PARTICULUM MOBILE: ZEND EXPRESSIVE MICROSERVICES IN DOCKER SWARM

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ZEND EXPRESSIVE

EXPRESSIVE 2.0

The PHP framework for Middleware applications

- PSR-7 HTTP Message support (using zend-diactoros)
- Support of *lambda middleware* (PSR-15) and *double pass* ($request, $response, $next)
- Piping workflow (using zend-stratigility)
- Features: routing, dependency injection, templating, error handling
- Last release 2.0.3, 28th March 2017

MIDDLEWARE

A function that gets a request and generates a response

```
use Psr\Http\Message\ServerRequestInterface as Reques
use Interop\Http\ServerMiddleware\DelegateInterface;

function (Request $request, DelegateInterface $next)
{
    // doing something with $request...
    // for instance calling the delegate middleware $next
    $response = $next->process($request);
    // manipulate the $response
    return $response;
}
```

INSTALLATION

You can install Expressive 2.0 using composer:

```
composer create-project zendframework/zend-expressive-
```

Choose the default options during the installation

PARTICULUM MOBILE

PERPETUUM MOBILE / FREE ENERGY

Load

Partcile collisions

Requests to backend: 8770
Responses from backend: 7883

Dead Partciles

Responses w/o recipients: 1755

PHP Containers

6d6db0d5a2fa	666
d4f8e73eb48e	463
f57a871e5e8b	365
016140aae2d3	364
e501c4fe2126	365
ff40afc93a11	365
72234b6b4497	364
68624300be27	365

Particulum Mobile

Statistics

Session Id:

Collision Count: 8216

Redis, total

Collision Count: 365

Session

bitbucket.org/5square-rw/particulum-mobile-backend

bitbucket.org/5square-rw/particulum-mobile-master

MICROSERVICES

"[...] a collection of loosely coupled services."

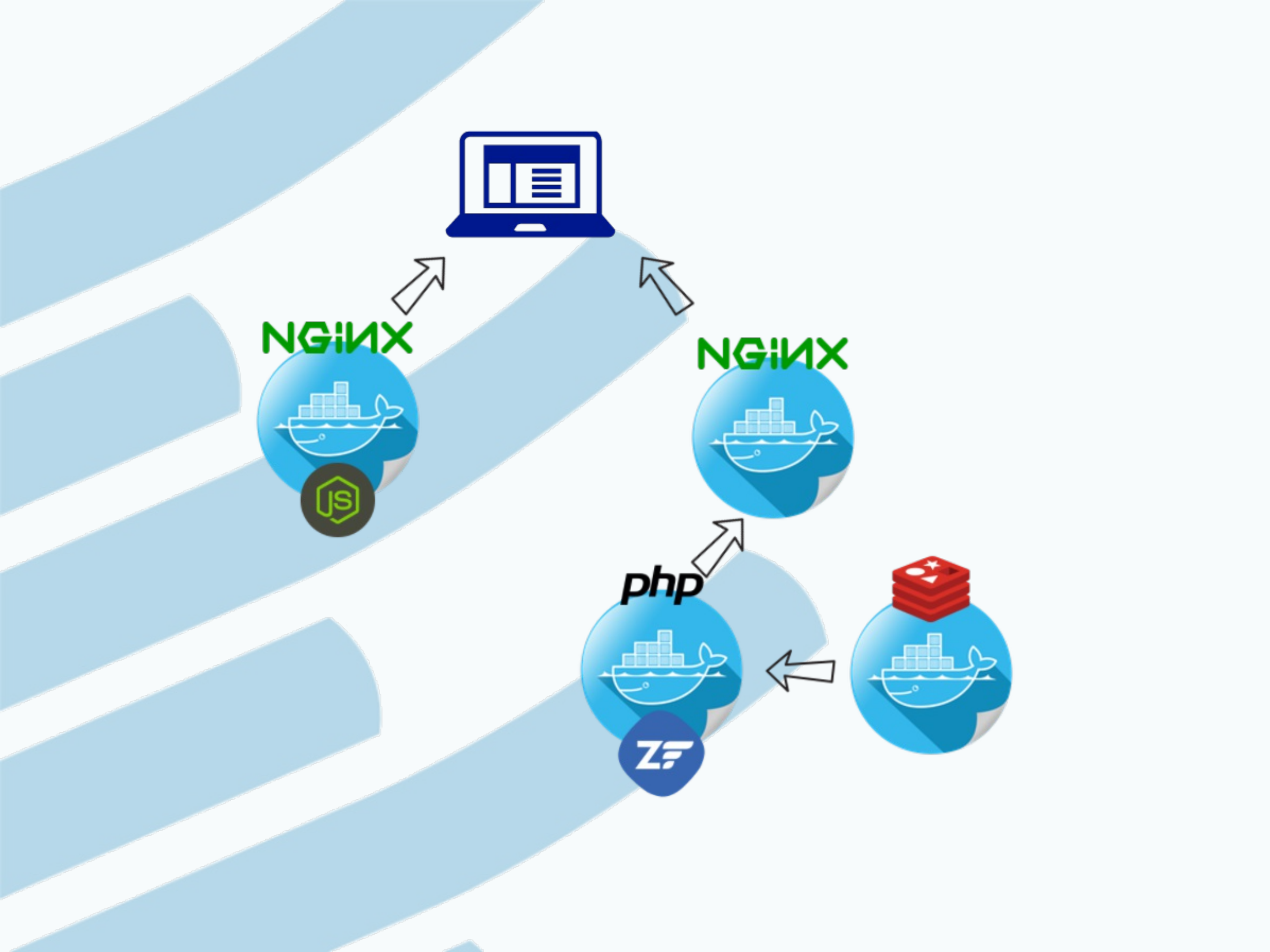
en.wikipedia.org/wiki/Microservices

- No Standard Definition
- No Specification
- Not specific to any Technology

DOCKER

MICROSERVICE ARCHITECTURAL STYLE

"[...] a suite of small services, each running in its own process and communicating with lightweight mechanisms, often an HTTP resource API"


NGINX
NGINX
php

DOCKER COMPOSE

DOCKER SWARM (MODE)

"Current versions of Docker include swarm mode for natively managing a cluster of Docker Engines called a swarm. Use the Docker CLI to create a swarm, deploy application services to a swarm, and manage swarm behavior."

MY LOCAL SETUP

- VirtualBox
- Vagrant
- 3 Nodes
- Ubuntu 16

INIT / MANAGER

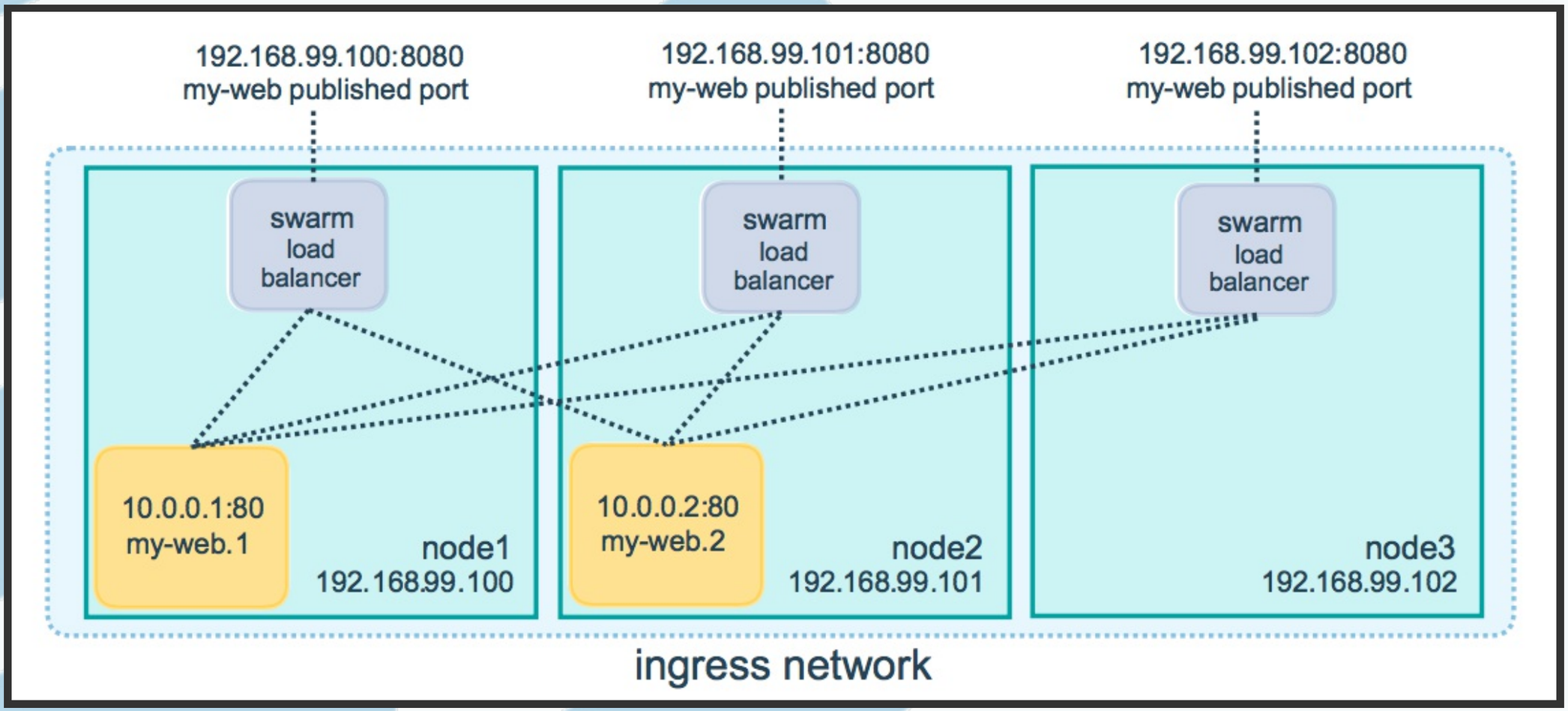
```
$ docker swarm init --advertise-addr 192.168.99.121
```

```
Swarm initialized: current node (bvz81updecsj6wjz393c09

To add a worker to this swarm, run the following commanc

    docker swarm join \
    --token SWMTKN-1-3pu6hszjas19xyp7ghgosyx9k8atbfcr
    172.17.0.2:2377

To add a manager to this swarm, run 'docker swarm join-t
```

ROUTING MESH

"The routing mesh enables each node in the swarm to accept connections on published ports for any service running in the swarm, even if there's no task running on the node."

INGRESS NETWORK



https://docs.docker.com/engine/swarm/ingress/

DEPLOYMENT

DOCKER COMPOSE V3

DEV

PROD

```
$ docker stack deploy --compose-file stack.yml pm
```

Install and Update

BUILDING (AND PUSHING) IMAGES

self-contained

BUILD

```
$ docker build -t particulum-mobile/backend .
```

DOCKER-COMPOSE

builds images on-the-fly

MAKEFILE

CI AAS

- (TravisCI)
- Codehip
- Wercker
- Codefresh
- etc...

DEMO

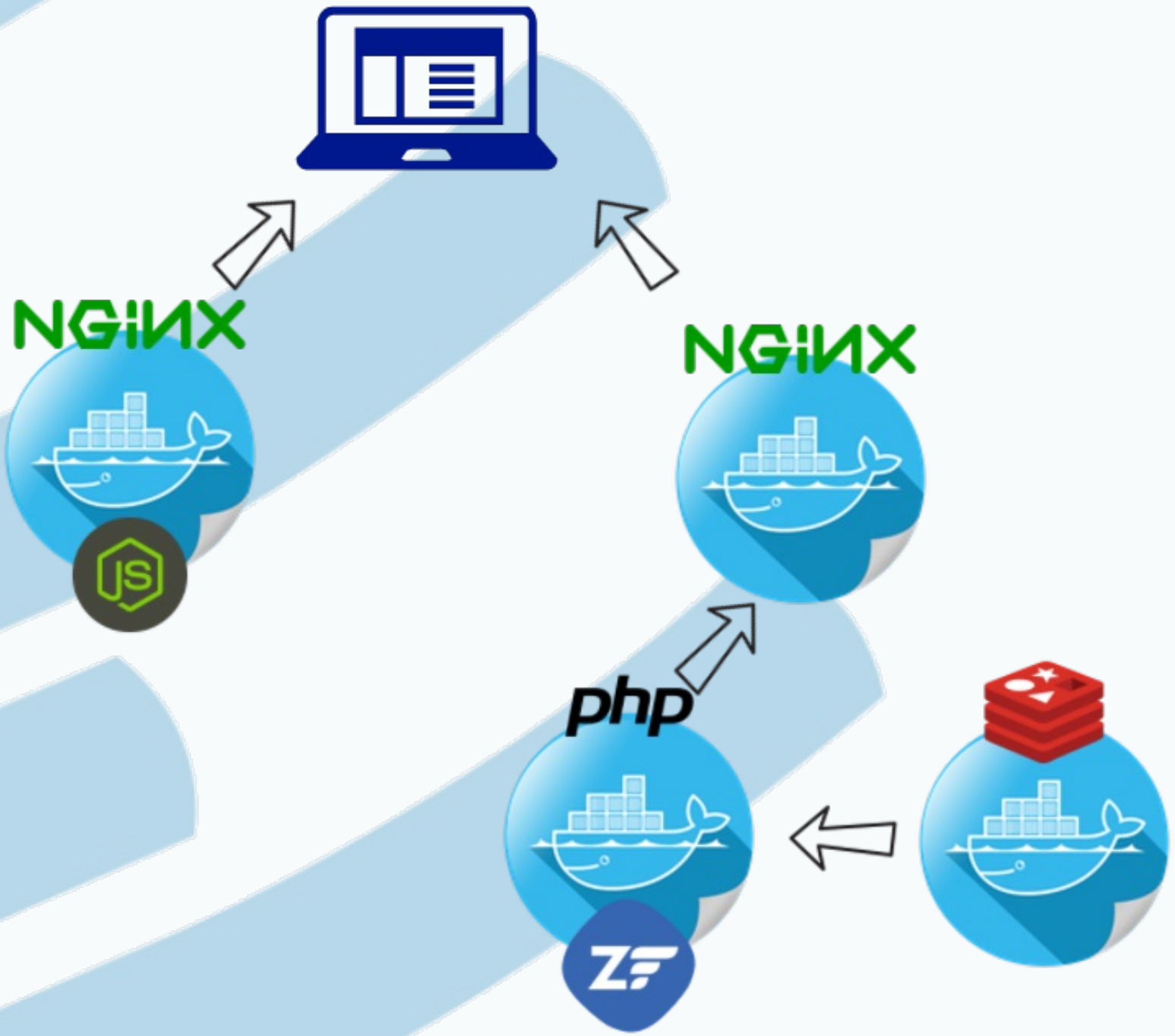
Particulum Mobile, Portainer, Visualizer

SCALABLE MICROSERVICE

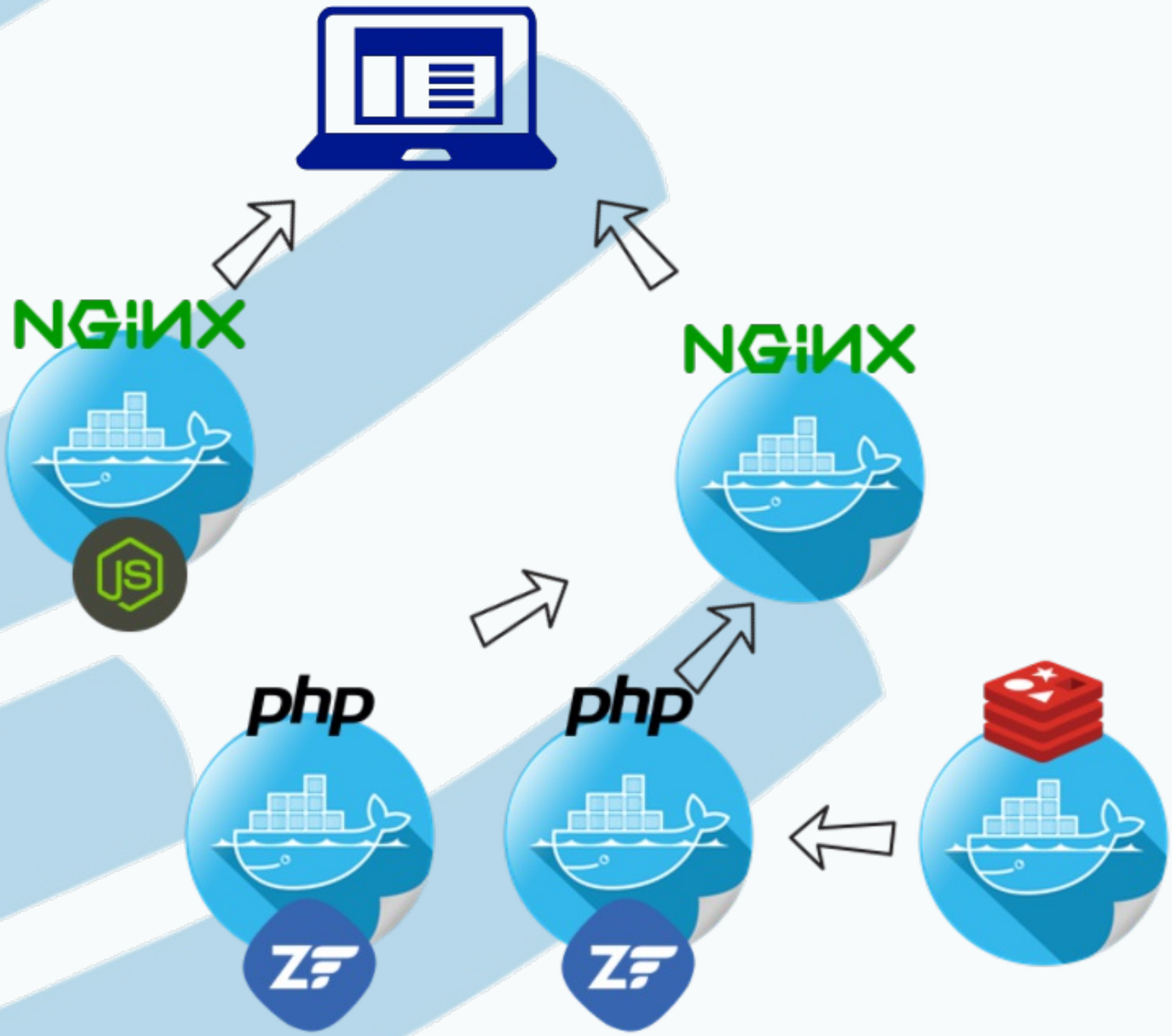
Session Handling?

ONE STEP BEYOND

WHAT DO WE HAVE?



WHAT DO WE WANT?



WHY?

Load

Swarm Stack

Name: pm-vanilla

Particle collisions

Requests to backend: 12791
Responses from backend: 7015

Dead Particles

Responses w/o recipients: 579

PHP Containers

0e4d9865c93e	297
1787398ea9ee	131
ab531391b7b6	131
5084018ee87d	132
082f3417632a	131
b32eee3a6d33	131
ef71c70faeeb	131
89963cb6d388	131
a1a0117ede57	131
c56268db5e1a	131
a1a44ce3cafb	132
ead775020f2d	130

Particulum Mobile

Statistics

Session Id: b0bab6bf-baba97f6-00000000-00000000-00000001-2gbjd80barahtve7qvj3648he1

Collision Count: 6227

Redis, total

Collision Count: 132

Session

PRIORIZATION

- Browser request limit
- Request queueing on server side

Just a Docker Compose file modification

BENEFITS 1/2

- Docker Swarm (& Compose)
  - See above ⬆
  - System Setup Config in VCS
  - Modular
  - Consistent Stack

BENEFITS 2/2

Expressive

- Lightweight
- No Framework Silo
- Modular
- Back to the Roots

DANKESCHÖN

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