



## A Byte of Nginx

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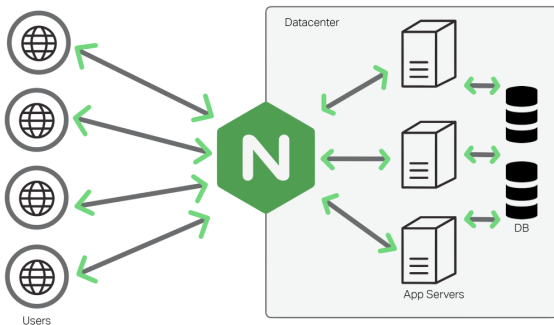
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# Introduce



Nginx is a web server which can also be used as a reverse proxy, load balancer, mail proxy and HTTP cache.

# Basics

```
$ nginx  
$ nginx -s reload  
$ nginx -s stop  
$ nginx -s quit  
$ nginx -s reopen  
$ nginx -f /conf/nginx.conf
```

```
$ service nginx start  
$ service nginx stop  
$ service nginx restart
```

# HTTP Load Balance

## Problem

You need to distribute load between two or more HTTP servers.

## Solution

```
upstream backend {  
    server 10.10.12.45:80 weight=1;  
    server app.example.com:80 weight=2;  
}  
server {  
    location / {  
        proxy_pass http://backend;  
    }  
}
```

# TCP Load Balance

## Problem

You need to distribute load between two or more TCP servers.

## Solution

```
stream {  
    upstream mysql_read {  
        server read1.example.com:3306 weight=5;  
        server read1.example.com:3306;  
        server 10.10.12.34:3306 backup;  
    }  
    server {  
        listen 3306;  
        proxy_pass mysql_read;  
    }  
}
```

# Load Balancing methods

- ▶ Round robin
- ▶ Least connections
- ▶ Generic hash
- ▶ Least time
- ▶ IP hash

# Connection Limiting



# Massively Scalable Content Caching

## Problem

You need to cache content and need to define where the cache is stored.

## Solution

```
proxy_cache_path /var/nginx/cache
```

```
    keys_zone=CACHE:60m levels=1:2  
    inactive=3h  
    max_size=20g;
```

```
proxy_cache CACHE;
```

# Configuring Logs

## Specify AND as well as OR Conditions

```
db.users.find(  
  {"name":"yuansheng", "age":23}  
)
```

# Performance Tuning

## Keeping Connections Open to Clients

```
http {  
    keepalive_requests 320;  
    keepalive_timeout 300s;  
}
```

## Keeping Connections Open Upstream

```
proxy_http_version 1.1;  
proxy_set_header Connection "";  
upstream backend {  
    server 10.0.0.42;  
    server 10.0.2.56;  
    keepalive 32;  
}
```

# OS Tuning

- ▶ Raising the number of open file descriptors is a more common need.
- ▶ Check the kernel setting for `net.core.somaxconn`, which is the maximum number of connections that can be queued by the kernel for NGINX to process.
- ▶ Enable more ephemeral ports.

# Other Tools

## Tools

mongo	mongoexport	mongooplog	mongos
mongod	mongofiles	mongoperf	mongostat
mongodump	mongoimport	mongorestore	mongotop

**mongooplog** Pulls oplog entries from another mongod instance.

**mongos** MongoDB shard process.

**mongoperf** Check disk I/O performance.

**mongostat** Returns counters of database operation.

**mongotop** Tracks/reports MongoDB read/write activities.

# References



Chodorow, K. (2013).

*MongoDB: The definitive guide.*

O'Reilly Media, Inc.



Plugge, E., Hows, D., Membrey, P., and Hawkins, T. (2015).

*The Definitive Guide to MongoDB: A complete guide to dealing with Big Data using MongoDB.*

Apress.