Apache Committer 가 되기까지

삼성 오픈소스 컨퍼런스 2019. 10. 17.

발표자 소개



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Apache OpenWhisk Committer / PMC

저는요



6년

분산 메시징 플랫폼 클라우드 플랫폼 빅데이터 분석 플랫폼



3년

Serverless Platform

오늘 드릴 말씀은요

50% 30% 20% 컨트리뷰션 경험담 기술 이슈 운영

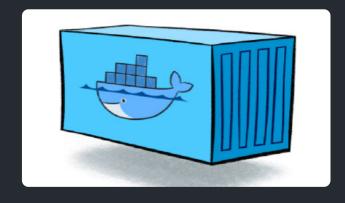
Apache OpenWhisk



오픈소스 Serverless 플랫폼



Apache 프로젝트



컨테이너 기반



Scala

IBM Cloud Functions 시작하기

IBM Cloud Functions (Apache OpenWhisk 기반) 는 수신 이벤트에 대한 응답으로 함수를 실행하고 사용하지 않을 때는 비용이 들지 않는 FaaS(Function-as-a-Service) 플랫폼입니다. 자세히 보기

IBM Cloud에 로그인

가입



IBM이 오픈소스화

Platform

Primary source code repositories including platform code, run books, tests and more

openwhisk

openwhisk-cli

openwhisk-apigateway

openwhisk-catalog

Packages

Several common service integrations are made available as packages. By default they are registered in the OpenWhisk catalog, under the /whisk.system/namespace, and include:

openwhisk-package-alarms

openwhisk-package-cloudant

openwhisk-package-kafka

openinient pasitage italita

openwhisk-package-deploy

pushnotifications

openwhisk-package-rss

openwhisk-package-jira

openwhisk-package-template

Runtimes

OpenWhisk supports several languages via Docker runtime containers

openwhisk-runtime-nodejs

openwhisk-runtime-docker

openwhisk-runtime-python

openwhisk-runtime-go

openwhisk-runtime-swift

openwhisk-runtime-php

openwhisk-runtime-java

openwhisk-runtime-ruby

Clients and SDK

Here are the clients to access to OpenWhisk API:

openwhisk-client-go

openwhisk-client-js

Samples

Deployments

OpenWhisk can be deployed and

configured on variety of platforms.

openwhisk-deploy-kube

openwhisk-devtools/docker-

openwhisk-deploy-mesos

openwhisk/ansible

openwhisk/vagrant-setup

Few example applications to demonstrate OpenWhisk features and functionalities:

openwhisk-sample-slackbot

openwhisk-slackinvite

openwhisk-GitHubSlackBot

openwhisk-sample-matos

openwhisk-tutoria

openwhisk-workshop

Tooling

OpenWhisk provides variety of tools around deployment and

openwhisk-wskdeploy

openwhisk-devtools

openwhisk-debugger

openwhisk-playground

openwhisk-vscode

openwhisk-xcode

Others

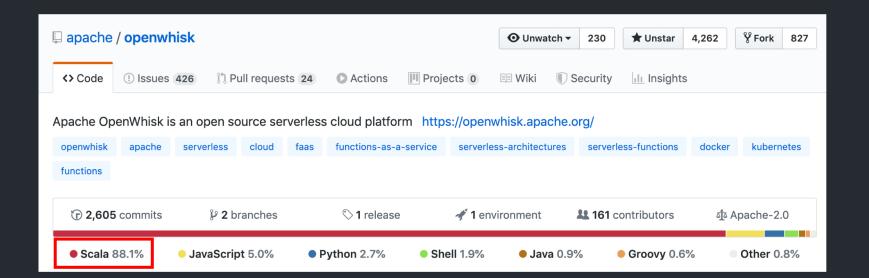
Few other misc. but crucial repositories.

openwhisk-release

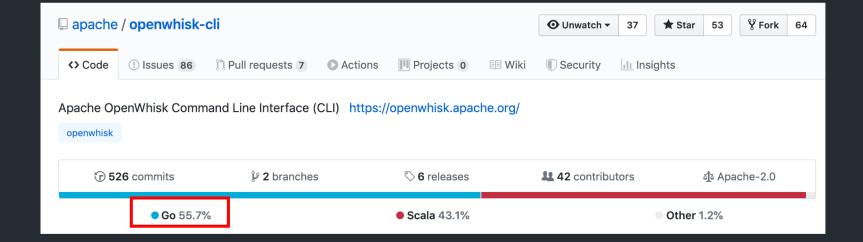
openwhisk-website

openwhisk-external-resources

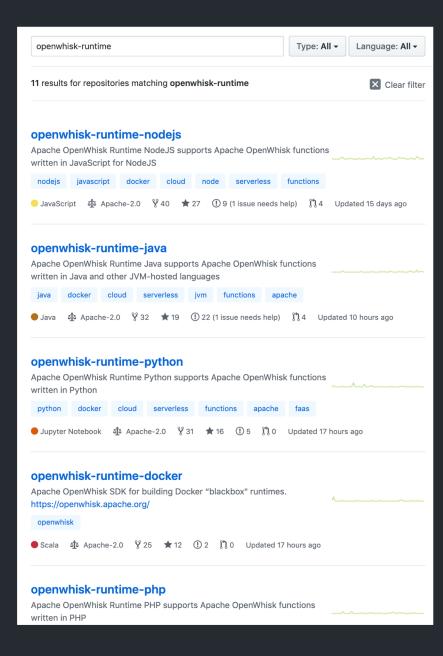
총 52개 Repo



Core: Scala

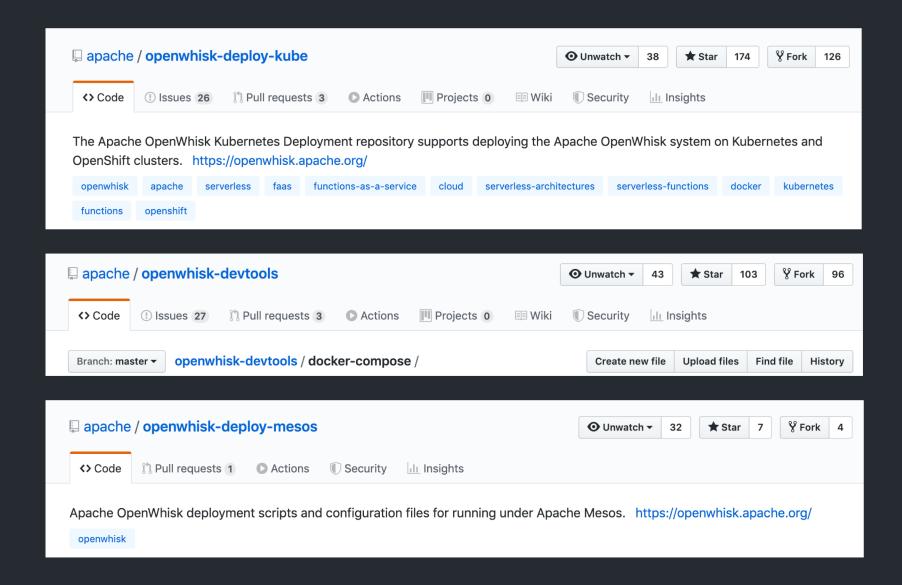


CLI: Go

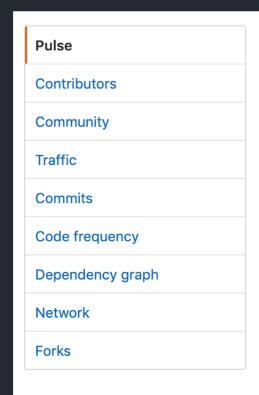


11개 런타임

- Node.js
- Java
- Python
- Php
- Go
- Swift
- Ruby
- Rust
- Dotnet
- Ballerina

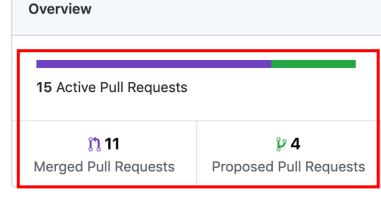


Ansible
Kubernetes
Docker-compose
Mesos
Knative



September 18, 2019 – September 25, 2019

Period: 1 week ▼



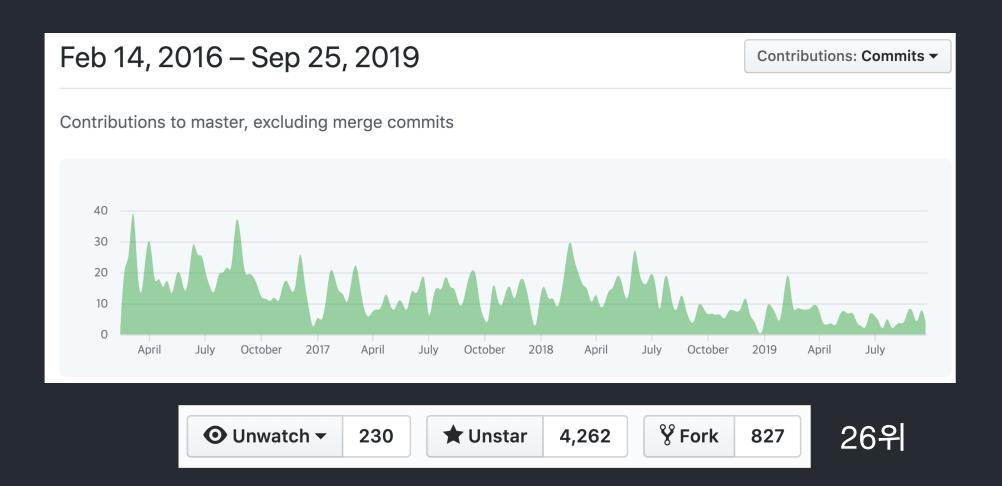
Excluding merges, 7 authors have pushed 11 commits to master and 11 commits to all branches. On master, 90 files have changed and there have been 5,631 additions and 600 deletions.







2016. 11. 23.



229 contributors

Contributor

오픈소스 활동에 참여하는 모든 사람

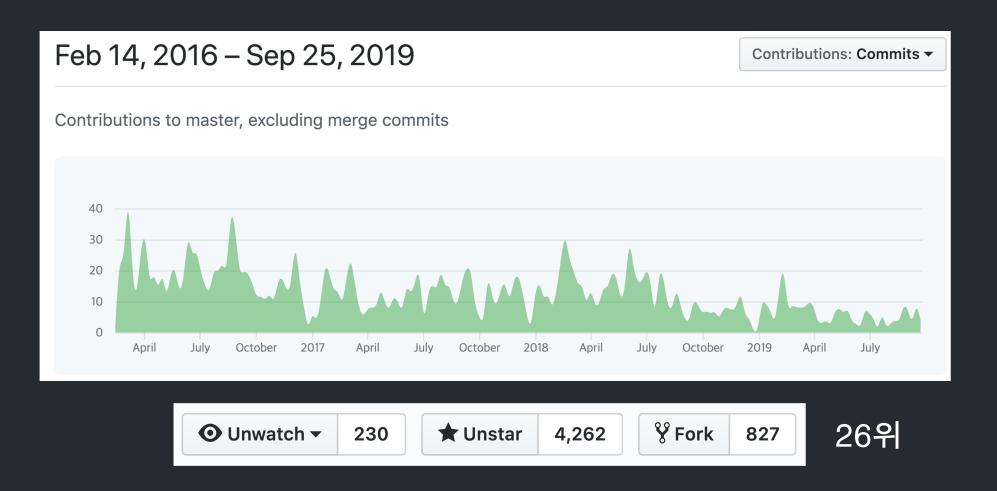
Committer

코드를 리뷰하고 머지할 수 있는 권한을 가진 사람

PMC

(Project Management Committee) 프로젝트와 관련된 모든 사항을 결정

Committer를 뽑을 수 있는 권한을 가진 사람



229 contributors21 committers17 PMC members



★5,712 MCap: \$125.51B Red Hat

Cloud Native Landscape \$\psi 5.639\$ Cloud Native Computing Foundation (CNCF)

Landscape

Weave Net Weaveworks

\$ 5.638 Puppet Funding: \$20M Puppet

± 4.677

\$ 5.457 Funding: \$149.5M



Cassandra **★** 5,431 Anache Software Foundation



Scylla **★** 5,365 ScyllaDB Funding: \$60M



Nomad **★** 5,274 HashiCorp Funding: \$174.18M



\$ 5.169 Thoughtworks Funding: \$28M

GoCD

★ 5,061

Kubeless

Red Hat

Graylog

*****4,996 Funding: \$9.4M Docker

Funding: \$272.86M

★ 4.833 Funding: \$5.03M



graphite

Graphite Graphite



containerd Cloud Native Computing Foundation (CNCF)



Fission ***** 4.623 Platform9 Funding: \$61.5M



Flannel

Red Hat

4.595 MCap: \$125.51B



Linkerd **#**4,536 Cloud Native Computing Foundation (CNCF)



Cilium ± 4.479 Isovalent

WEYCLOAK Kevcloak ± 4 464

kaniko ***** 4.431 MCap: \$125.51B Google MCap: \$845.31B

Kaniko

MvSQL

*****4.346 MCap: \$177.97B



*****4,329 Funding: \$16M

Thanos

Cloud Native Computing Foundation (CNCF)



Concourse *****4,312 MCap: \$4.09B



Apache Mesos Apache Software



Apache OpenWhisk *****4,262 Apache Software



*****4,228 Oracle MCap: \$177.97B



cert-manager **★**4,213 Jetstack



Dragonfly **★**4,190 Cloud Native Computing Foundation (CNCF)

→ PULSAR Pouch Orient DB

Pulsar *****4,160 Apache Software

Alibaba Cloud MCap: \$446.64B

4,033

MCap: \$146.44B



Funding: \$12.12M

OPENTSDB

*****3,863 Argo Intuit argo

*****3,765 PipelineAl MCap: \$68.67B PipelineAl

Pipeline AI

★3,757

Funding: \$1.2M

±4,290

Weave Scope Weaveworks

scope *****3,691 Funding: \$20M



Pulumi

Pulumi

*****3,507 Funding: \$20M



Tekton Pipelines Foundation (CDF)



StackStorm StackStorm



*****3,402

Apache Heron Apache Software Foundation



Rundeck Rundeck Funding: \$3M



Beam Apache Software Foundation



Funding: \$35.08M

OpenTSDB

OpenTSDB

BigchainDB BigchainDB Funding: \$5.37M Claudia.is

ClaudisJS **★**3,276 ClaudiaJS



OpenStack *****3,232 OpenStack



kind *****3,194 Cloud Native Computing Foundation (CNCF)



Tsuru **3**,182 Tsuru



Velero **★**3,096 VMware MCap: \$59.72B



Foundation (CDF)



2,983 Funding: \$48M



MariaDB MariaDB Funding: \$98.18M Corporation



Funding: \$12.5M







Supporters

The following companies and organizations have acknowledged support of the Apache OpenWhisk project as contributors or users of the technology.



































openwhisk

style95 14 commits 1,178 ++ 612 10 10 10 10 10 10 April 2017 October April 2017 October

<u>openwhisk-cli</u>



openwhisk-client-js



serverless-openwhisk



openwhisk-runtime-java



openwhisk-apigateway



openwhisk-catalog



openwhisk-wskdeploy



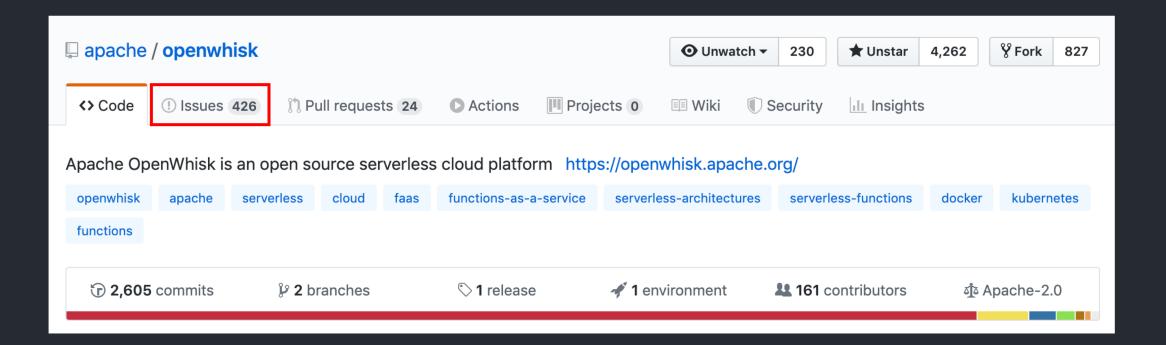
openwhisk-client-go

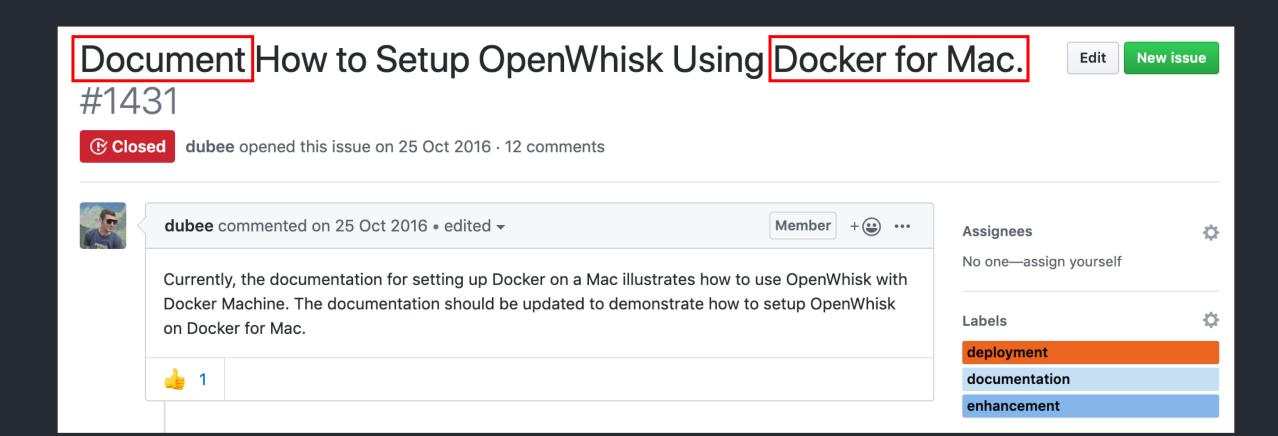


openwhisk-package-alarms



10개 repo참여, 55개 커밋 머지 완료 현재 9개 추가 Pull requests 리뷰 중







style95 commented on 11 Jan 2017 • edited ▼

Member

@dubeejw Is there anything in progress about this issue?

If not, I want to contribute on this issue.

It looks many things should be discussed such as "ansible environment in mac", "how to consider xhyve vm as local environment" and so on..



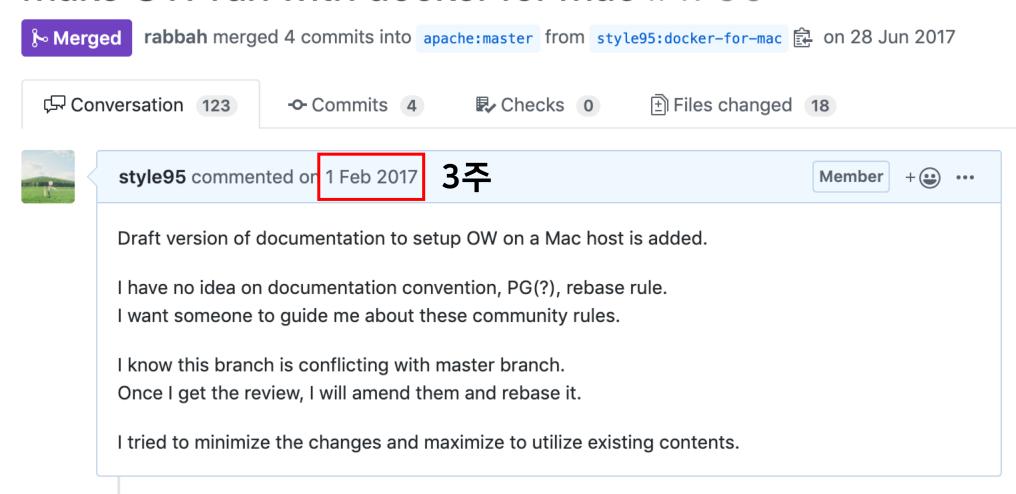
dubee commented on 12 Jan 2017

Author

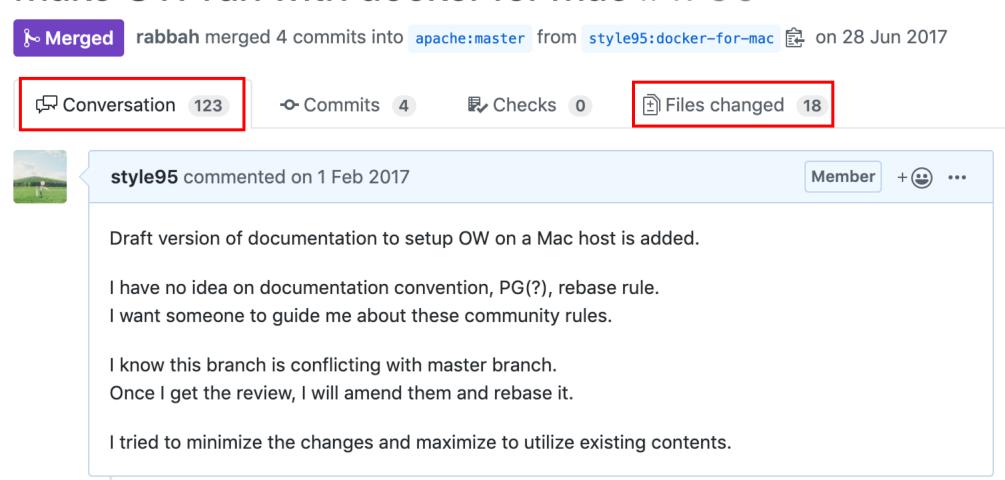
Member

@style95, feel free to help out. I don't think any documentation has been created yet for this issue.

Make OW run with docker for mac #1790



Make OW run with docker for mac #1790





markusthoemmes commented on 28 Jun 2017

Member



Sounds good to me, thanks for clarification 👍





rabbah commented on 28 Jun 2017

Member



We will try to further improve this in the future to use local for docker for mac, and further strip the play dependence. Thanks for being patient and working this out!

5개월

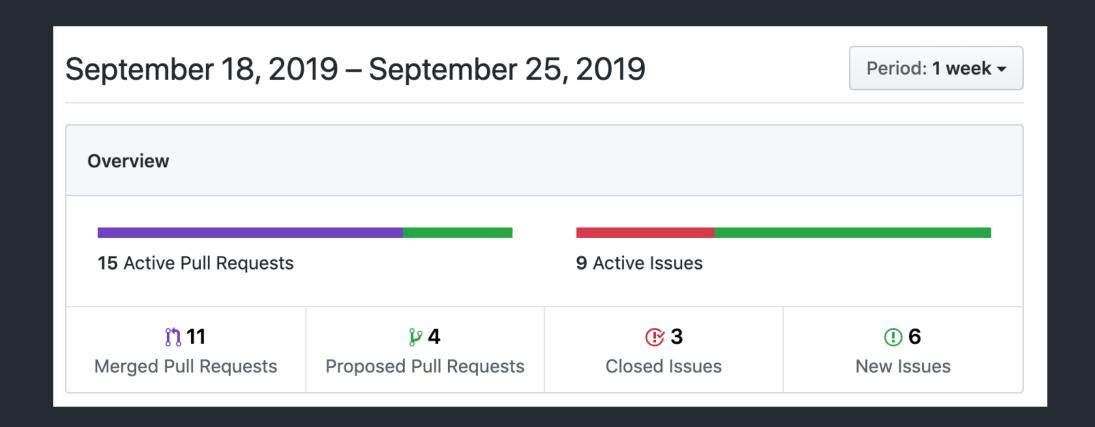


1 check passed

rabbah merged commit 55e693a into apache: master on 28 Jun 2017

View details

Revert





style95 commented on 27 Jun 2017

Author M

Member

• (

•••

I hope this is reviewed before it becomes staled again..

TL님의 홍보(?)



5개월 만에 머지

여기서 잠깐!

뭐가 문제인가?

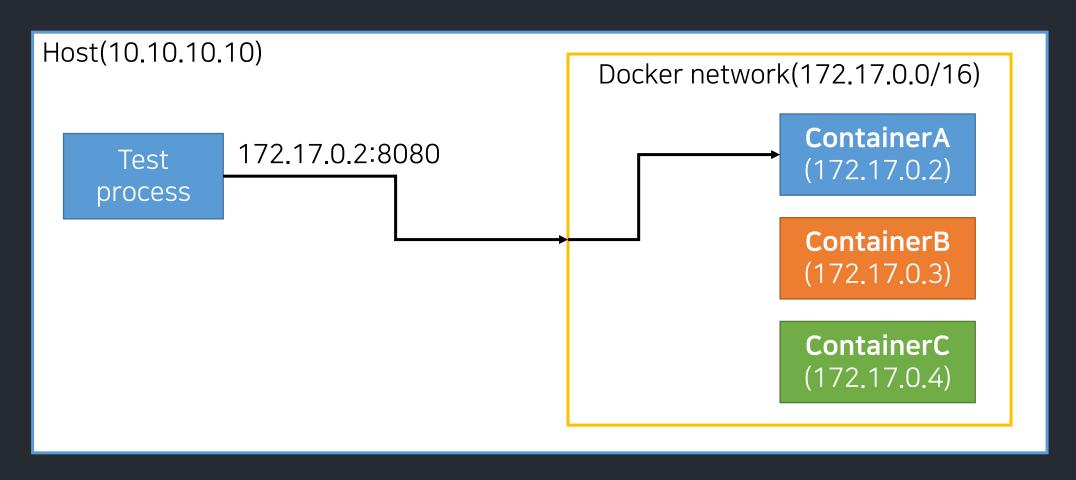
Host(**10.10.10.10**)

Docker network(172.17.0.0/16)

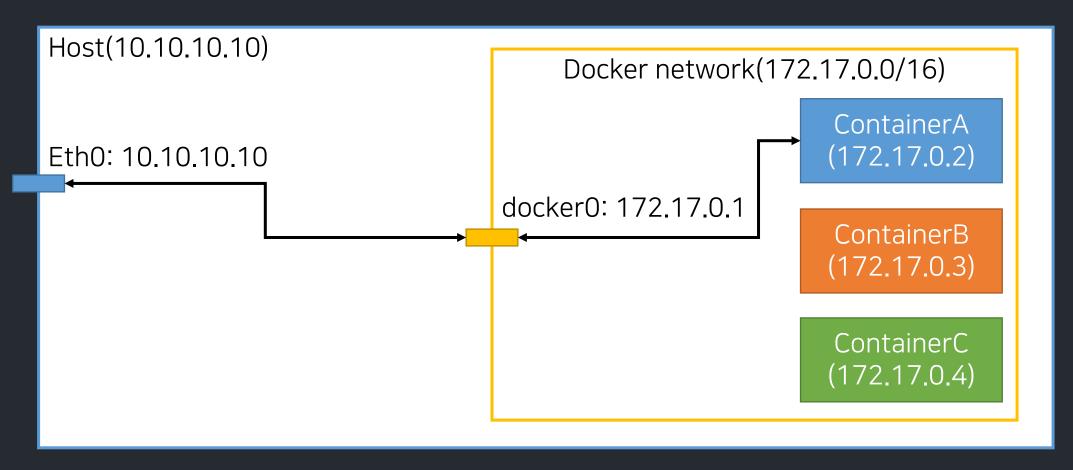
ContainerA (172.17.0.2)

ContainerB (172.17.0.3)

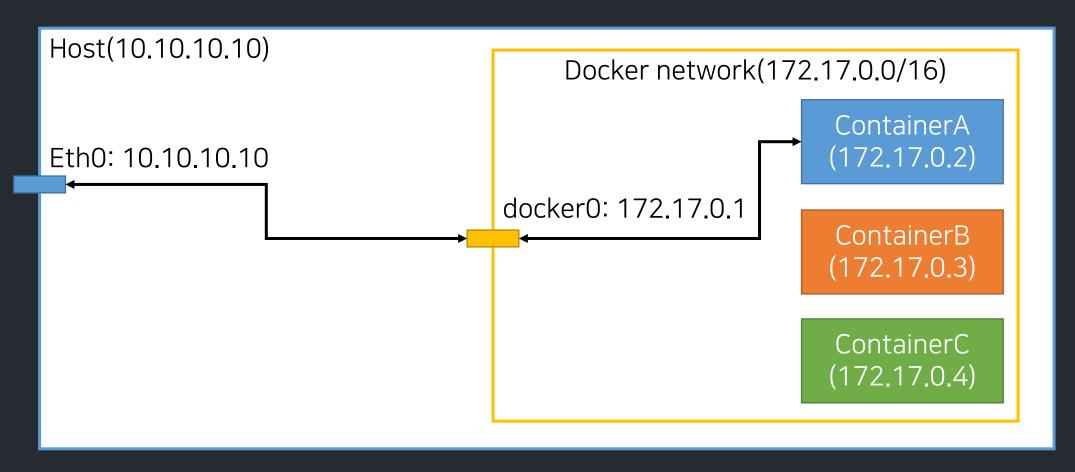
ContainerC (172.17.0.4)



Host에서 컨테이너 IP로 직접 접근 필요



리눅스 기반의 Docker 네트워크 구조



docker0 인터페이스가 컨테이너들의 Gateway 역할

```
$ ifconfig docker0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
```

```
inet 172.17.0.1 netmask 255.255.0.0 broadcast 0.0.0.0 ether 02:42:4a:06:2c:db txqueuelen 0 (Ethernet) RX packets 1600061407 bytes 757851585498 (705.8 GiB) RX errors 0 dropped 0 overruns 0 frame 0 TX packets 2662761605 bytes 240562713498 (224.0 GiB) TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

.

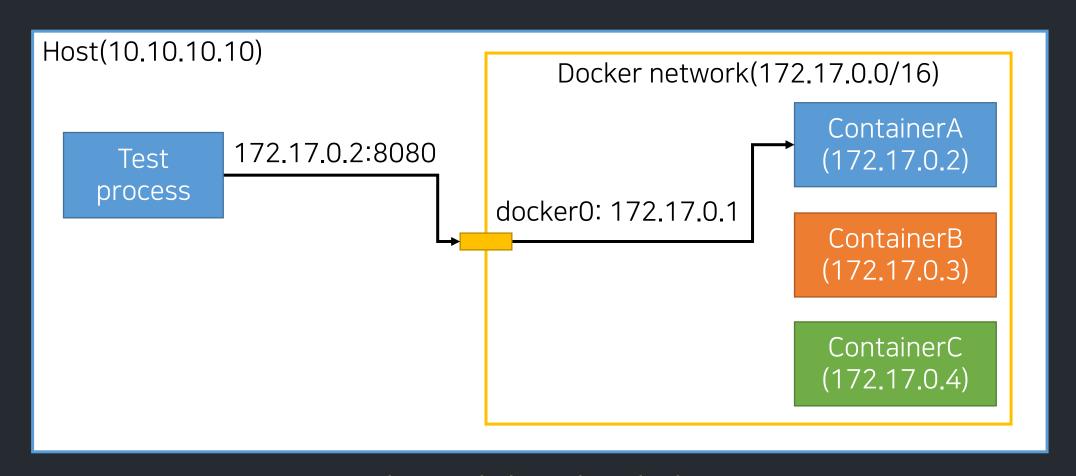
.

[호스트 머신]

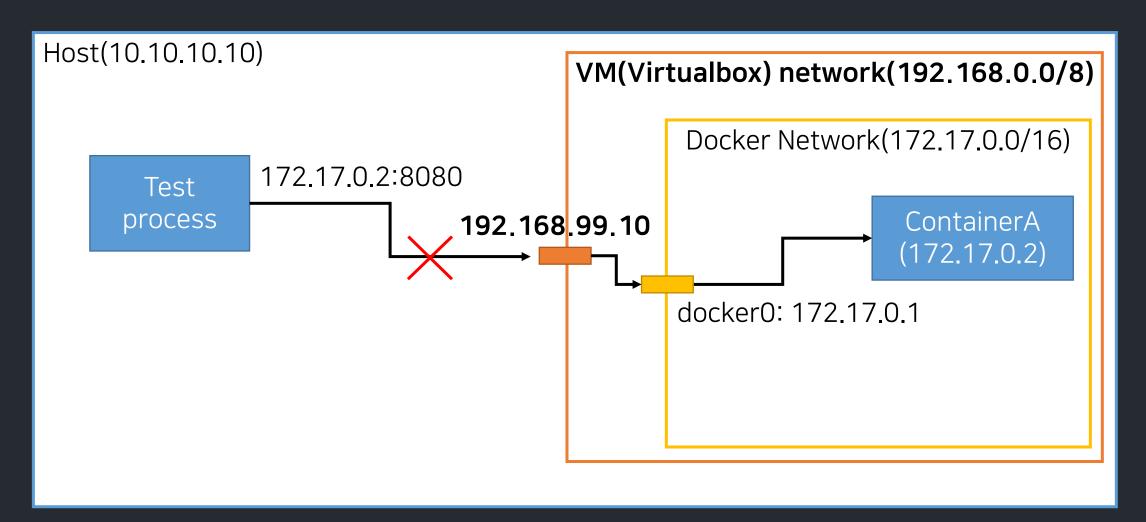
route -n Kernel IP routing table Gateway Destination Genmask Flags Metric Ref Use Iface 10.106.100.1 0.0.0.0 eth1 0.0.0.0UG 0 0 0 10.106.100.0 0.0.0.0 255.255.254.0 U 0 0 0 eth1 169.254.0.0 0.0.0.0 255.255.0.0 U 1003 0 0 eth1 U 172.17.0.0 0.0.0.0 255.255.0.0 0 0 0 docker0

[컨테이너 내부]

bash-4.4# route -n Kernel IP routing table Metric Destination Flags Use Iface Genmask Ref Gateway 172.17.0.1 0.0.0.0 0.0.0.0 UG 0 0 0 eth0 172.17.0.0 0.0.0.0255.255.0.0 U 0 0 0 eth0



리눅스에서는 접근이 가능



맥 OS(Docker-machine) 에서의 구조

Docker-machine 예제

\$ docker-machine Is

NAME ACTIVE DRIVER STATE URL SWARM DOCKER ERRORS default * virtualbox Running tcp://192.168.99.187:2376 v1.9.1

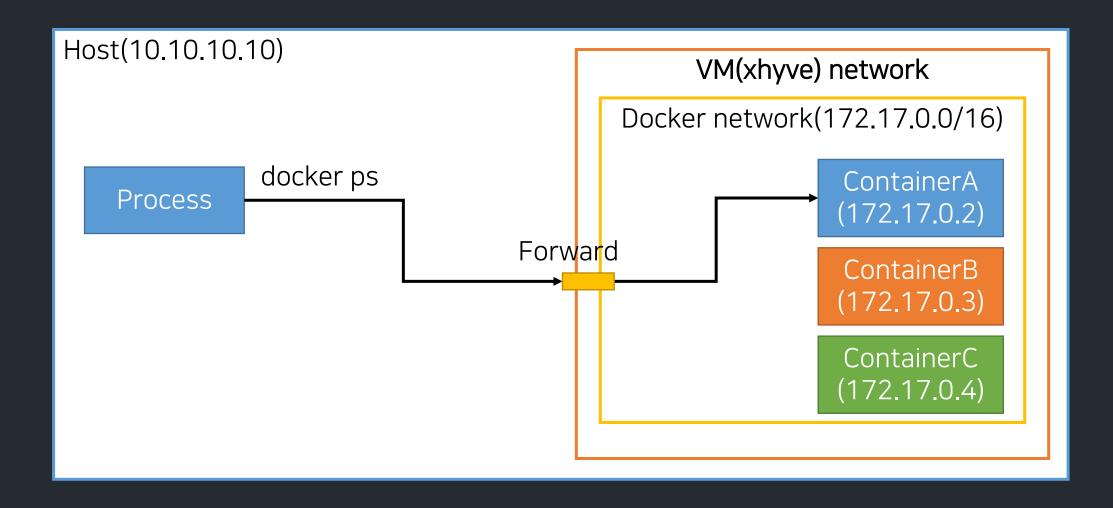
\$ env | grep DOCKER

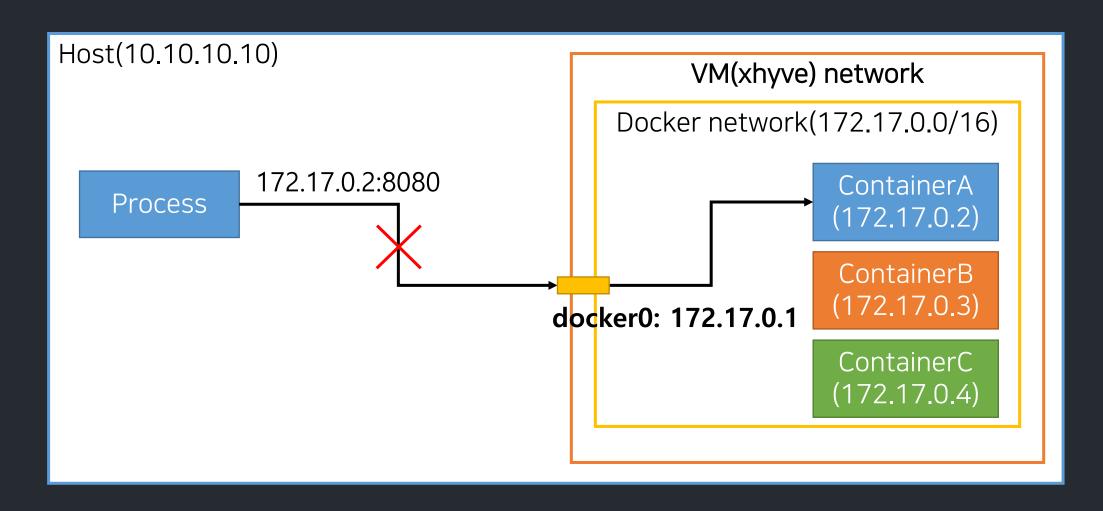
DOCKER_HOST=tcp://192.168.99.187:2376

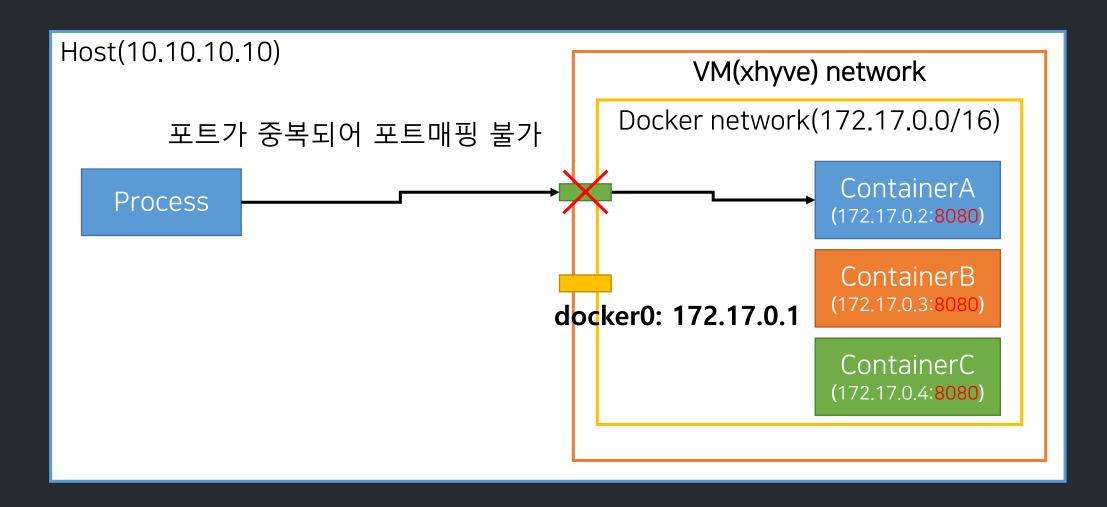
DOCKER_MACHINE_NAME=default

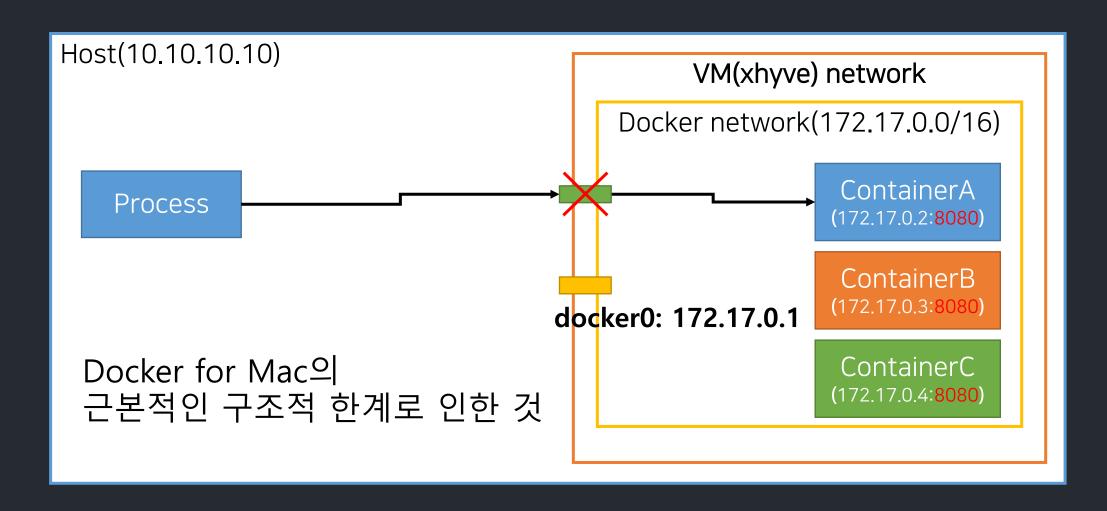
DOCKER_TLS_VERIFY=1

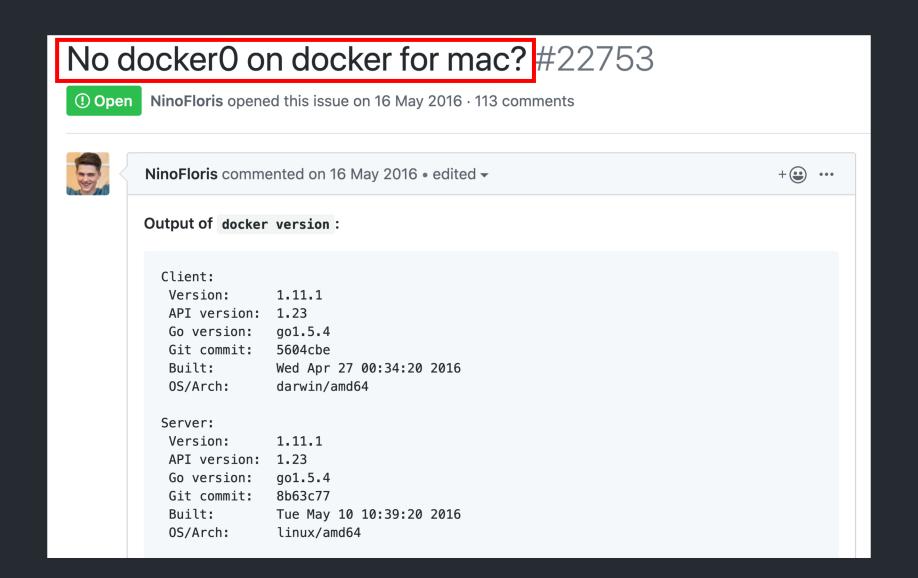
DOCKER_CERT_PATH=/Users/<your_username>/.docker/machine/machines/default

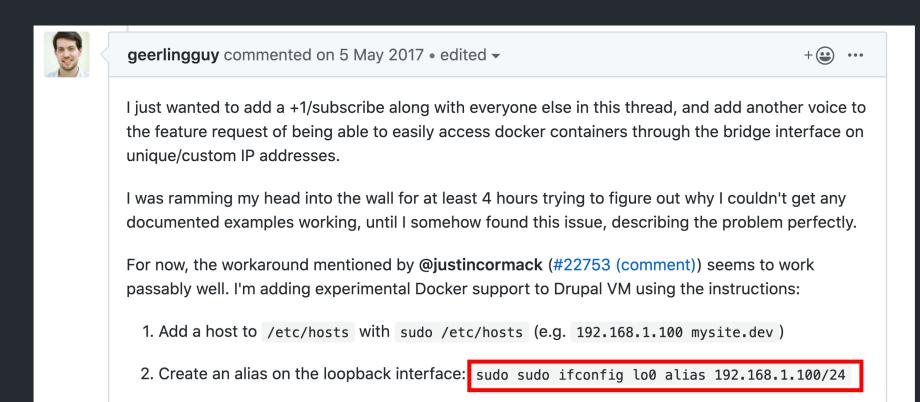












Loopback interface를 마치 docker0 network 인 것처럼 사용

Activate docker0 network

This is an optional step for local deployment. The OpenWhisk deployment via Ansible uses the dockerd network interface to deploy OpenWhisk and it does not exist on Docker for Mac environment.

An expedient workaround is to add alias for dockerd network to loopback interface.

sudo ifconfig lo0 alias 172.17.0.1/24

OpenWhisk에서도 동일하게 가이드

요청을 Docker network 내부에서 전송하자!

스퀴드 (소프트웨어)

위키백과, 우리 모두의 백과사전.

스퀴드(squid)는 대중적인 오픈 소스(GPL)소프트웨어 프록시 서버이자 웹 캐시이다. 반복된 요청을 캐싱함으로 웹서버의 속도를 향상시키는 것부터, 네트워크 자원을 공유하려는 사람들에게 웹, DNS와 다른 네트워크 검색의 캐싱을 제공하고, 트래픽을 걸러줌으로써 안정성에 도움을 주는 등에 이르기까지 광범위 하게 이용된다.

스퀴드는 기본적으로 유닉스 계열 시스템에서 돌아가도록 설계되었다.

스퀴드는 매우 오랜 기간 동안 개발되었기에 완성된 형태이며 튼튼하다. 기본적으로 HTTP와 FTP에 사용되지만 TLS, SSL, HTTPS 등과 같이 많은 프로토콜을 지원한다.

HTTP Proxy

스퀴드 (소프트웨어)

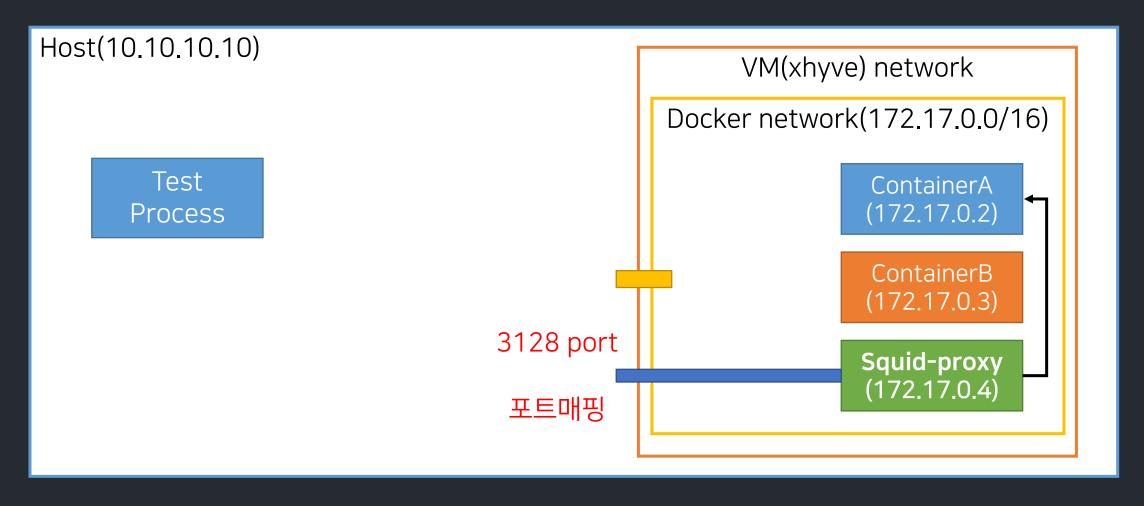
위키백과, 우리 모두의 백과사전.

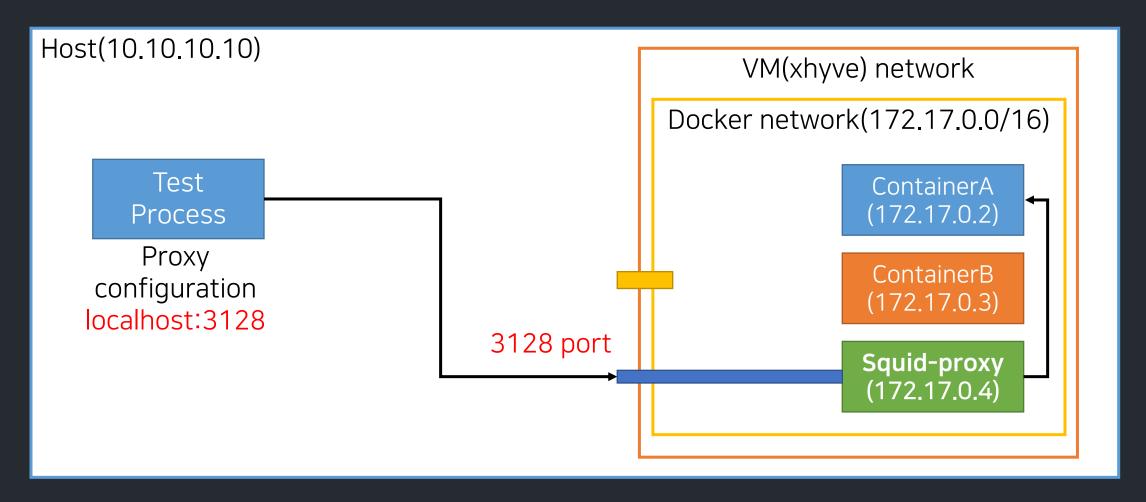
스퀴드(squid)는 대중적인 오픈 소스(GPL)소프트웨어 프록시 서버이자 웹 캐시이다. 반복된 요청을 캐싱함으로 웹서버의 속도를 향상시키는 것부터, 네트워크 자원을 공유하려는 사람들에게 웹, DNS와 다른 네트워크 검색의 캐싱을 제공하고, 트래픽을 걸러줌으로써 안정성에 도움을 주는 등에 이르기까지 광범위 하게 이용된다.

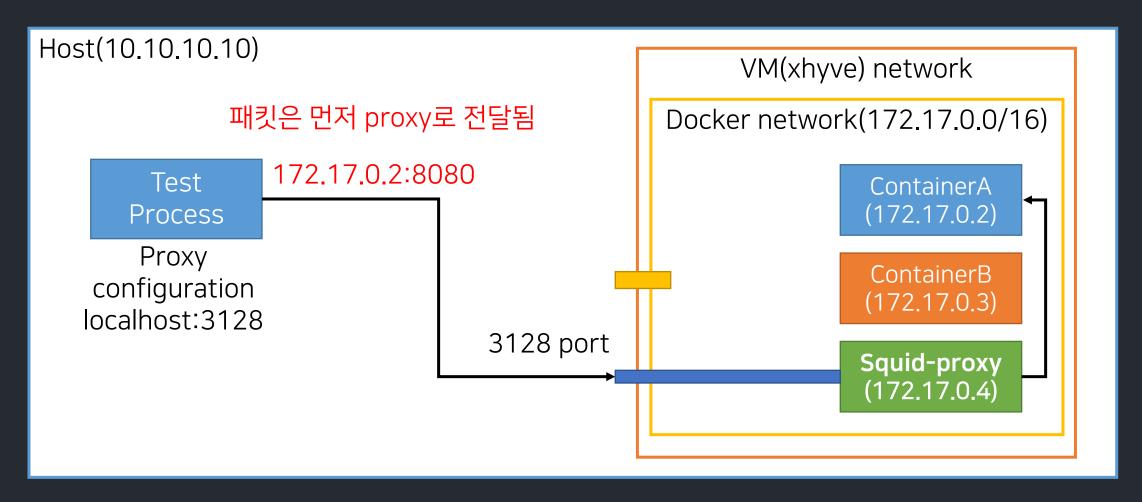
스퀴드는 기본적으로 유닉스 계열 시스템에서 돌아가도록 설계되었다.

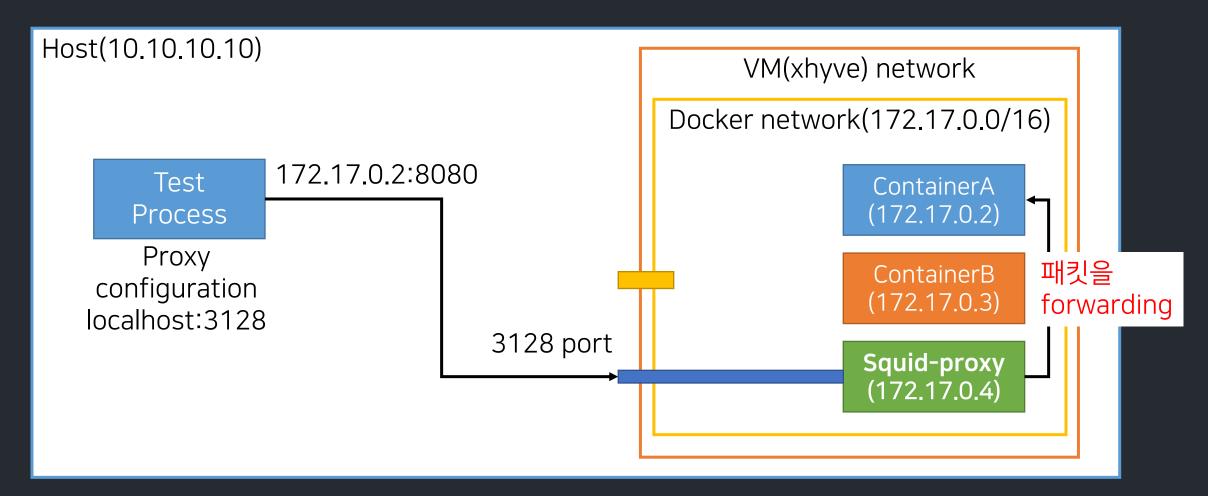
스퀴드는 매우 오랜 기간 동안 개발되었기에 완성된 형태이며 튼튼하다. 기본적으로 HTTP와 FTP에 사용되지만 TLS, SSL, HTTPS 등과 같이 많은 프로토콜을 지원한다.

패킷을 전달하면, Destination으로 forwarding



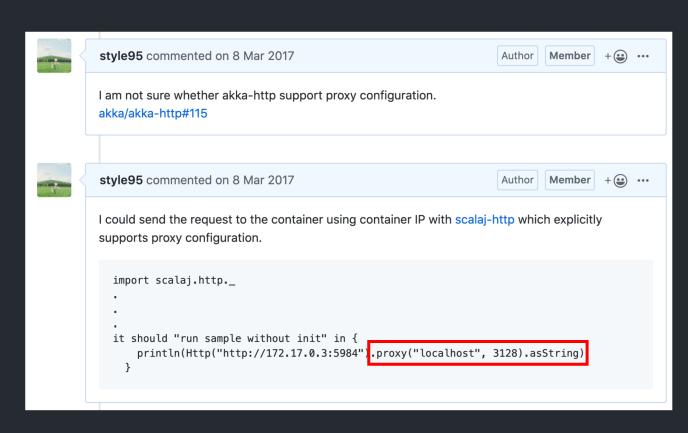




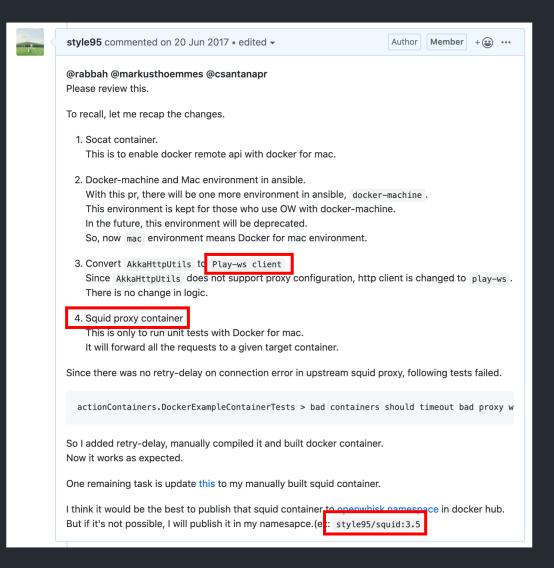


Akka-http client는 proxy를 지원하지않음

```
# IMPORTANT:
   # Please note that this section mirrors `akka.http.client` however is used only for
   # such as `Http().superPool` or `Http().singleRequest`.
   client = {
     # The default value of the `User-Agent` header to produce if no
     # explicit `User-Agent`-header was included in a request.
     # If this value is the empty string and no header was included in
      # the request, no `User-Agent` header will be rendered at all.
      user-agent-header = akka-http/${akka.version}
      # The time period within which the TCP connecting process must be completed.
      connecting-timeout = 10s
      # The time after which an idle connection will be automatically closed.
      # Set to `infinite` to completely disable idle timeouts.
      idle-timeout = 60 s
      # The initial size of the buffer to render the request headers in.
      # Can be used for fine-tuning request rendering performance but probably
      # doesn't have to be fiddled with in most applications.
      request-header-size-hint = 512
      # The proxy configurations to be used for requests with the specified
      # scheme.
      } vxorq
       # Proxy settings for unencrypted HTTP requests
       # Set to 'none' to always connect directly, 'default' to use the system
       # settings as described in http://docs.oracle.com/javase/6/docs/technotes/quides
       # or specify the proxy host, port and non proxy hosts as demonstrated
       # in the following example:
       # http {
          host = myproxy.com
           port = 8080
           non-proxy-hosts = ["*.direct-access.net"]
       http = default
       # Proxy settings for HTTPS requests (currently unsupported)
       https = default
```



Play-ws client 적용



```
Make OW run with docker for mac #1790
                                                                                        0 / 18 files viewed (i)
                                                                                                              Review changes ▼
         Changes from all commits ▼ File filter... ▼ × Clear filters Jump to... ▼ 🌣 ▼
 Viewed •••
      60 + docker run -d -p 3128:3128 style95/squid:3.5.26-p1
          + You need to configure gradle proxy settings.
      65 + **~/.gradle/gradle.properties**
      67 + systemProp.http.proxyHost=localhost
      68 + systemProp.http.proxyPort=3128
56 71
            ### Using Ansible
  ΣĮZ
          @@ -127,6 +142,7 @@ cd ansible
            ansible-playbook -i environments/<environment> couchdb.yml
128 143
             ansible-playbook -i environments/<environment> initdb.yml
129 144
             ansible-playbook -i environments/<environment> wipe.vml
     + ansible-playbook -i environments/<environment> apigateway.yml
130 146
             ansible-playbook -i environments/<environment> openwhisk.yml
             ansible-playbook -i environments/<environment> postdeploy.yml
132 148
          @@ -145,6 +161,7 @@ cd <openwhisk home>
```

Production

Naver 노출



style95 commented on 14 Jan 2017





I am facing this issue.

+ /Users/Naver/git/openwhisk/ansible/../bin/wsk -i --apihost 192.168.0.23 package update error: Package update failed: The server is currently unavailable (because it is overloan

As per the roles/apigateway/tasks/deploy.yml file, it is looking for docker images "openwhisk/apigateway"

```
docker_container:
```

name: apigateway

image: openwhisk/apigateway

state: started
recreate: true

restart_policy: "{{ docker.restart.policy }}"

hostname: apigateway

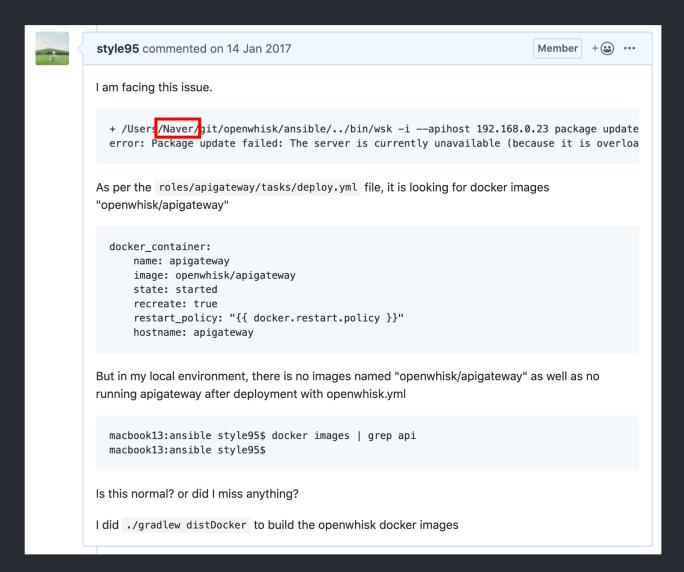
But in my local environment, there is no images named "openwhisk/apigateway" as well as no running apigateway after deployment with openwhisk.yml

```
macbook13:ansible style95$ docker images | grep api
macbook13:ansible style95$
```

Is this normal? or did I miss anything?

I did ./gradlew distDocker to build the openwhisk docker images

Naver 노출



IBM OpenWhisk 담당 부사장 -> 영국 부사장

From Michael M Behrendt/Germany/IBM

To: Gerry Reilly/UK/IBM@IBMGB

Cc: Todd Moore/Austin/IBM@IBMUS, Ashley Brisco/Birmingham/IBM@IBMUS, Andreas Nauerz/Germany/IBM@IBMDE, Trevor Bodz/Austin/IBM@IBMUS

Date: 15/01/2017 08:41

Subject: Fw: [openwhisk/openwhisk] Document How to Setup OpenWhisk Using Docker for Mac. (#1431)

fyi - naver seems to be doing some active work around openwhisk

+ /Users/Naver/git/openwhisk/ansible/../bin/wsk -i --apihost 192.168.0.23 package update --auth

Thanks & best regards
Michael

IBM Distinguished Engineer Chief Architect, Bluemix Core Platform

Mobile: +49-170-7993527

michaelbehrendt@de.ibm.com | @michael_beh

IBM 영국 부사장 -> 한국 IBM 상무

From: Gerry Reilly/UK/IBM

To: ChangWoo Jung/Korea/IBM@IBMKR

Date: 01/17/2017 05:45 AM

Subject: Fw: [openwhisk/openwhisk] Document How to Setup OpenWhisk Using Docker for Mac. (#1431)

Hi ChangWoo

Looks like we are starting to see some real activity from Naver around OpenWhisk. Would be interested if you hear anything?

regards

gerry

IBM 한국 상무로부터의 연락

안녕하세요.

저는 한국 IBM에 근무하는 정창우 라고 합니다.

OpenWhisk와 관련해서 유럽 팀에서 많이 보고 있는데, 김동경씨께서 관심을 가지고 진행하시는 일들에 대해 좀더 알고 싶어하는것 같습니다. <mark>저는 이분야에 현재 직접적으로 관여하고 있지는 않지만,</mark> OpenWhisk를 담당하는 VP와 일했던 인연으로 제가 도움이 될수 있는 부분들이 있는지 보려고 합니다.

제가 집이 분당이라서, 사실 퇴근길에 들러서 잠깐 뵙고 (부담없이) 말씀 나눌수 있는 기회가 있으면 좋을것 같은데, 가능하실까요?

Best Regards,

Changwoo Jung (정창우 상무)

Lab Director - Korea Lab & Client Center Korea Executive, University Program Lead for Korea

Member of IBM Academy of Technology, IBM

E-mail: jungcw@kr.ibm.com / Office: +82-2-3781-8422 / Mobile: +82-10-4995-8422

Assistant: Lee, MyungJae (E-mail: <u>leemyj@kr.ibm.com</u> / Tel: +82-2-3781-5206)

Please visit IBM Korea Lab & Client Center Korea site

IBM 한국 상무로부터의 연락

RE: Fwd: Fw: [openwhisk/openwhisk] Document How to Setup OpenWhisk Using Docker for Mac. (#1431) [2]

보낸사람 VIP 윤준호<juno.yoon@navercorp.com> 주소록에추가 | 메시지 | 약속초대

받는사람 <jungcw@kr.ibm.com>

참조 김동경<dominic.kim@navercorp.com>, 김성관<sungkwan.kim@navercorp.com>, 유장선<jangseon.ryu@navercorp.com>

안녕하세요. 정창우님.

티미팅 진행 진행 가능할것 같습니다. 가능하신 날짜를(가급적 설이후) 알려주시면 저희 사무실 2층 회의실에서 진행하면 될것 같습니다.

저희도 궁금한 점이 좀 있었는데요.. 이를 먼저 알려드리는 편이 나을 것 같습니다.

- * openwhisk 측에서 현재 개발자들에게 어떤 지원을 하고 있는지?
- * 국내에 openwhisk를 사용하는 레퍼런스가 있는지?
- * docker 버전이 증가함에 따라 docker service 등의 신규 기능들이 들어오는데, 이에 대해서 대응 계획이 있는지?

감사합니다.

OpenStack days 2017

Serverless Computing Platform with OpenWhisk



Container Day 13:00~13:50

540	Serveness companing Platform with Openwillsk				
발표자	네이버 김동경				
발표자 프로필	2010년부터 5년간 삼성전자에서 분산 메시징 / 클라우드/ 빅데이터 / 이벤트 프로세싱에 관련된 플랫폼들을 개발해왔습니다. 현재는 네이버에서 Serverless 컴퓨팅 플랫폼을 개발하고 있고, 관련 오픈소스 구현체인 Apache OpenWhisk의 Contributor로도 활동하고 있습니다.				
발표요약	최근 Serverless computing 기술에 대한 관심이 높아지고 있습니다. Serverless computing이란, 개발자는 서 버의 provisioning이나 운영을 신경설 필요 없이, 코드만 작성해서 등록하면, 플랫폼이 알아서 해당 코드를 실행 해주고, 결과를 반환해주는 시스템을 말합니다. 자주 실행되지 않는 로직의 실행이나, Thrid party API 연동, Sandbox 형태의 안전한 실행 환경 등이 필요할 때, 유용하게 이용할 수 있습니다. 네이버 사내에서도 이런 Serverless computing에 대한 요구사항이 생기기 시작했고, 여러 opensource들을 고려하여, Apahce OpenWhisk를 기반으로 구축을 시작했습니다. 네이버 사내 플랫폼들은 Keystone으로 인증/권한이 통합되어 있기에, 본 플랫폼도, Keystone과 연동이 필요했고, OpenWhisk의 인증 및 권한의 개념을 Keystone의 인증/권한 개념으로 매핑하는 작업이 필요했습니다. 본 세션에서는 Serverless computing에 대한 기본적인소개 및 그 Open-source 구현체인 Apache OpenWhisk에 대한 소개, 그리고 이를 네이버에 도입하는 과정에서 겪고 있는 경험 및 고민들을 공유합니다				



	발표명	OpenStack 기반의 Kubernetes, 어디까지 해봤니?
	발표자	IBM 클라우드 에반젤리스트 공진기 차장
Frack I 10~15:40	발표자 프로필	개발, 인프라, 네트워크, 보안 등 컴퓨터에 관련된 모든 부분에 얕지만 넓은 지식을 토대로 한국IBM 에서 Bluemix Technical Evangelist 로 활동하면서 새로운 기술과 소식을 전파하고 있습니다.
		오픈소스 기반의 클라우드와 컨테이너가 확장되면서 Kubernetes 기반으로 OpenStack 을 운영하거나, OpenStack 기반으로 Kubernetes 를 운영하는 시도가 있습니다. 이 세션에서는 Cinder 스토리지나 로드 밸런 서처럼 OpenStack 과 Kubernetes 를 잘 연동할 수 있 는 방법으로부터, 컨테이너 볼륨처럼 Kubernetes 에 필

안을 찾아봅니다.

발표요약 요하지만 OpenStack 에서는 제공되지 않는 기능들,

Swift object storage 처럼 OpenStack 에서는 제공되 지만 Kubernetes 에서 지원되지 않는 기능들을 짚어봅 니다. 그리고 Kubernetes 플러그인을 활용하거나 새로 운 OpenStack 기능을 통해 이 간극을 줄여 OpenStack 기반으로 Kubernetes 를 효과적으로 운영할 수 있는 방

IBM DeveloperConnect 2017



IBM DeveloperConnect 2017



▲ 보낸사람

VIP SunAh Jang<sajang@kr.ibm.com> 주소록에 추가 | 메시지 | 약속초대

받는사림

<dominic.kim@navercorp.com>

안녕하세요, 김동경님 IBM 개발자 마케팅 장선아입니다

우선 지난 Container Day 2017에서 드린 요청에 발표를 긍정적으로 검토해주셔서 감사합니다. 지난해에 이어 올 DeveloperConnect은 11월 9일에 르메르디앙(구. 리츠칼튼)에서 진행됩니다.

아래와 같이 키노트 스피커는 확정이 되었으며, 세션 아젠다를 확정 중에 있습니다.

Start	End	Duration		5	Speaker			
10:30	10:40	0:10		Welco	Andrew Chang, GM, IBM Korea			
10:40	11:10	0:30	IBN	Approach on Open Tec	Jonas Jacobi, IBM VP, Developer Advocacy			
11:10	11:40	0:30		Watson	Christian Weber, GitHub			
11:40	12:10	0:30	Te	ch trend : Transformation	Michael M Behrendt, OpenWhisk			
12:10	12:10 13:00	0:50	Lunch					
12.10	13.00		Cloud	Open Source	Al	Developer Community		
13:00	13:40	0:40						
13:40	14:20	0:40						
14:20	15:00	0:40						
15:00	15:20	0:20	Break					
15:20	16:00	0:40						
16:00	16:40	0:40						
16:40	17:20	0:40						

관련하여, 김동경님의 OpenWhisk 세션에 대한 제목, 시놉시스를 받고자 합니다. 우선 Draft로 OpenStack Day 2017에 있었던 내용을 넣어두었습니다.

제목, 시놉 관련하여 답변 부탁드리며, 발표자 소개 부분은 동일하게 진행하고자 하는데 혹시 새로운 버전이 있으시면 공유 부탁드립니다.

OpenWhisk 담당 부사장과의 미팅

보낸사람

VIP SunAh Jang<sajang@kr.ibm.com> 주소록에 추가 | 메시지 | 약속초대

받는사람

김동경<dominic.kim@navercorp.com>

김동경님, 안녕하세요

확인 결과 Michael Behrendt 부사장님은 Apache와 Naver의 향후 비즈니스 협력관계에 대해 미팅을 할 의사가 있으신 것으로 확인되었습니다. 실제 개발단의 기술적인 질문들은 팀내 개발자분과 연결해주시겠다고 하네요. 11월 부사장님 방한시, Naver 임원분과 미팅을 진행하실지 확인 부탁드립니다. 감사합니다.

Regards,

Sunah Jang

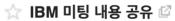
Developer Outreach Marketing Manager,

Marketing & Communications, IBM Korea

+82-10-4995-4686

sajang@kr.ibm.com

개발자라면 지금 방문하세요! https://developer.ibm.com/kr/



▲ 보낸사람

VIP 김동경<dominic.kim@navercorp.com>메시지 | 약속초대

받는사람

pasta<dl_pasta@navercorp.com>

참조

김태웅<taewoong.kim@navercorp.com>, 김건희<geonhui.kim@navercorp.com>, <dominic.kim@navercorp.com>

금일 IBM과 진행했던 미팅 내용 공유 드립니다.

* 일시: 2017. 11. 10

* 시각: 오전 9시 30분

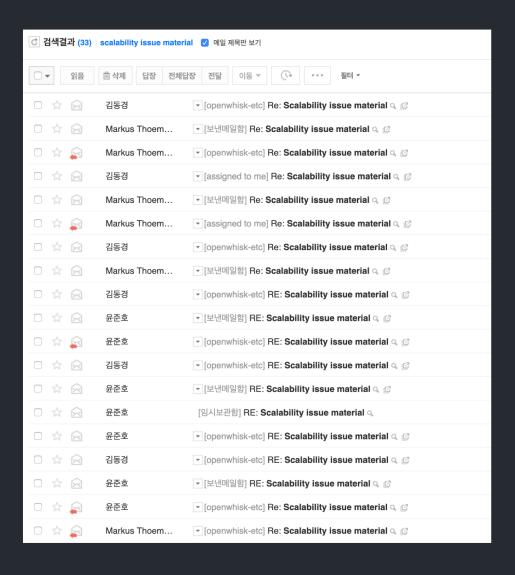
* 장소: 여의도 IBM 한국 본사. 12층 m08 미팅룸

* IBM측 참석자: Michael Behrendt. 정창우 상무, 공진기 차장, 장선아 차장

* NAVER 참석자: 윤준호, 김동경

주요 내용

실무진과 직접 커뮤니케이션







IBM OpenWhisk 중국 개발자와의 만남 이후

----Original Message-----

From: "Ying Chun Guo" < guoyingc@cn.ibm.com>

To: <dominic.kim@navercorp.com>;

Cc: "Matt Rutkowski"<<u>mrutkows@us.ibm.com</u>>;

Sent: 2018-07-26 (목) 14:54:01

Subject: Apache OpenWhisk Supporter/Provider

Hi, Dominic

It was nice to meet with you at the LC3 @ Beijing. I'm Daisy from IBM OpenWhisk team.

OpenWhisk website is being update. There will be a supporter/provider company list in the new website. Would you like to add naver's logo there? If you want, my colleague Matt will help. He is the leader of OpenWhisk community. He is working on the website now.

Thanks and regards Ying Chun Guo (Daisy)

[attachment "NAVER LOGOTYPE.zip" deleted by Matt Rutkowski/Austin/IBM]

NAVER를 OpenWhisk 공식 Supporter로 등록

Supporters

The following companies and organizations have acknowledged support of the Apache OpenWhisk project as contributors or users of the technology.



































NAVER 노출 실수가 쏘아올린 작은 공(?)

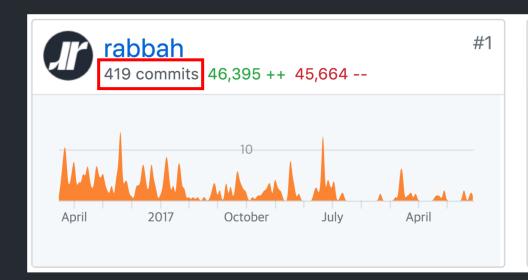
신선하고 재미있다!

그래서 뭘 했는데?

코드(Commit) != 컨트리뷰션







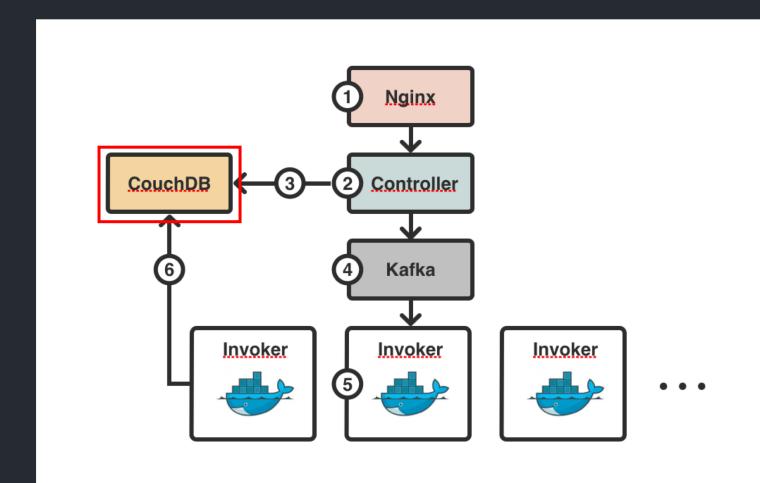


Contribution 포인트

Production 관련

- 성능
- Failover
- 모니터링
- 기능

CouchDB



사용자의 함수 저장 실행 결과 저장 인증/권한 정보 저장

CouchDB 이슈

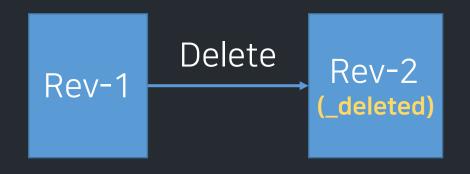
- 데이터 삭제가 되지 않음
- 잦은 Crash
 - High loads에서 Crash
 - Indexing으로 인한 Crash
- <u>● 불친절한 커미터</u>



여러 버전의 Rev을 유지하고 있음 Rev을 통해 여러 노드간의 Conflict를 해결



여러 버전의 Rev을 유지하고 있음 Rev을 통해 여러 노드간의 Conflict를 해결



문서 내용은 삭제되지만 Tombstone은 지워지지 않음

```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
        ./erts-6.2
5.8M
40K
       ./etc
       ./lib
19M
244K
        ./releases
3.2M
        ./share
       ./var
297M
        ./data
325M
```

초기 상태

```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
5.8M
       ./erts-6.2
40K
       ./etc
       ./lib
19M
244K
        ./releases
3.2M
        ./share
       ./var
297M
        ./data
325M
```

초기 상태

```
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64K
       ./bin
5.8M
       ./erts-6.2
40K
       ./etc
       ./lib
19M
       ./releases
244K
3.2M
       ./share
       ./var
9.8G
        ./data
9.8G
```

데이터 삽입

```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
5.8M
        ./erts-6.2
40K
       ./etc
       ./lib
19M
244K
        ./releases
3.2M
        ./share
        ./var
297M
        ./data
325M
```

초기 상태

```
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5.8M
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40K
       ./etc
19M
       ./lib
244K
        ./releases
3.2M
        ./share
       ./var
13G
       ./data
13G
```

```
데이터 삭제
```

```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
5.8M
        ./erts-6.2
40K
       ./etc
       ./lib
19M
        ./releases
244K
3.2M
        ./share
       ./var
9.8G
        ./data
9.8G
```

데이터 삽입

```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
        ./erts-6.2
5.8M
       ./etc
40K
19M
       ./lib
244K
        ./releases
3.2M
        ./share
        ./var
297M
        ./data
325M
```

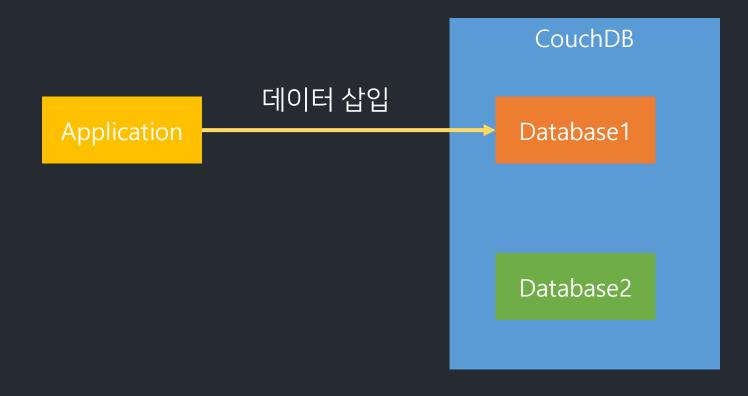
초기 상태

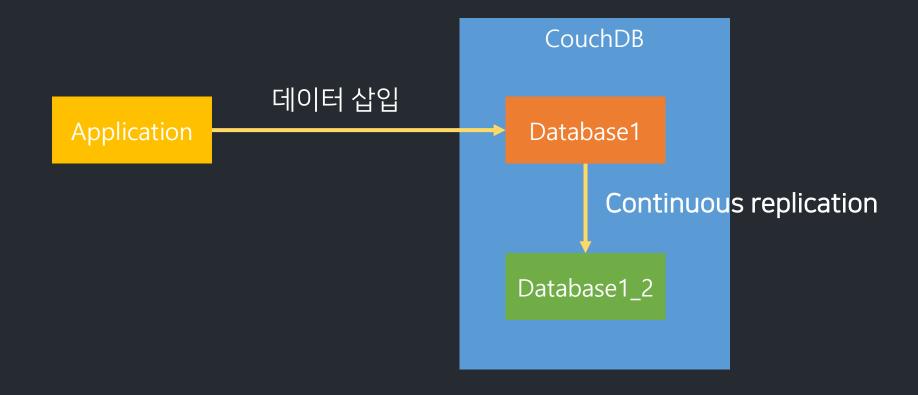
```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
       ./erts-6.2
5.8M
40K
       ./etc
19M
       ./lib
244K
        ./releases
3.2M
        ./share
       ./var
13G
       ./data
13G
```

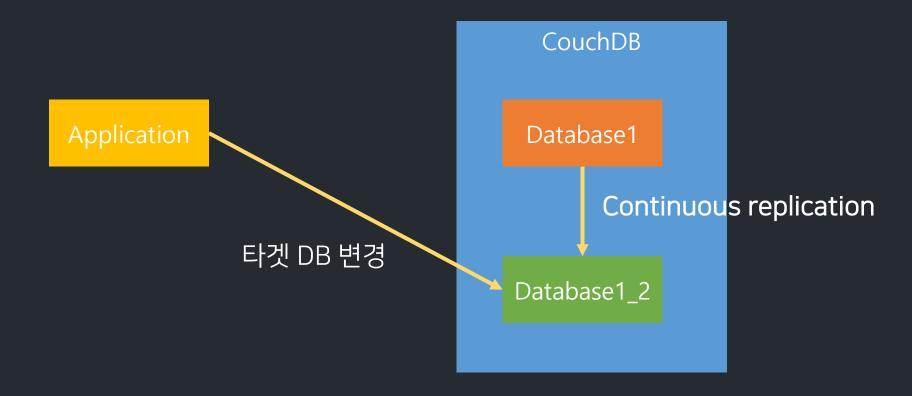
```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
5.8M
        ./erts-6.2
40K
       ./etc
       ./lib
19M
        ./releases
244K
3.2M
        ./share
       ./var
9.8G
        ./data
9.8G
```

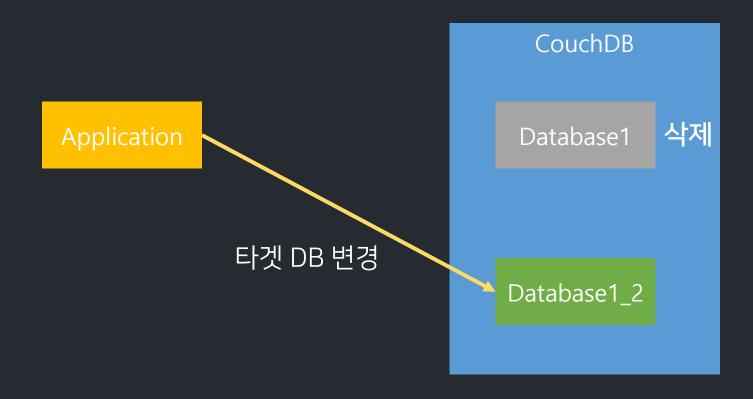
데이터 삽입

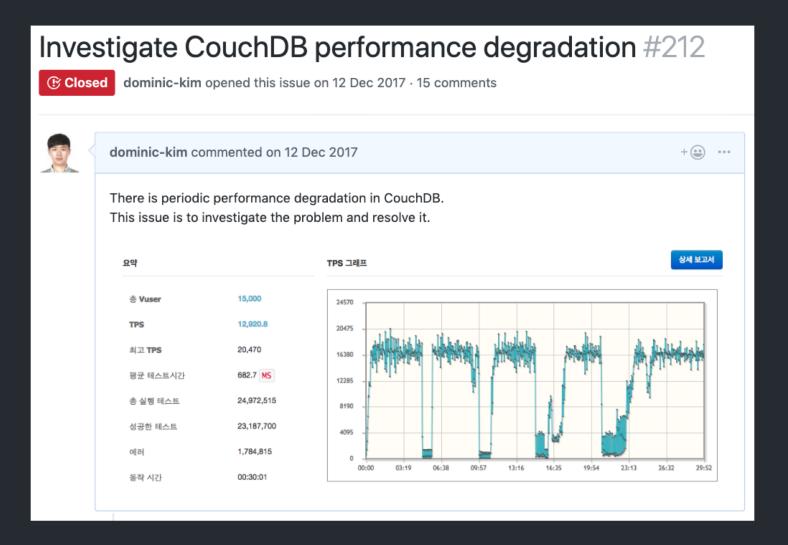
```
root@bf83420db0ec:/opt/couchdb# du -h --max-depth 1
64K
       ./bin
5.8M
        ./erts-6.2
40K
       ./etc
       ./lib
19M
244K
        ./releases
3.2M
        ./share
0
       ./var
3.3G
        ./data
3.4G
```



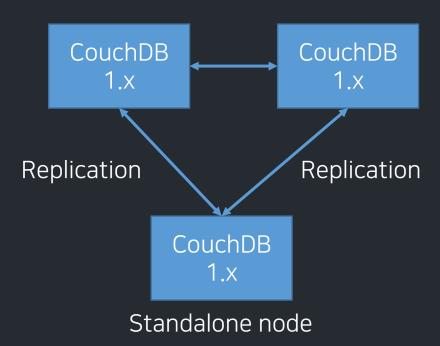




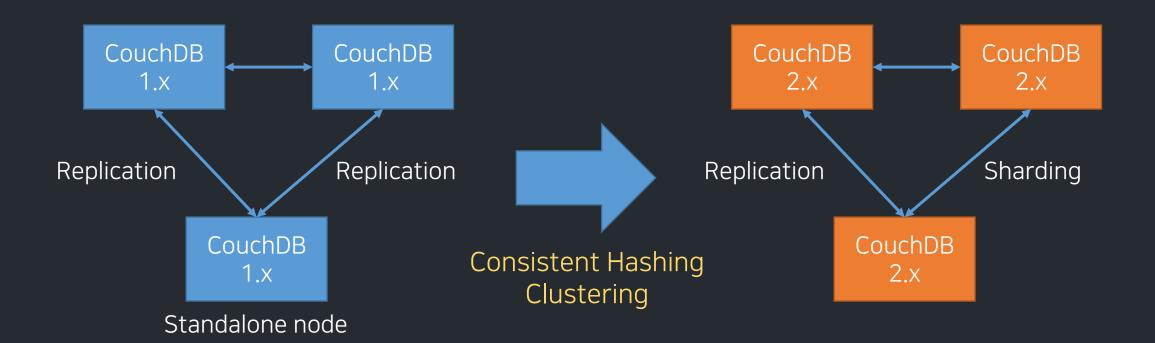




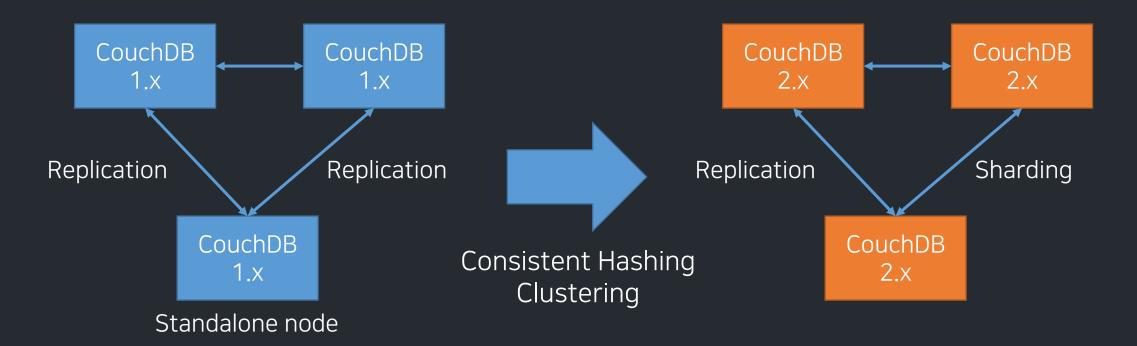
CouchDB 1.x -> CouchDB 2.x



CouchDB 1.x -> CouchDB 2.x

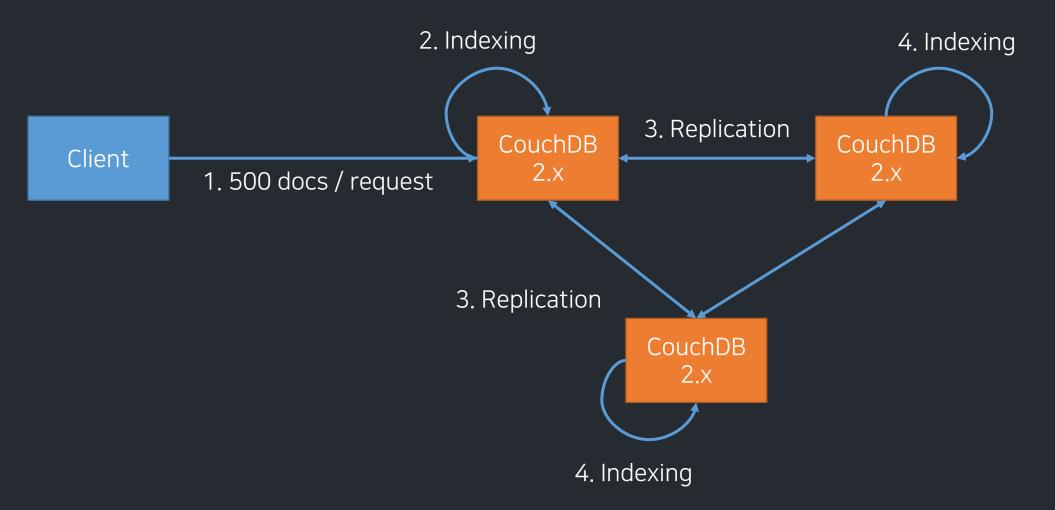


CouchDB 1.x -> CouchDB 2.x

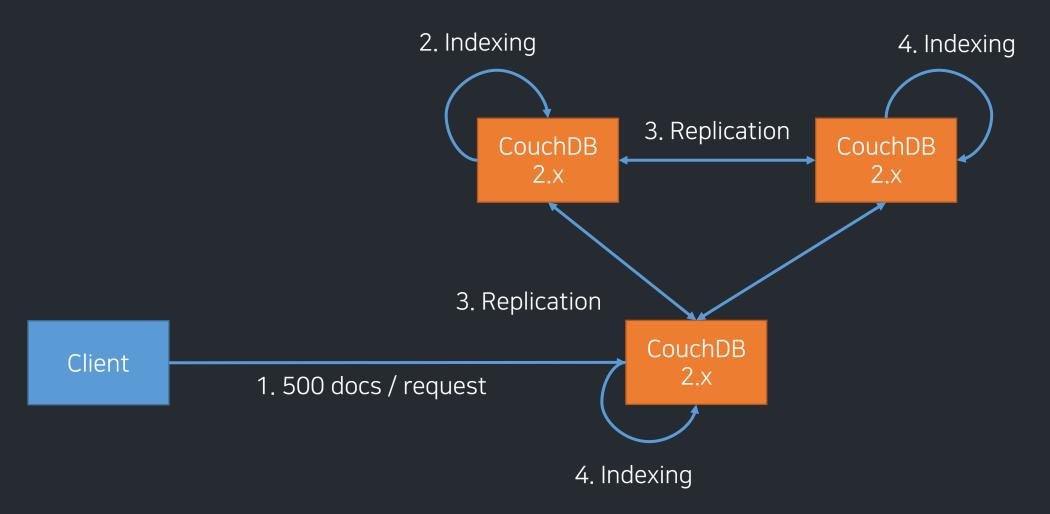


Cloudant(IBM)사에서 집중적으로 Contribution

Bulk insertion issue



Bulk insertion issue



Bulk insertion issue

```
/80000000-9fffffff/test.1508232485 couchdb@dev-lambda-exp-db002.ncl {pending_changes,92312}
/20000000-3fffffff/test.1508232485 couchdb@dev-lambda-exp-db003.ncl {pending_changes,91131}
```

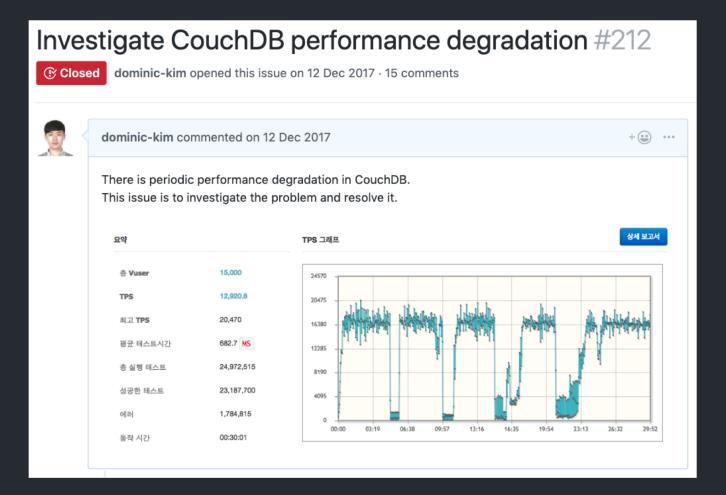
메모리 상에 적용되지 않은 변경들이 쌓이기 시작

Investigate CouchDB performance degradation #212 dominic-kim opened this issue on 12 Dec 2017 · 15 comments dominic-kim commented on 12 Dec 2017 + \cdots There is periodic performance degradation in CouchDB. This issue is to investigate the problem and resolve it. 상세 보고서 요약 TPS 그래프 15,000 총 Vuser 24570 12,920.8 20475 20,470 최고 TPS 16380 평균 테스트시간 12285 24,972,515 총 실행 테스트 8190 23,187,700 성공한 테스트 1.784.815 00:00 동작 시간 00:30:01

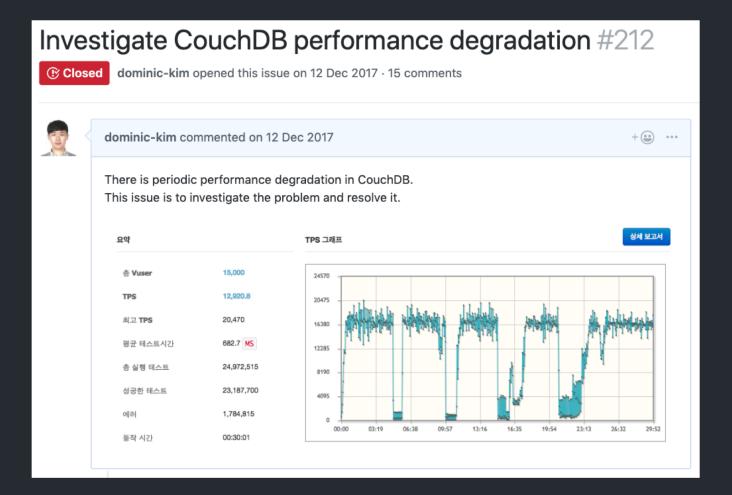
1. Pending_changes가 메모리를 소진

Investigate CouchDB performance degradation #212 dominic-kim opened this issue on 12 Dec 2017 · 15 comments dominic-kim commented on 12 Dec 2017 + (00) *** There is periodic performance degradation in CouchDB. This issue is to investigate the problem and resolve it. 상세 보고서 요약 TPS 그래프 15,000 총 Vuser 24570 12,920.8 20475 20,470 최고 TPS 16380 평균 테스트시간 12285 총 실행 테스트 24,972,515 23,187,700 성공한 테스트 1.784.815 동작 시간 00:30:01

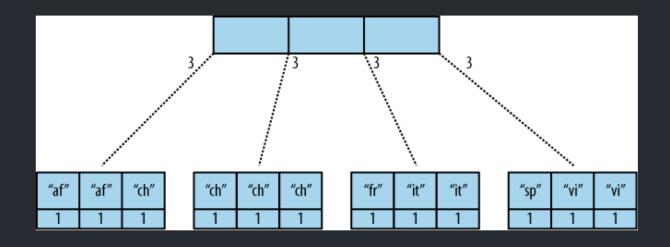
- 1. Pending_changes가 메모리를 소진
- 2. 메모리가 100% 달하면 CouchDB 노드가 Crash되고 재시작됨



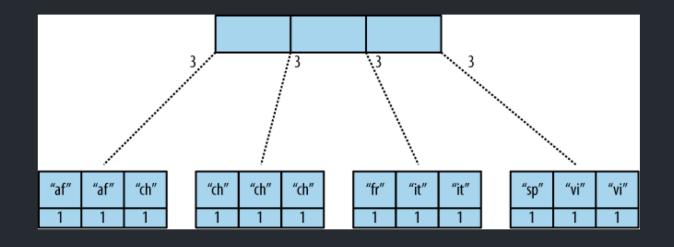
40 Cores CPU
128 GB Memory
2TB SSD



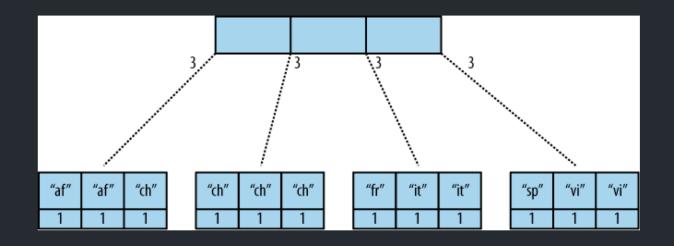
처리되지 못한 데이터의 유실 불안정한 클러스터 불안정한 TPS



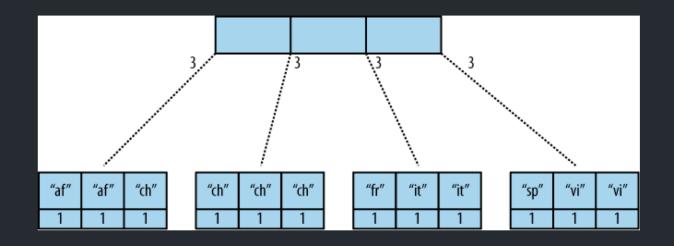
View로 특정 데이터들만 필터링 B-tree를 만들어둠 (Indexing)



View를 read할 때 갱신이 이루어짐



View에 접근이 오랫동안 이루어지 지 않으면, 한번에 모든 데이터를 indexing

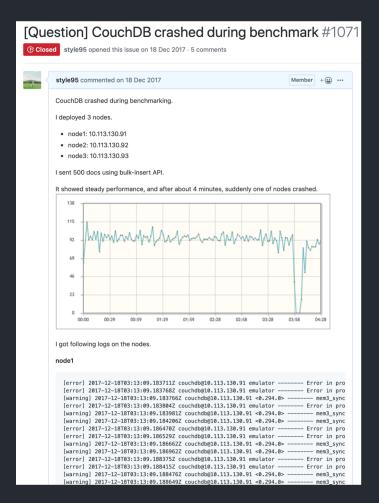


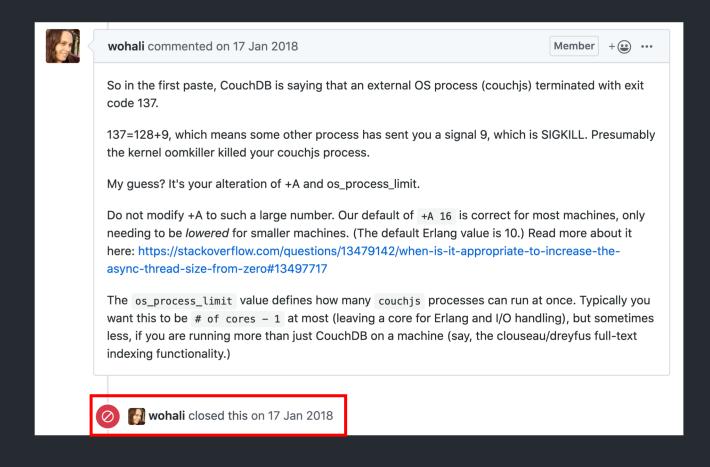
10GB 수준의 데이터를 indexing하다 Crash 발생



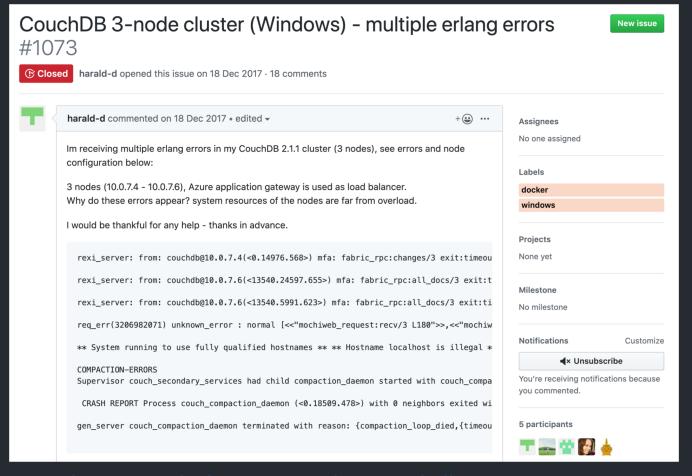
주기적인 view read query 수행

커뮤니티에 리포팅 했으나..



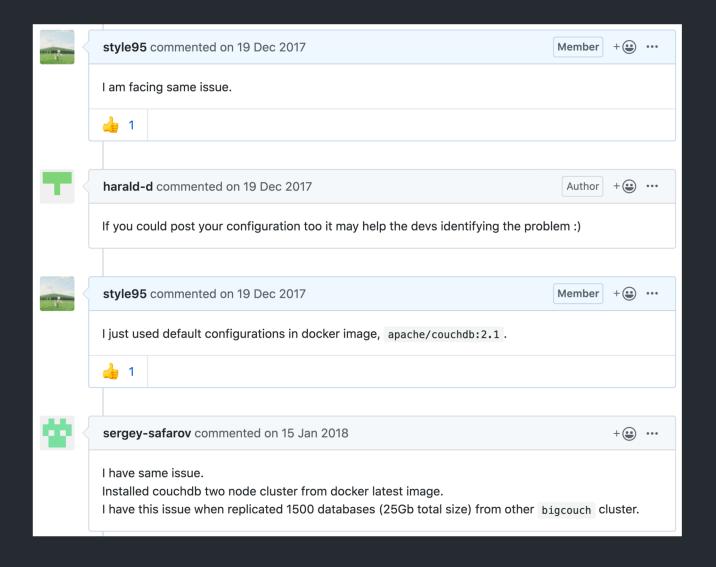


커뮤니티에 리포팅 했으나..

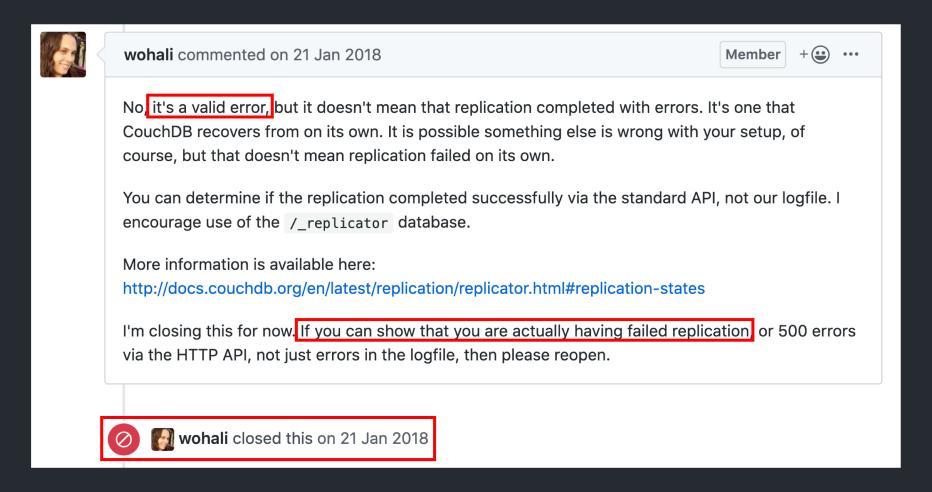


https://github.com/apache/couchdb/issues/1073

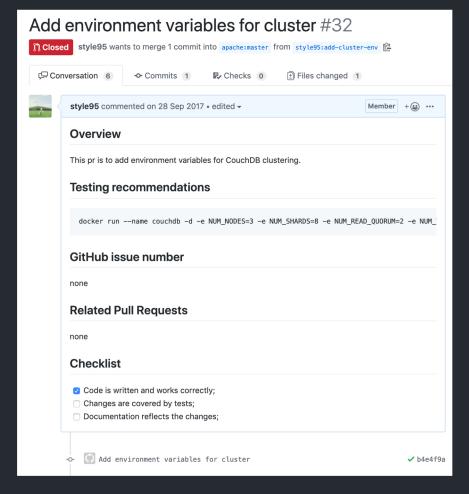
커뮤니티에 리포팅 했으나..



커뮤니티에 리포팅 했으나..

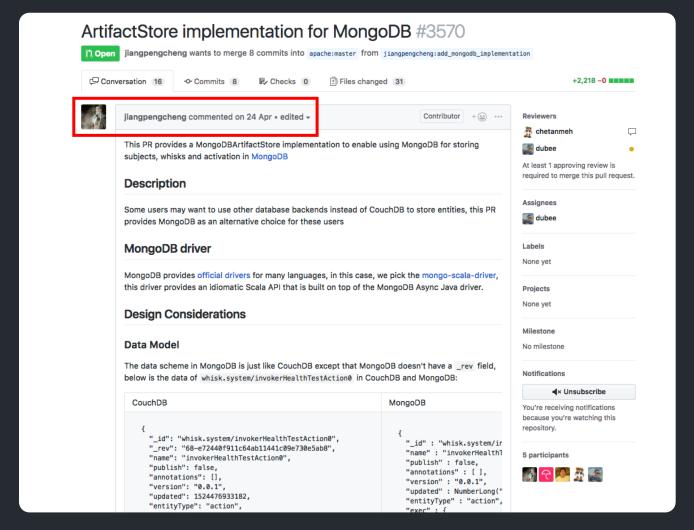


컨트리뷰션 했으나...

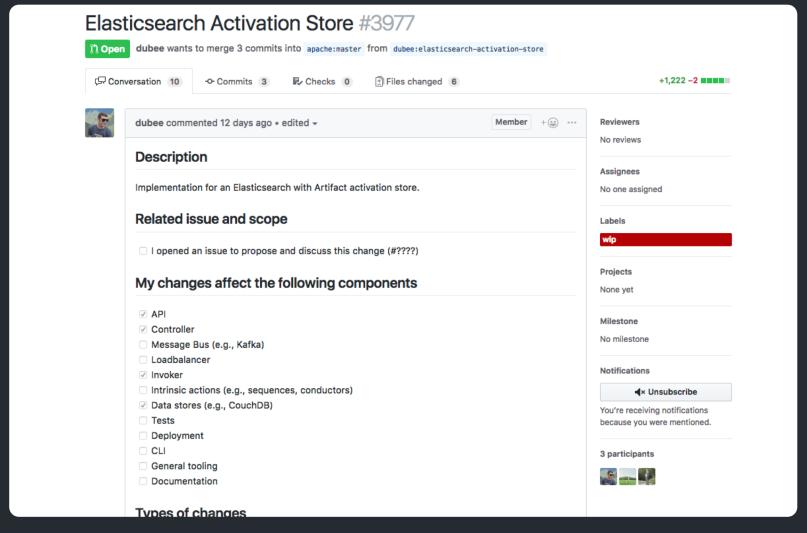




MongoDB로 변경



ElasticSearch Activation Store

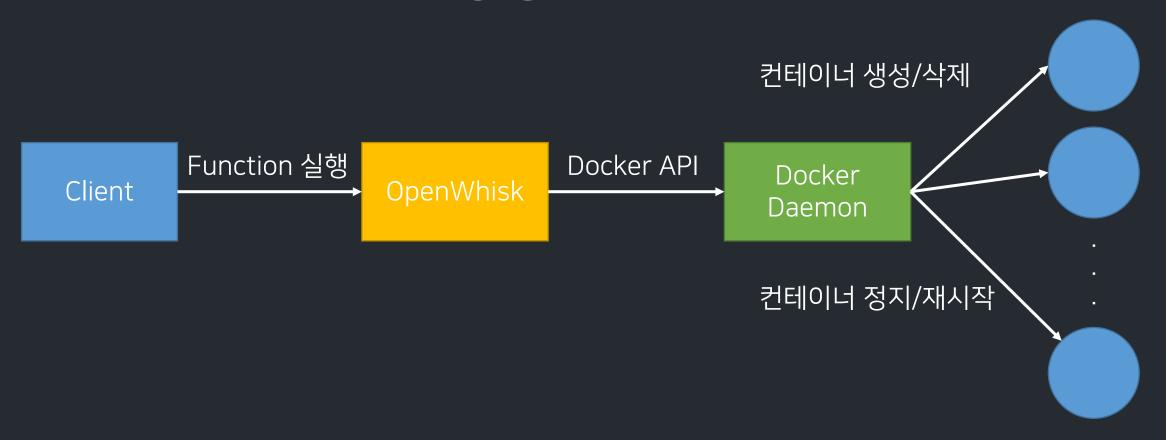


https://github.com/apache/incubator-openwhisk/pull/3977

ElasticSearch Activation Store

Data Node (Hot) / 2 Node / Memory 8GB, SSD 192GB									
Doc Count	Ouery Id	Query Duration				Docs count	Storage size	Primary storage size	
Doc Count	Query lu	First	Second	Third		1006100	724.9mb	361.8mb	
	q1	1 ms	0 ms	0 ms		10108600	8.4gb	4.2gb	
1006100	q2	13 ms	11 ms	1 ms		52365100	37.7gb	19.1gb	
	q3	5 ms	6 ms	8 ms		118840100	81.5gb	41.5gb	
	q1	3 ms	2 ms	2 ms					
10108600	q2	103 ms	102 ms	0 ms					
	q3	58 ms	21 ms	11 ms					
	q1	19 ms	6 ms	4 ms					
52365100	q2	387 ms	307 ms	0 ms					
	q3	75 ms	43 ms	24 ms					
	q1	63 ms	16 ms	7 ms					
118840100	q2	794 ms	727 ms	0 ms					
	q3	184 ms	31 ms	26 ms					
q1: teacher su	bject가 실행한	<u></u> 액션 실행시간	의 stats를 반환						
q2:groupBy s	ubject의 cour	nt 반환 (전체 네	임스페이스별 수						
q3 : 한시간(1h)	, interval로 su'	bject별 액션 실	행 횟수 반환						
	Doc Count 1006100 10108600 52365100 118840100 q1: teacher sulup q2: group By sulup su	Doc Count Query Id 의 1 1006100	Doc Count Query Id Query Id 1006100 q1 1 ms 10108600 q2 13 ms q3 5 ms q1 3 ms q3 58 ms q3 58 ms q1 19 ms 52365100 q2 387 ms q3 75 ms q1 63 ms 118840100 q2 794 ms q3 184 ms	Doc Count Query Id Query Duration 1006100 q1 1 ms 0 ms 1006100 q2 13 ms 11 ms q3 5 ms 6 ms q1 3 ms 2 ms 10108600 q2 103 ms 102 ms q3 58 ms 21 ms q1 19 ms 6 ms 52365100 q2 387 ms 307 ms q3 75 ms 43 ms 118840100 q2 794 ms 727 ms q3 184 ms 31 ms	Doc Count Query Id Query Duration 1006100 q1 1 ms 0 ms 0 ms 1006100 q2 13 ms 11 ms 1 ms 10108600 q2 103 ms 2 ms 2 ms 10108600 q2 103 ms 102 ms 0 ms q3 58 ms 21 ms 11 ms 1 ms 1 ms 1 ms 1 ms 1 ms 1 ms 0 ms 0 ms 1 ms 1 ms 1 ms 0 ms 1 ms 1 ms 1 ms 0 ms 1 ms 1 ms 1 ms 0 ms 1 ms 1 ms 0 ms 0 ms 1 ms 1 ms 1 ms 0 ms 1 ms 1 ms 0 ms 0 ms	Doc Count Query Id Query Duration 1006100 q1 1 ms 0 ms 0 ms 1006100 q2 13 ms 11 ms 1 ms q3 5 ms 6 ms 8 ms q1 3 ms 2 ms 2 ms 10108600 q2 103 ms 102 ms 0 ms q3 58 ms 21 ms 11 ms 52365100 q2 387 ms 307 ms 0 ms q3 75 ms 43 ms 24 ms 118840100 q2 794 ms 727 ms 0 ms q3 184 ms 31 ms 26 ms q1: teacher subject? Jejot Yet Jejot Yet Jejot Jet Jejot Jet Jejot Jet Jejot Jet Jet Jejot Jet Jejot Jet Jet Jet Jet Jet Jet Jet Jet Jet Je	Doc Count Query Id Query Duration Docs count 1006100 q1 1 ms 0 ms 0 ms 10108600 1006100 q2 13 ms 11 ms 1 ms 52365100 q3 5 ms 6 ms 8 ms 118840100 q1 3 ms 2 ms 2 ms 10108600 q2 103 ms 102 ms 0 ms q3 58 ms 21 ms 11 ms 52365100 q2 387 ms 307 ms 0 ms q3 75 ms 43 ms 24 ms 118840100 q2 794 ms 727 ms 0 ms q3 184 ms 31 ms 26 ms q1: teacher subject가 실행한 액션 실행시간의 stats를 반환 q2: groupBy subject의 count 반환 (전체 네임스페이스별 실행 횟수)	Doc Count Query Id Query Duration Docs count Storage size 1006100 q1 1 ms 0 ms 0 ms 10108600 8.4gb 1006100 q2 13 ms 11 ms 1 ms 52365100 37.7gb q3 5 ms 6 ms 8 ms 118840100 81.5gb 10108600 q2 103 ms 102 ms 0 ms q3 58 ms 21 ms 11 ms 52365100 q2 387 ms 307 ms 0 ms q3 75 ms 43 ms 24 ms q1 63 ms 16 ms 7 ms 118840100 q2 794 ms 727 ms 0 ms q3 184 ms 31 ms 26 ms q1 : teacher subject가 실행한 액션 실행시간의 stats를 반환 q2 : groupBy subject의 count 반환 (전체 네임스페이스별 실행 횟수)	Doc Count Query Id First Second Third 1006100 724.9mb 361.8mb 1006100 q2 13 ms 11 ms 1 ms 52365100 37.7gb 19.1gb q3 5 ms 6 ms 8 ms 118840100 81.5gb 41.5gb 10108600 q2 103 ms 102 ms 0 ms 10108600 R1.5gb 41.5gb 10108600 q2 103 ms 102 ms 0 ms 102 ms 102 ms 103 ms 102 ms 103 ms 10 ms 103 ms

Docker daemon 성능 이슈



실행 시간	결과
2018. 09. 02. 12:46:40 (3ms)	success
2018. 09. 02. 12:46:39 (2ms)	success
2018. 09. 02. 12:46:38 (3ms)	success
2018. 09. 02. 12:46:37 (2ms)	success

액션 실행 결과

```
1.5 user

TPS: 6.3

avg: 7874 ms
avg: 7878 ms
avg: 7890 ms
avg: 7896 ms
avg: 7906 ms

total avg 7888 ms

the number of process: 5
time per 10 action: 7898 ms
time per 1 action: 7898 ms
action per 1s(TPS): (1000/789) * 5 = 6.3
```

Docker 생성/삭제 API 성능

```
1. 5 user

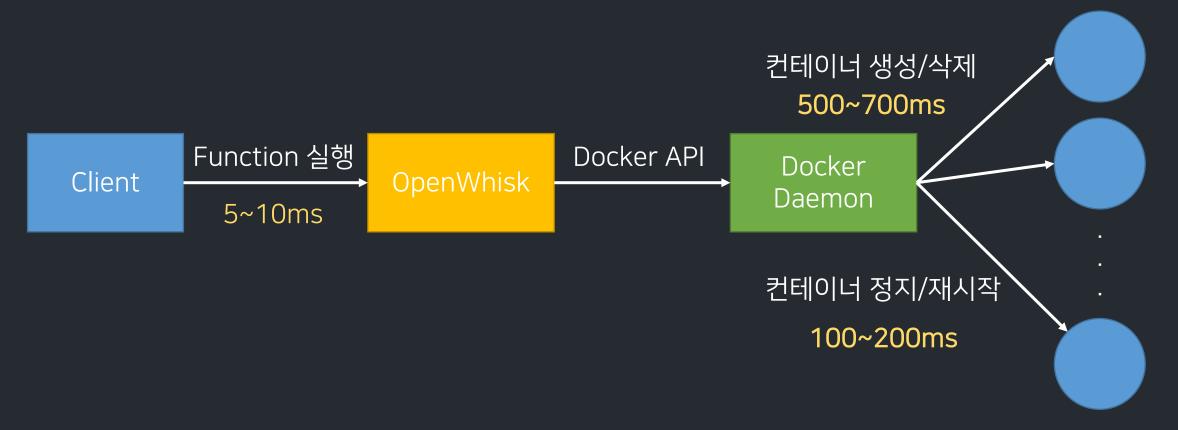
TPS: 38.1

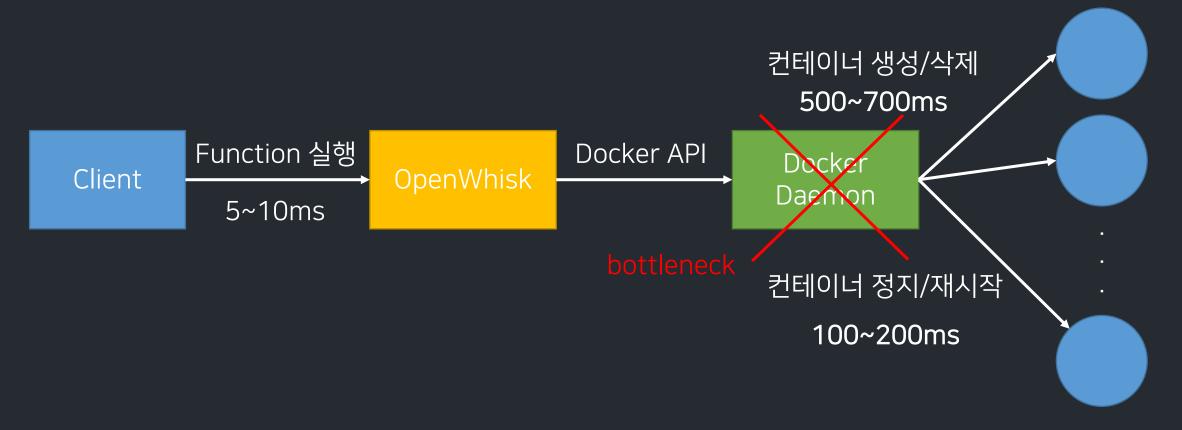
node2 avg: 1312 ms
node1 avg: 1312 ms
node4 avg: 1312 ms
node3 avg: 1313 ms
node5 avg: 1313 ms

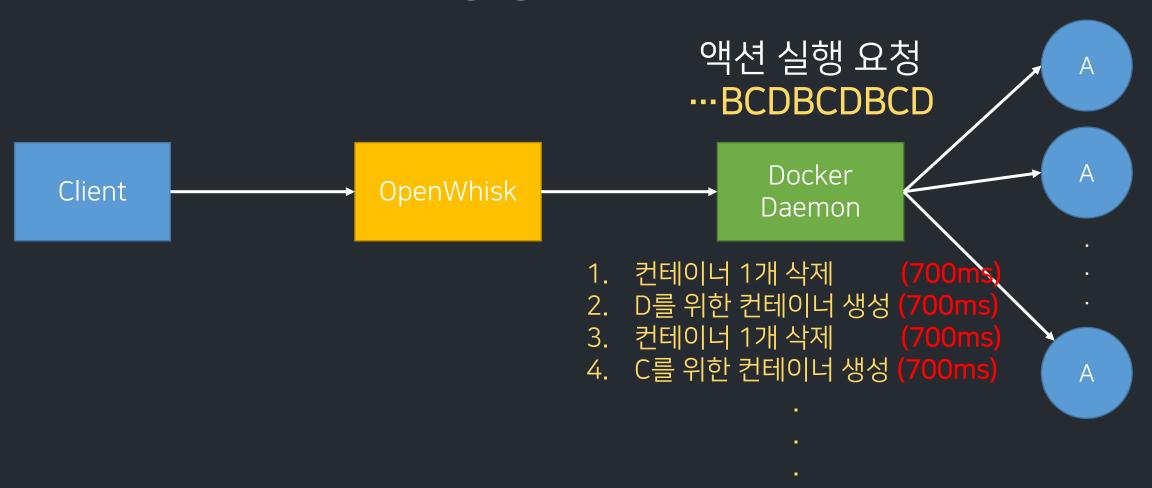
total avg: 1312 ms

the number of node: 5
time per 10 action: 1312 ms
time per 1 action: 1311 ms
action per 1s(TPS): (1000/131) * 5 = 38.1
```

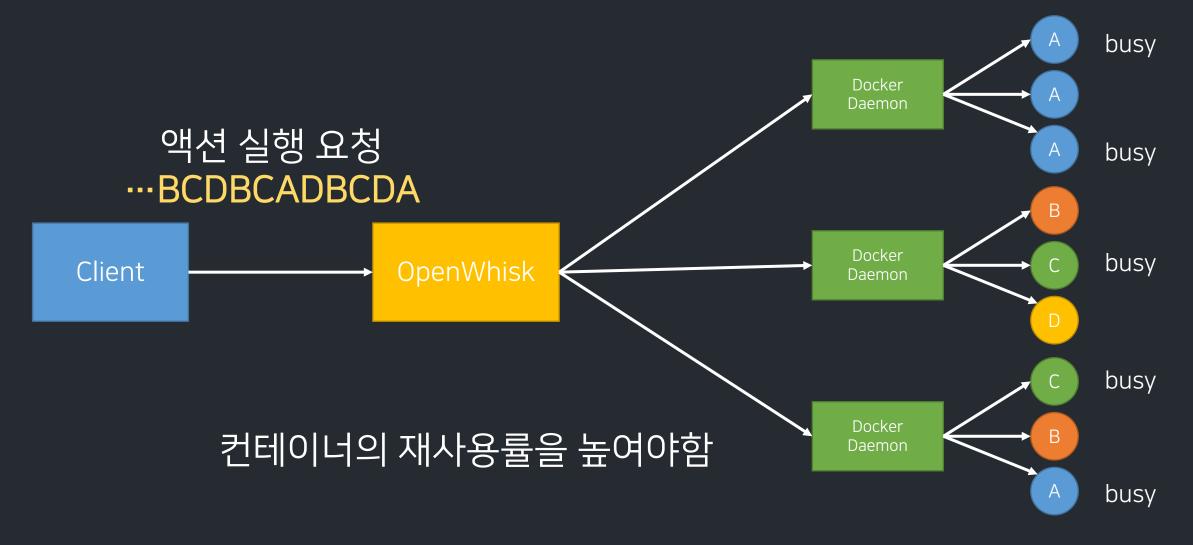
Docker 정지/재개 API 성능



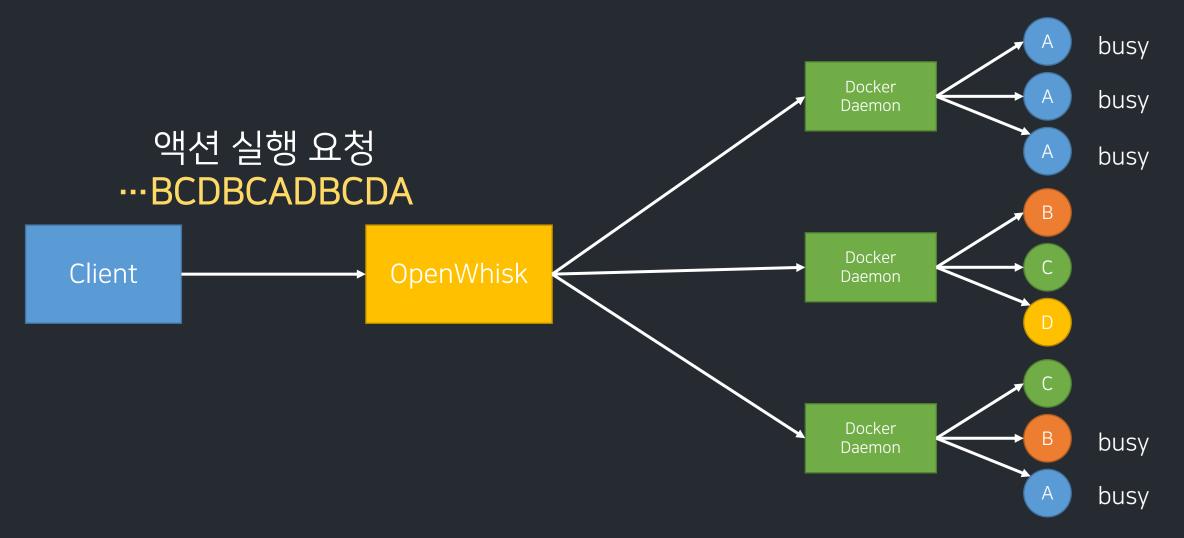


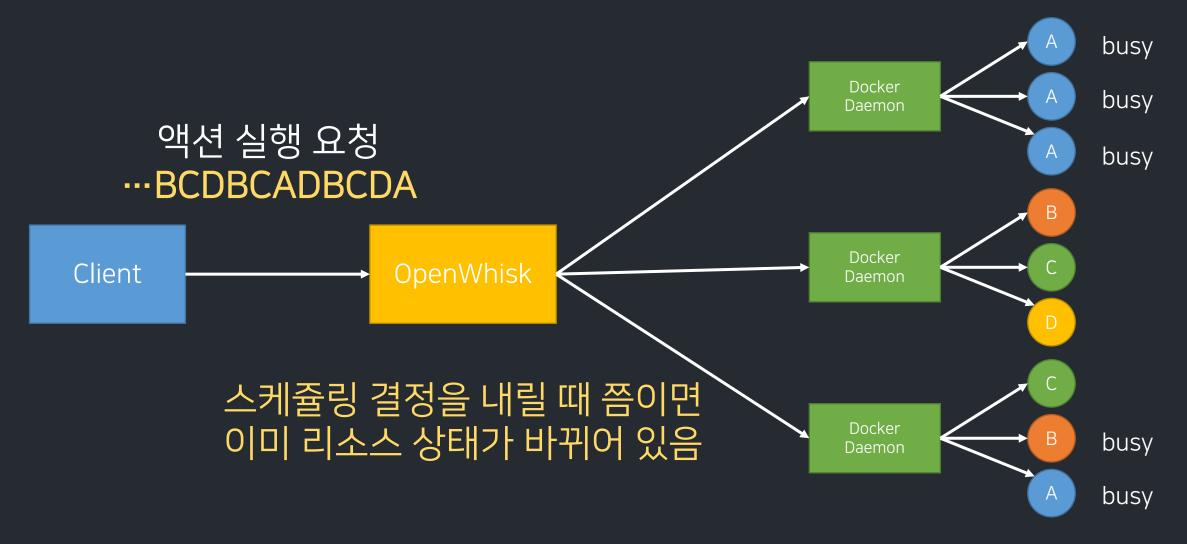


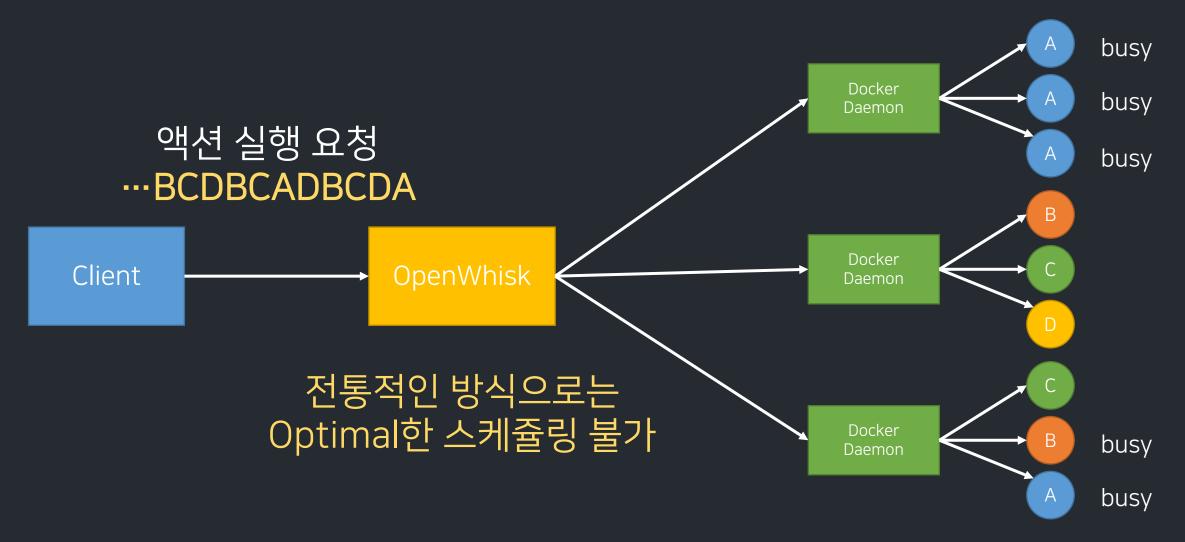
- Docker API의 처리속도가 느림
- Docker daemon이 요청을 직렬로 처리
- 잦은 API 호출 및 동시 호출 (X)
- Docker API 호출 최소화 및 기존 컨테이너 재사용이 핵심



3ms 마다 리소스 상태가 변화





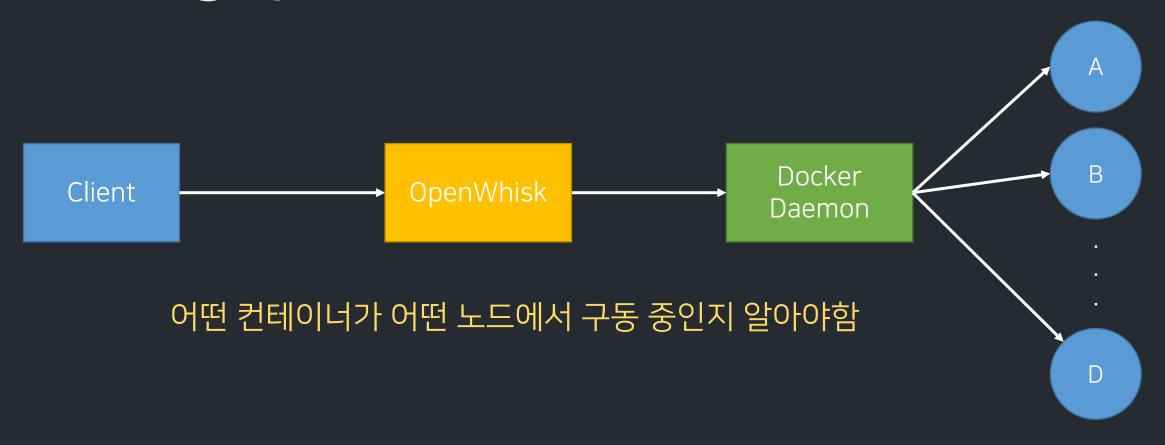


해결 방안1 – Pull 방식

기존방식 – Push



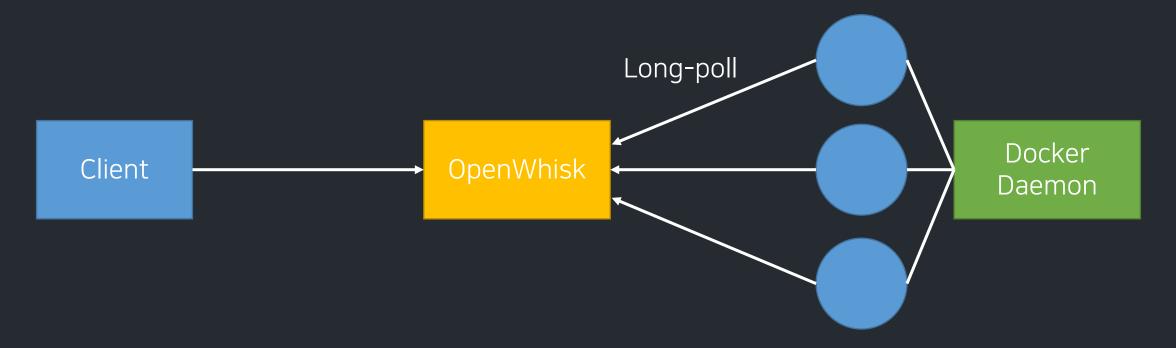
기존방식 – Push



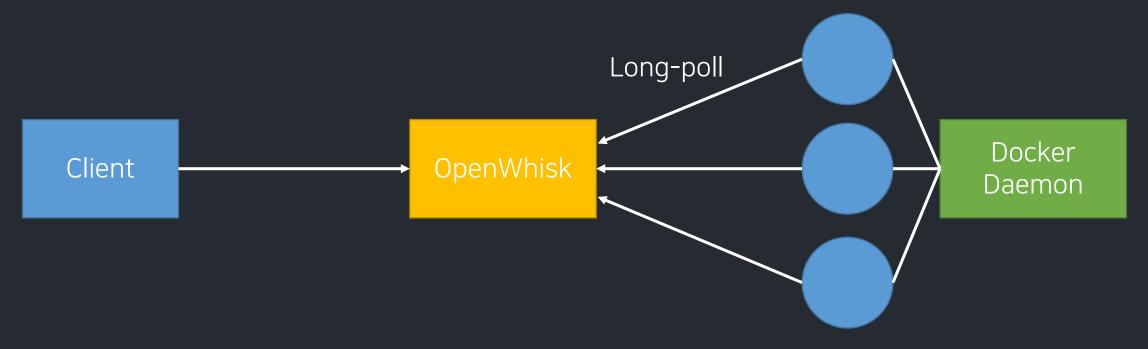
기존방식 – Push



극복방안1 – Pull

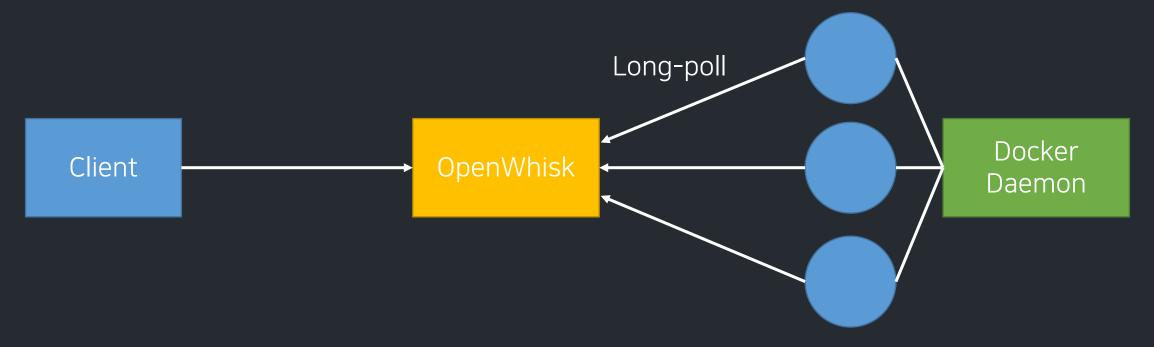


극복방안1 - Pull



각 컨테이너가 직접 요청을 가져감

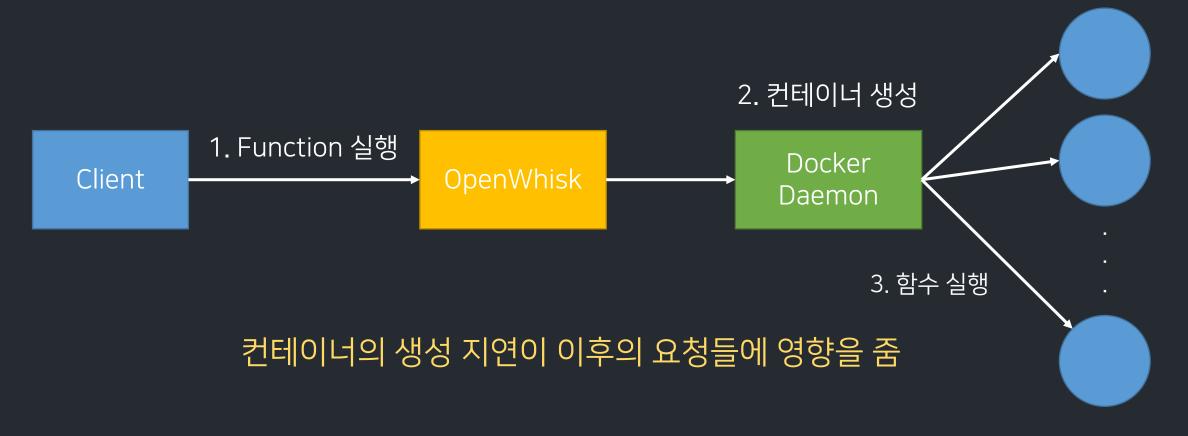
극복방안1 – Pull



OpenWhisk는 컨테이너의 위치를 신경 쓸 필요가 없음 각 컨테이너가 서로에게 영향을 주지 않음 각 컨테이너의 재사용 률을 최대화 할 수 있음

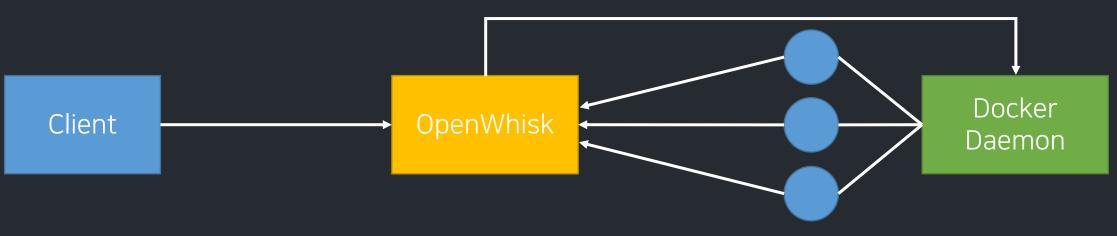
해결 방안2 – 실행과 생성의 분리

기존방식 – 실행 = 컨테이너 생성



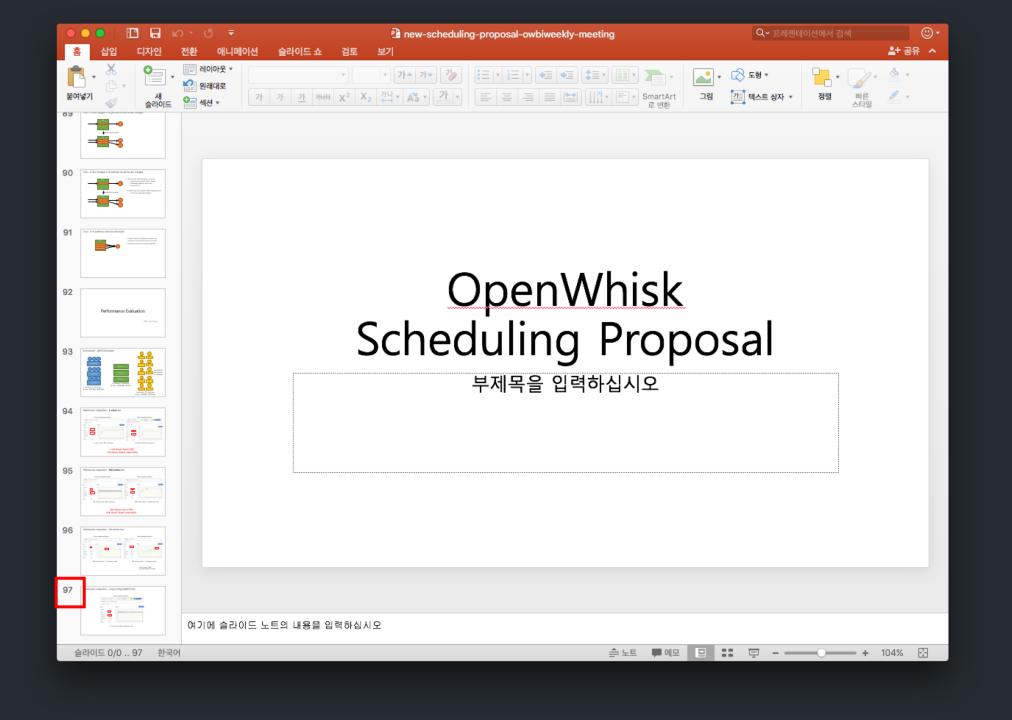
극복방안2 – 실행과 생성의 분리

트래픽에 따라 비동기적으로 컨테이너를 생성

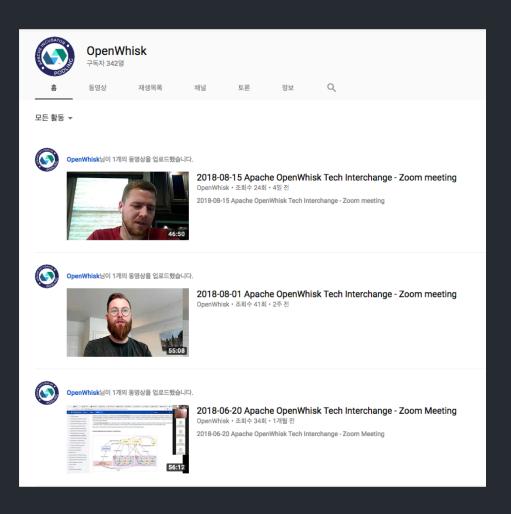


컨테이너의 생성 지연이 기존 실행에 영향을 주지 않음

Docker daemon의 로드를 최대한 분산시킬 수 있음



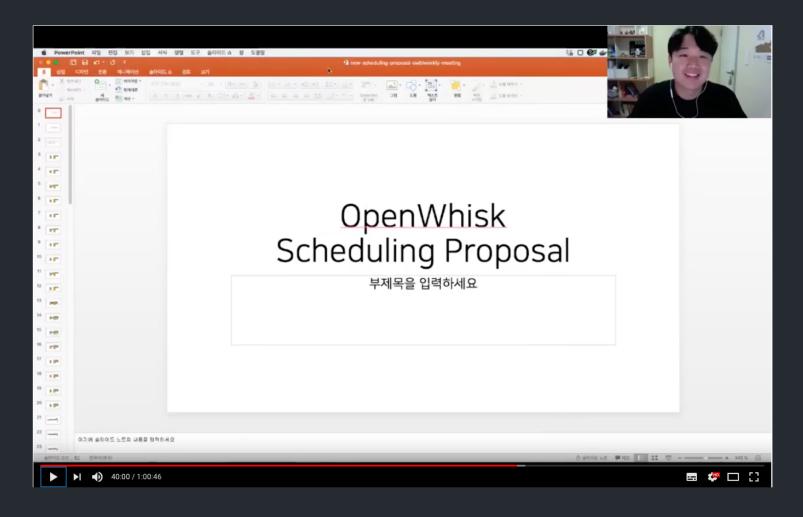
신규 스케쥴링 알고리즘 공유



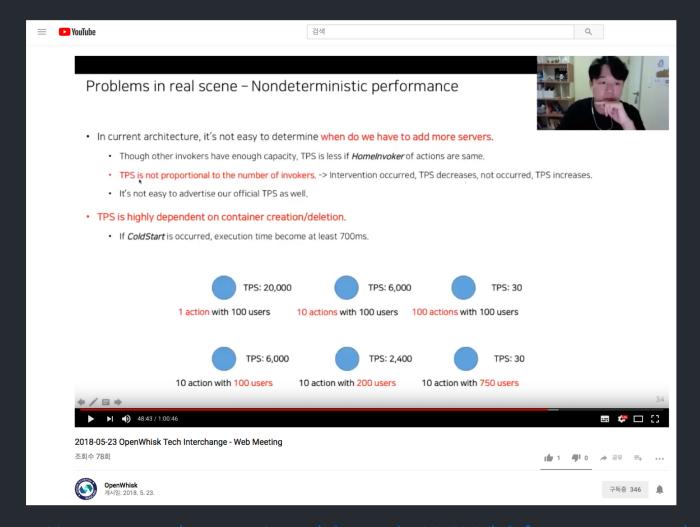
Bi-weekly Meeting

- 전세계 커뮤니티 멤버들이 모임
- 이슈나 신규 기술 등을 공유하는 자리
- 누구나 참석 가능
- 밤 11시에 시작됨

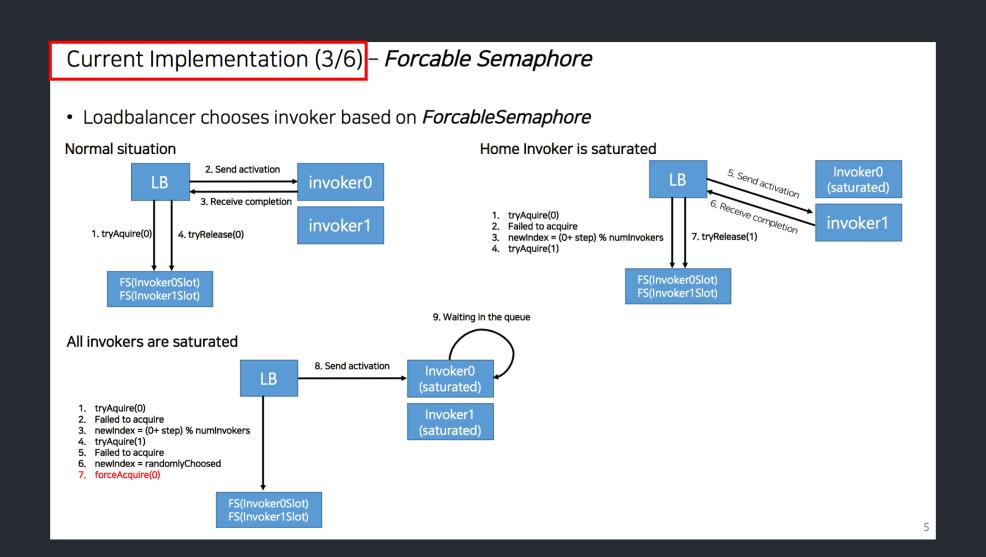
신규 스케쥴링 알고리즘 공유



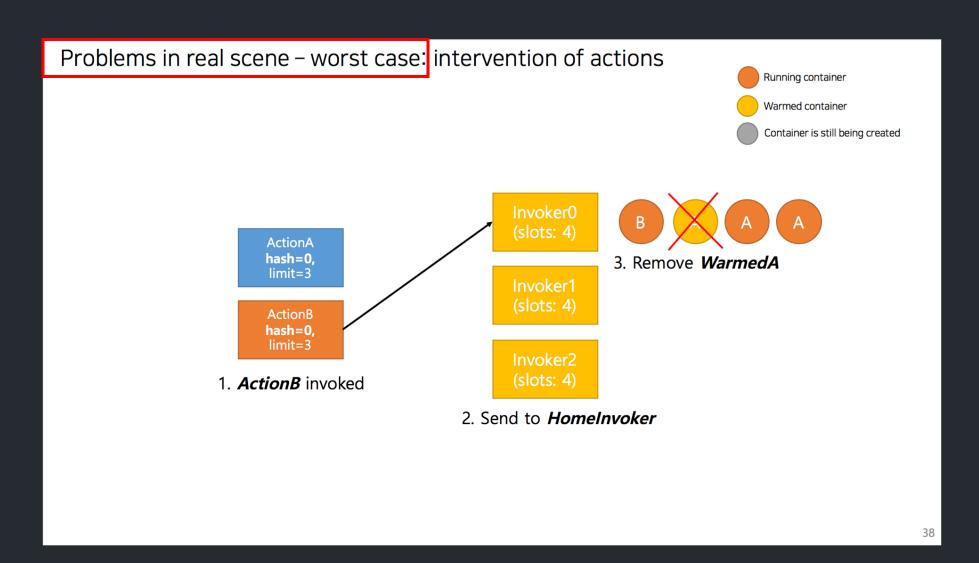
신규 스케쥴링 알고리즘 공유



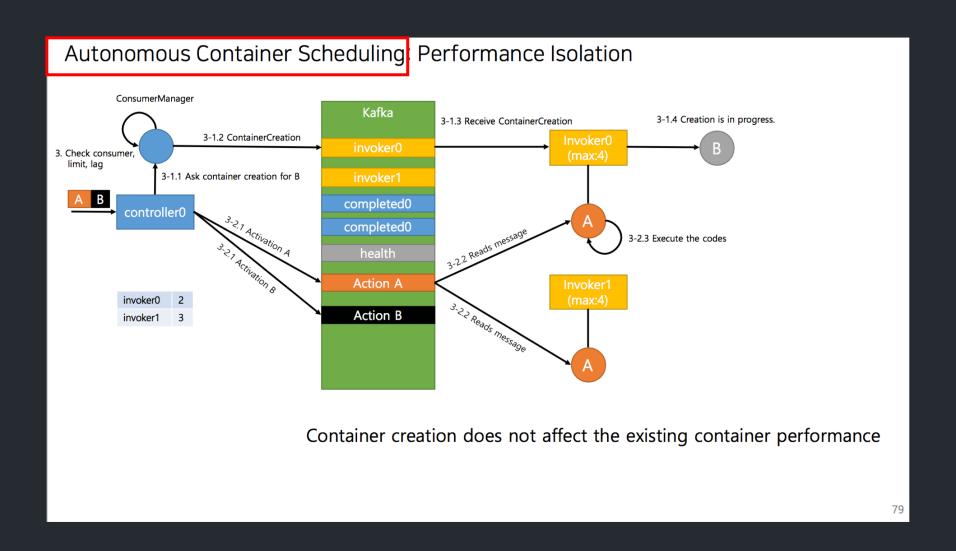
현재 스케쥴링 로직 분석



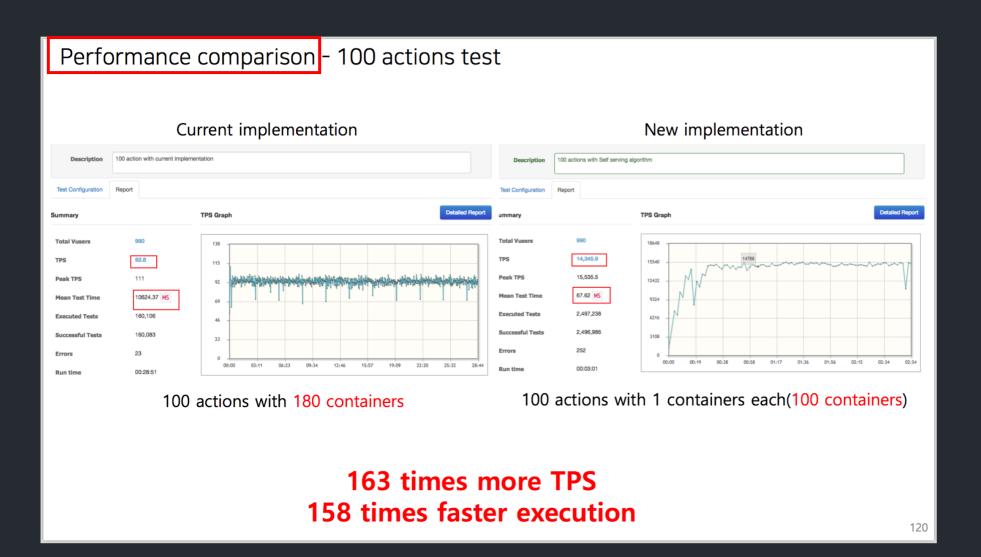
성능 이슈 분석

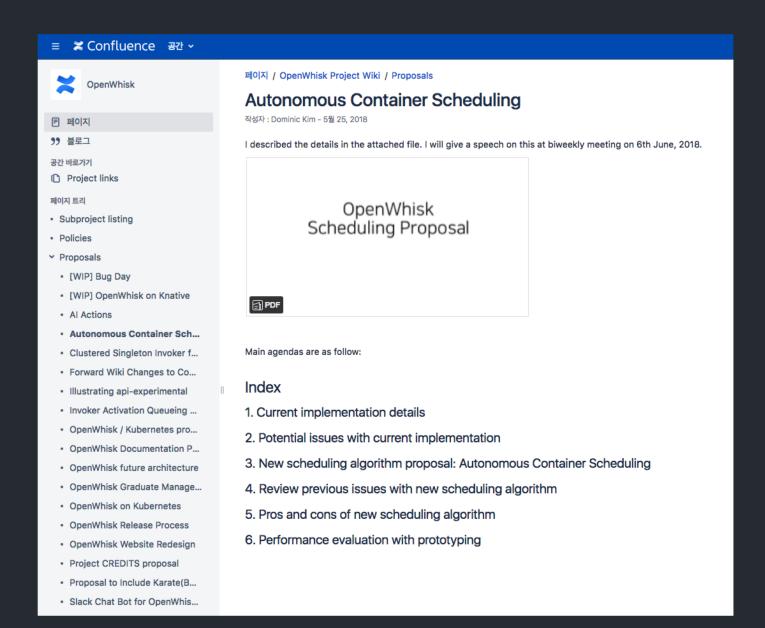


신규 알고리즘 제안



Proto-typing 및 성능 비교 벤치마크







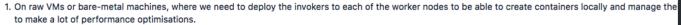
OpenWhisk future architecture

Markus Thömmes님이 작성, 8월 14, 2018에 최종 변경



Architectural differences

We currently basically have 2 ways of deploying OpenWhisk:



2. Atop a container orchestrator, where we can transparently generate containers across a cluster of worker nodes. The concept of the invoker feels foreign in this

Yes, there are multiple flavors to both of those (there's an invoker-centric version of the Kubernetes deployment for instance), but in essence it boils to the two flavors

The issue here is, that the needs and abstractions for these two types are different and make it hard to exist next to each other in one shared codebase. This causes

Proposal

I believe we can (and should) converge on an architecture that abstract the VM/bare-metal case away and give the Controller direct access to the containers for each Scheduling, Clustered Singleton Invoker for HA on Mesos) and it is a natural fit for the orchestrator based deployments, which the whole community seems to move to

The following is a proposal on where we could move to in the future. Please note that not all of it is completely thought out until the end and there are open questions converge our topologies and get an overall better and cleaner picture.

The main goal of this document is to help us discuss on the overall architecture and then decide on a direction that we all think is viable to go in. It is **not** meant to be seperate discussions. It is meant though to identify early show-stoppers or concepts that we think cannot fly.

Overview

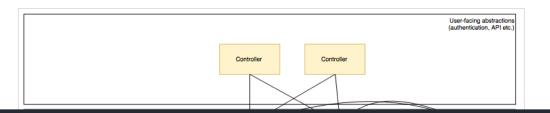
The overall architecture revolves around a clear distinction between user-facing abstractions (implemented by the Controller as of today) and the execution system, very the containers (similar to Autonomous Container Scheduling is a sense). The Controller orchestrates the full workflow of an activation (calling `/run`, getting the result invoker as we know it today from the critical path. Picking a container boils down to choosing a free (warm) container from a locally known list of containers for a specific path.

Container creation happens at a component called **ContainerManager** (which can reuse a lot of today's invoker's code, like the container factories). The Container the underlying container orchestrator to create new containers. If the **ContainerRouter** has no more capacity for a certain action, that is, it exhausted its containers keeping to the container or container

The ContainerManagerAgent is an extension to the ContainerManager. It is placed on each node in the system to either orchestrate the full container lifecycle (no or pause/unpause in the Kubernetes case).

Kafka is still in the picture to handle overload scenarios (see Invoker Activation Queueing Change).

General dependencies between components



Autonomous Container Scheduler v2

작성자 : Dominic Kim - 11월 28, 2018

This document describes the next version of Autonomous Container Scheduling.

- Basics
- 1. Segregation of container creation and activation processing
- · 2. Location-independent scheduling.
- 3. MessageDistributor
- 4. ContainerProxy Lifecycle changes
- 5 ETCD
- 6. ActionMonintor
- 7. Changes in Throttler.
- 8, ETC
- 8.1 Handling of Action updates
- 8.2 Drawbacks of ACS
 - 1. It is more effective for short-running actions.
 - 2. Since a container is asynchronously created, the first invocation can take a little bit more time.
 - 3. In the big cluster(e.g: # of controllers/invokers > 500~1000), it might not be effective because it rely on ETCD transaction and Kafka partitions.

Basics

Currently, discussion and the implementation for future architecture of OW are in progress.

I agree with many parts of the future architecture and that would be the right direction to step up, IMHO.

(I hope I can also participate in the implementation of them.)

It seems, however it will take some time to take those into OW and stabilize them.

What if we can improve the performance of OpenWhisk more than 150 times with the relatively small amount of efforts by adopting new scheduler based on current architecture?

I think it would be worth to take it in until the new implementation is ready.

With SPI abstraction, the new scheduler can even coexist with the existing one.

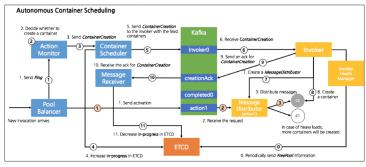
OW operators can choose the suitable scheduler which fits their needs the best.

In the Autonomous Container Scheduler(I will call it ACS in the rest of this document), there are following major changes:

- Activation is handled in a best-effort manner.
 - · One container will try its best to handle activations
 - When existing containers are not enough to properly handle incoming activations, more containers are created for the action.
- Once action containers are initialized, they exist longer than the current implementation.
- They wait for subsequent requests for about 5~10s (configurable value).
- The criteria for throttling is no more activation per minute, now the throttler cares the number of containers for the given action(namespace) and processing speed of existing containers.
 - It denotes that once a container is initialized, it is occupied by the given action.

The following diagram depicts the basic flow of container creation and activation invocation.

Each path is separately handled. So there are only 3 steps in the activation path.



Autonomous Container Scheduler v2

작성자 : Dominic Kim - 11월 28, 2018

This document describes the next version of Autonomous Container Scheduling.

- 1. Segregation of container creation and activation processing
- 2. Location-independent scheduling.
- 3. MessageDistributor
- 4. ContainerProxy Lifecycle changes
- 6. ActionMoninto
- 7. Changes in Throttler.
- 8. ETC
- 8.1 Handling of Action updates
- - . 1. It is more effective for short-running actions.
 - . 2. Since a container is asynchronously created, the first invocation can take a little bit more time.
 - 3. In the big cluster(e.g. # of controllers/invokers > 500~1000), it might not be effective because it rely on ETCD transaction and Kafka

Basics

Currently, discussion and the implementation for future architecture of OW are in progress.

I agree with many parts of the future architecture and that would be the right direction to step up, IMHO.

(I hope I can also participate in the implementation of them.)

It seems, however it will take some time to take those into OW and stabilize them.

What if we can improve the performance of OpenWhisk more than 150 times with the relatively small amount of efforts by adopting new scheduler based on current architecture?

I think it would be worth to take it in until the new implementation is ready.

With SPI abstraction, the new scheduler can even coexist with the existing one.

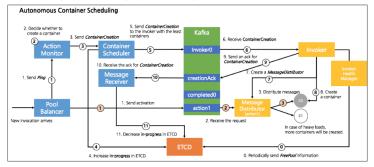
OW operators can choose the suitable scheduler which fits their needs the best.

In the Autonomous Container Scheduler(I will call it ACS in the rest of this document), there are following major changes:

- - · One container will try its best to handle activations
- . When existing containers are not enough to properly handle incoming activations, more containers are created for the action.
- Once action containers are initialized, they exist longer than the current implementation.
- They wait for subsequent requests for about 5~10s (configurable value).
- The criteria for throttling is no more activation per minute, now the throttler cares the number of containers for the given action(namespace) and processing speed of existing containers
 - . It denotes that once a container is initialized, it is occupied by the given action.

The following diagram depicts the basic flow of container creation and activation invocation.

Each path is separately handled. So there are only 3 steps in the activation path.



System Architecture

Dominic Kim님이 작성, 4월 04, 2019에 최종 변경

- 1) Scheduler
- 2) etcd
 3) Akka-grpc

- 1. Queue Creation Flow
- 2. Container Creation Flow
- 3. Activation Flow

Introduction

I introduced a few new components.

Scheduler is a new components it include many critical features

It is in charge of two major features, 1, gueueing and routing activations 2, decide whether to add more containers based on the loads.

It has sub component 'Queue'. The role of the queue is similar to the Kafka topic. A dedicated queue is created for each action.

Each queue will receive activation messages from the Kafka for a given action and send them to the ContainerProxy in respond to requests from it.

etcd is a distributed reliable key-value store, etcd is mostly used for transactional support and information sharing among components.

Akka-grpc

Akka-grpc is introduced to replace Kafka based execution path.

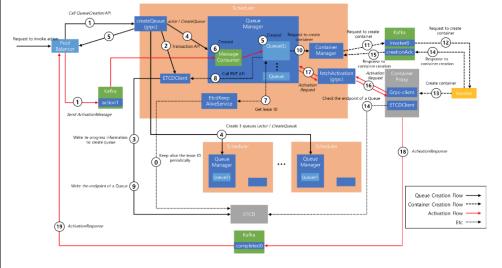
In this version, I could not fully rule out it due to heavy dependencies. My final objective is to exclude it at least from the critical path.

It is also being used to send queue creation request to the scheduler.

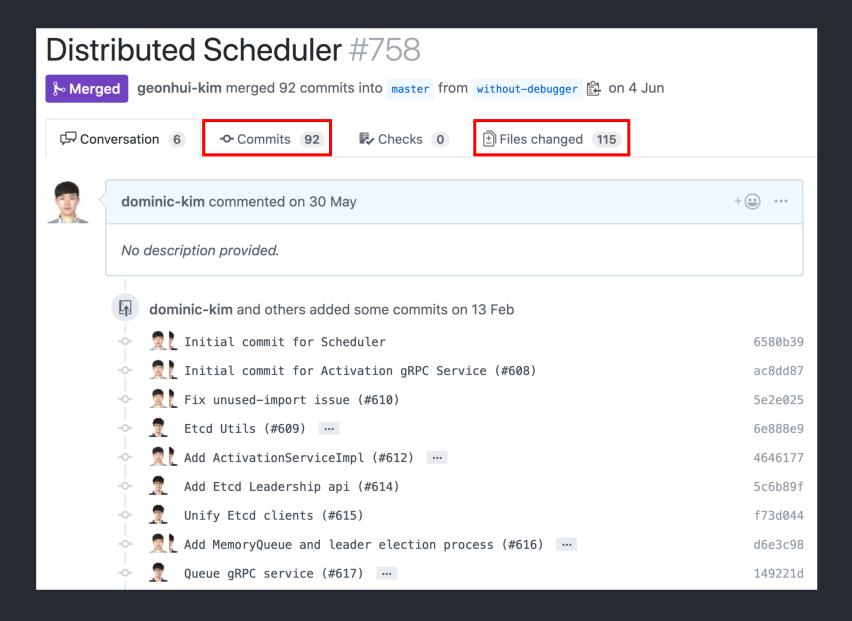
Akka-cluster

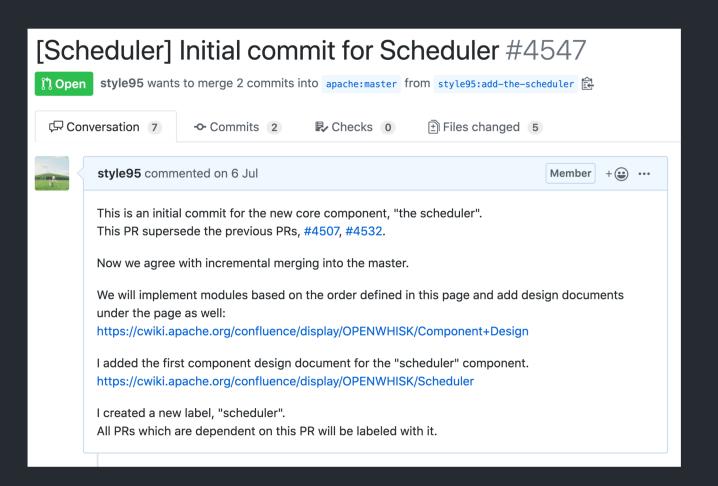
Akka-cluster is used for schedulers to communicate with each other.

Akka-grpc is required to define a grpc message, there are some advantages in akka-cluster when it is being used for simple inter-cluster communication.

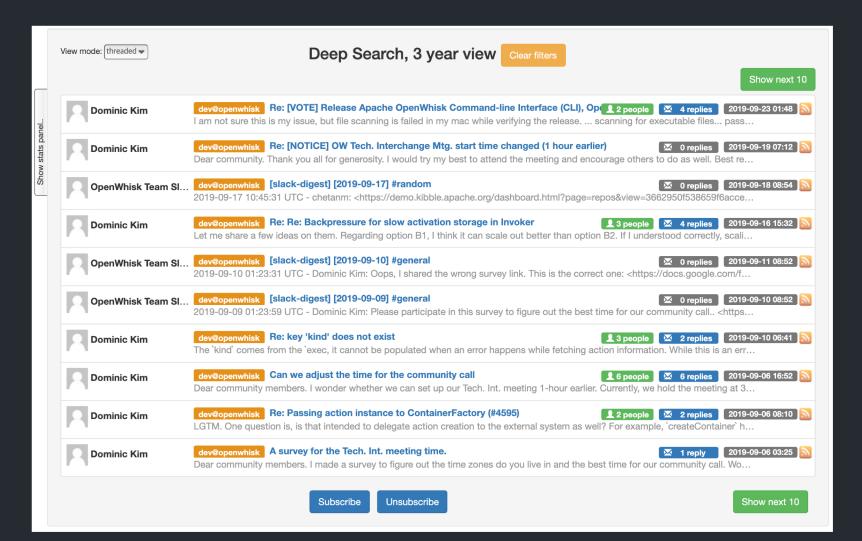


Entire system is comprised of three flows, 1. queue creation flow, 2. container creation flow, 3. activation flow.

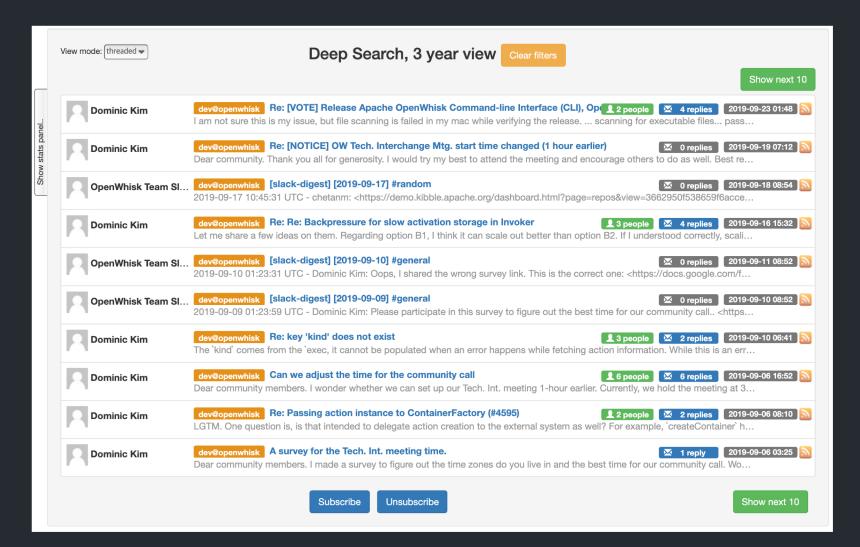




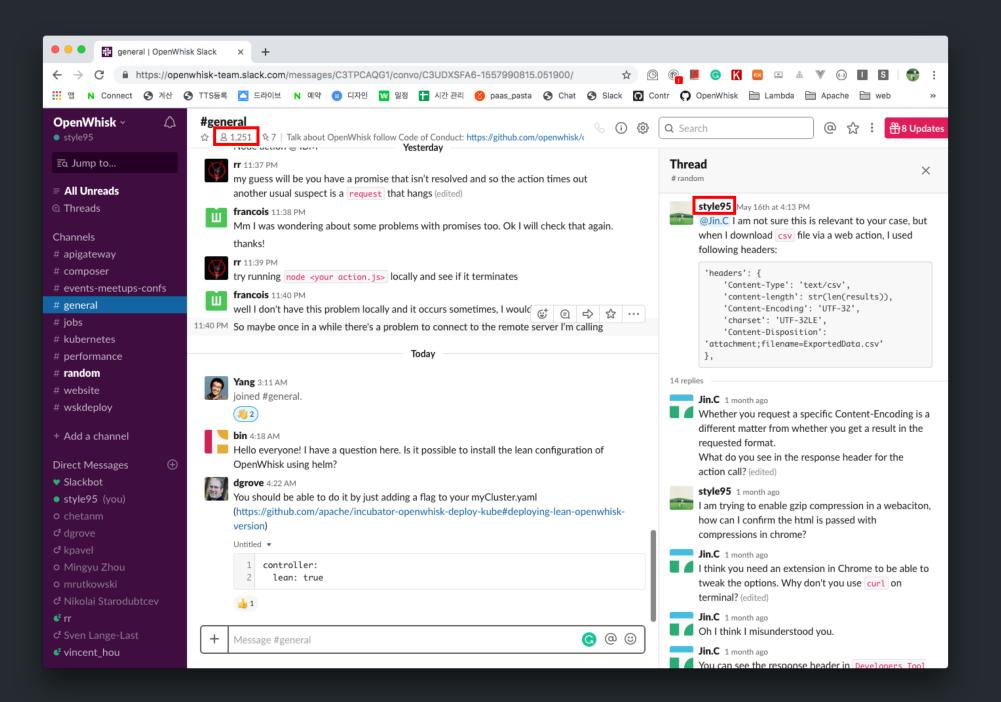
첫 PR 오픈



100개 스레드 참여



핵심적인 기능 및 구조 개선과 프로젝트 운영 및 릴리즈에 참여 중













Rodric Rabbah < rodric@gmail.com>

4월 6일 (토) 오후 8:51 ☆







나. private에게 🔻

Hello Dominic,

The Apache OpenWhisk Project Management Committee (PMC) hereby offers you committee privileges to the project as well as a membership on the Podling Project Mgmt. Committee (PPMC). Please read both parts of this email below.

Committer privileges are offered on the understanding that you'll use them reasonably and with common sense. We like to work on trust rather than unnecessary constraints.

Being a committer enables you to more easily make changes without needing to go through the patch submission process.

Being a committer does not require you to participate any more than you already do. It does tend to make one even more committed. You will probably find that you spend more time here.

Of course, you can decline and instead remain as a contributor, participating as you do now.

A. This personal invitation is a chance for you to accept or decline in private. Either way, please let us know in reply to the private@openwhisk.apache.org address only.

B. If you accept the invitation, you will also have to choose a unique Apache account username and let us know. We need this before we can proceed with account creation and assigning required permissions. To verify that your desired username does not already exist, please head over to the people index [1] and do a quick search to see if the login id is in use. Please also choose an email forwarding address for your Apache account.











Rodric Rabbah <rodric@gmail.com>

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2017. 2.1 ~ 2019. 4.6. 2년 2개월

From: Markus Thömmes < <u>markusthoemmes@apache.org</u>>

Sent: Tuesday, March 26, 2019 10:28 AM

To: private@openwhisk.apache.org

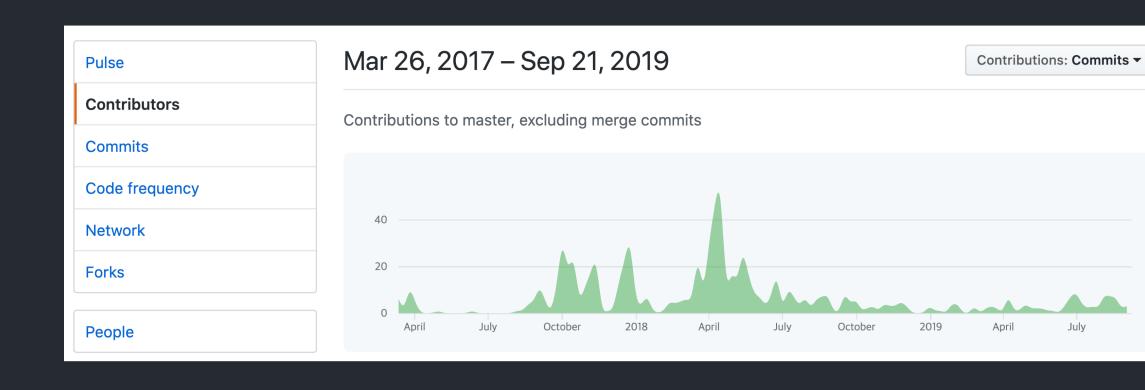
Subject: Re: [DISCUSS] Dominic Kim PPMC membership

Definitely. He's a natural fit for the contributor position and knows the innerts of the system like few others.

+1 from me.

그리고 지금은...

2017년 3월 시작



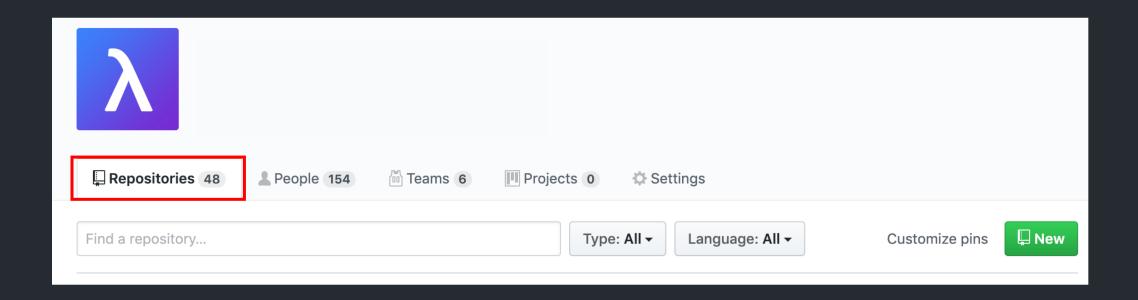
유지보수

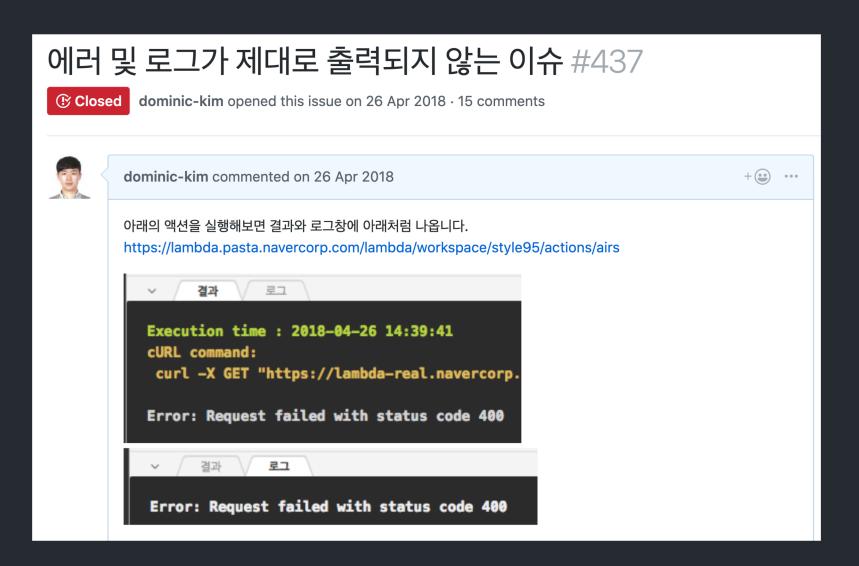


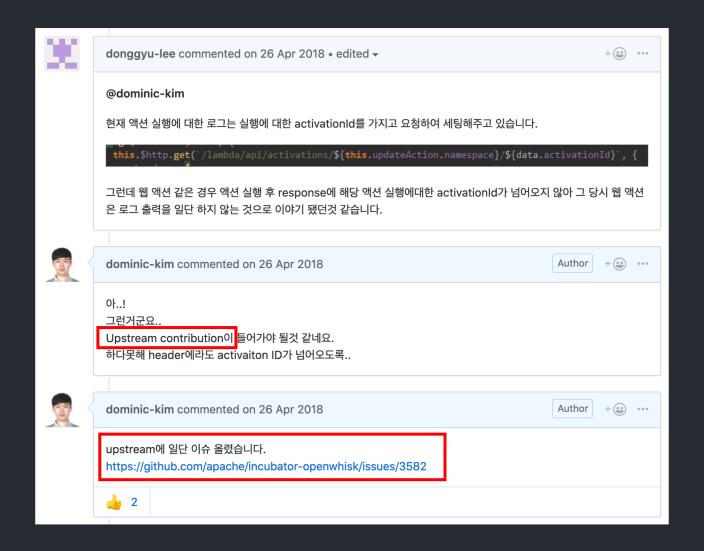
유지보수

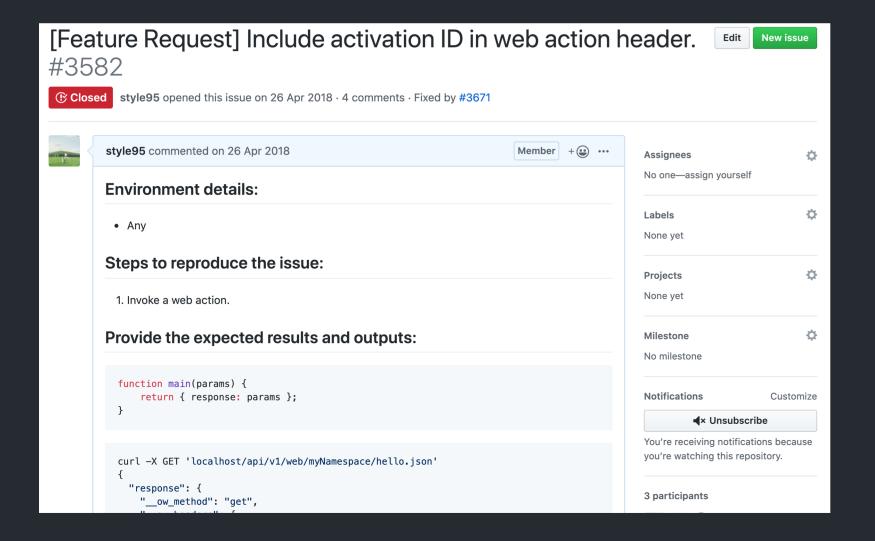
- 주기적인 Rebase (2주 1회 Rebase)
 - PR builder를 통해 Unit test
 - Test존에 자동 배포 및 검증
 - Dev존에 배포 후 1주간 운영
 - Production 존에 최종 배포
- 오픈소스 CLI와 호환
- Contribution first

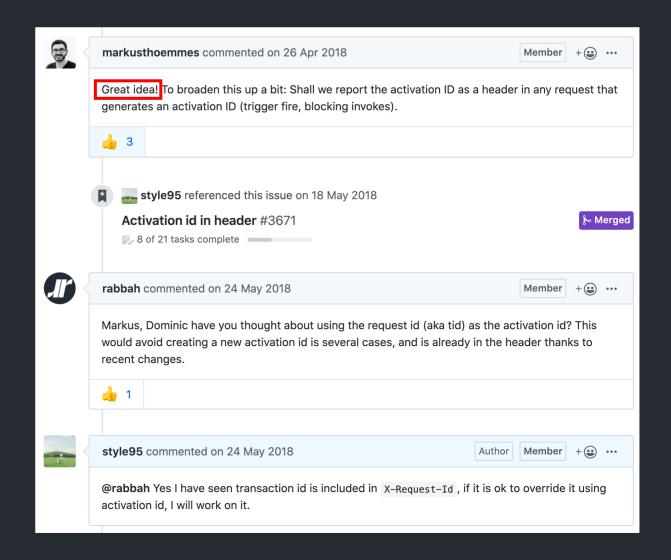
Fork 수는 늘어만 가고

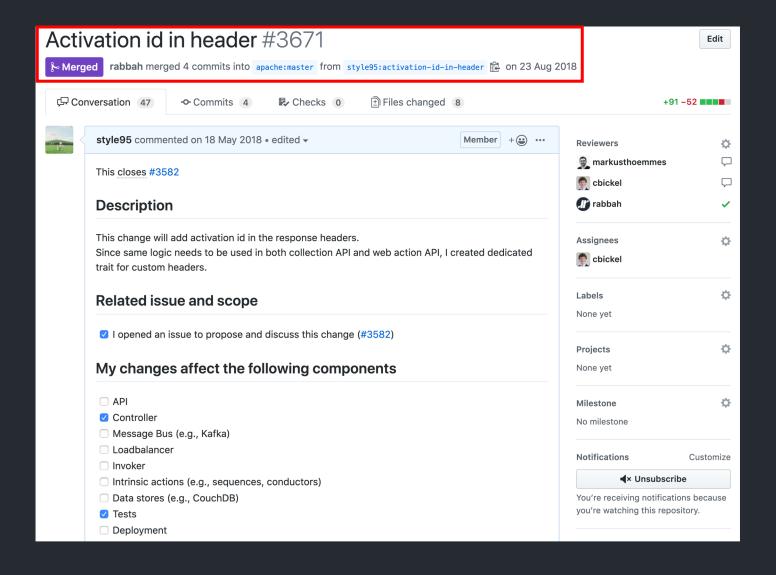


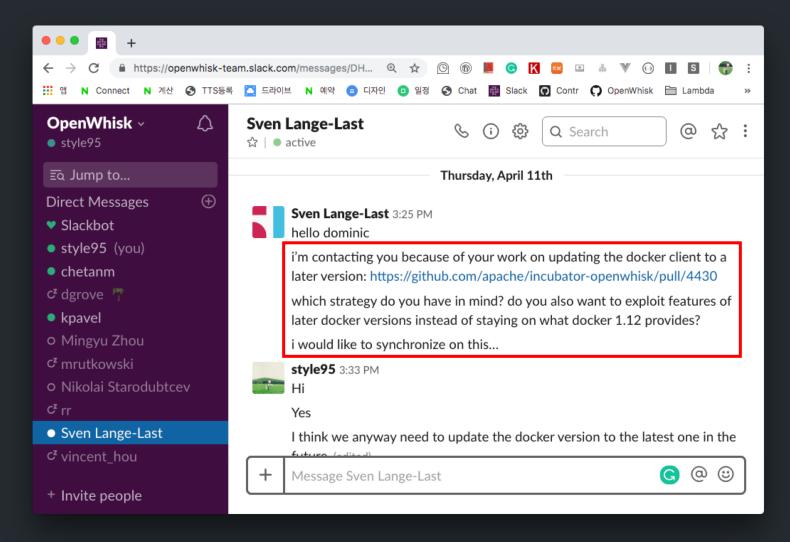






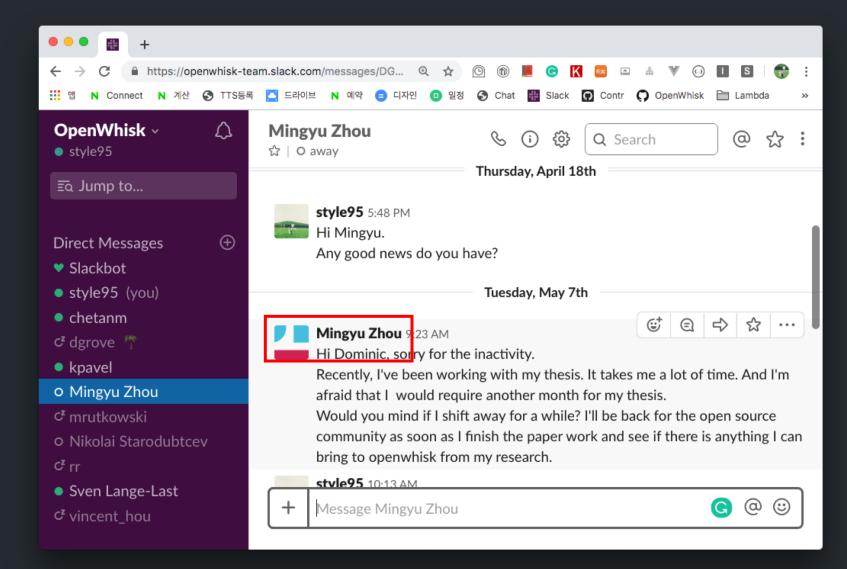




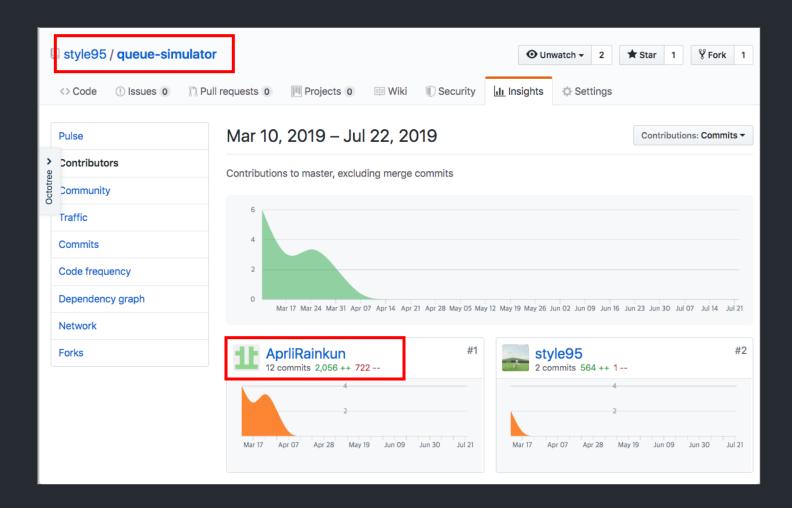


IBM쪽에서

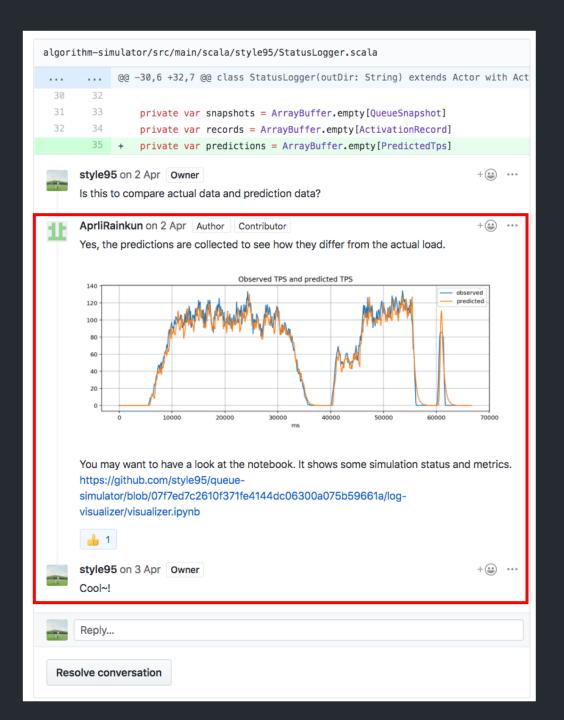
방향 논의를 위해 먼저 연락 옴



상하이 교통대 학생으로부터의 연락

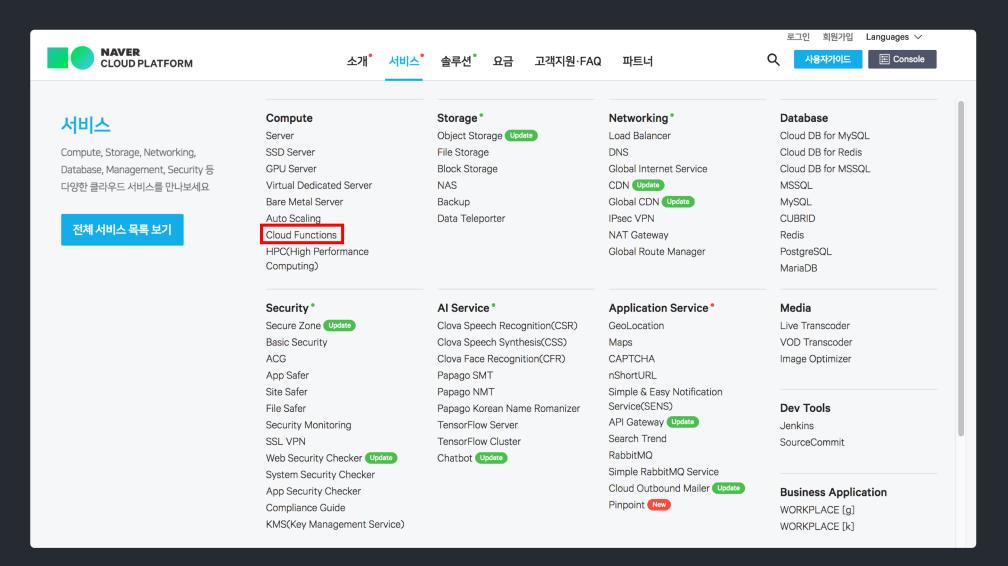


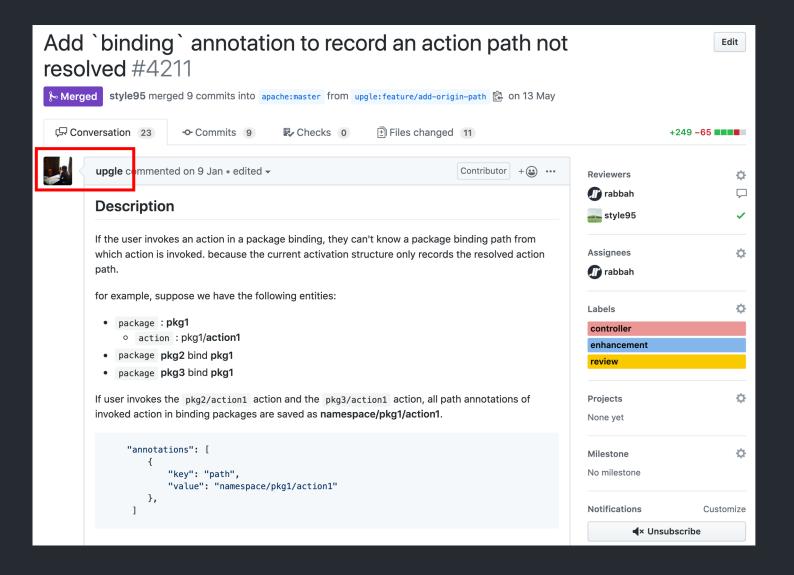
Remote로 협업

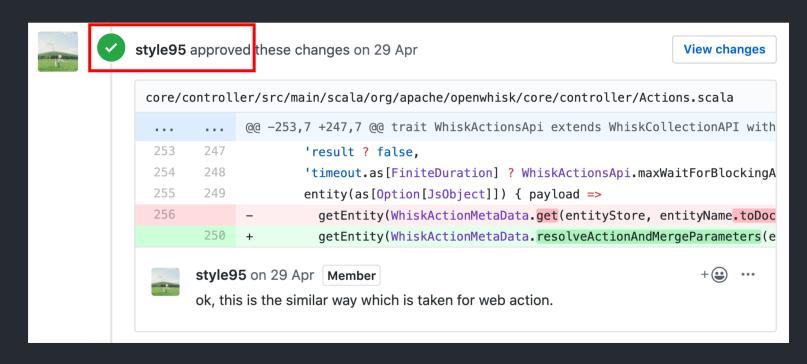


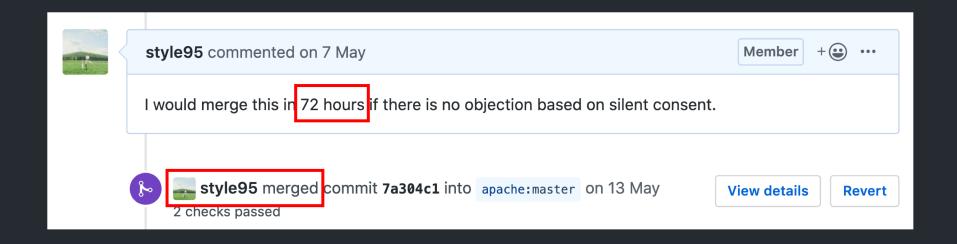
다양한 논의 및 리뷰

Naver Cloud Platform









Apache Guidelines

- 중요한 의사 결정 전에 최소 48시간 ~ 72시간의 시간을 두어야한다.
- 최대 72시간 동안 반대가 없으면, 암묵적인 동의로 간주한다

느낀점

- 다이나믹한 개발 경험
 - 영국, 독일, 미국 등, 전 세계의 개발자들과 함께 커뮤니케이션
 - Apache 프로젝트에 내 코드가 들어가는 경험
- 누구에게나 평등한 기회: 코드로만 표현되고 평가받음
- 장소에 구애 받지 않을 수 있음
- 다양한 외부 발표 기회











Rodric Rabbah < rodric@gmail.com >

4월 6일 (토) 오후 8:51







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> 커미터가 되면, 훨씬 더 많이 프로젝트에 헌신하는 경향이 있다. 너는 더 많은 시간을 프로젝트에 할애하게 될 것이다.



김동경 <dominic.kim@navercorp.com>

👔 style95, dominic.kim에게 🔻

감사합니다 김동경 드림

이 메일은 나눔글꼴로 작성되었습니다.

김동경 KIM DONG KYOUNG

PaaS

경기도 성남시 분당구 불정로 6 네이버

Mobile 01026962181

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보낸사람: 김동경 <dominic.kim@navercorp.com>

받는사람: style95@apache.org

참조: dominic.kim@navercorp.com

날짜: 2019. 4. 15. 오후 5:53

제목: test

발송 도메인:: apache.org

인증기관: navercorp.com

🔌 apache.org에서 이 메일을 암호화하지 않았습니다. <u>자세히 알아보기</u>

: Google 매직에 따르면 중요한 메일입니다.



To Apache communities ➤ ੫ੁ੨ਦਰੋਂ ×





Adam Alami <adaa@itu.dk>

dev@brpc.apache.org, dev@jackrabbit.apache.org, dev@shiro.apache.org, dev@bval.apache.org, dev@calcite.apache.org, dev@singa.incubator.apache.org, dev@camel.apache.org, dev@ca

Dear Apache communities,

I'm conducting a survey part of my PhD studies to understand Pull Requests assessment in open source communities. Your participation is anonymous. The link to the survey below:

https://icse2020.limequery.com/913965?lang=en

Please help and participate. It takes less than 10 mins. I will share the results of the survey with the Apache communities as soon as they become available

Kind regards

Adam Alami

PhD Fellow

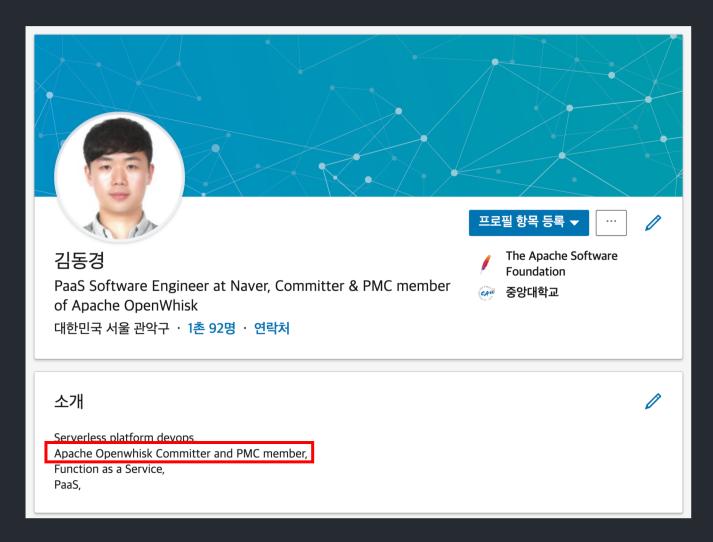
IT UNIVERSITY OF COPENHAGEN

Rued Langgaards Vej 7 DK-2300 Copenhagen S 4D04

E-mail: adaa@itu.dk PHONE (+45) 72 18 50 71

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Thank You!

Q & A