.0/8

Require ip 192.168.0.0/16

Require local

</Location>

# Server Status (Restrict Access)

<Location "/server-status">

SetHandler server-status

Require ip 10.0.0.0/8

Require local

</Location>

# Server Info (Restrict Access)

<Location "/server-info">

SetHandler server-info

Require ip 10.0.0.0/8

Require local

</Location>

# ==================================================================

# PERFORMANCE OPTIMIZATION

# ==================================================================

# Compression

LoadModule deflate\_module modules/mod\_deflate.so

<IfModule mod\_deflate.c>

<Location />

SetOutputFilter DEFLATE

SetEnvIfNoCase Request\_URI \.(?:gif|jpe?g|png)$ no-gzip dont-vary

SetEnvIfNoCase Request\_URI \.(?:exe|t?gz|zip|bz2|sit|rar)$ no-gzip dont-vary

</Location>

</IfModule>

# Caching

LoadModule expires\_module modules/mod\_expires.so

<IfModule mod\_expires.c>

ExpiresActive On

ExpiresByType image/jpg "access plus 1 month"

ExpiresByType image/jpeg "access plus 1 month"

ExpiresByType image/gif "access plus 1 month"

ExpiresByType image/png "access plus 1 month"

ExpiresByType text/css "access plus 1 month"

ExpiresByType application/pdf "access plus 1 month"

ExpiresByType text/javascript "access plus 1 month"

ExpiresByType application/javascript "access plus 1 month"

</IfModule>

# ==================================================================

# RATE LIMITING (Optional - requires mod\_evasive)

# ==================================================================

# LoadModule evasive24\_module modules/mod\_evasive24.so

# <IfModule mod\_evasive24.c>

# DOSHashTableSize 2048

# DOSPageCount 2

# DOSSiteCount 50

# DOSPageInterval 1

# DOSSiteInterval 1

# DOSBlockingPeriod 600

# DOSEmailNotify admin@your-domain.com

# DOSLogDir logs

# </IfModule>

# ==================================================================

# MOD\_SECURITY (Web Application Firewall)

# ==================================================================

# <IfModule security2\_module>

# Include conf/modsecurity.conf

# Include conf/owasp-modsecurity-crs/\*.conf

# </IfModule>