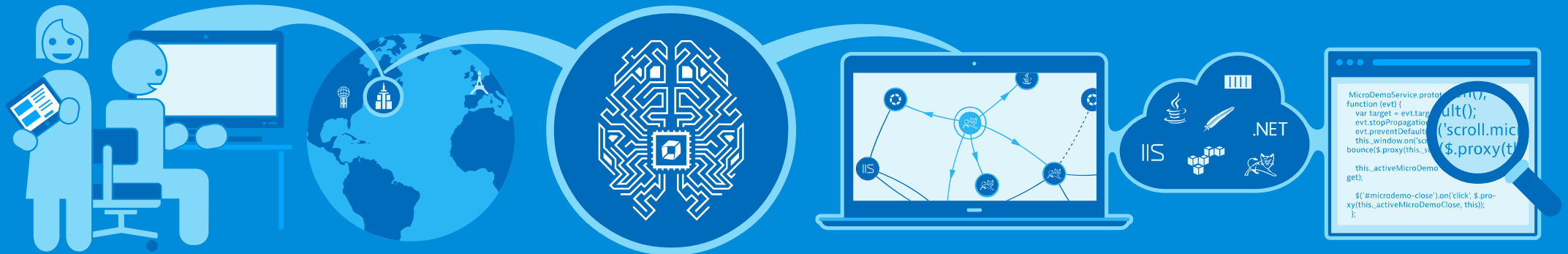




# *Schaffen Sie den Sprung ins Microservices Zeitalter* Monitoring von OpenShift mit Dynatrace

Red Hat Forum Wien, 24. Oktober 2017





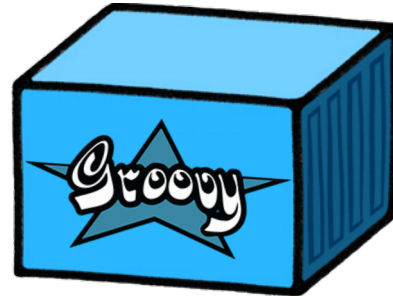
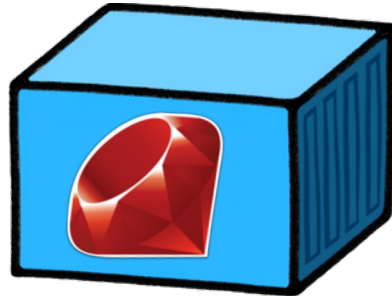
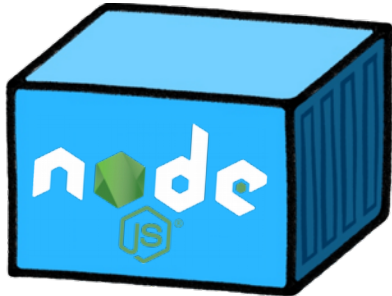
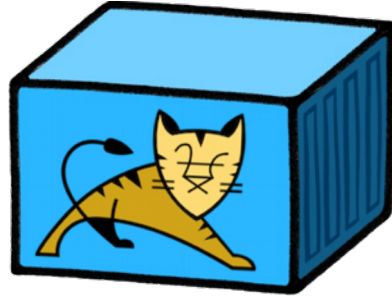
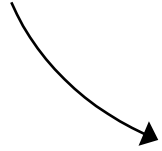
**Martin Etmajer**  
Technology Lead

✉ martin.etmajer@dynatrace.com



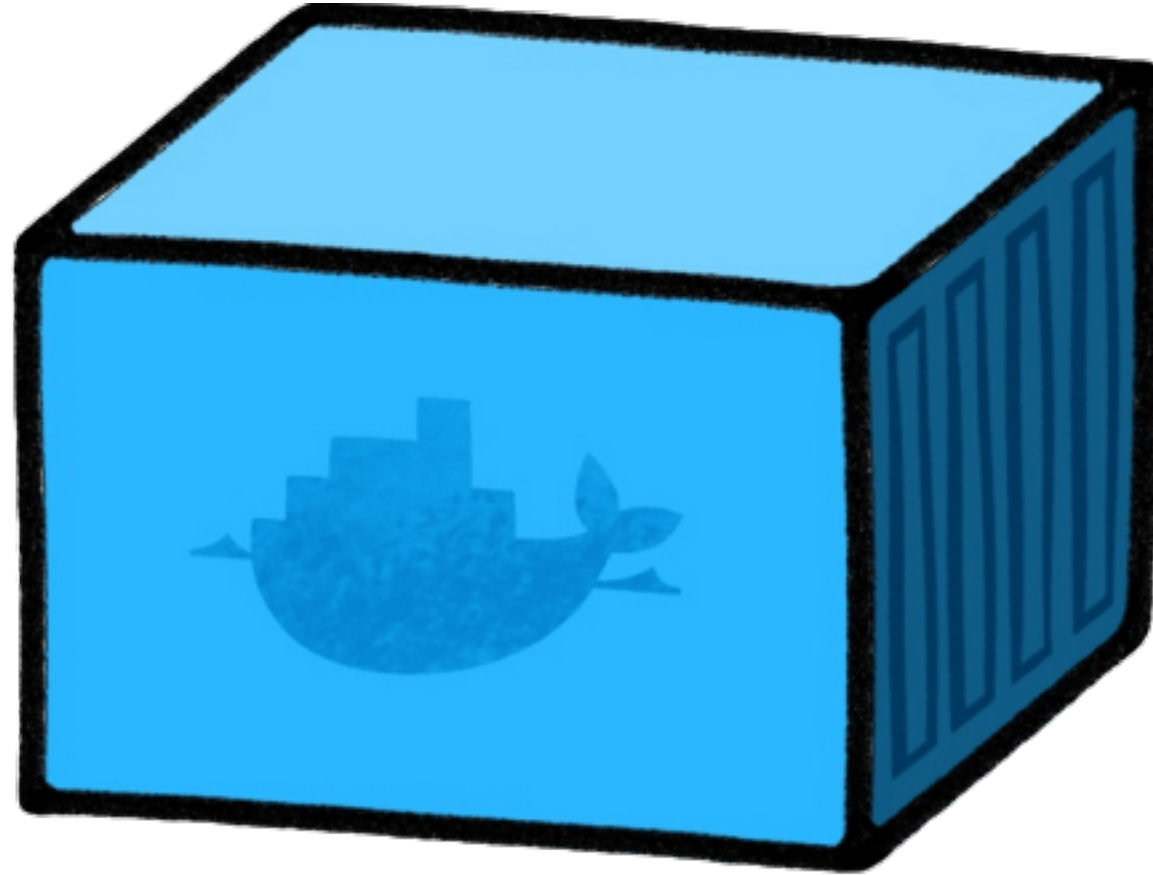
@metmajer

≈ microservices Containers in the Enterprise

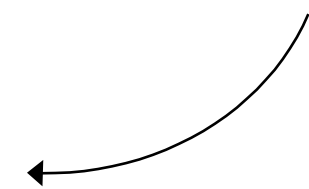


Enable increased *velocity, scalability, innovation.*

# Containers in the Enterprise



are containers enough





Red Hat OpenShift

@openshift

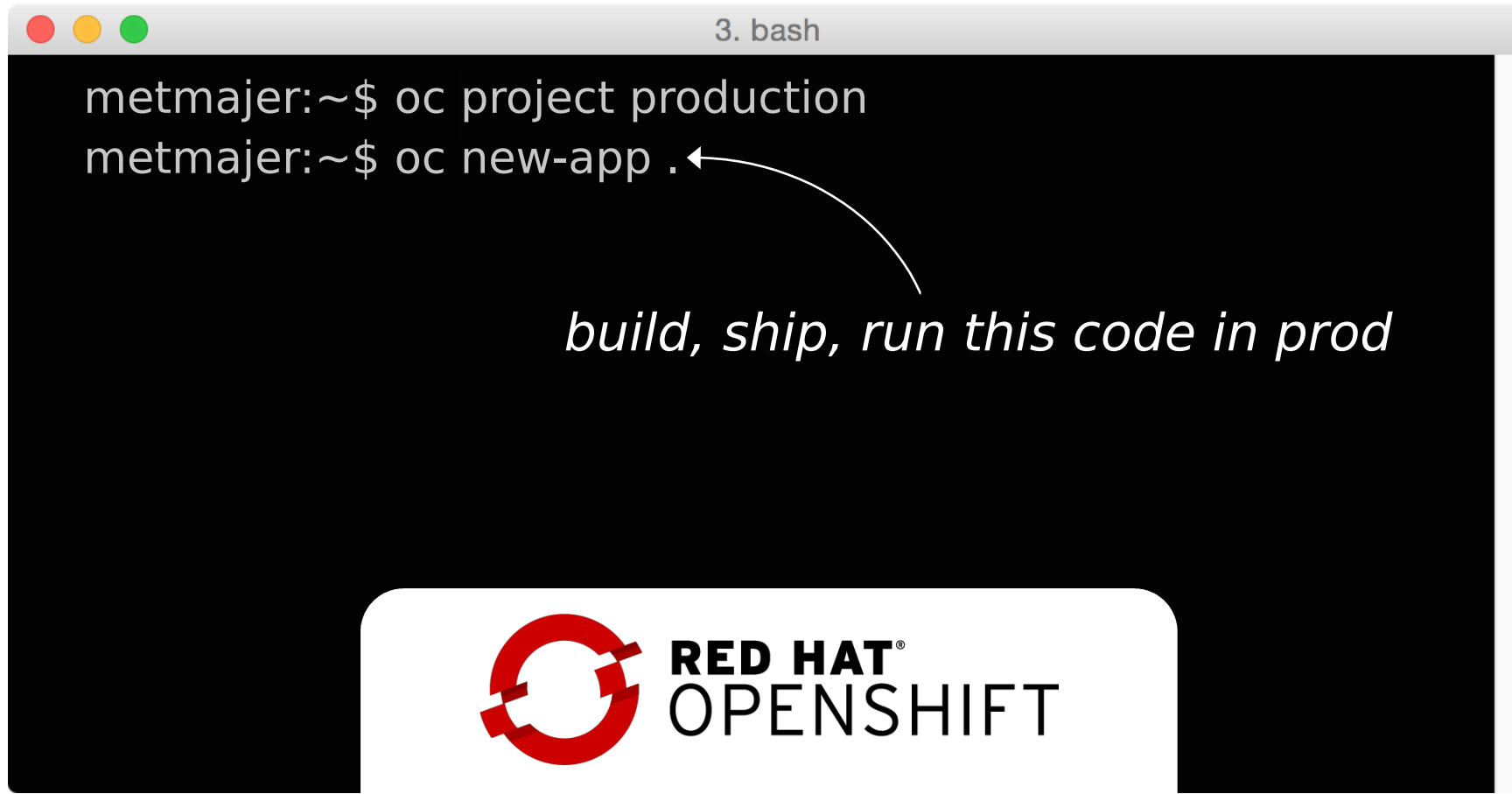
Following



Red Hat CTO [@kernelcdub](#) delivers the keynote at [#Kubecon](#), "OpenShift is Enterprise Kubernetes".




# Here is how to release into production today...

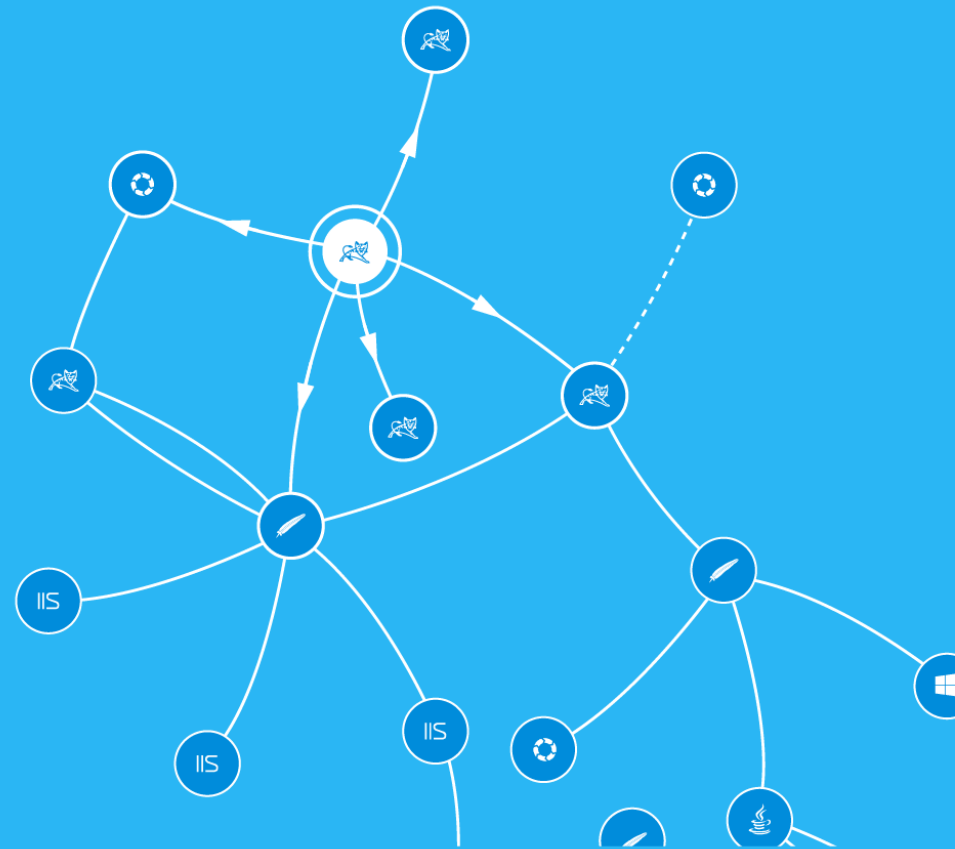
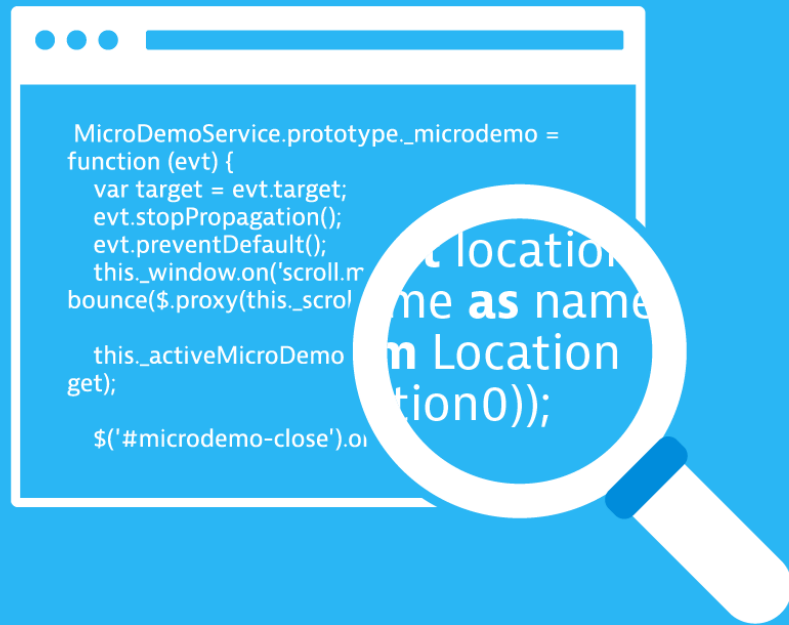


```
3. bash
metmaje:~$ oc project production
metmaje:~$ oc new-app .
```

*build, ship, run this code in prod*



# Learning № 1: „Microservices are complex“



Lower inner vs. higher outer complexity

# Learning № 1: “Microservices are complex”

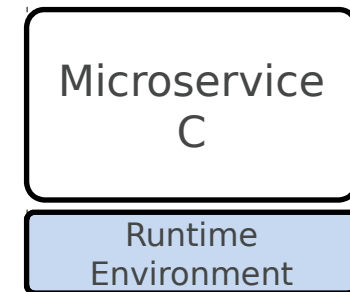
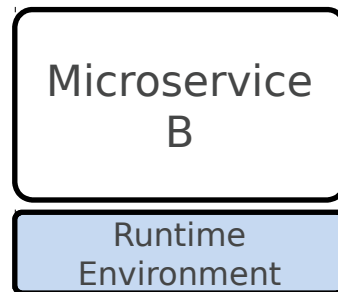
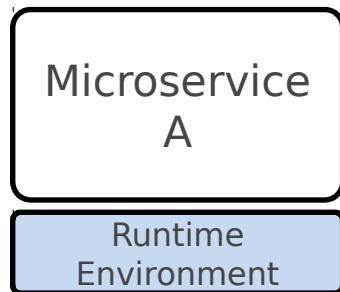
Microservice  
A

Microservice  
B

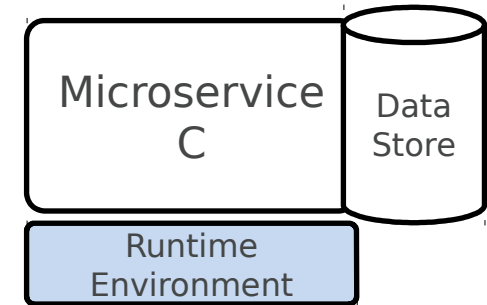
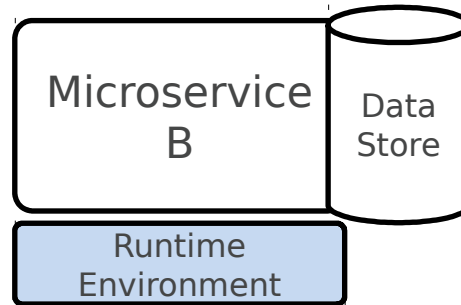
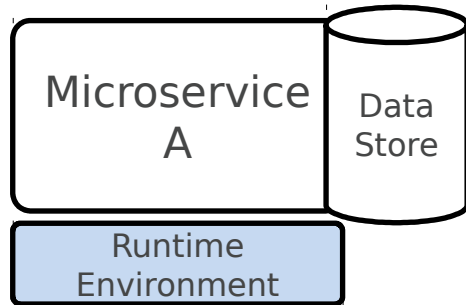
Microservice  
C



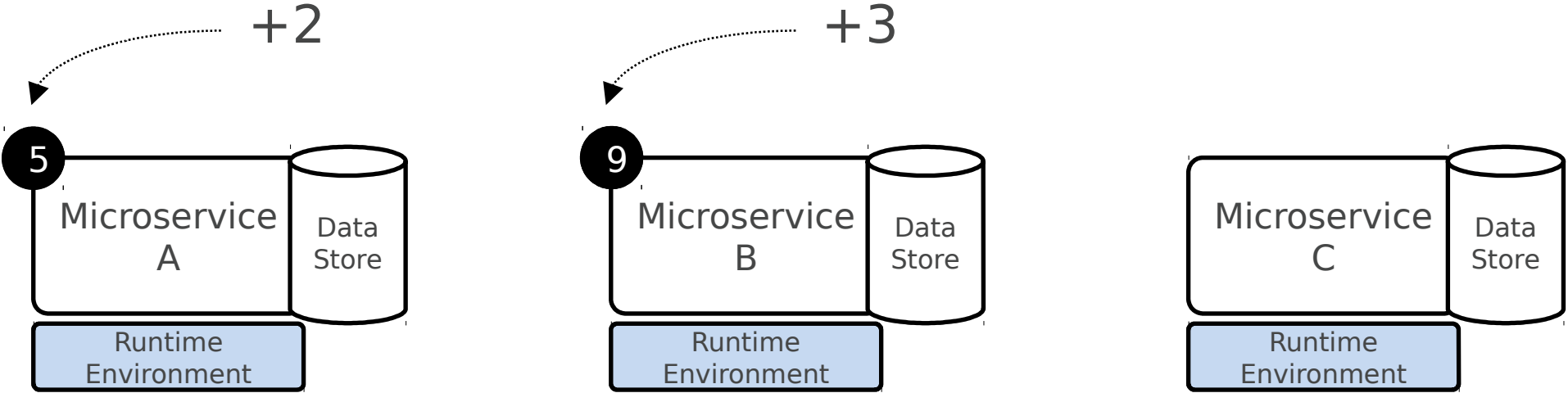
# Learning № 1: “Microservices are complex”



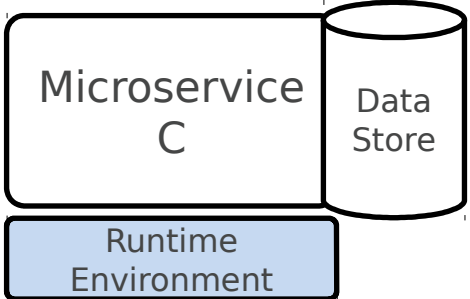
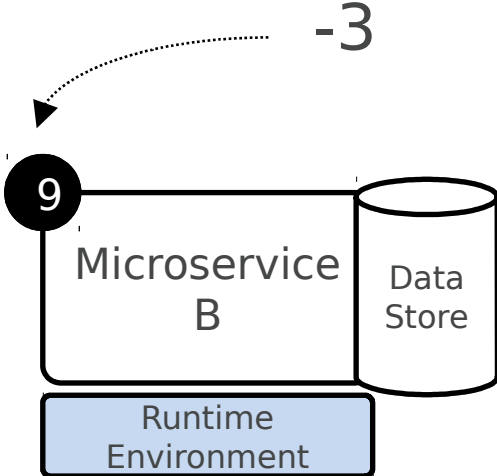
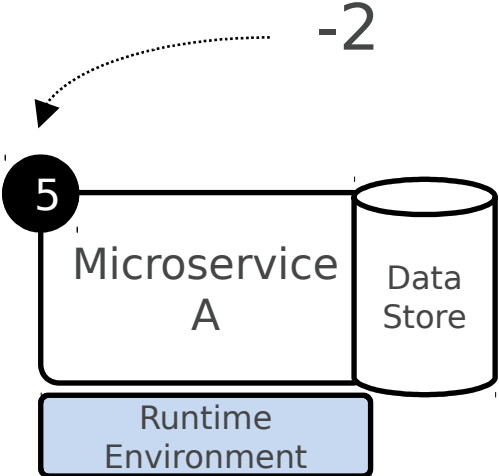
# Learning № 1: “Microservices are complex”



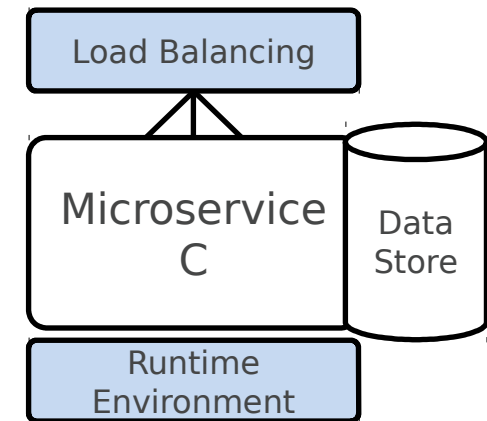
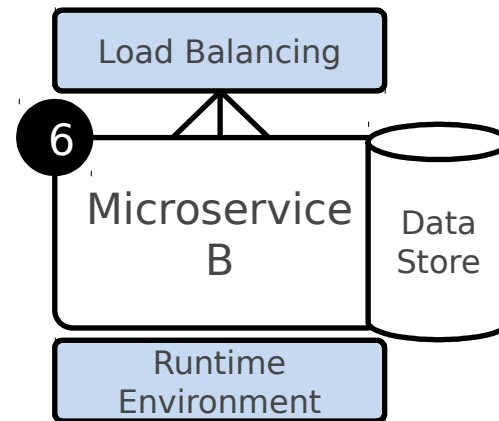
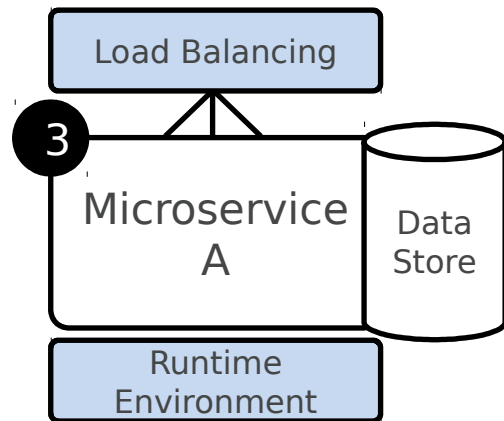
# Learning № 1: “Microservices are complex”



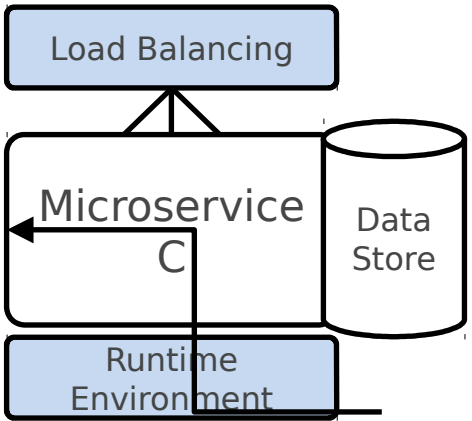
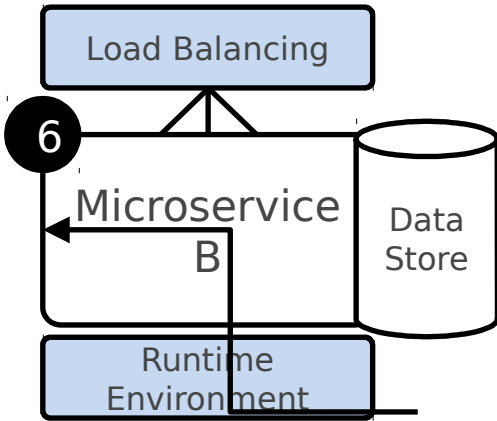
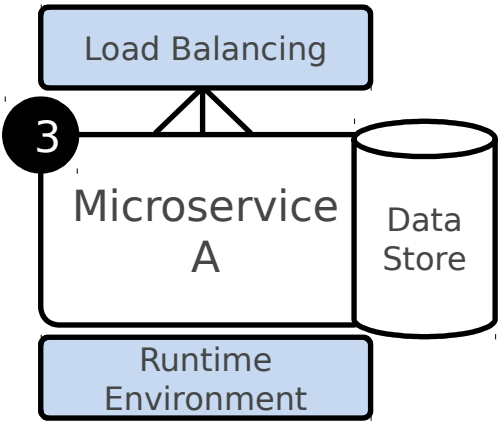
# Learning № 1: “Microservices are complex”



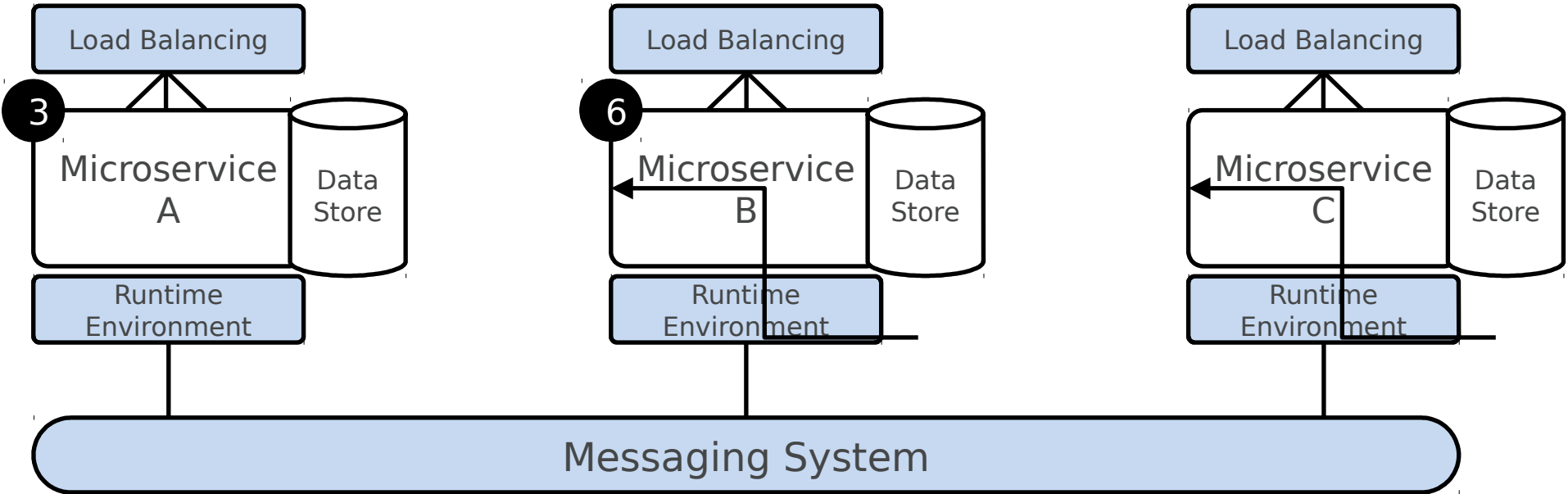
# Learning № 1: “Microservices are complex”



# Learning № 1: “Microservices are complex”



# Learning № 1: “Microservices are complex”





The New Stack

@thenewstack

Following



## How Synchronous #REST Turns #Microservices Back into Monoliths

tnstack.io/10FJID with @jroper @lightbend @nyjvasig #Java #Scala



### How Synchronous REST Turns Microservices Back into Mo...

If you are breaking down a monolithic legacy application into a set of microservices, and if those microservices are communicating via REST (Representational State Transfer), th...

thenewstack.io

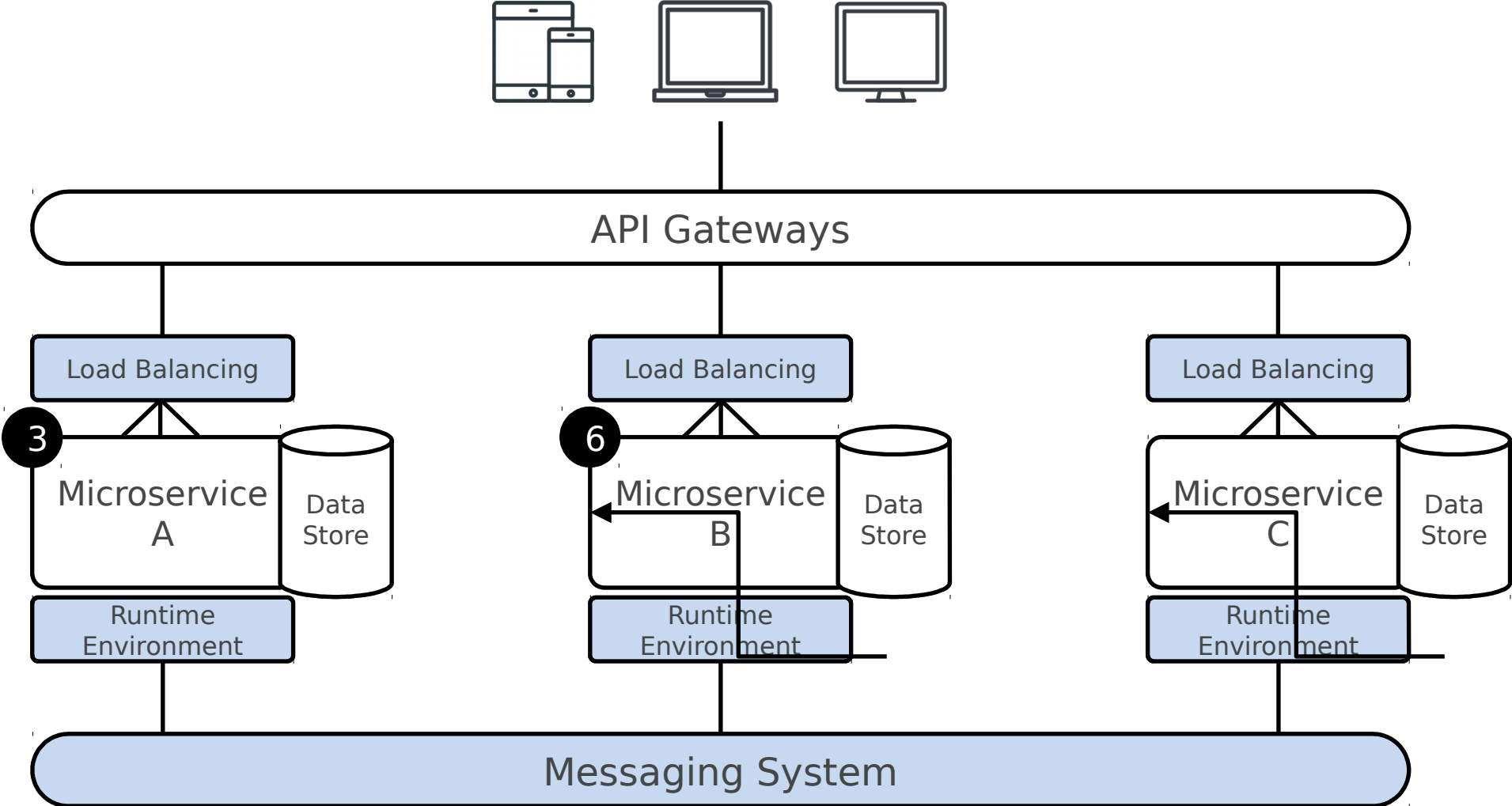
8:10 PM - 19 Apr 2016

5 Retweets 6 Likes

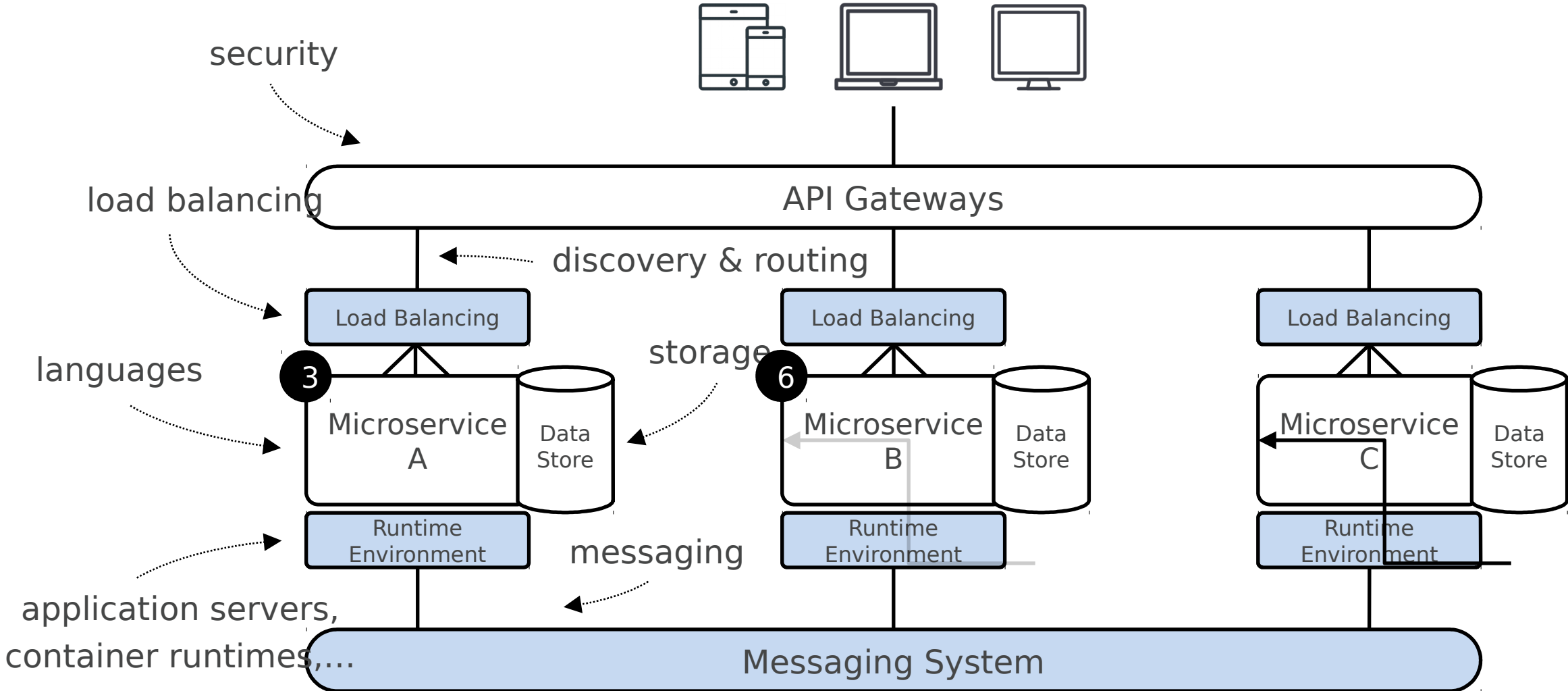




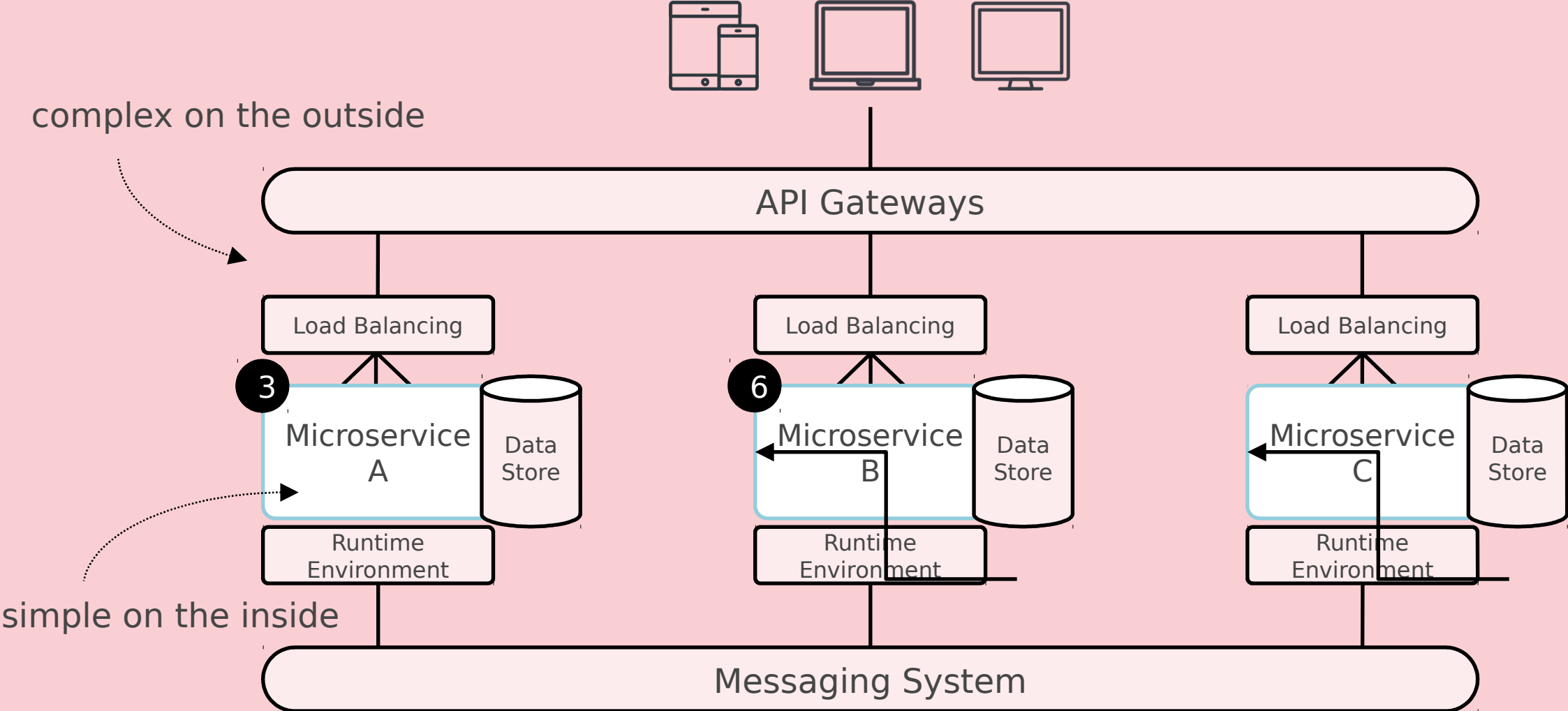
# Learning № 1: “Microservices are complex”



# Learning № 1: “Microservices are complex”



# Learning № 1: “Microservices are complex”





The New Stack

@thenewstack

Following



## #Microservices Require Robust #API Management



### Microservices Require Robust API Management

As the microservices approach is becoming more prevalent in application development, API operations, or API Ops, is increasingly being recognized as a requisite skill amongst ent...

thenewstack.io



3:55 PM - 19 May 2016

*adopt a contract-first design approach for stable APIs:  
focus more on what, less on how*

2 Retweets 4 Likes



# Back in 2015...



**Arun Gupta** ✓

@arungupta

Following



Microservices is like teenage sex, every body talking about it, but no body is doing it!

#TGIF

12:22 PM - 26 Jun 2015

102 Retweets 55 Likes



7



102



55



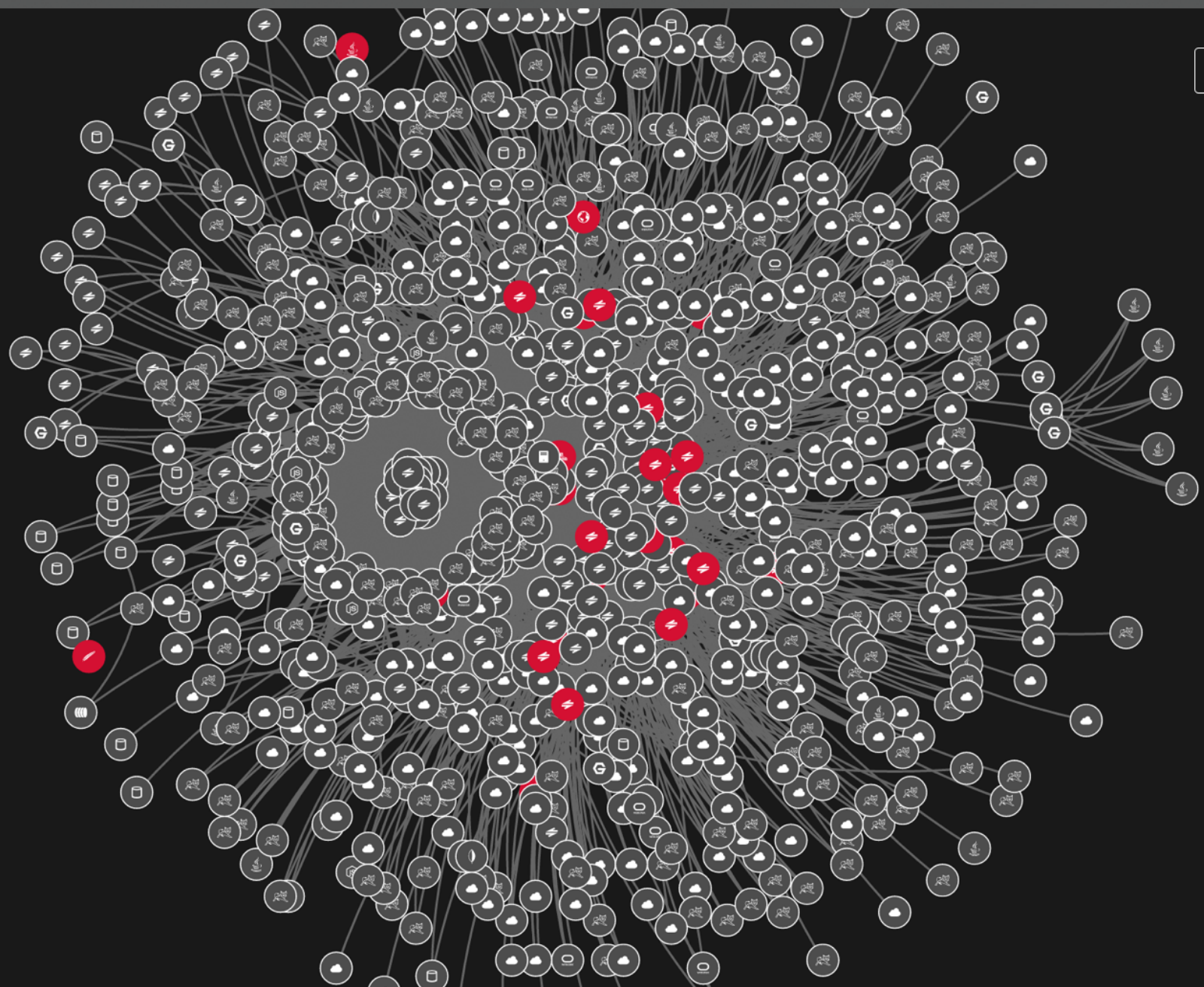
Applications 9

Services 30/3304

Processes 3/10424

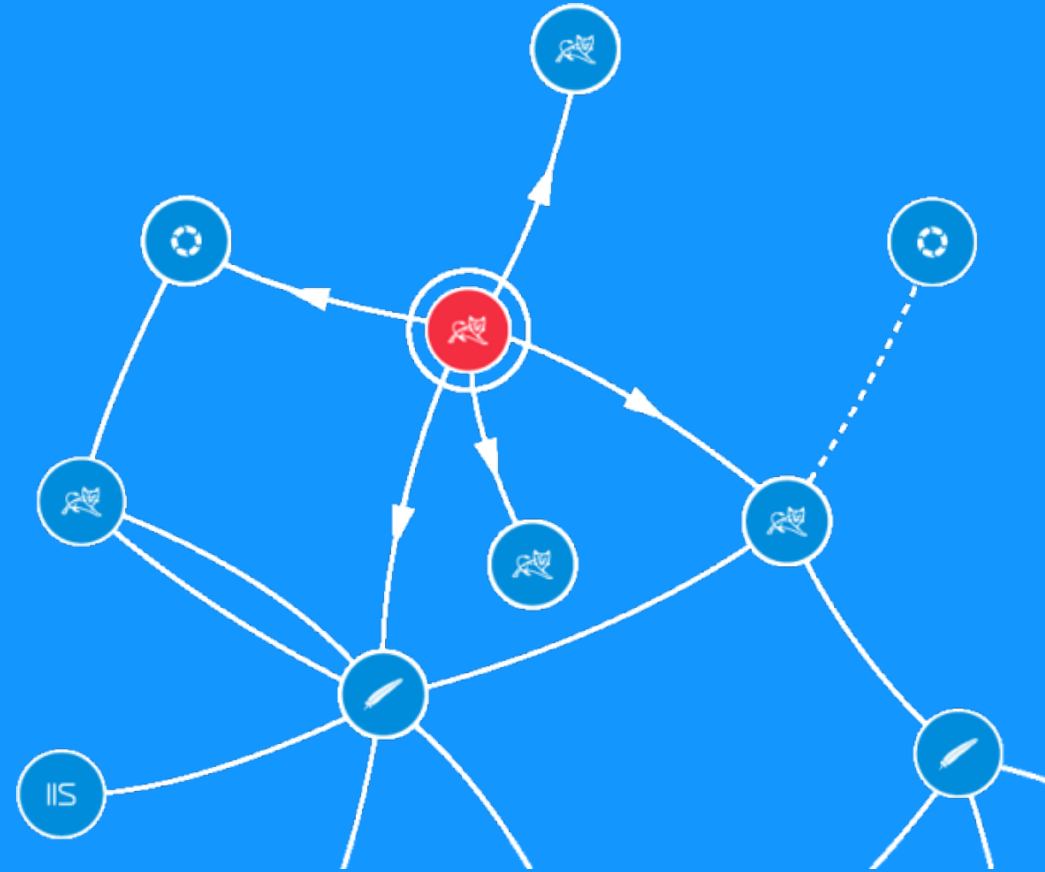
Hosts 142

Datacenters 7



Navigation controls including a plus sign (+), a minus sign (-), and a three-dot menu icon (⋮).

# Learning № 2: „Microservices don't fail independently“



Design for failure!

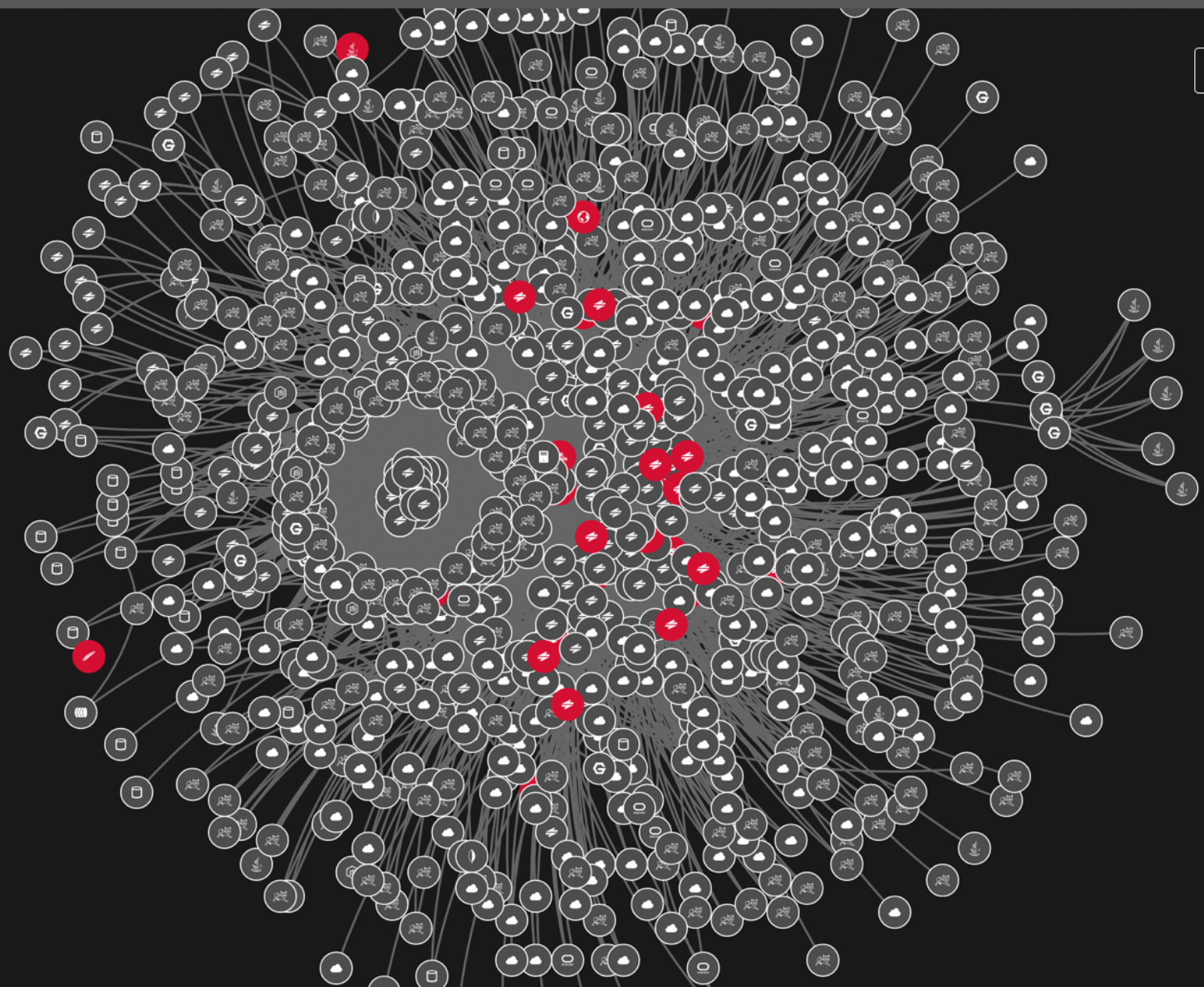
Applications  
9

Services  
30/3304

Processes  
3/10424

Hosts  
142

Datacenters  
7



+ - ...



Oh no, the application has failed...



What happened?

How bad  
is it?

Why?

### What's affected?

**2 applications: User action duration degradation**  
 Problem 505 detected at 07:52 - 08:45 (was open for 53 minutes).  
 This problem affects real users.

	Affected	Recovered	Monitored
Applications	-	2	14
Services	-	17	99
Infrastructure components	-	2	669

**123,322,122**  
 Dependencies analyzed

### What's the impact?

#### Business impact analysis

An analysis of all affected service calls and impacted real users during the first 10 minutes of the problem shows the following potential impact.

**271** Impacted users      **7.59k** Affected service calls

[Show more](#)

### What's the root cause?

#### Root cause

Based on our dependency analysis all incidents have the same root cause:

#### 2 impacted applications

314 User actions per minute impacted

**www.easytravel.com**  
Application

**User action duration degradation**  
 The current response time (1.33 min) exceeds the auto-detected baseline (1.5 s) by 5,200 %

Affected user actions	User action		
93.6/min	All		
Browser	Geolocation	OS	
All	All	All	

**BB1-apache-tomcatjms-iis**  
Host

**CPU saturation**

100 % CPU usage

[Analyze logs](#)

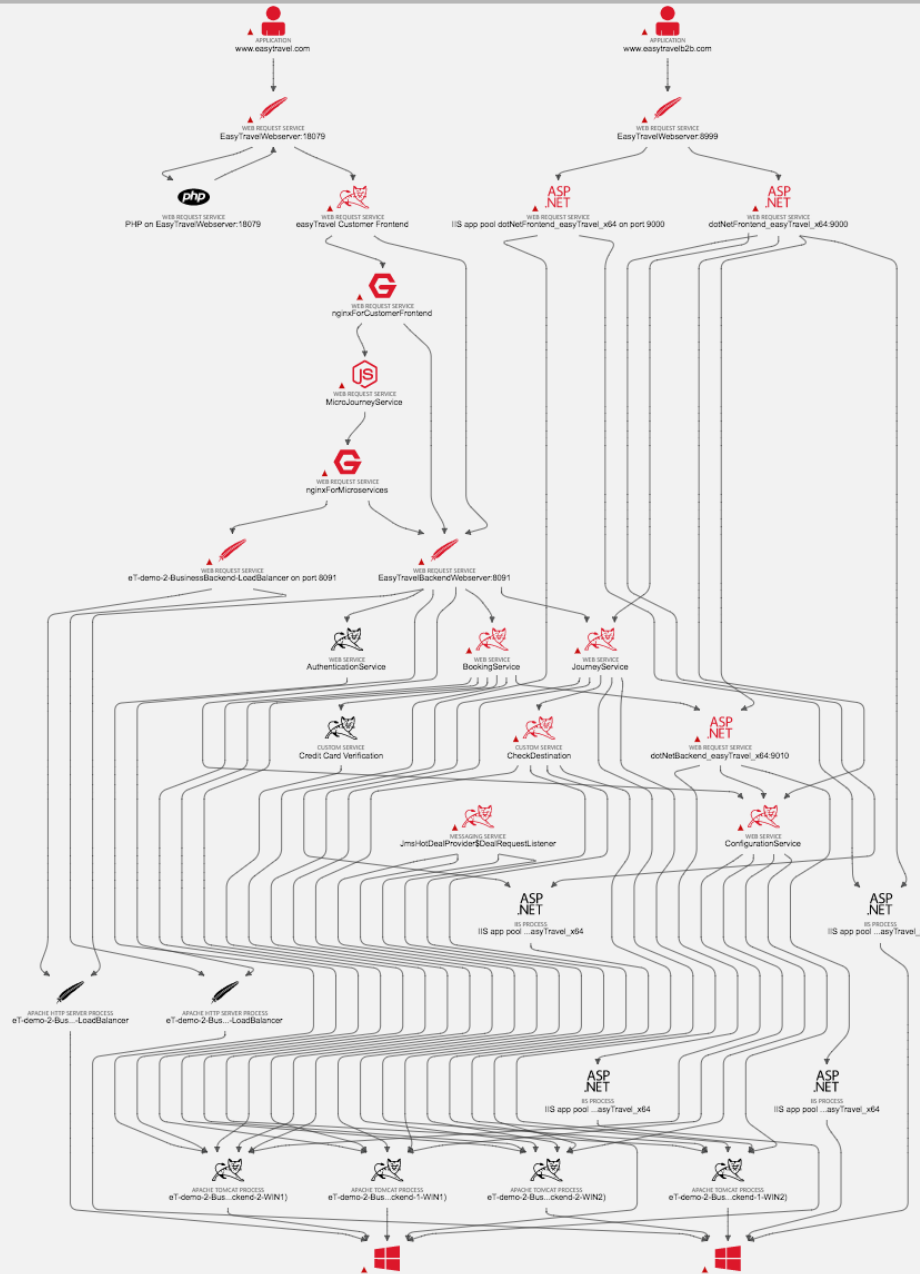
**BB2-apache-tomcatjms-iis**  
Host

**CPU saturation**

100 % CPU usage

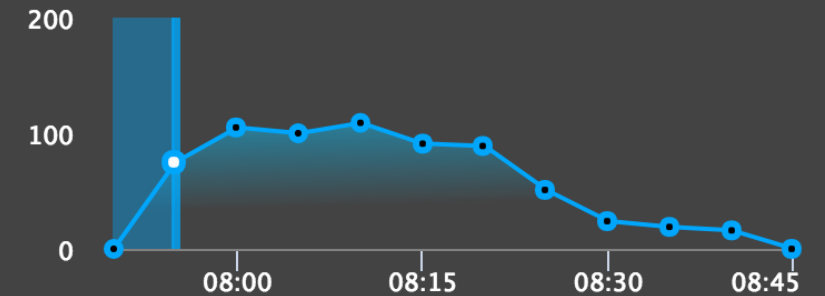
[Analyze logs](#)

**CheckDestination**  
Custom service



▶
⬆
⌛
Replay

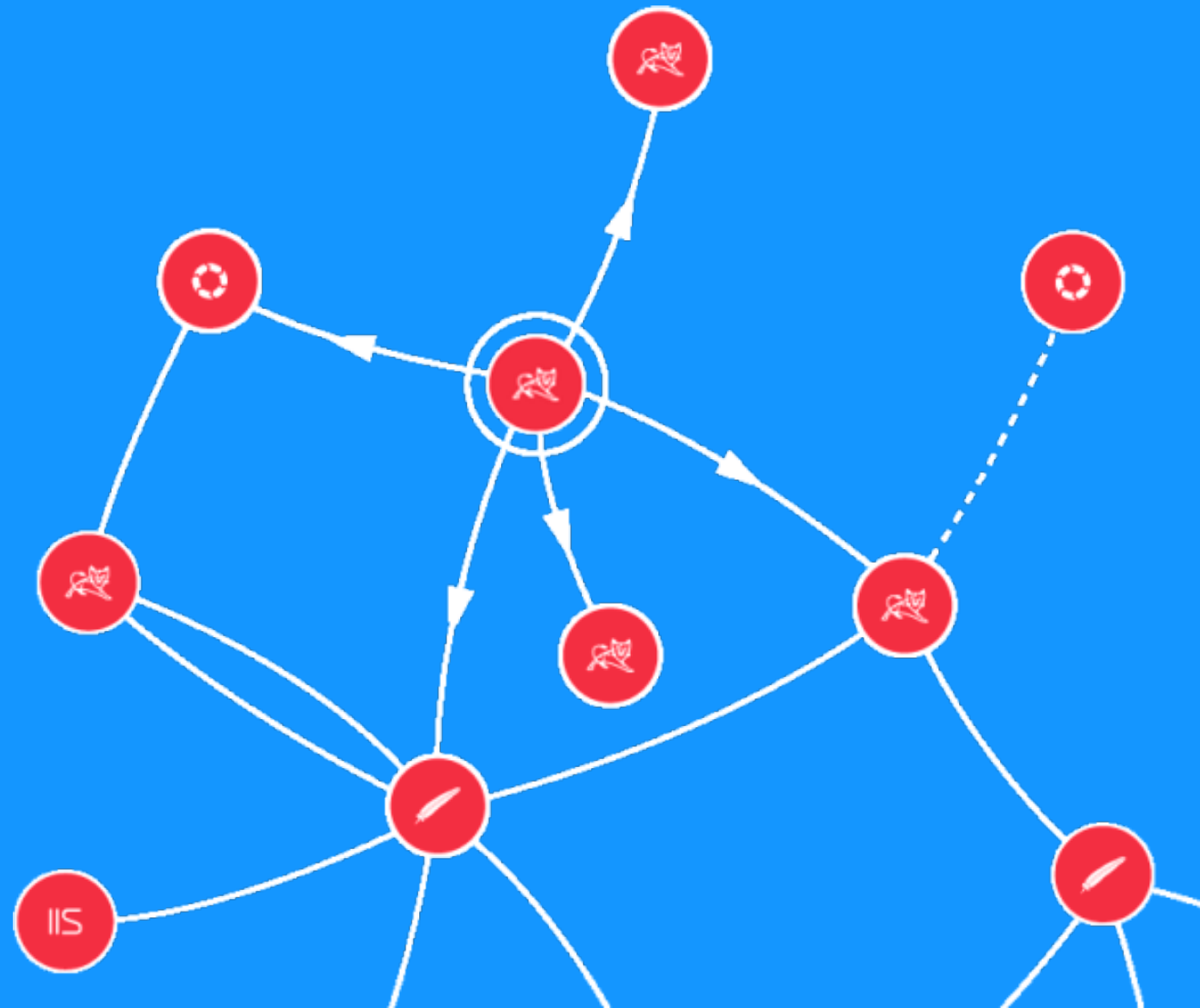
### Problem evolution



2017-09-29 07:50 - 07:55 75 ongoing events in 20 components  
 Trend ▲ 75 ▼ 0

- Application  
 www.easytravel.com  
 ▲ User action duration degradation (x5)
- Application  
 www.easytravelb2b.com  
 ▲ User action duration degradation (x6)

# Learning № 3: „Microservices aren't better performers“





**InfoQ**  
@InfoQ

Follow



A microservice's **efficiency & resource consumption** patterns are **dramatically affected** by its **threading model**.



### Microservice Threading Models and their Tradeoffs

A microservice's efficiency and resource consumption patterns are dramatically affected by its threading model. Choosing the correct model for your solution is a basic requirement for [infoq.com](http://infoq.com)

7:43 PM - 9 May 2016

7 Retweets 15 Likes





**InfoQ**  
@InfoQ

**architecture**

Follow



A microservice's **efficiency & resource consumption patterns** are **dramatically affected by its threading model.** **degree of distribution**



### Microservice Threading Models and their Tradeoffs

A microservice's efficiency and resource consumption patterns are dramatically affected by its threading model. Choosing the correct model for your solution is a basic requirement for  
[infoq.com](http://infoq.com)

7:43 PM - 9 May 2016

7 Retweets 15 Likes



Showing service flow of requests to 'EasyTravelBackendWebserver:8091'

Yesterday, 17:33 - Today 17:33 Apply

Add filter

### Tightly coupled. Really Distribute?

**JourneyService**

74 % response time contribution

Average response time 164 ms

Requests 778k

69 % call

1x per request

**CheckDestination**

55 % response time contribution

Average response time 148 ms

Requests 650k

83 % call

1x per request

**EasyTravelBackendWebser...**

Average response time 154 ms

Requests 1.13M

**BookingService**

16 % response time contribution

2 services

9.1 % response time contribution

**ConfigurationService**

5.7 % response time contribution

3 services

15 % response time contribution

3 services

5.1 % response time contribution

**PluginService**

3.8 % response time contribution

**EasyTravelBackendWebserver:8091**

Requests 650k of 1.13M

Failed requests 0 of 1.13M

Filter service flow to show only those transactions that contain the current call chain

Filter service flow

See every single request in PurePath view

View PurePaths

show more

JourneyService

**CheckDestination**

Requests calling **CheckDestination** via 1 other service

Avg. response time 148 ms

Avg. time spent in called services 0 ms

Requests 650k

Failed requests 0

See every single request in PurePath view

View PurePaths

show more

### Problem 416

User action duration degradation  
 Mar 4 04:45 - Mar 10 22:15 Duration 6 days 17:30 hours

www.easytravel.com  
 192 actions per minute impacted

eT-demo-2-CustomerFrontend  
 This Process has been identified as root cause.

1 event affected this process

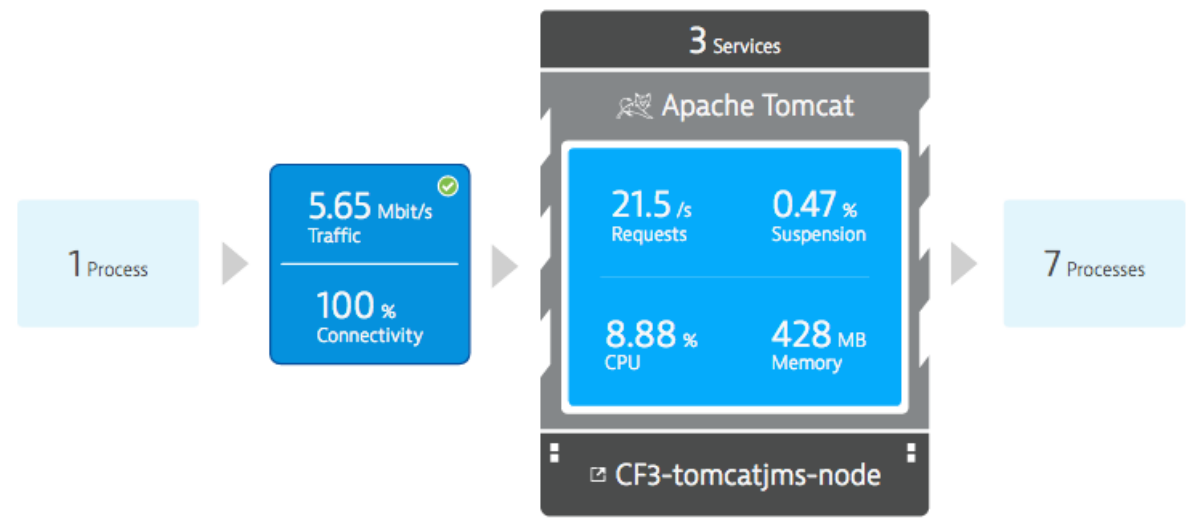
**Network problem** ✓  
 Packet retransmission rate for process eT-demo-2-CustomerFrontend on host CF3-tomcatjms-node has increased to 13 %

Close problem analysis

### eT-demo-2-CustomerFrontend

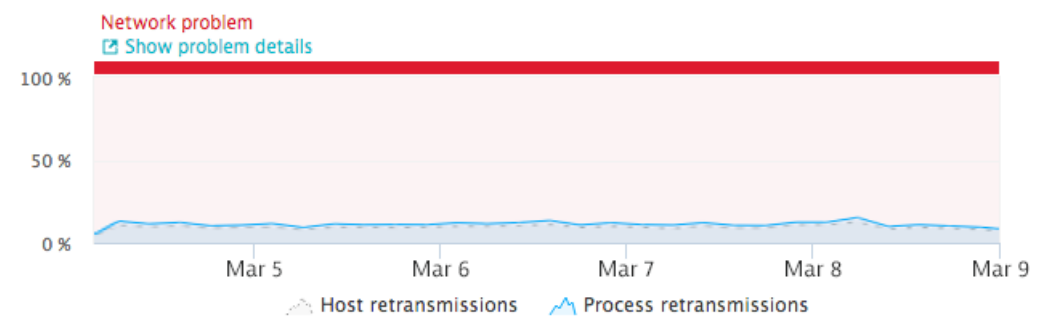
Analyze process connections

Properties

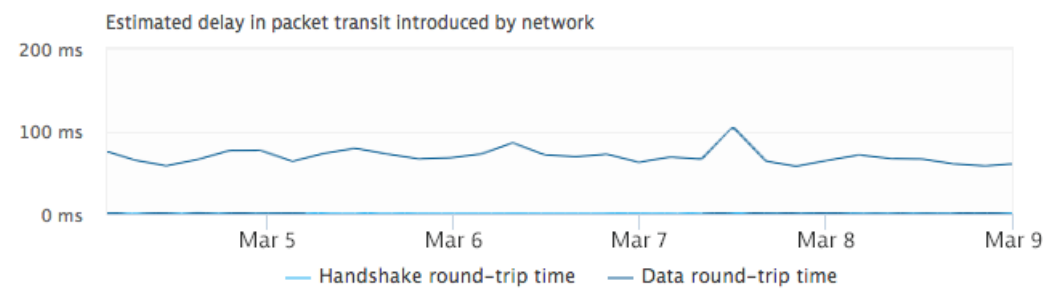


Traffic 5.65 Mbit/s    Connectivity 100 %    **Quality** ✓

### Retransmissions



### Round-trip time





How to make monitoring  
part of your platform?

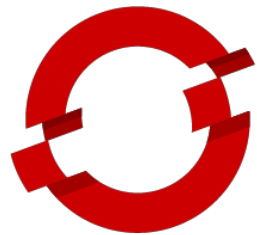
# Deploying OneAgent...



...for all-in-one,  
full stack  
monitoring.



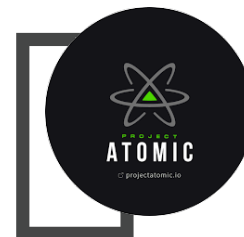
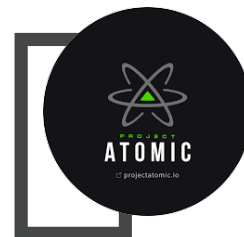
# Install OneAgent on cluster nodes via Docker container image



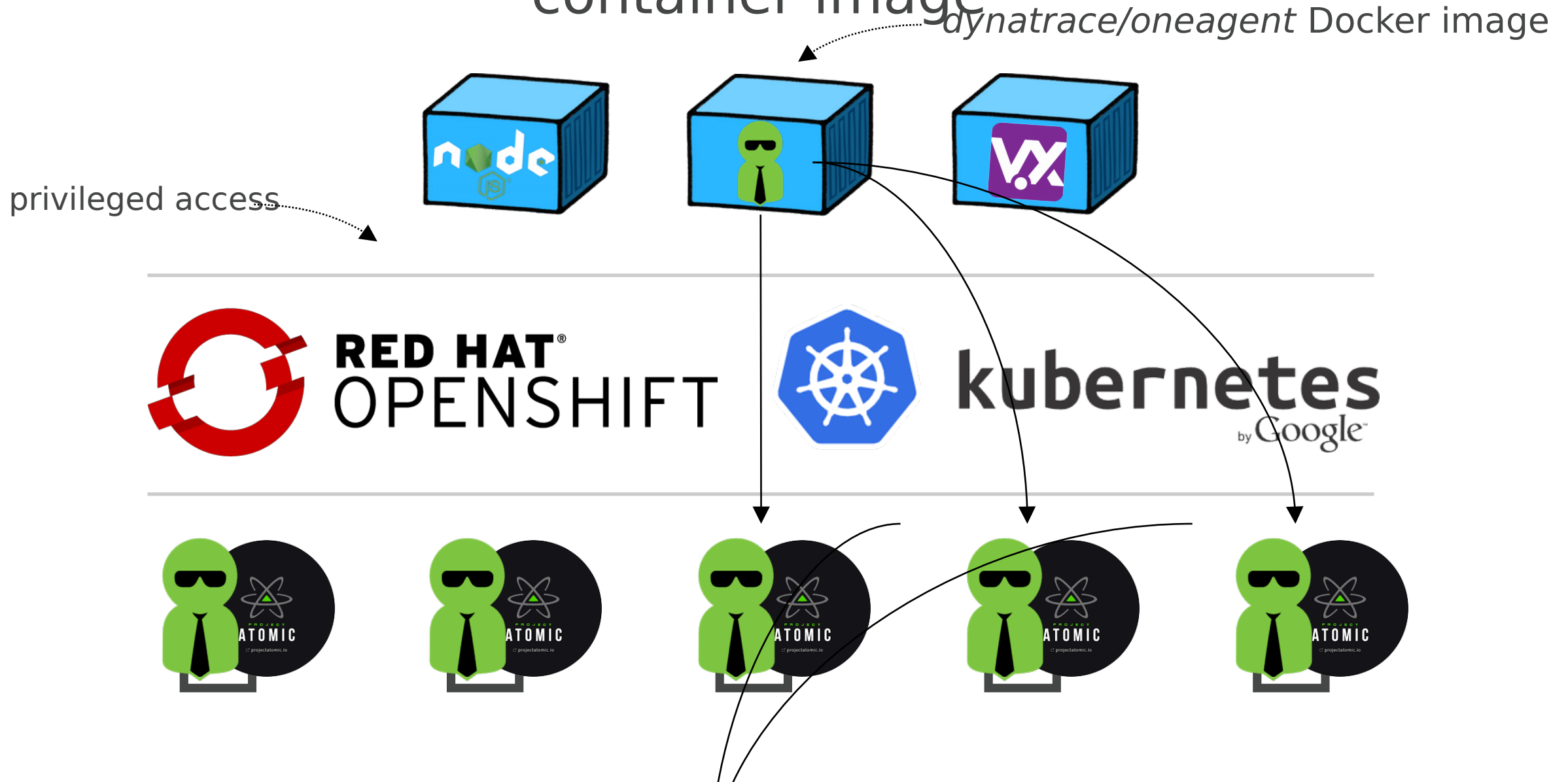
**RED HAT®**  
**OPENSIFT**



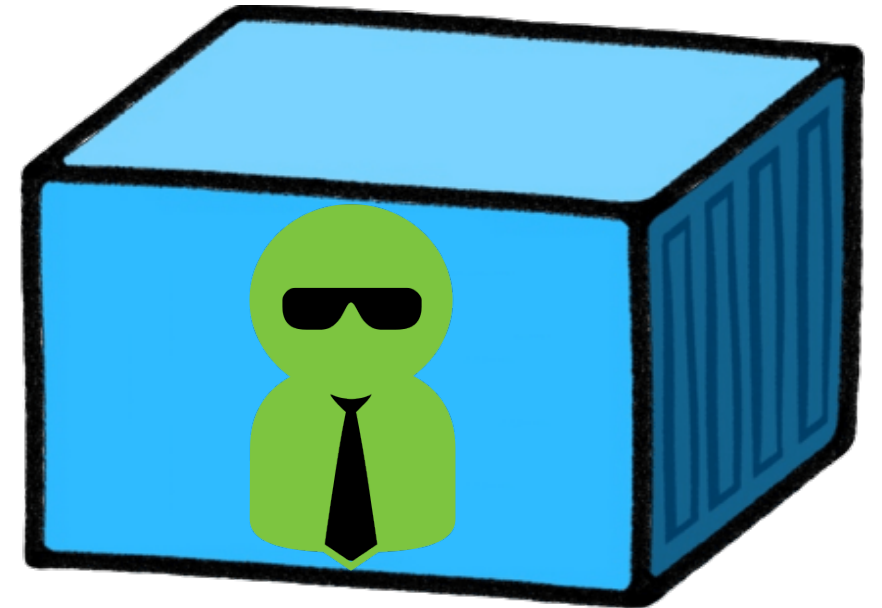
**kubernetes**  
by Google™



# Install OneAgent on cluster nodes via Docker container image



[dynatrace/oneagent](#) is *Red Hat Certified*  
*Technology*

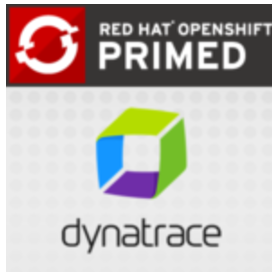


## Author Archives: The Dynatrace Team

---

### OpenShift Ecosystem: Monitoring OpenShift Apps with Dynatrace (Part 2)

OCTOBER 17, 2016 BY THE DYNATRACE TEAM



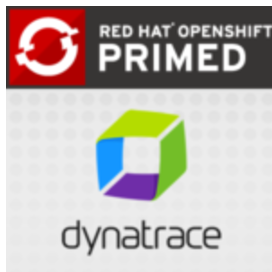
In this article, we'll explore various alternatives to monitoring your OpenShift applications when installing Dynatrace OneAgent on your cluster nodes isn't an option. This situation arises when using managed cloud offerings, such as OpenShift Dedicated or the OpenShift Online Developer Preview.

[Read More...](#)

---

### OpenShift Ecosystem: Monitoring OpenShift Apps with Dynatrace

AUGUST 1, 2016 BY THE DYNATRACE TEAM



Dynatrace is an all-in-one, zero-config monitoring platform, powered by artificial intelligence that identifies performance problems and pinpoints their root causes in seconds.

[Read More...](#)



Every user, every app, everywhere.