



LOAD BALANCE

DOCKER PROJECT

WITHOUT LOADBALANCER

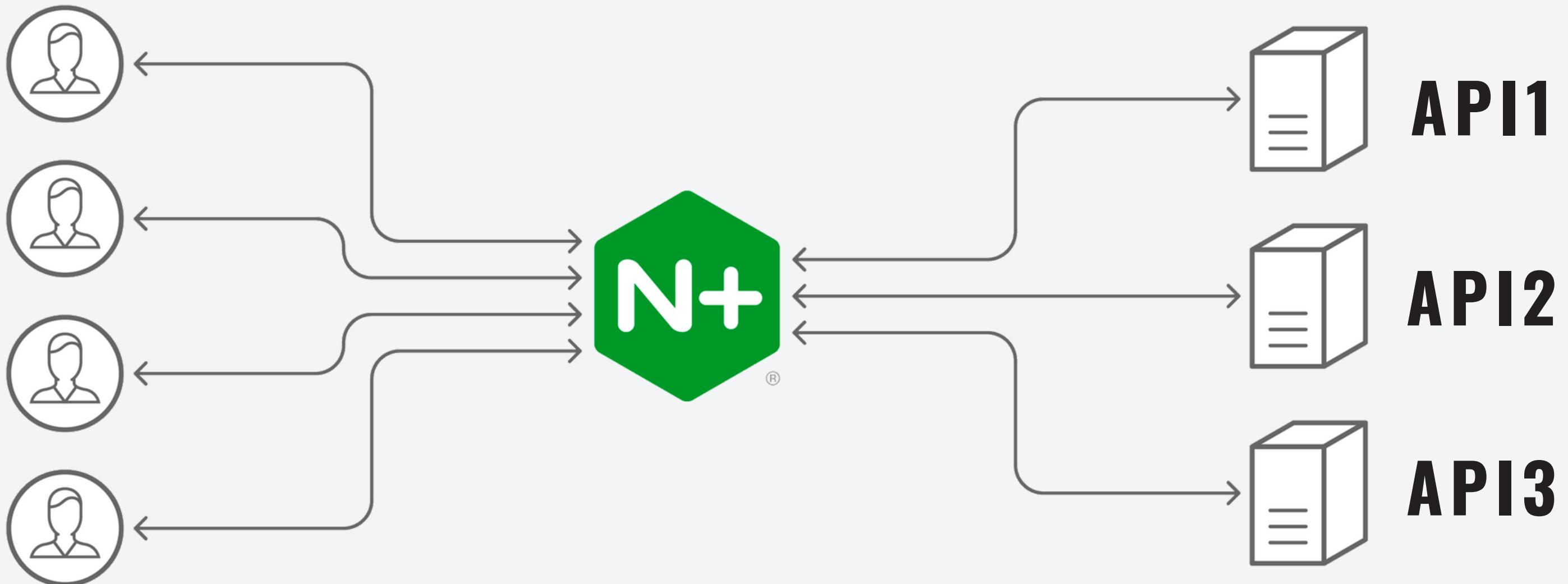


WITHOUT LOADBALANCER

502 BAD GATEWAY



WHAT IS LOADBALANCE



BENEFIT OF THE PROJECT

HIGH AVAILABILITY

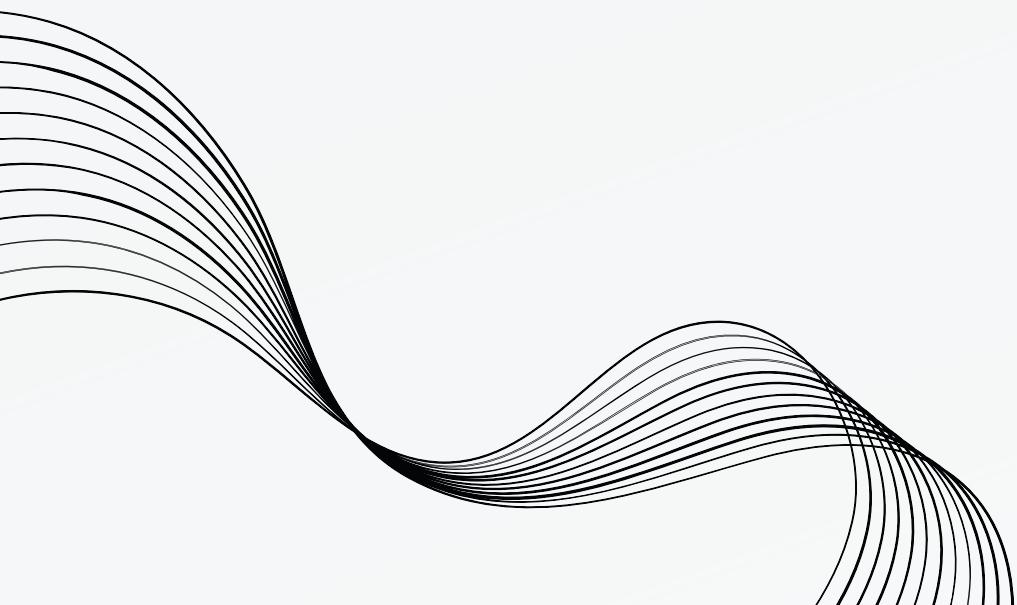
BY REDIRECTING TRAFFIC IN CASE OF SERVER ISSUES, LOAD BALANCERS
ENHANCE SYSTEM RELIABILITY AND MINIMIZE DOWNTIME.

IMPROVED PERFORMANCE

LOAD BALANCERS EVENLY DISTRIBUTE TRAFFIC, PREVENTING SERVERS
FROM BECOMING OVERLOADED AND ENSURING FASTER RESPONSE TIMES.

SCALABILITY

LOAD BALANCERS ALLOW FOR EASY ADDITION OF SERVERS, ENABLING
SYSTEMS TO SCALE AND ACCOMMODATE INCREASED USER DEMAND.



COMPLEXITY OF THE PROJECT

THE PROJECT INVOLVES SETTING UP A DOCKER ENVIRONMENT WITH NGINX AS A LOAD BALANCER DISTRIBUTING REQUESTS TO THREE API CONTAINERS

NUMBER OF CONTAINERS:

4 CONTAINERS: ONE FOR THE NGINX LOAD BALANCER AND THREE FOR EACH API.

DOCKER NETWORKS:

DOCKER NETWORK TO CONNECT NGINX WITH API CONTAINERS.

PORTS:

NGINX EXPOSES PORT 3333, AND IT BALANCES TRAFFIC TO THREE APIs INTERNALLY.

VOLUME:

CONFIG OF NGINX

PERFECTLY BALANCED

AS ALL THINGS SHOULD BE

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CREATE INDEX.JS TO SHOW HOSTNAME ID

```
1 import express from "express";
2 import os from "os";
3
4 const app = express();
5 const port = 3333;
6
7 app.get("/", (req, res) => {
8   res.send({
9     message: `${os.hostname()} is running on port ${port}`,
10   });
11 });
12
13 app.listen(port, () => {
14   console.log(`Server is running on port ${port}`);
15});
```

CREATE DOCKER FILE FOR BUILD

```
1 FROM node:lts-alpine
2 ENV NODE_ENV=production
3 WORKDIR /usr/src/app
4 COPY ["package.json", "package-lock.json*", "npm-shrinkwrap.json*", "./"]
5 RUN npm install --production --silent && mv node_modules ../
6 COPY . .
7 EXPOSE 3333
8 RUN chown -R node /usr/src/app
9 USER node
10 CMD ["node", "index.js"]
```

CREATE DOCKER-COMPOSE FILE FOR RUN CONTAINER

```
1 version: "3.1"
2 services:
3   api:
4     image: pantagon/loadbalance
5   nginx:
6     image: nginx:alpine
7     ports:
8       - "3333:3333"
9     volumes:
10      - ./conf.d:/etc/nginx/conf.d
11    depends_on:
12      - api
```

CREATE 3 INSTANCE AS API

DOCKER COMPOSE UP --SCALE API=3



API1



API2



API1

```
{"message":"ae0f85f2e347 is running on port 3333!"}
```

```
{"message":"e8f8bc2b39ca is running on port 3333!"}
```

```
{"message":"d60997408168 is running on port 3333!"}
```

DEMO