DESTINATION CLOUD

DEPLOYING APPLICATIONS TO THE CLOUD WITH DOCKER

Ryan Baxter - @ryanjbaxter - 11.16.15

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BOSTON, MA

@ryanjbaxter

http://ryanjbaxter.com

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GOPRO-
Giveaway

Stop By Bluemix Booth

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DEPLOYMENT
CYCLES
ARE GETTING
FASTER

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CONTINUOUS DELIVERY IS AWE-SOME

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DEVELOPMENT

TESTING

STAGING

PRODUCTION

CLOUD

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“…it works for me.”

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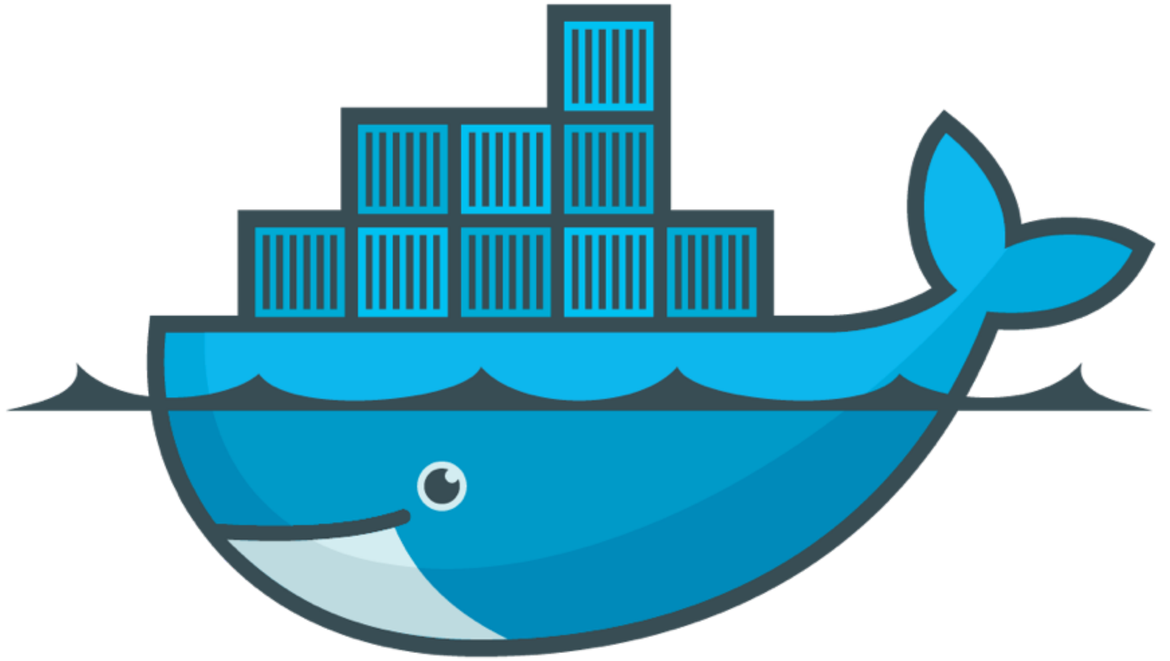


docker

DOCKER HUB

VERSIONING

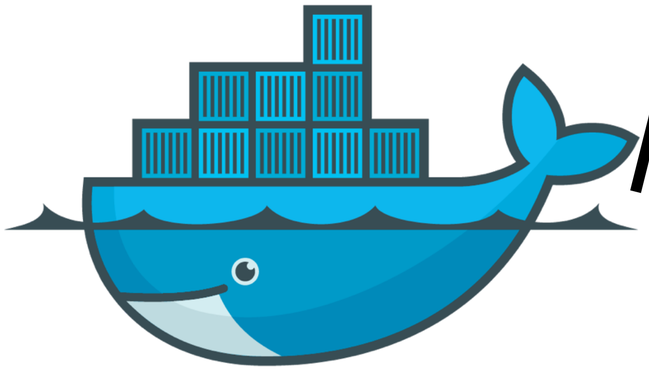
RUNS ON LINUX

OPEN SOURCE

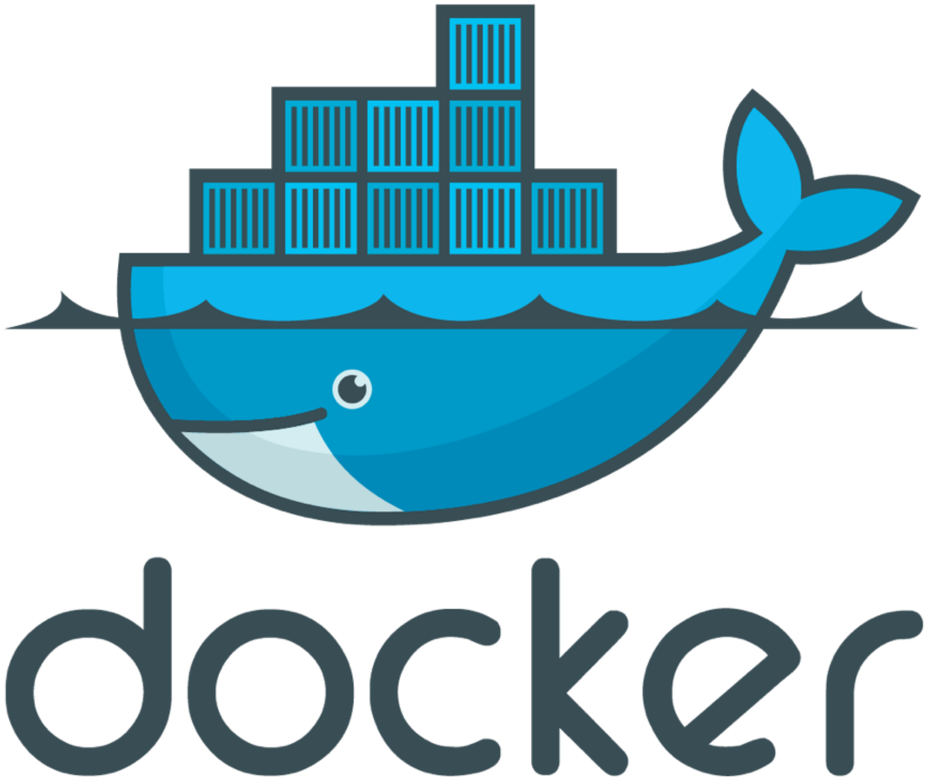
LIGHT WEIGHT

WRITE ONCE
RUN EVERYWHERE

REGISTRIES



docker


docker

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IBM **Bluemix**

The Digital Innovation Platform

Build your apps, your way.

Use a combination of the most prominent open-source compute technologies to power your apps. Then, let Bluemix handle the rest.

Instant Runtimes

App-centric runtime environments based on Cloud Foundry.

Check out runtimes on Bluemix

IBM Containers

Portable and consistent delivery of your app without having to manage an OS.

Check out containers on Bluemix

Virtual Machines

Get the most flexibility and control over your environment with VMs.

Check out VMs on Bluemix

Compute // Start with Cloud Foundry or Docker images

Runtimes

Run an app in the language of your choice

- Liberty for Java™ — IBM
- SDK for Node.js™ — IBM
- PHP — Community
- Python — Community
- Ruby — Community
- Community buildpacks — Community

Container Images

Create containers from IBM images or add your own.

- ibm-mobilefirst-starter — IBM
- ibm-node-strong-pm — IBM
- ibmliberty — IBM
- ibmnode — IBM
- bluechatter — My Org
- Add your own — My Org

Services // The building blocks of any great app

Watson

Build cognitive apps that help enhance, scale, and accelerate human expertise

- AlchemyAPI — IBM
- Concept Expansion — IBM *BETA*
- Concept Insights — IBM
- Dialog — IBM
- Language Translation — IBM
- Natural Language Classifier — IBM

Data and Analytics

Essential data services; limitless possibilities

HELP ME PICK

Analytics for Apache Hadoop
IBM *BETA*

Apache Spark
IBM *BETA*

BigInsights for Apache Hadoop
IBM

Cloudant NoSQL DB
IBM

dashDB
IBM

DataWorks
IBM

Elasticsearch by Compose
IBM

Geospatial Analytics
IBM

IBM DB2 on Cloud
IBM

Insights for Twitter
IBM

MongoDB by Compose
IBM

Object Storage
IBM *BETA*

Object Storage (v2)
IBM *BETA*

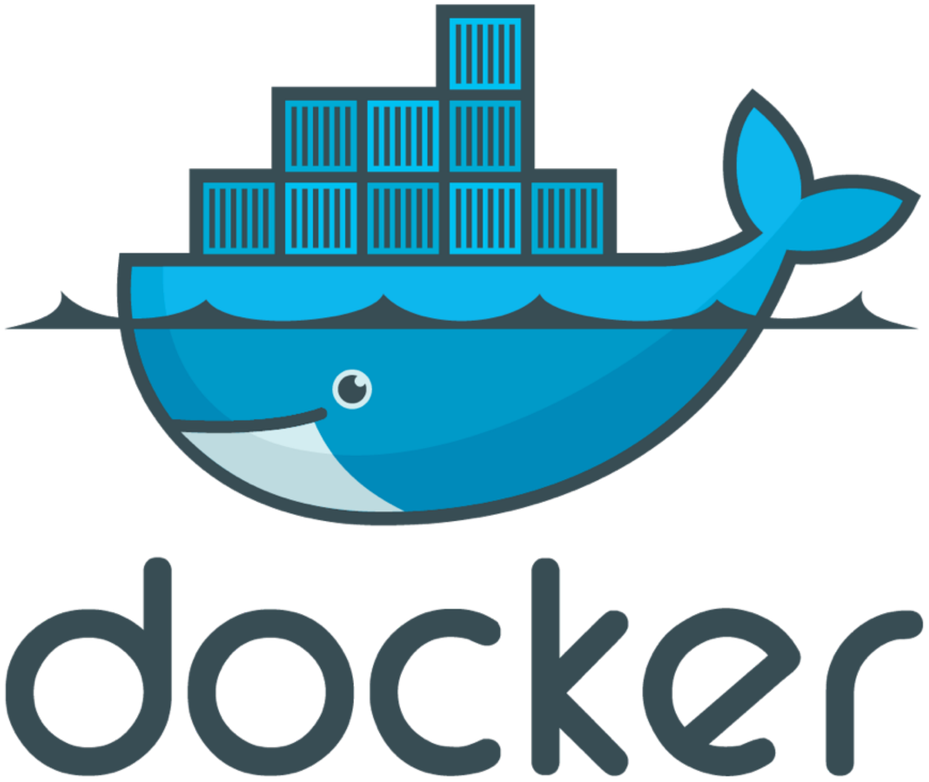
PostgreSQL by Compose
IBM

Predictive Analytics
IBM *BETA*

Redis by Compose
IBM

SQL Database
IBM

Streaming Analytics
IBM


docker

+

CONTAINER GROUPS

DEPLOYMENT PIPELINE

GUI or CLI

PRIVATE REGISTRY

100+ SERVICES

MACHINE SIZES

MONITOR CPU

VULNERABILITY SCANNING

THE APP

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BlueChatter

kauffecup

why hello there

jon

how goes it

Type something insightful!

Built By The BlueMix Dev Advocate Team

https://github.com/IBM-Bluemix/bluechatter

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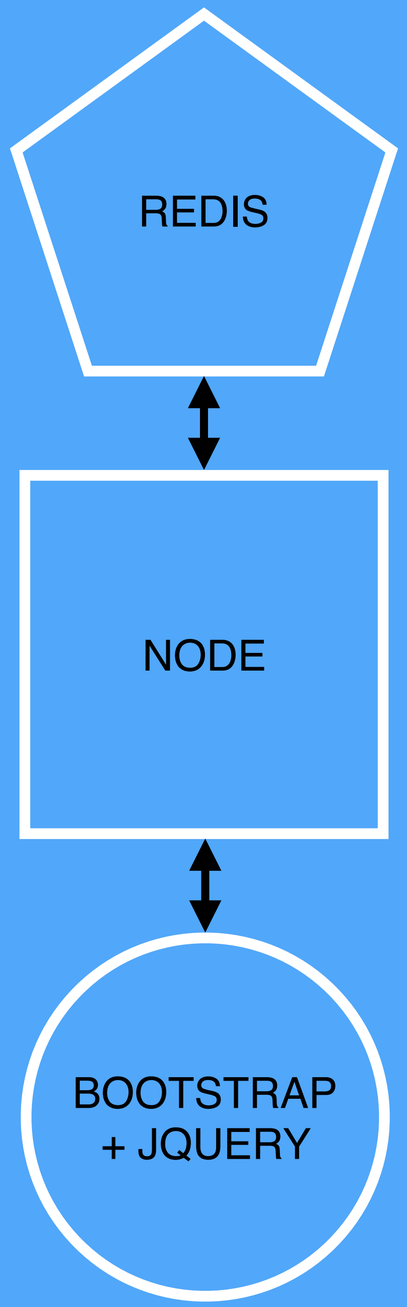
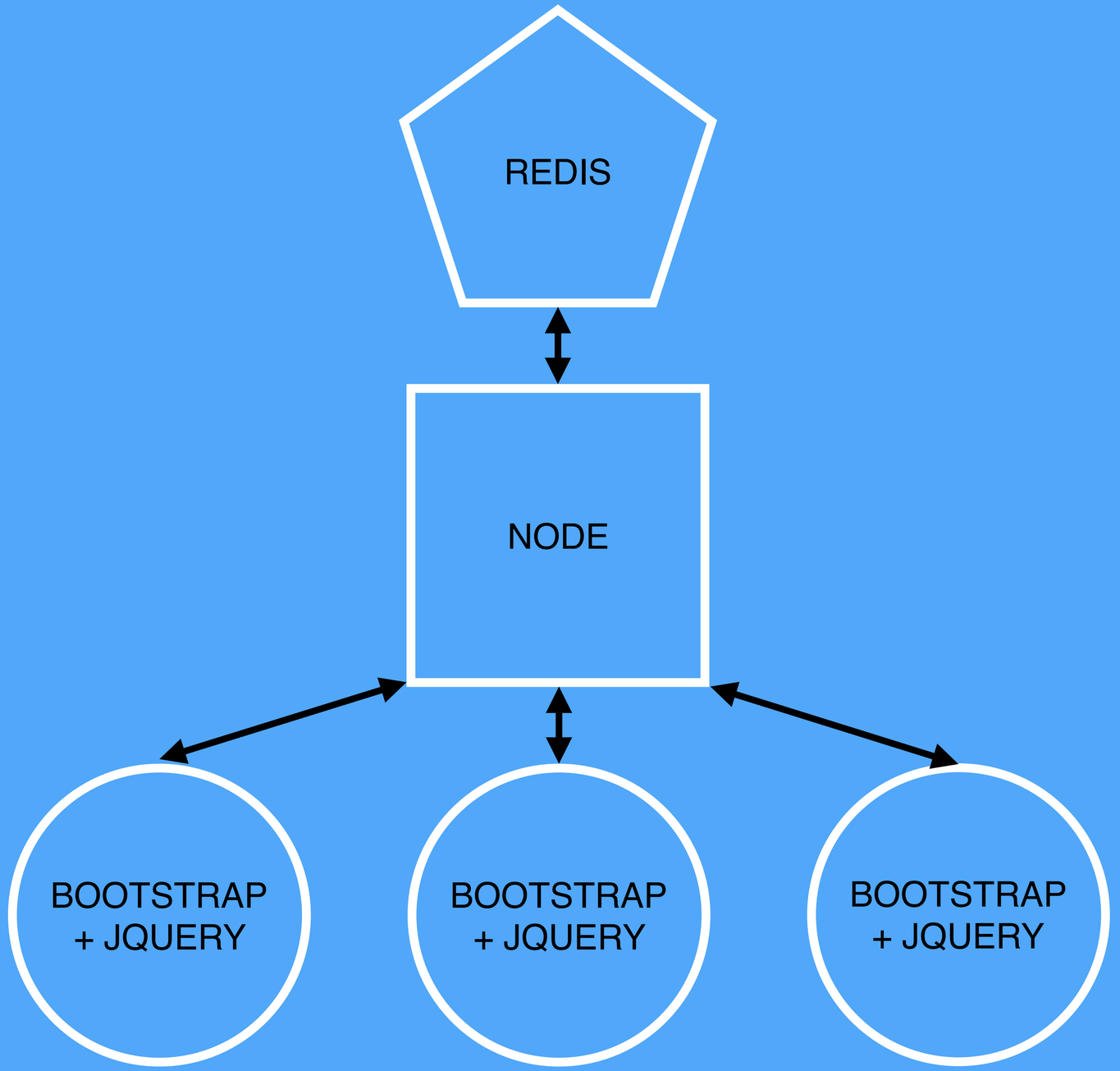

REDIS
NODE
BOOTSTRAP
+ JQUERY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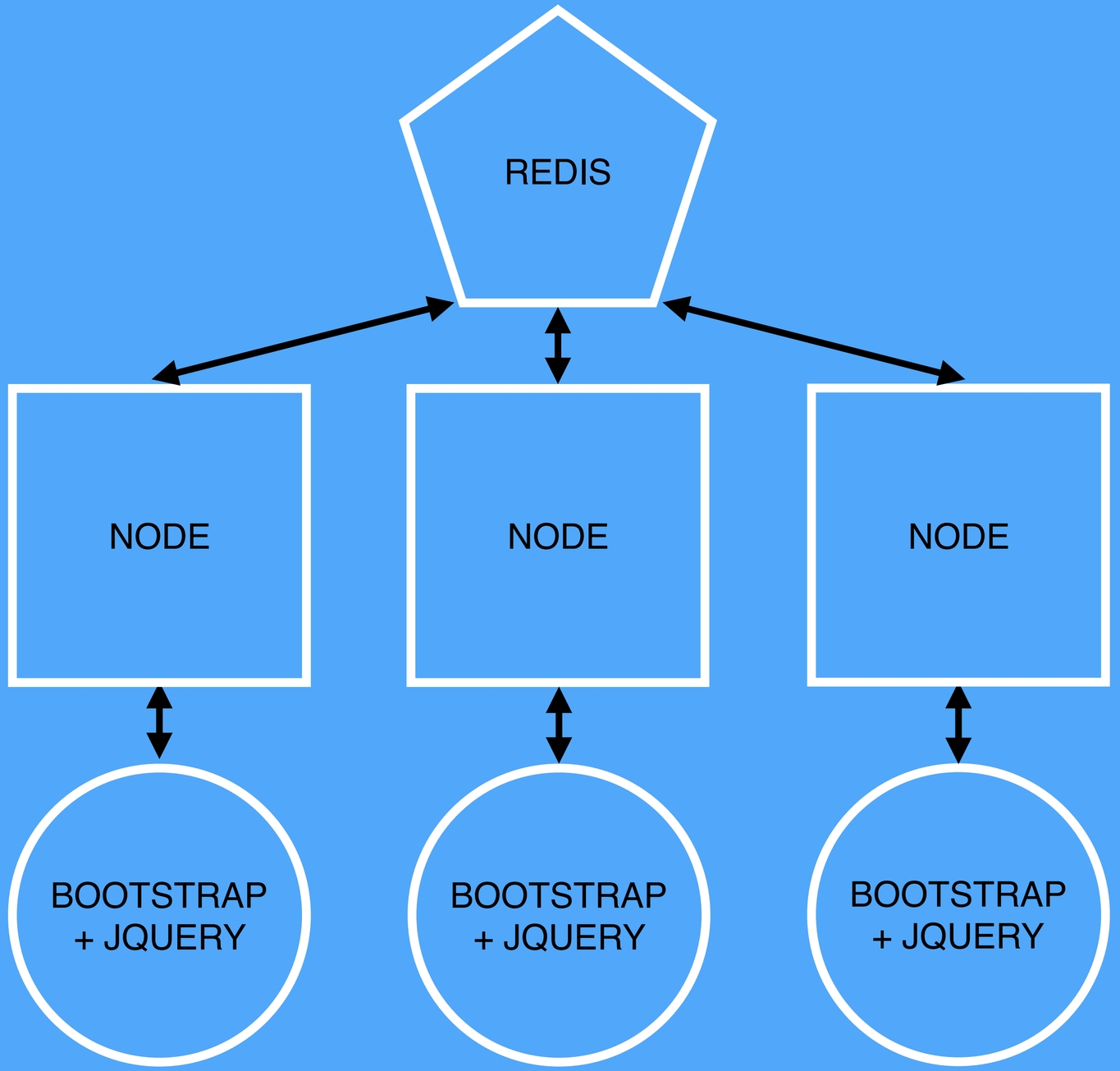
REDIS
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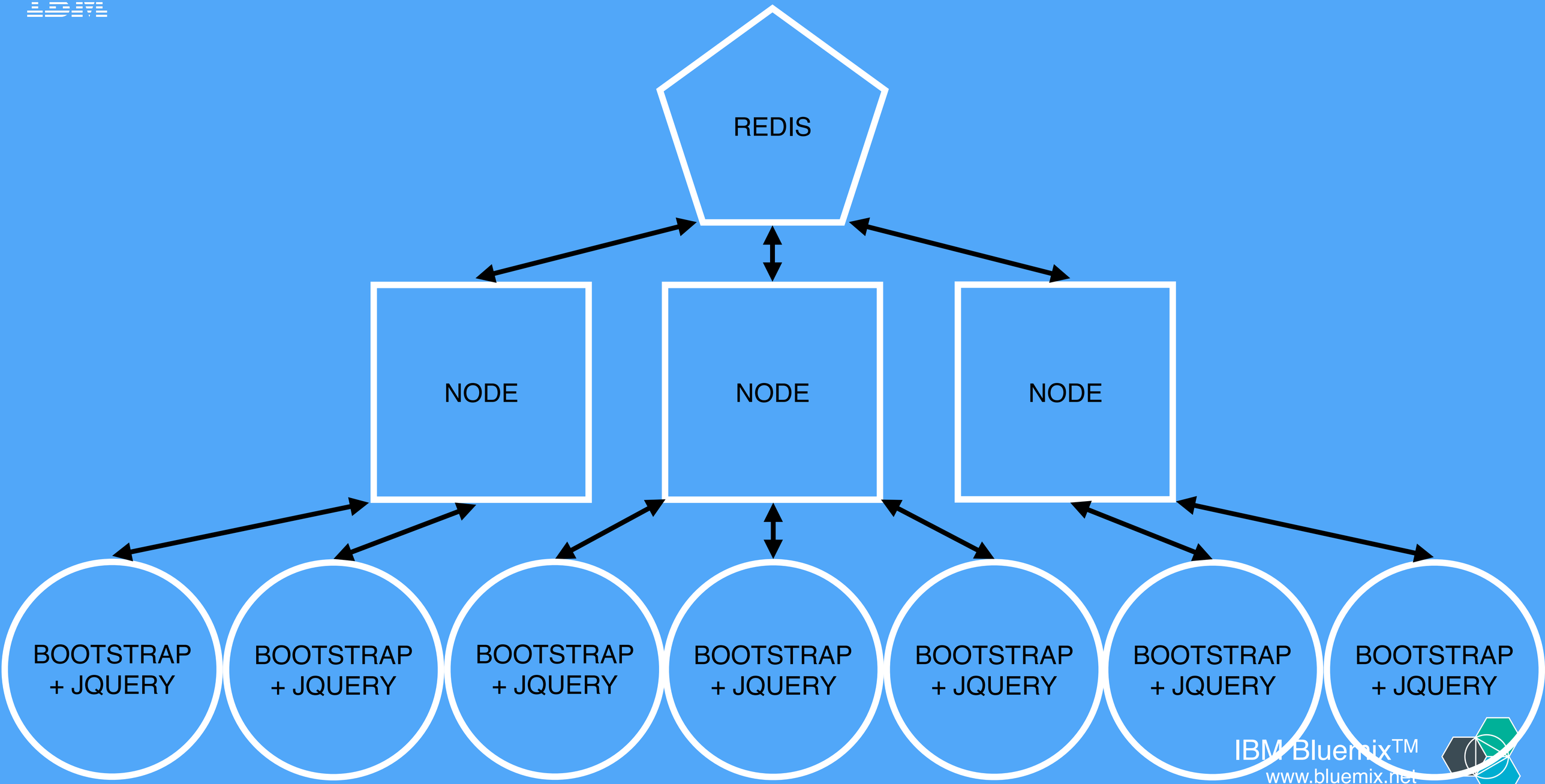
REDIS
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BOOTSTRAP + JQUERY
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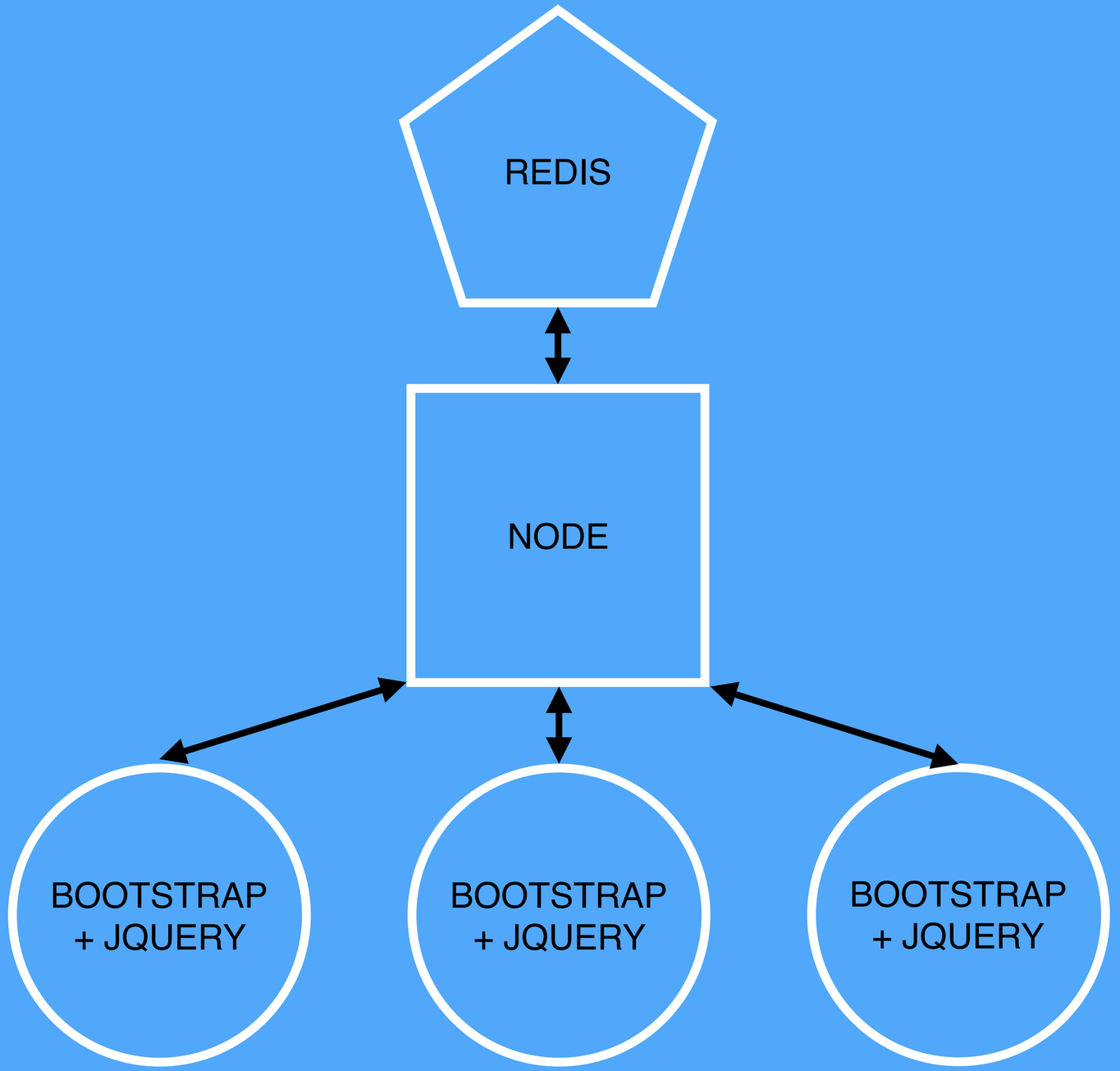
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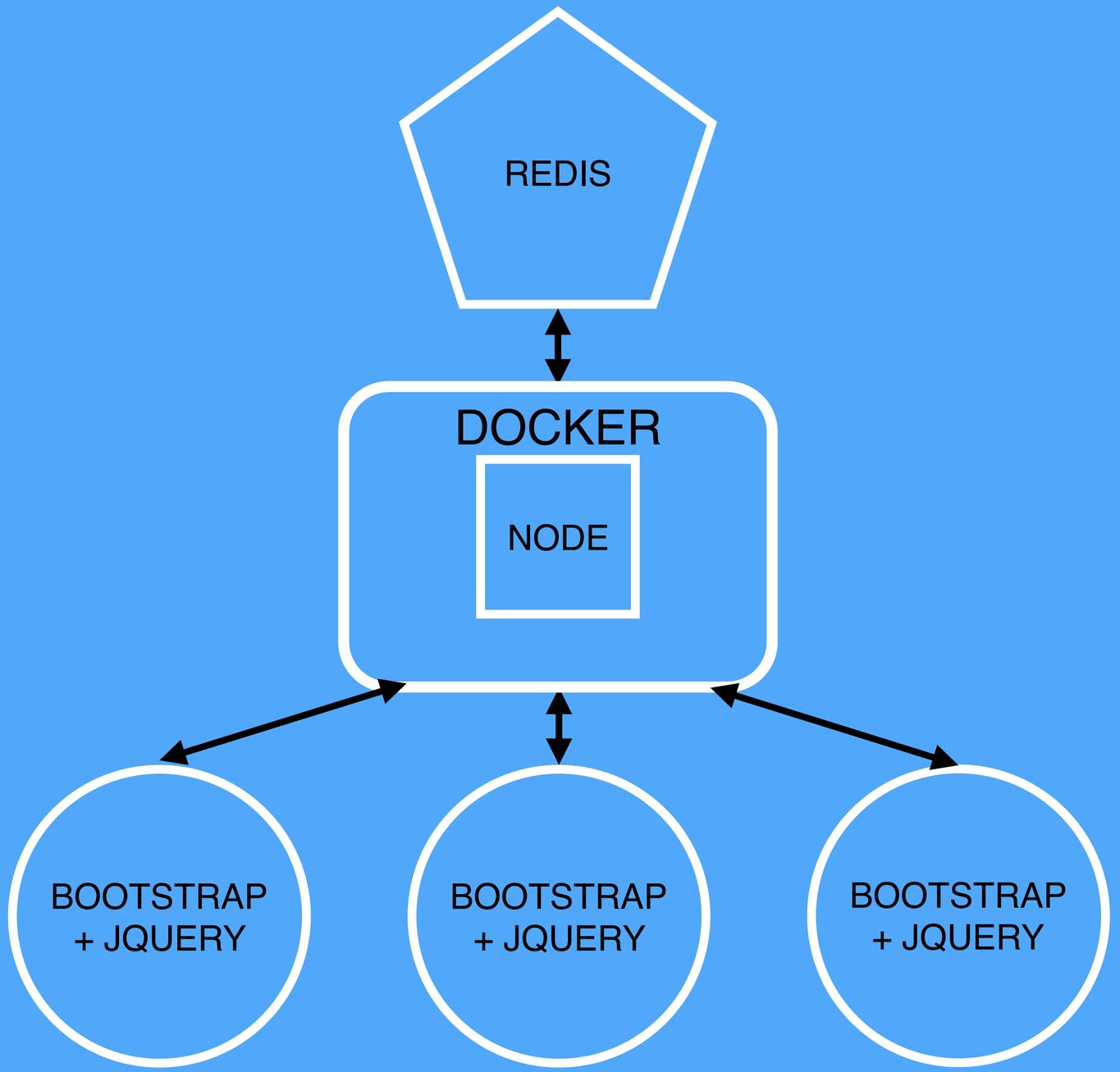
REDIS
DOCKER
NODE
BOOTSTRAP
+ JQUERY
BOOTSTRAP
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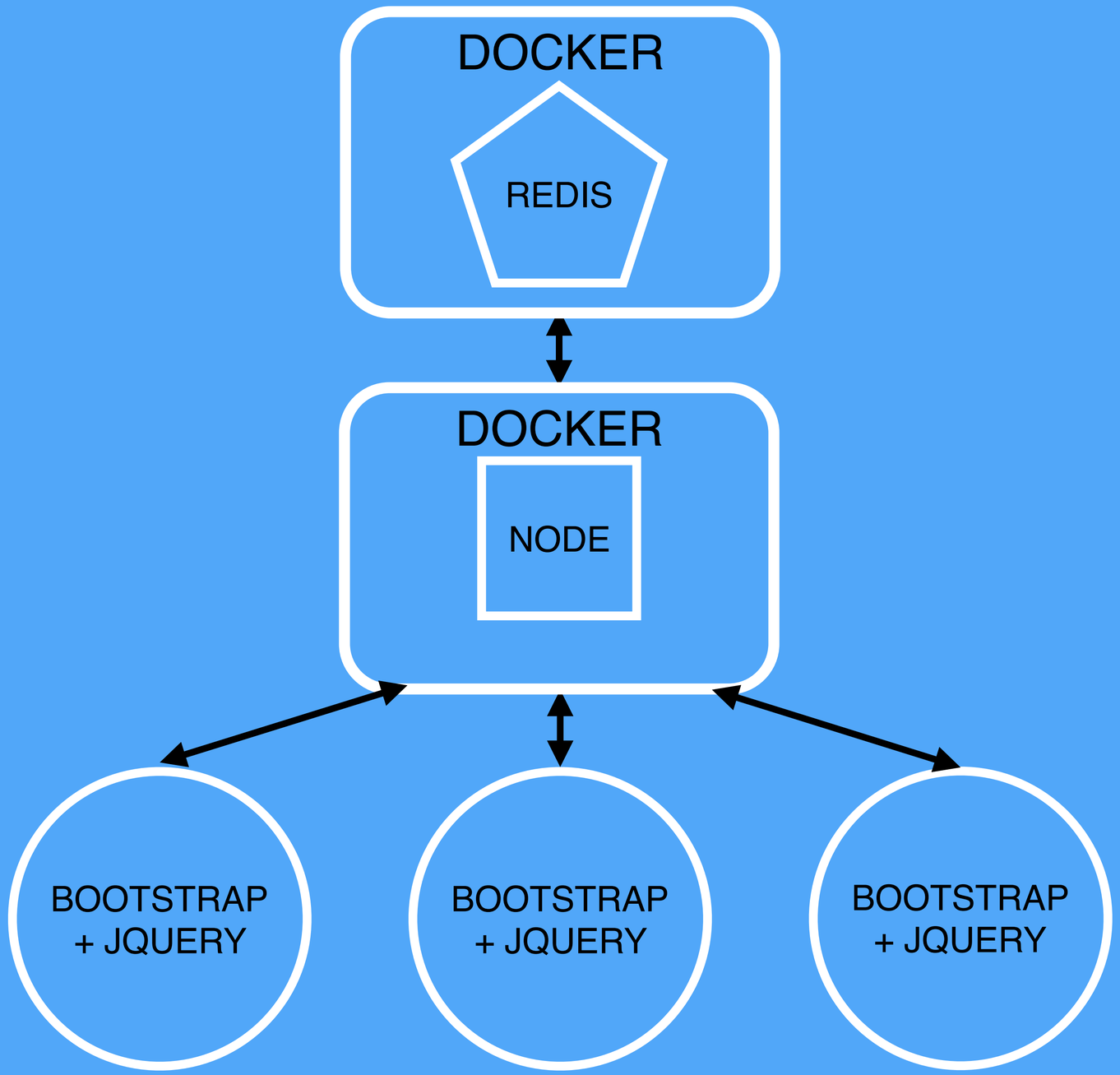
DOCKER
REDIS
DOCKER
NODE
BOOTSTRAP
+ JQUERY
BOOTSTRAP
+ JQUERY
BOOTSTRAP
+ JQUERY

IBM

BOILERPLATE

```
var redisService = appEnv.getService('redis-chatter');
var credentials;
if (!redisService || redisService == null) {
  if (isDocker) {
    credentials = {"hostname":"redis", "port":6379};
  } else {
    credentials = {"hostname":"127.0.0.1", "port":6379};
  }
} else {
  if (isDocker) {
    // This works around a problem with networking when deployed to Bluemix in a docker container
    // For some reason it takes about 30 seconds for the networking to come up on the container
    // so we sleep here before we continue on and use these credentials to connect
    console.log('The app is running in a Docker container on Bluemix so we are ' +
      'sleeping for 90 seconds waiting for the networking to become active.');
    require('sleep').sleep(90);
  }
  credentials = redisService.credentials;
}
```

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FILE STRUCTURE

```
bluechatter
 |--node_modules
 |--public
 |--app.js
 |--admin.js
 |--docker-compose.yml
 |--Dockerfile
 |--package.json
```

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RUNNING LOCALLY

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STEP 1:
GET THE CODE

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```
➜  Workspace git clone https://github.com/IBM-Bluemix/bluechatter.git
Cloning into 'bluechatter'...
remote: Counting objects: 101, done.
remote: Total 101 (delta 0), reused 0 (delta 0), pack-reused 101
Receiving objects: 100% (101/101), 29.25 KiB | 0 bytes/s, done.
Resolving deltas: 100% (52/52), done.
Checking connectivity... done.
➜  Workspace cd bluechatter
➜  bluechatter git:(master)
```

WITHOUT DOCKER

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NODE + REDIS

1. Install dependencies
2. Kick off Redis server
3. Start Node app

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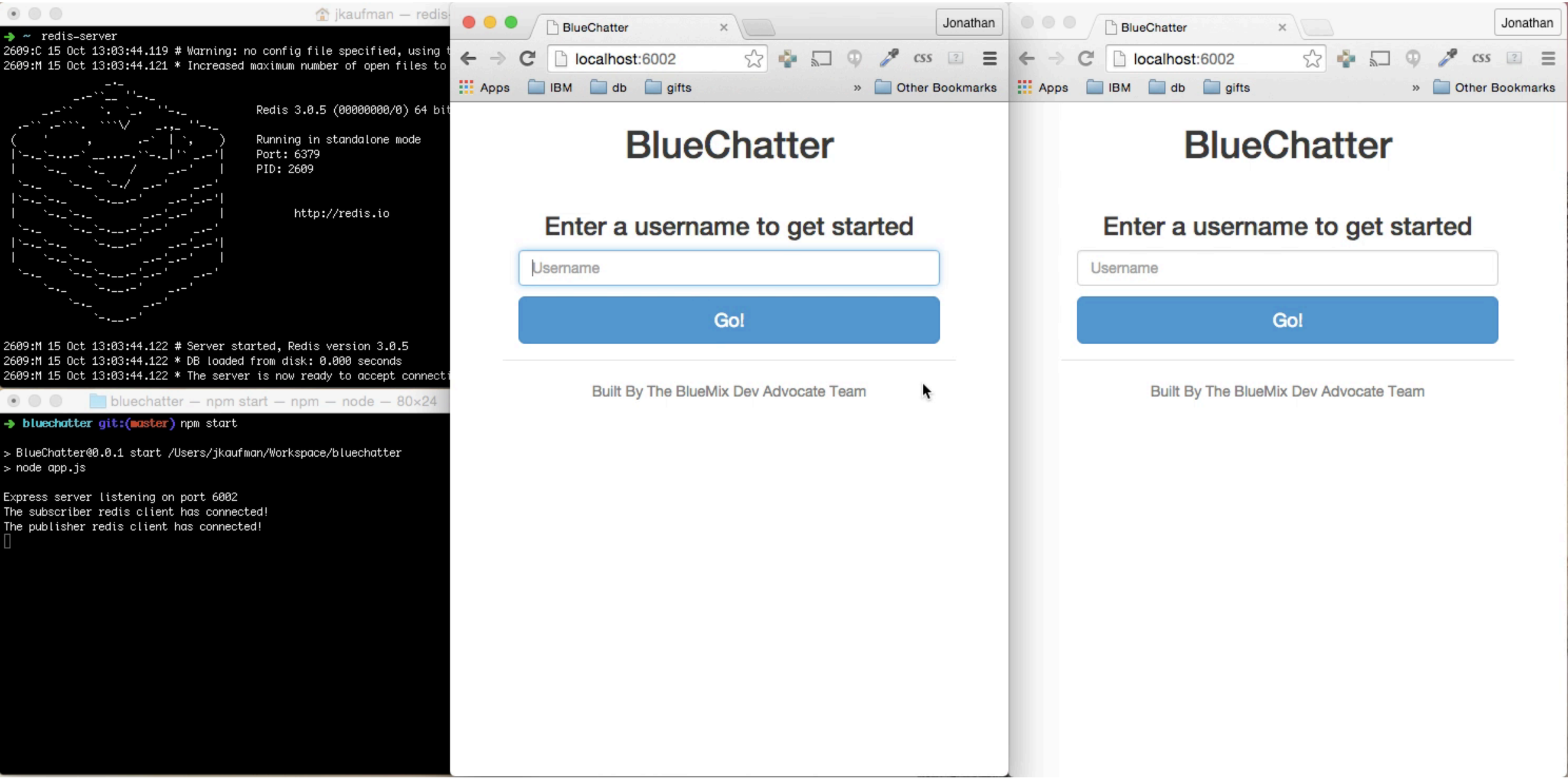
```
➜  bluechatter git:(master) npm install
npm WARN package.json BlueChatter@0.0.1 No license field.

> sleep@3.0.0 install /Users/jkaufman/Workspace/bluechatter/node_modules/sleep
> node-gyp rebuild

  CXX(target) Release/obj.target/node_sleep/sleep.o
  SOLINK_MODULE(target) Release/node_sleep.node

> BlueChatter@0.0.1 install /Users/jkaufman/Workspace/bluechatter
> node admin.js track

…

nconf@0.7.2 node_modules/nconf
├── ini@1.3.4
├── async@0.9.2
└── yargs@3.15.0 (decamelize@1.0.0, camelcase@1.2.1, window-size@0.1.2,
cliui@2.1.0)
```

```
➜ ~ redis-server
2609:C 15 Oct 13:03:44.119 # Warning: no config file specified, using the default config. In order to sp
2609:M 15 Oct 13:03:44.121 * Increased maximum number of open files to 10032 (it was originally set to 2
```

```
                Redis 3.0.5 (00000000/0) 64 bit

                Running in standalone mode
                Port: 6379
                PID: 2609


                      http://redis.io
```

```
2609:M 15 Oct 13:03:44.122 # Server started, Redis version 3.0.5
2609:M 15 Oct 13:03:44.122 * DB loaded from disk: 0.000 seconds
2609:M 15 Oct 13:03:44.122 * The server is now ready to accept connections on port 6379
```

```
➜  bluechatter git:(master) npm start
> BlueChatter@0.0.1 start /Users/jkaufman/Workspace/bluechatter
> node app.js

Express server listening on port 6002
The subscriber redis client has connected!
The publisher redis client has connected!
```


jkaufman — redis
~ redis-server
2609:C 15 Oct 13:03:44.119 # Warning: no config file specified, using t
2609:M 15 Oct 13:03:44.121 * Increased maximum number of open files to
Redis 3.0.5 (00000000/0) 64 bit
Running in standalone mode
Port: 6379
PID: 2609
http://redis.io
2609:M 15 Oct 13:03:44.122 # Server started, Redis version 3.0.5
2609:M 15 Oct 13:03:44.122 * DB loaded from disk: 0.000 seconds
2609:M 15 Oct 13:03:44.122 * The server is now ready to accept connecti
bluechatter — npm start — npm — node — 80×24
bluechatter git:(master) npm start
> BlueChatter@0.0.1 start /Users/jkaufman/Workspace/bluechatter
> node app.js
Express server listening on port 6002
The subscriber redis client has connected!
The publisher redis client has connected!
BlueChatter
Jonathan
localhost:6002
Apps
IBM
db
gifts
Other Bookmarks
BlueChatter
Enter a username to get started
Username
Go!
Built By The BlueMix Dev Advocate Team
BlueChatter
Jonathan
localhost:6002
Apps
IBM
db
gifts
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BlueChatter
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Username
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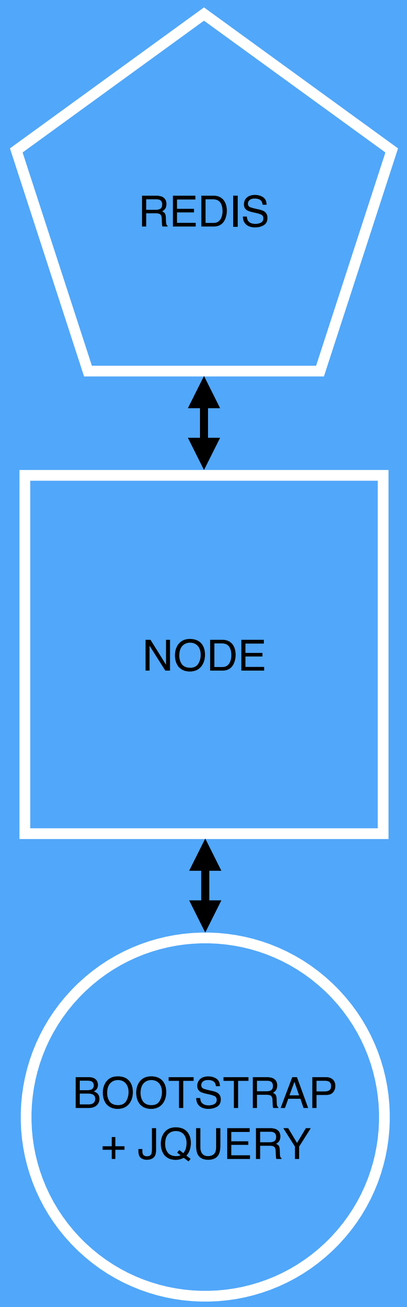
Built By The BlueMix Dev Advocate Team


REDIS
NODE
BOOTSTRAP
+ JQUERY

TO SHARE

(and guarantee behavior):

1. Have same OS
2. Have same version of Node
3. Have same version of Redis

WITH DOCKER

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1. Build the app into an image
2. Run the image in a container

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DOCKERFILE

```
FROM registry.ng.bluemix.net/ibmnode:latest
COPY ./ bluechatter
WORKDIR bluechatter
RUN npm install -d --production
EXPOSE 80
ENV PORT 80
ENV DOCKER true
CMD ["node", "app.js"]
```

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```
➜  bluechatter git:(master) docker build -t bluechatter:test .
Sending build context to Docker daemon 142.8 kB
Step 0 : FROM registry.ng.bluemix.net/ibmnode:latest
 ---> 8f962f6afc9a
Step 1 : COPY ./ bluechatter
 ---> 51605b64b015
Removing intermediate container 7b0f6e22fb99
Step 2 : WORKDIR bluechatter
 ---> Running in e1c0436890d5
 ---> 6f607172a3ff
Removing intermediate container e1c0436890d5
Step 3 : RUN npm install -d --production
 ---> Running in 278bf3713ef6
cfenv@1.0.3 node_modules/cfenv
├── ports@1.1.0
├── underscore@1.8.3
└── js-yaml@3.4.3 (esprima@2.6.0, argparse@1.0.2)
npm info ok
```

```
Removing intermediate container 58b5613bfe6f
Step 4 : EXPOSE 80
 ---> Running in f18f213e2bc6
Removing intermediate container f18f213e2bc6
Step 5 : ENV PORT 80
 ---> Running in 214f959e23ca
Removing intermediate container 214f959e23ca
Step 6 : ENV DOCKER true
 ---> Running in 701f4a794e70
Removing intermediate container 701f4a794e70
Step 7 : CMD node app.js
 ---> Running in 74c50bc04811
Removing intermediate container 74c50bc04811
Successfully built 250ab2421de16
```

IDENTIFY AND RUN THE IMAGE

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```
➜  bluechatter git:(master) docker images
REPOSITORY   TAG             IMAGE ID       CREATED              VIRTUAL SIZE
bluechatter  test            250ab421de16   12 seconds ago       673.2 MB
node         0.10-onbuild    f8a19007bc68   2 days ago           633.4 MB
➜  bluechatter git:(master) docker run -t bluechatter:test
Express server listening on port 80
There was an error with the subscriber redis client Error: Redis connection to
redis:6379 failed - getaddrinfo ENOTFOUND
There was an error with the publisher redis client Error: Redis connection to
redis:6379 failed - getaddrinfo ENOTFOUN
There was an error with the subscriber redis client Error: Redis connection to
redis:6379 failed - getaddrinfo ENOTFOUND
There was an error with the publisher redis client Error: Redis connection to
redis:6379 failed - getaddrinfo ENOTFOUN
There was an error with the subscriber redis client Error: Redis connection to
redis:6379 failed - getaddrinfo ENOTFOUND
There was an error with the publisher redis client Error: Redis connection to
redis:6379 failed - getaddrinfo ENOTFOUN
```

OH NOES

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DOCKER COMPOSE

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DEFINE AND RUN MULTI-CONTAINER APPLICATIONS

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docker-compose.yml

```
web:
  build: .
  ports:
   - "80:80"
   - "8080:8080"
  links:
   - redis
redis:
  image: redis
```

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RUNS WITH ONE COMMAND:

docker-compose up

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```
➜  bluechatter git:(master) docker-compose up
Pulling redis (redis:latest)...
latest: Pulling from library/redis
library/redis:latest: The image you are pulling has been verified. Important:
image verification is a tech preview feature and should not be relied on to
provide security.

Digest: sha256:ea780255d8b42745f14e61c75c83eba2c7254f6cccf97f975a644890f5d3bf7
Status: Downloaded newer image for redis:latest
Creating bluechatter_redis_1...
Building web...
Step 0 : FROM registry.ng.bluemix.net/ibmnode:latest
...
Successfully built 5a9d88a42af2
Creating bluechatter_web_1...
Attaching to bluechatter_redis_1, bluechatter_web_1
```

```
redis_1 | 1:C 15 Oct 21:40:58.936 # Warning: no config file specified, using the default config. In
order to specify a config file use redis-server /path/to/redis.conf
redis_1 |                 _.-
redis_1 |            _.-``__ ''-._
redis_1 |       _.-``    `.  `_.  ''-._           Redis 3.0.5 (00000000/0) 64 bit
redis_1 |   .-`` .-```.  ```\/    _.,_ ''-._
redis_1 |  (    '      ,       .-`  | `,    )     Running in standalone mode
redis_1 |  |`-._`-...-` __...-.``-._|'` _.-'|     Port: 6379
redis_1 |  |    `-._   `._    /     _.-'    |     PID: 1
redis_1 |   `-._    `-._  `-./  _.-'    _.-'
redis_1 |  |`-._`-._    `-.__.-'    _.-'_.-'|
redis_1 |  |    `-._`-._        _.-'_.-'    |           http://redis.io
redis_1 |   `-._    `-._`-.__.-'_.-'    _.-'
redis_1 |  |`-._`-._    `-.__.-'    _.-'_.-'|
redis_1 |  |    `-._`-._        _.-'_.-'    |
redis_1 |   `-._    `-._`-.__.-'_.-'    _.-'
redis_1 |       `-._    `-.__.-'    _.-'
redis_1 |           `-._        _.-'
redis_1 |               `-.__.-'
redis_1 | 1:M 15 Oct 21:40:58.937 * The server is now ready to accept connections on port 6379
web_1   | Express server listening on port 80
web_1   | The subscriber redis client has connected!
web_1   | The publisher redis client has connected!
```

IDENTIFY
OUR MACHINE'S IP
AND CONNECT

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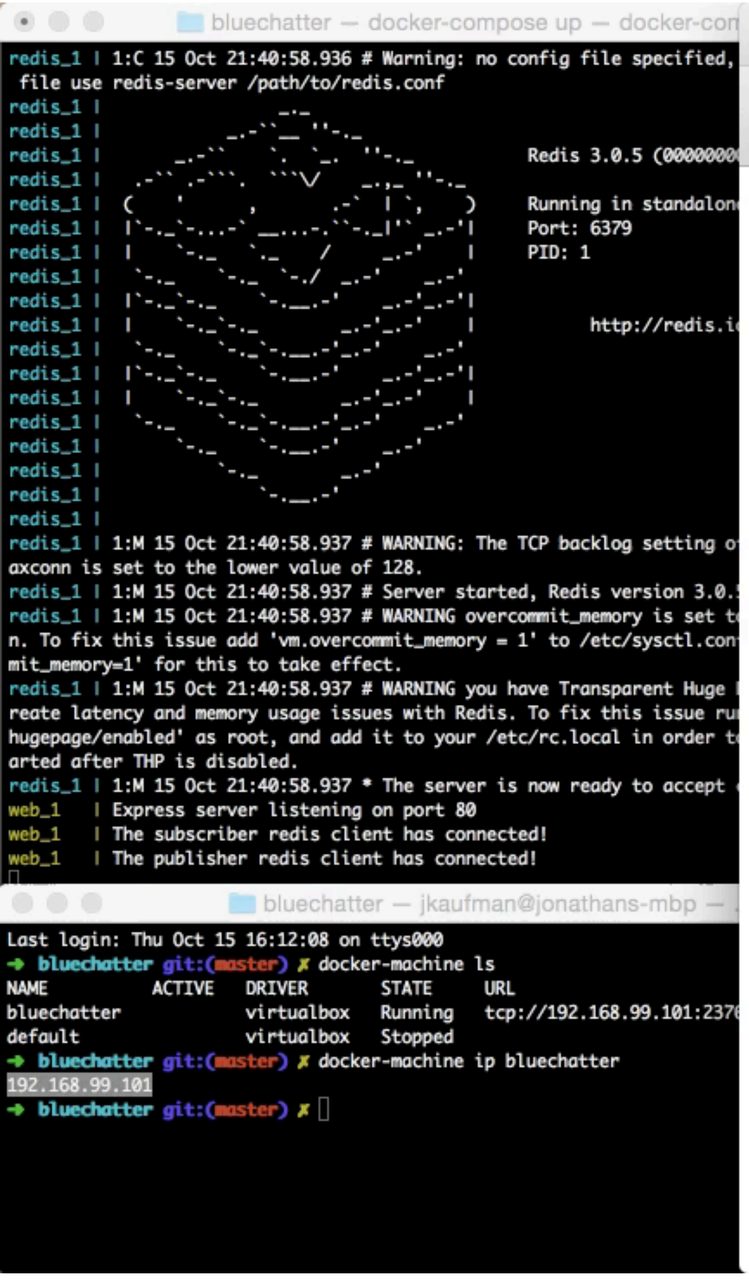
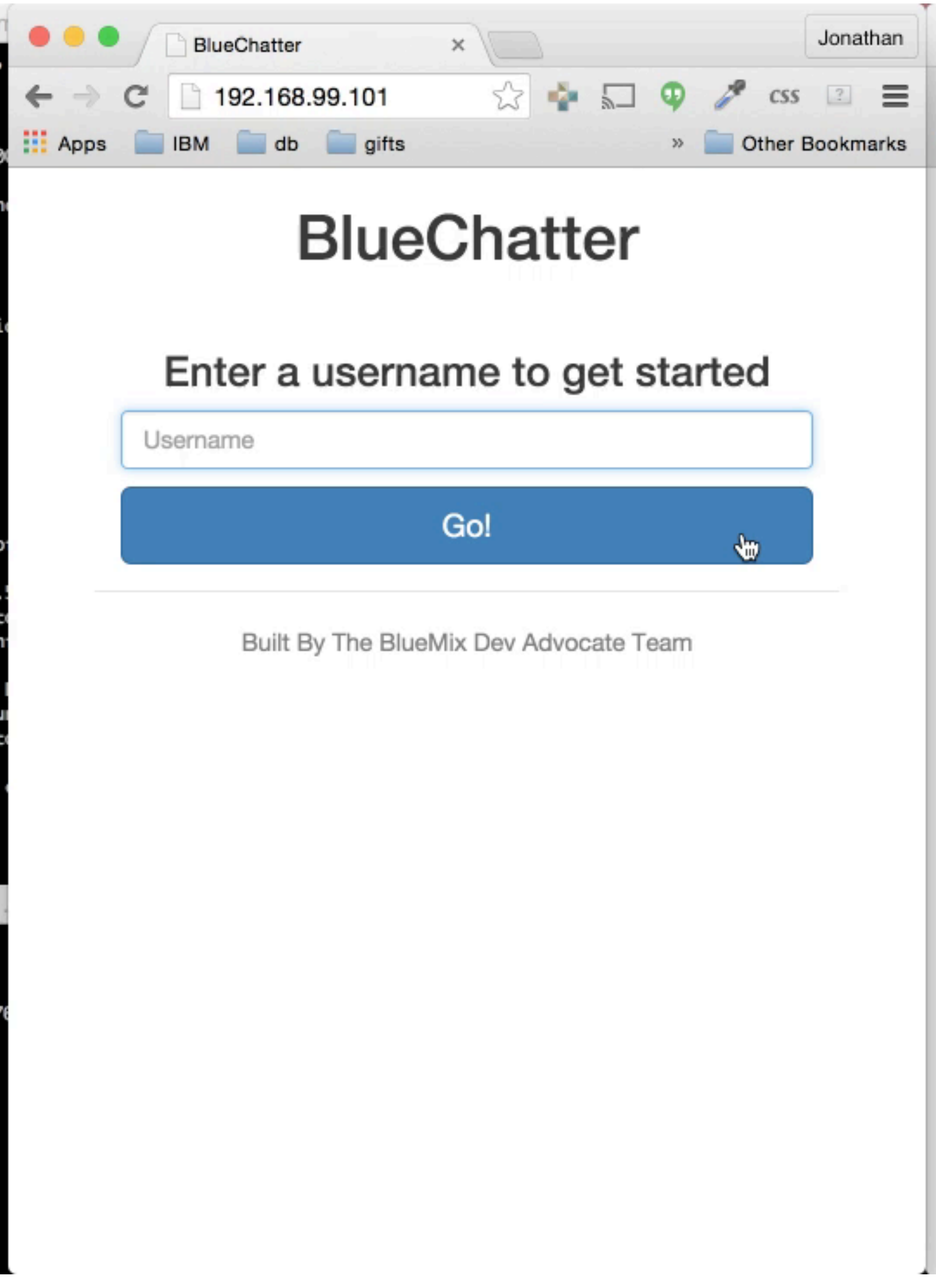
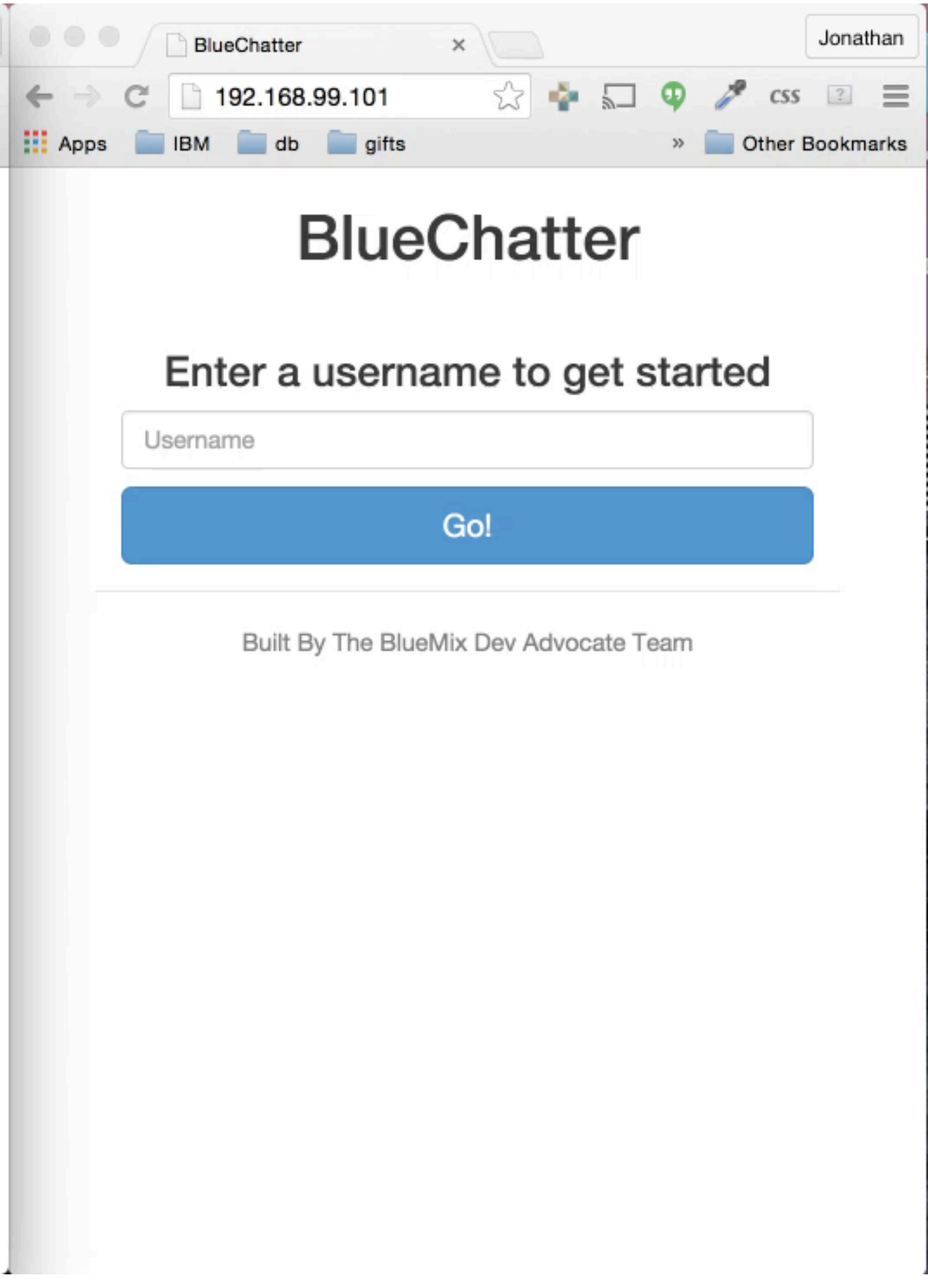
```
➜  bluechatter git:(master) docker-machine ls
NAME           ACTIVE   DRIVER       STATE     URL                         SWARM
bluechatter             virtualbox   Running   tcp://192.168.99.101:2376
default                 virtualbox   Stopped
➜  bluechatter git:(master) docker-machine ip bluechatter
192.168.99.101
➜  bluechatter git:(master)
```


bluechatter — docker-compose up — docker-com
redis_1 | 1:C 15 Oct 21:40:58.936 # Warning: no config file specified, file use redis-server /path/to/redis.conf
redis_1 | Redis 3.0.5 (00000000
redis_1 | Running in standalon
redis_1 | Port: 6379
redis_1 | PID: 1
redis_1 | http://redis.i
redis_1 | 1:M 15 Oct 21:40:58.937 # WARNING: The TCP backlog setting o
axconn is set to the lower value of 128.
redis_1 | 1:M 15 Oct 21:40:58.937 # Server started, Redis version 3.0.
redis_1 | 1:M 15 Oct 21:40:58.937 # WARNING overcommit_memory is set t
n. To fix this issue add 'vm.overcommit_memory = 1' to /etc/sysctl.con
mit_memory=1' for this to take effect.
redis_1 | 1:M 15 Oct 21:40:58.937 # WARNING you have Transparent Huge
reate latency and memory usage issues with Redis. To fix this issue ru
hugepage/enabled' as root, and add it to your /etc/rc.local in order t
arted after THP is disabled.
redis_1 | 1:M 15 Oct 21:40:58.937 * The server is now ready to accept
web_1 | Express server listening on port 80
web_1 | The subscriber redis client has connected!
web_1 | The publisher redis client has connected!
bluechatter — jkaufman@jonathans-mbp —
Last login: Thu Oct 15 16:12:08 on ttys000
→ bluechatter git:(master) ✗ docker-machine ls
NAME ACTIVE DRIVER STATE URL
bluechatter virtualbox Running tcp://192.168.99.101:2376
default virtualbox Stopped
→ bluechatter git:(master) ✗ docker-machine ip bluechatter
192.168.99.101
→ bluechatter git:(master) ✗


BlueChatter
Jonathan
192.168.99.101
Apps
IBM
db
gifts
Other Bookmarks
BlueChatter
Enter a username to get started
Username
Go!
Built By The BlueMix Dev Advocate Team


BlueChatter
Jonathan
192.168.99.101
Apps
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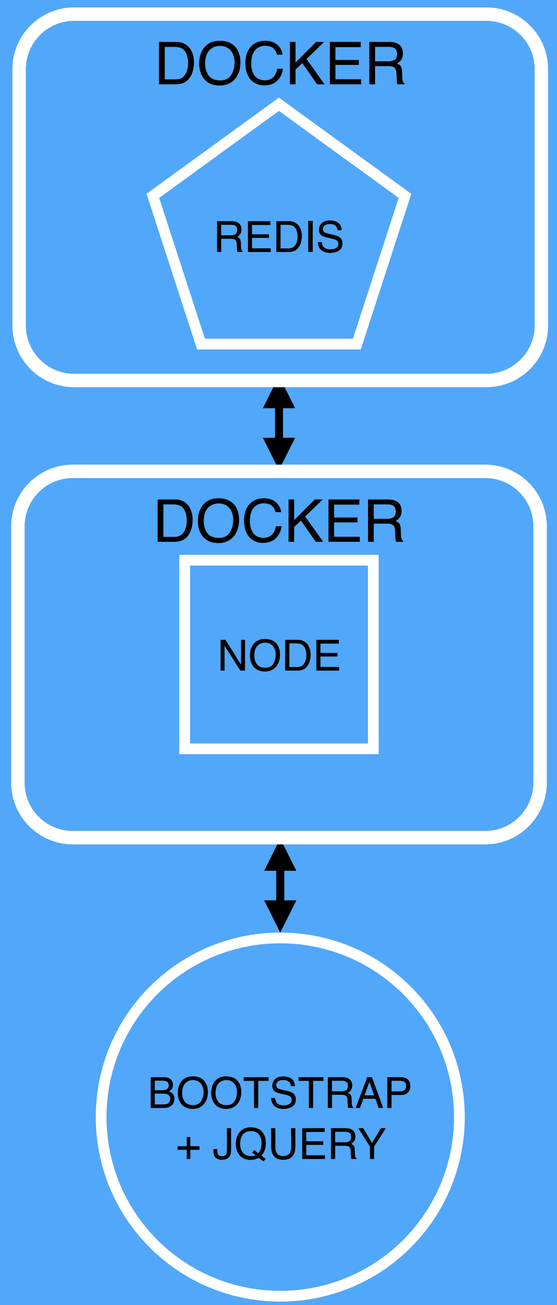
Enter a username to get started
Username
Go!
Built By The BlueMix Dev Advocate Team


DOCKER
REDIS
DOCKER
NODE
BOOTSTRAP
+ JQUERY

TO SHARE

(and guarantee behavior):

1. Have Docker

IBM Bluemix™

www.bluemix.net

SOLVED:
INCONSISTENT ENVIRONMENTS

IBM Bluemix™
www.bluemix.net

TO THE CLOUD

IBM Bluemix™
www.bluemix.net

STEPS:

1. BUILD + PUSH IMAGE TO REGISTRY
2. CREATE BRIDGE APP + BIND REDIS
3. START CONTAINER FROM IMAGE

Starters

- Boilerplates

Compute

- Runtimes
- Containers

Services

- Watson
- Mobile
- DevOps
- Web and Application
- Integration
- Data and Analytics
- Security
- Business Analytics
- Internet of Things
- Custom APIs

Provider

- IBM
- Third Party
- Community
- Beta
- My Org

Starters *// Choose a package of sample code and services, or start from scratch*

Boilerplates

Get started with a new app, now

- Apache Spark Starter — **IBM**
- Internet of Things Foundation Starter — **IBM**
- Java Cloudant Web Starter — **IBM**
- Java DB Web Starter — **IBM**
- LoopBack Starter — **IBM**
- MobileFirst Services Starter — **IBM**
- Personality Insights Java Web Starter — **IBM**
- StrongLoop Arc — **IBM**
- Node-RED Starter — **Community**
- Python Flask — **Community**
- Ruby Sinatra — **Community**
- Vaadin Rich Web Starter — **Community**

Compute *// Start with Cloud Foundry or Docker images*

Runtimes

Run an app in the language of your choice

- Liberty for Java™ — **IBM**
- SDK for Node.js™ — **IBM**
- PHP — **Community**
- Python — **Community**
- Ruby — **Community**
- Community buildpacks — **Community**

Compute

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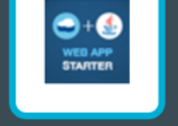
Get started with a new app, now

Apache Spark Starter
IBM

Internet of Things Foundation Starter
IBM



Java Cloudant Web Starter
IBM

Java DB Web Starter
IBM

LoopBack Starter
IBM

MobileFirst Services Starter
IBM

Personality Insights Java Web Starter
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StrongLoop Arc
IBM

Node-RED Starter
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Community

Container Images

Create containers from IBM images or add your own.

ibm-mobilefirst-starter
IBM

ibm-node-strong-pm
IBM

ibmliberty
IBM

ibmnode
IBM

Add your own
My Org

1. BUILD + PUSH IMAGE TO REGISTRY

```
cf ic build -t bluechatter .
```


```
➜  bluechatter git:(master) cf ic build -t bluechatter .
Sending build context to Docker daemon 142.8 kB
Step 0 : FROM registry.ng.bluemix.net/ibmnode:latest
...
Successfully built e0d9661a2c3f
The push refers to a repository [registry.ng.bluemix.net/jdkaufma/bluechatter]
Sending image list
Pushing repository registry.ng.bluemix.net/jdkaufma/bluechatter (1 tags)
Image 83e4dde6b9cf already pushed, skipping
Image d2a0ecffe6fa already pushed, skipping
e288e2539065: Image successfully pushed
803521c35f1b: Image successfully pushed
Pushing tag for rev [e0d9661a2c3f] on {https://registry.ng.bluemix.net/v1/
repositories/jdkaufma/bluechatter/tags/latest}
➜  bluechatter git:(master)
```

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StrongLoop Arc
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ibm-mobilefirst-starter
IBM

ibm-node-strong-pm
IBM

ibmliberty
IBM

ibmnode
IBM

bluechatter
My Org

Add your own
My Org

Services *// The building blocks of any great app*

Watson

Build cognitive apps that help enhance, scale, and

2. MAKE A BRIDGE + BIND REDIS

IBM Bluemix™
www.bluemix.net

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ibmnode
IBM

bluechatter
My Org

Add your own
My Org

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Community

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ibmliberty
IBM

ibmnode
IBM

bluechatter
My Org

Add your own
My Org

Services // The building blocks of any great app

Watson

Build cognitive apps that help enhance, scale, and accelerate human expertise

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- Beta

Integration

Extend existing investments and infrastructure

- API Management — IBM
- Cloud Integration — IBM
- Secure Gateway — IBM
- Rocket Mainframe Data — Third Party

Data and Analytics

Essential data services; limitless possibilities

HELP ME PICK

- Analytics for Apache Hadoop — IBM *BETA*
- Apache Spark — IBM *BETA*
- BigInsights for Apache Hadoop — IBM
- Cloudant NoSQL DB — IBM
- dashDB — IBM
- DataWorks — IBM
- Elasticsearch by Compose — IBM
- Geospatial Analytics — IBM
- IBM DB2 on Cloud — IBM
- Insights for Twitter — IBM
- MongoDB by Compose — IBM
- Object Storage — IBM *BETA*
- Object Storage (v2) — IBM *BETA*
- PostgreSQL by Compose — IBM
- Predictive Analytics — IBM *BETA*
- Redis by Compose — IBM
- SQL Database — IBM
- Streaming Analytics — IBM

- Security
- Business Analytics
- Internet of Things
- Custom APIs

Provider

- IBM
- Third Party
- Beta

Data and Analytics

Essential data services; limitless possibilities

HELP ME PICK

Analytics for Apache Hadoop
IBM *BETA*

Apache Spark
IBM *BETA*

BigInsights for Apache Hadoop
IBM

Cloudant NoSQL DB
IBM

dashDB
IBM

DataWorks
IBM

Elasticsearch by Compose
IBM

Geospatial Analytics
IBM

IBM DB2 on Cloud
IBM

Insights for Twitter
IBM

MongoDB by Compose
IBM

Object Storage
IBM *BETA*

Object Storage (v2)
IBM *BETA*

PostgreSQL by Compose
IBM

Predictive Analytics
IBM *BETA*

Redi… …mpose
IB…

SQL Database
IBM

Streaming Analytics
IBM

Time Series Database
IBM

ClearDB MySQL Database
Third Party

ElephantSQL
Third Party

MongoLab
Third Party

Redis Cloud
Third Party

Security

Build security into application design

Type here to search

HELP ME PICK

Hadoop
IBM BETA

IBM BETA

Hadoop
IBM

IBM

IBM

Elasticsearch by Compose
IBM

Geospatial Analytics
IBM

IBM DB2 on Cloud
IBM

Insights for Twitter
IBM

MongoDB by Compose
IBM

Object Storage
IBM BETA

Object Storage (v2)
IBM BETA

PostgreSQL by Compose
IBM

Predictive Analytics
IBM BETA

Redis by Compose
IBM

SQL Database
IBM

Streaming Analytics
IBM

Time Series Database
IBM

ClearDB MySQL Database
Third Party

ElephantSQL
Third Party

MongoLab
Third Party

Redis Cloud
Third Party

Security

Build security into application design

Application Security Manager
IBM BETA

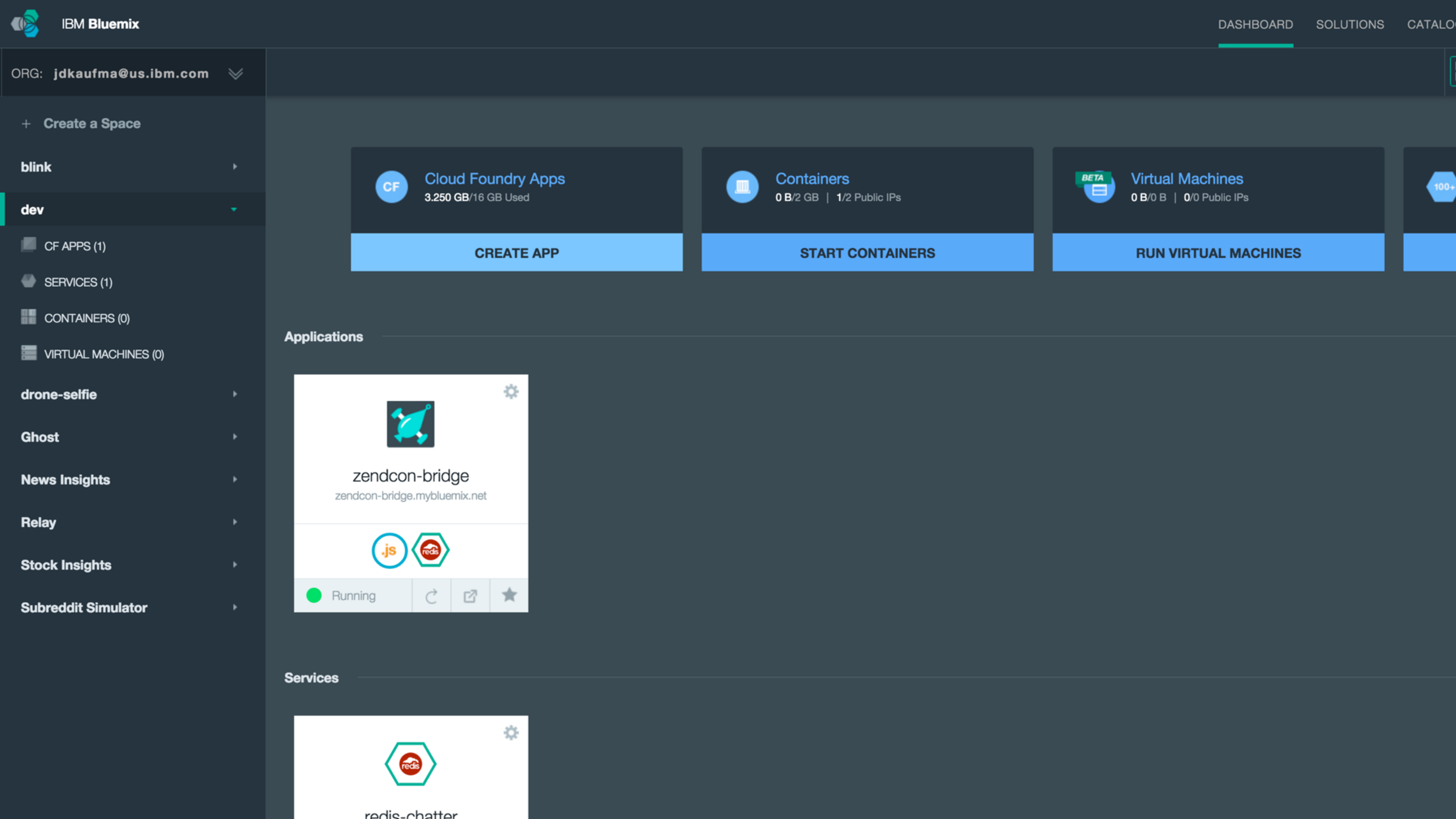
AppScan Dynamic Analyzer
IBM

AppScan Mobile Analyzer
IBM

Mobile Analyzer for iOS
IBM BETA

Single Sign On
IBM

Static Analyzer
IBM BETA

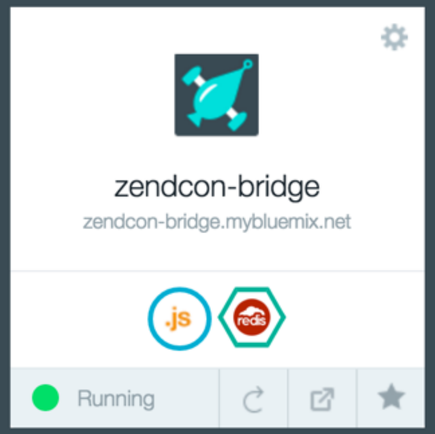

IBM Bluemix
DASHBOARD
SOLUTIONS
CATALO
ORG: jdkaufma@us.ibm.com
+ Create a Space
blink
dev
CF APPS (1)
SERVICES (1)
CONTAINERS (0)
VIRTUAL MACHINES (0)
drone-selfie
Ghost
News Insights
Relay
Stock Insights
Subreddit Simulator
CF
Cloud Foundry Apps
3.250 GB/16 GB Used
CREATE APP
Containers
0 B/2 GB | 1/2 Public IPs
START CONTAINERS
BETA
Virtual Machines
0 B/0 B | 0/0 Public IPs
RUN VIRTUAL MACHINES
100+
Applications
zendcon-bridge
zendcon-bridge.mybluemix.net
.js
redis
Running
Services
redis
redis-chatter

CONTAINERS (0)

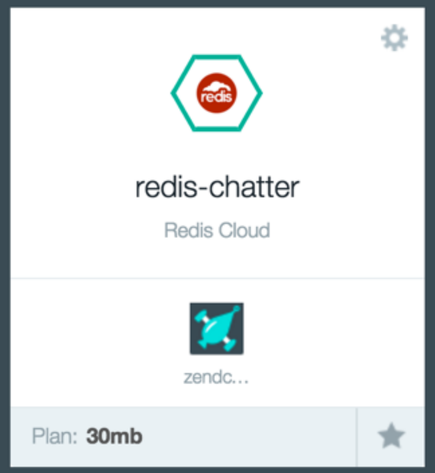
VIRTUAL MACHINES (0)

- drone-selfie
- Ghost
- News Insights
- Relay
- Stock Insights
- Subreddit Simulator

Applications

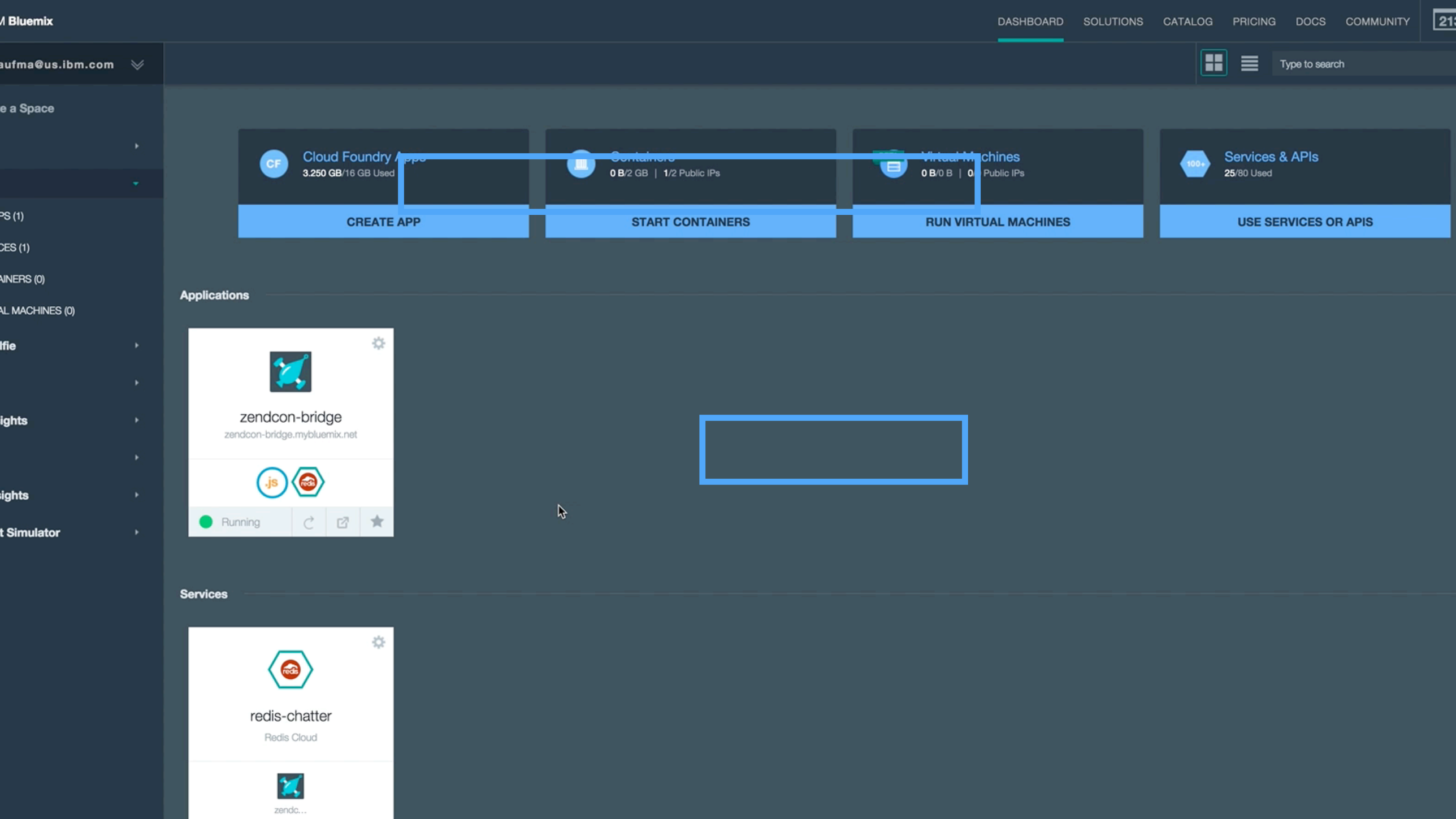


Services



3. START CONTAINER FROM IMAGE

IBM Bluemix™
www.bluemix.net


M Bluemix
DASHBOARD
SOLUTIONS
CATALOG
PRICING
DOCS
COMMUNITY
aufma@us.ibm.com
e a Space
Type to search
PS (1)
CES (1)
AINERS (0)
AL MACHINES (0)
lfie
ights
ights
t Simulator
Cloud Foundry Apps
3.250 GB/16 GB Used
Containers
0 B/2 GB | 1/2 Public IPs
Virtual Machines
0 B/0 B | 0 Public IPs
Services & APIs
25/80 Used
CREATE APP
START CONTAINERS
RUN VIRTUAL MACHINES
USE SERVICES OR APIS
Applications
zendcon-bridge
zendcon-bridge.mybluemix.net
Running
Services
redis-chatter
Redis Cloud

bluechatter

My Org

TAG / VERSION

latest

Copy Image URL

VULNERABILITY ADVISOR

Status: Incomplete

Image scan is still in progress. Try again later.

VIRTUAL SIZE

427.36 MB

CREATED DATE

10/16/2015

TYPE

Container Image

VIEW DOCS

TERMS

Single Container | Scalable Group

Use scalable group deployment for long-term processes that need high availability. You can make your container group accessible to the internet by assigning a public IP address.

Space:

dev

Container group name:

Enter a container group name

Instances:

Example: 2

Size:

Micro (256 MB Memory, 16 GB Storage)

Host:

Enter host

Domain:

mybluemix.net

HTTP port:

Enter an HTTP port or select a default

Enable automatic recovery

Advanced Options

Volumes:

Add volumes that are created and managed from the CLI by specifying a path to your container.
Learn more about creating and managing container volumes from the CLI.

Environment Variables:

Add a new environment variable

Service binding:

Bind services to your containers from the Cloud Foundry apps in your Bluemix space.

Select a Cloud Foundry app

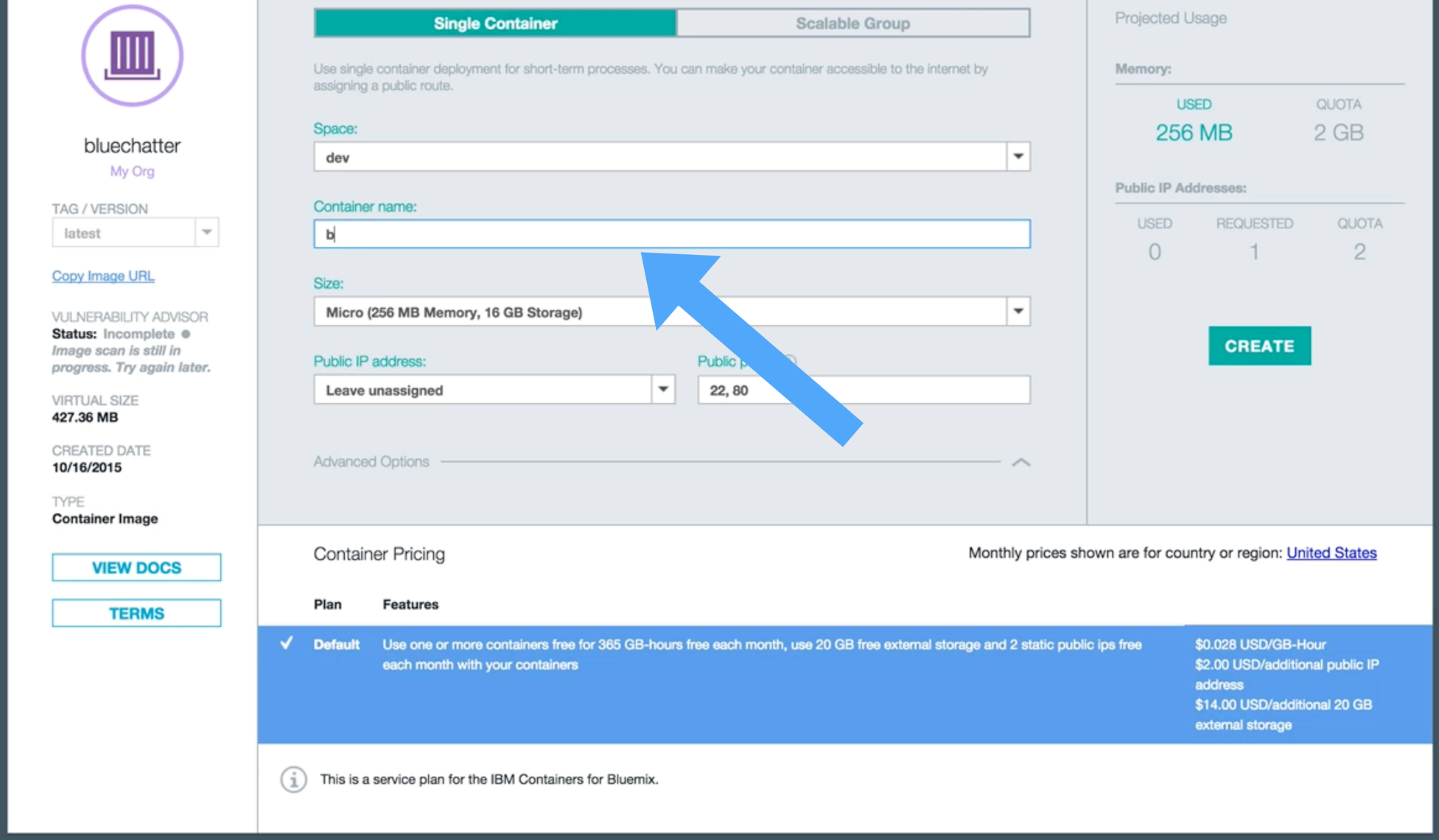
Projected Usage

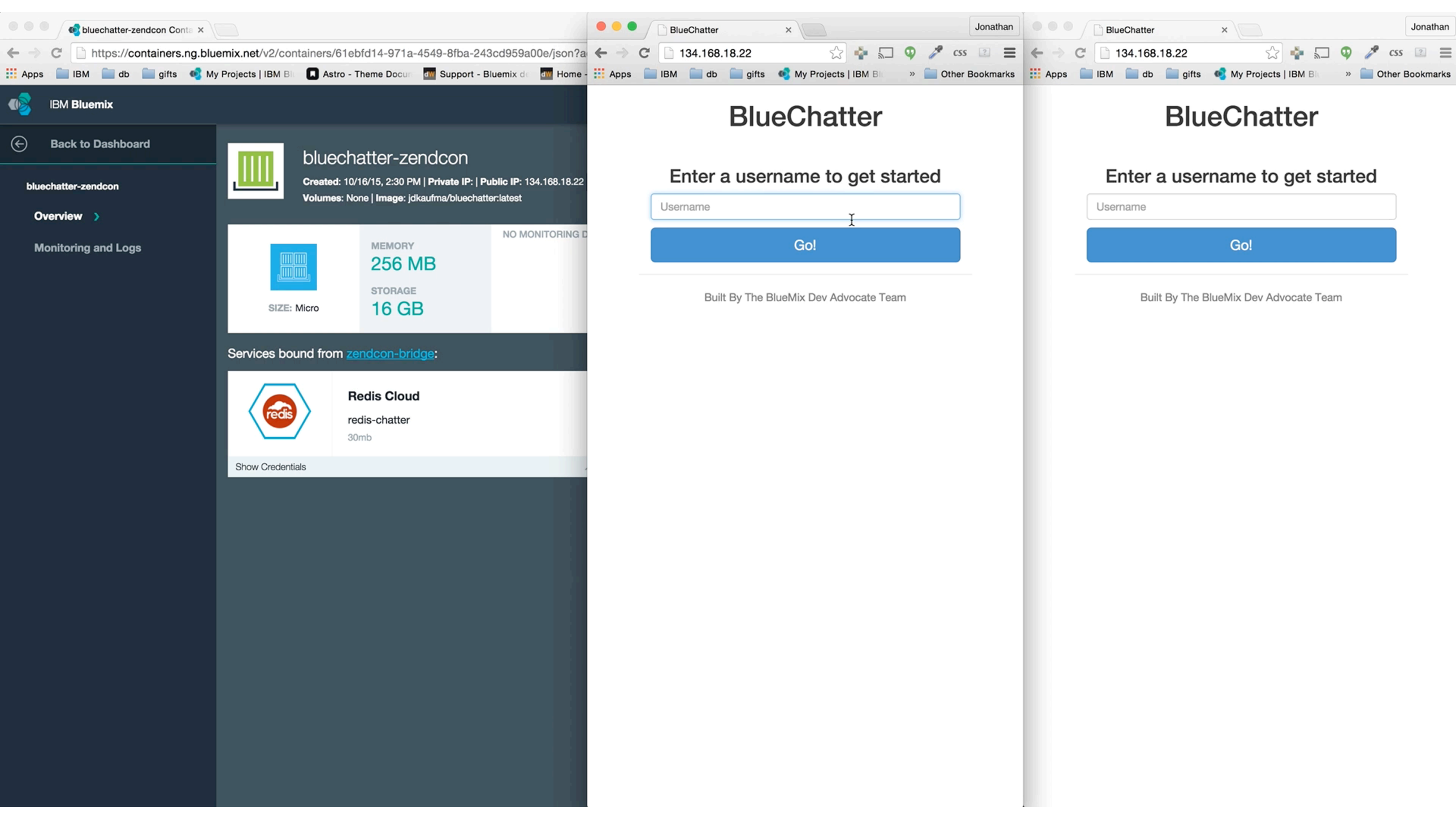
Memory:

USED	QUOTA
256 MB	2 GB

CREATE

All Categories




bluechatter-zendcon Conta
https://containers.ng.bluemix.net/v2/containers/61ebfd14-971a-4549-8fba-243cd959a00e/json?a
Apps
IBM
db
gifts
My Projects | IBM Bl
Astro - Theme Docu
Support - Bluemix d
Home -
IBM Bluemix
Back to Dashboard
bluechatter-zendcon
Overview
Monitoring and Logs
bluechatter-zendcon
Created: 10/16/15, 2:30 PM | Private IP: | Public IP: 134.168.18.22
Volumes: None | Image: jdkaufma/bluechatter:latest
NO MONITORING D
SIZE: Micro
MEMORY
256 MB
STORAGE
16 GB
Services bound from zendcon-bridge:
Redis Cloud
redis-chatter
30mb
Show Credentials
BlueChatter
134.168.18.22
Jonathan
Other Bookmarks
BlueChatter
Enter a username to get started
Username
Go!
Built By The BlueMix Dev Advocate Team
BlueChatter
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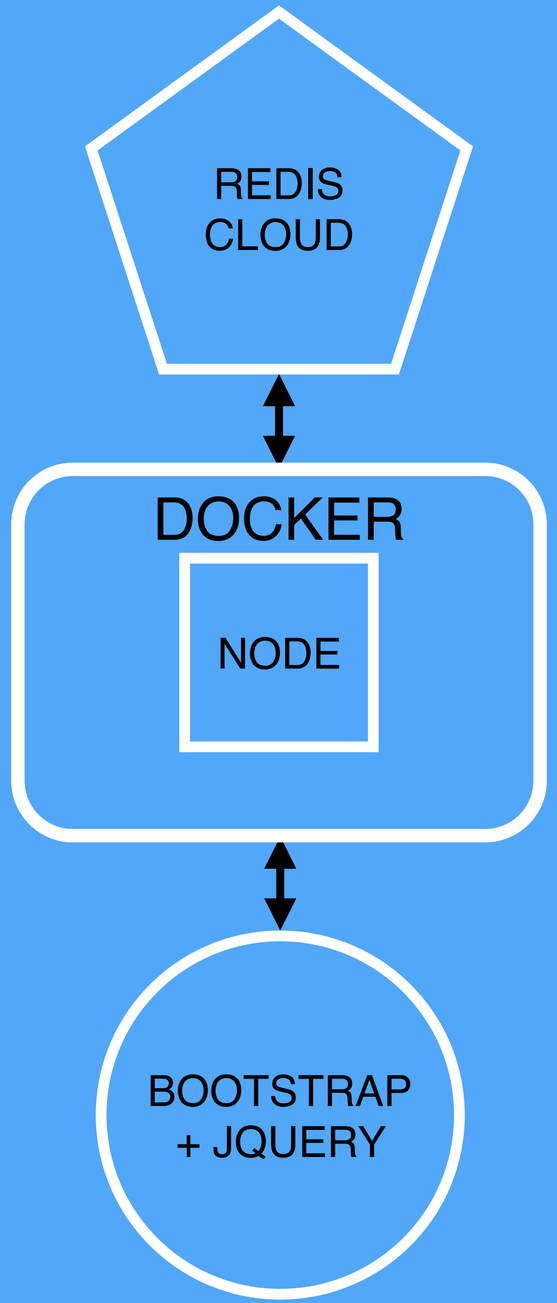

IBM Bluemix™
www.bluemix.net

http://bit.ly/blueqcon

IBM Bluemix™
www.bluemix.net

SOME SETUP REQUIRED

IBM Bluemix™
www.bluemix.net

HOOK UP SHELL TO DOCKER

IBM Bluemix™
www.bluemix.net

```
➜ ~ docker-machine ls
NAME      ACTIVE   DRIVER       STATE     URL                         SWARM
bluechatter           virtualbox   Running   tcp://192.168.99.101:2376
default               virtualbox   Stopped
➜ ~ docker-machine env bluechatter
export DOCKER_TLS_VERIFY="1"
export DOCKER_HOST="tcp://192.168.99.101:2376"
export DOCKER_CERT_PATH="/Users/jkaufman/.docker/machine/machines/bluechatter"
export DOCKER_MACHINE_NAME="bluechatter"
# Run this command to configure your shell:
# eval "$(docker-machine env bluechatter)"
➜ ~ eval "$(docker-machine env bluechatter)"
➜ ~
```

CLI DECISIONS

IBM Bluemix™
www.bluemix.net

	Cloud Foundry Plug-in	ICE (IBM Containers Extension)
Runs native Docker CLI commands	Yes	Local image-development only
Requires Docker and Cloud Foundry CLI	Yes	Yes
Requires Python, Pip, and Setuptools	No	Yes

https://www.ng.bluemix.net/docs/

CLICK “CONTAINERS”
CLICK “SETTING UP THE IBM CONTAINERS CLI”

https://www.ng.bluemix.net/docs/containers/container_cli_ov.html

Setting up the CLI
Type to search

Choosing a CLI

IBM CONTAINERS PLUG-IN

Installing the IBM Containers plug-in

Upgrading the IBM Containers plug-in

Uninstalling the IBM Containers plug-in

IBM CONTAINERS EXTENSION (ICE)

Option 1: Creating a container that runs ICE

Option 2: Installing ICE and its prereqs on your computer

Uninstalling ICE

LOGGING IN TO THE CLI

Setting up the IBM Containers CLI

Last Updated: 10/8/2015

Some container creation and management tasks can be done from the Bluemix™ Dashboard, but for maximum capabilities, you can set up one of the IBM® Containers CLIs.

TUTORIALS AND SAMPLES

ICE interactive tutorial

Choosing a CLI

If you are just getting started with IBM Containers, use the Cloud Foundry plug-in for IBM Containers. With the plug-in, you are required to install fewer prerequisites than ICE, but all of the same functions are available. Plus, you have the ability to run native Docker commands.

If you used ICE in the past, you can continue to use it to manage your containers in Bluemix.

	Cloud Foundry plug-in	ICE
Runs native Docker CLI commands	Yes	Local image development only
Requires Docker and Cloud Foundry CLI	Yes	Yes

I PREFER
CLOUD FOUNDRY
PLUGIN

IBM Bluemix™
www.bluemix.net

cf ic build	docker build
cf ic images	docker images
cf ic inspect	docker inspect
cf ic restart	docker restart
cf ic run	docker run
cf ic start	docker start
cf ic stop	docker stop
cf ic version	docker version

```
➜  bluechatter git:(master) cf ic images
REPOSITORY                                          TAG    IMAGE ID      CREATED       SIZE
registry.ng.bluemix.net/jdkaufma/bluechatter  latest  e0d9661a2c3f  3 days ago   448.1 MB
registry.ng.bluemix.net/ibm-node-strong-pm    latest  ef21e9d1656c  13 days ago  528.7 MB
registry.ng.bluemix.net/ibmliberty            latest  2209a9732f35  13 days ago  492.8 MB
registry.ng.bluemix.net/ibmnode               latest  8f962f6afc9a  13 days ago  429 MB
registry.ng.bluemix.net/ibm-mobilefirst-starter test  97513e56aaa7  13 days ago  769.1 MB
registry.ng.bluemix.net/ibm-mobilefirst-starter  7.1  97513e56aaa7  13 days ago  769.1 MB
➜  bluechatter git:(master)
```

INSTALL IBM CONTAINER CLOUD FOUNDRY CLI PLUGIN

IBM Bluemix™
www.bluemix.net

```
➜ ~ cf install-plugin https://static-ice.ng.bluemix.net/ibm-containers-mac

Attempting to download binary file from internet address...
9086880 bytes downloaded...
Installing plugin /var/folders/h9/00ngb57132bgxqys_jvzpbw40000gn/T/ibm-contain
OK
Plugin IBM-Containers v0.8.723 successfully installed.
➜ ~ cf plugins
Listing Installed Plugins...
OK

Plugin Name      Version   Command Name   Command Help
IBM-Containers   0.8.723   ic             IBM Containers Plugin

➜ ~
```

AUTHENTICATE TO BLUEMIX

IBM Bluemix™
www.bluemix.net

```
➜  bluechatter git:(master) cf login api.ng.bluemix.net
API endpoint: https://api.ng.bluemix.net

Email> jdkaufma@us.ibm.com

Password>
Authenticating...
OK


API endpoint:   https://api.ng.bluemix.net (API version: 2.27.0)
User:           jdkaufma@us.ibm.com
Org:            jdkaufma@us.ibm.com
Space:          dev
```

```
➜  bluechatter git:(master) cf ic login [-a https://api.ng.bluemix.net]
[-H https://containers-api.ng.bluemix.net/v2/containers]
[-R registry.ng.bluemix.net]
** Retrieving client certificates from IBM Containers
** Storing client certificates in /Users/jkaufman/.ice/certs
Successfully retrieved client certificates
➜  bluechatter git:(master)
```

NOT COVERED

IBM Bluemix™
www.bluemix.net

IBM

RESILIENT CONTAINER GROUPS

IBM Bluemix™
www.bluemix.net

bluechatter

My Org

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latest

Copy Image URL

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CREATED DATE

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Select a Cloud Foundry app

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USED	QUOTA
256 MB	2 GB

CREATE

DEPLOYMENT PIPELINES

IBM Bluemix™
www.bluemix.net

Pipeline: All Stages

Build

STAGE PASSED

LAST INPUT Git URL

Last commit by **Jonathan Kaufman** 5 d ago
have demo endpoints reference yesterday...

JOBS View logs and history

Build Succeeded 5 d ago

LAST EXECUTION RESULT

Build 78

Staging

STAGE PASSED

LAST INPUT Stage: **Build** / Job: **Build**

Not yet run

JOBS View logs and history

Group Deploy Succeeded

Test Succeeded

Route Traffic Succeeded

LAST EXECUTION RESULT

Bluecnatter

Build 78

Production

STAGE PASSED

LAST INPUT Stage: **Build** / Job: **Build**

Not yet run

JOBS View logs and history

Deploy Succeeded

Test Succeeded

Results Succeeded

LAST EXECUTION RESULT

Build 78

+ ADD STAGE

MONITORING

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bluechatter-zendcon

Created: 10/16/15, 11:30 AM | **Private IP:** 172.31.0.7 | **Public IP:** 134.168.18.22 | **Ports:** 22 80

Volumes: None | **Image:** jdkaufma/bluechatter:latest

SIZE: Micro

MEMORY
256 MB

STORAGE
16 GB

MEMORY USED

Memory Usage Over Time (MB)

MEMORY USAGE
33.48 MB

Services bound from zendcon-bridge:

Redis Cloud

redis-chatter

30mb

Show Credentials

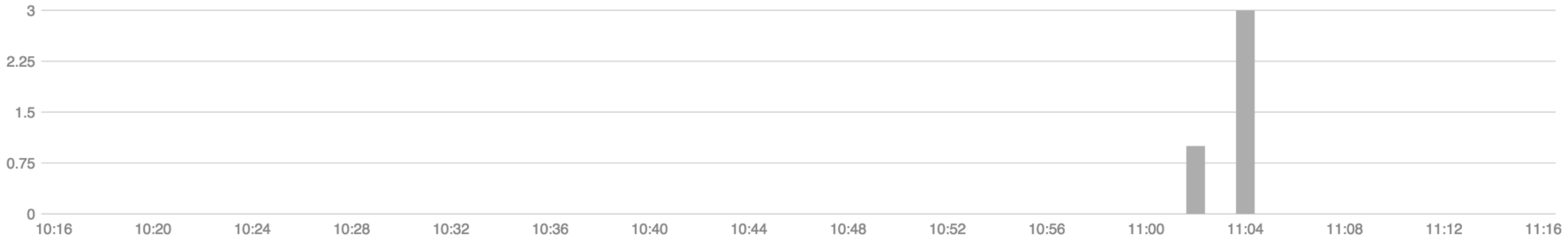
Monitoring | Logging

Last hour | ADVANCED VIEW

Monitoring | Logging

Last hour | ADVANCED VIEW

LOG MESSAGES OVER TIME



Show 10 entries

Date/Time	Machine	Description
10/20/2015 11:02	prod-dal09-vizio2-host-07	{"log":"The app is running in a Docker container on Bluemix so we are sleeping for 90 seconds waiting for the networking to become active.\n","stream":"stdout","time":"2015-10-20T18:02:54.57066508Z"}
10/20/2015 11:04	prod-dal09-vizio2-host-07	{"log":"The publisher redis client has connected!\n","stream":"stdout","time":"2015-10-20T18:04:24.636937614Z"}
10/20/2015 11:04	prod-dal09-vizio2-host-07	{"log":"The subscriber redis client has connected!\n","stream":"stdout","time":"2015-10-20T18:04:24.603274311Z"}
10/20/2015 11:04	prod-dal09-vizio2-host-07	{"log":"Express server listening on port 80\n","stream":"stdout","time":"2015-10-20T18:04:24.565713108Z"}

Showing 1 to 4 of 4 entries

Previous 1 Next

LET'S RECAP

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APP

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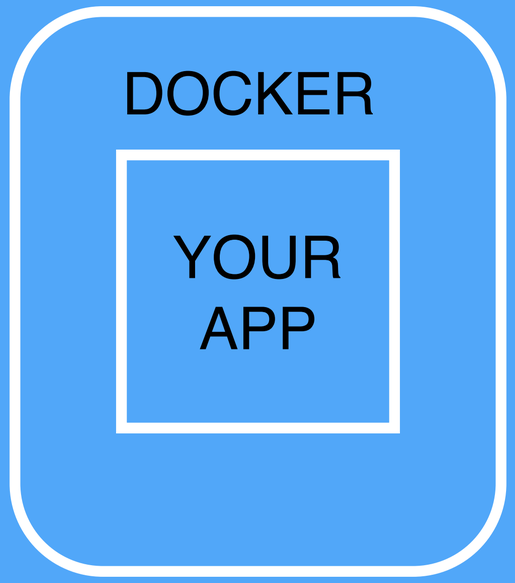
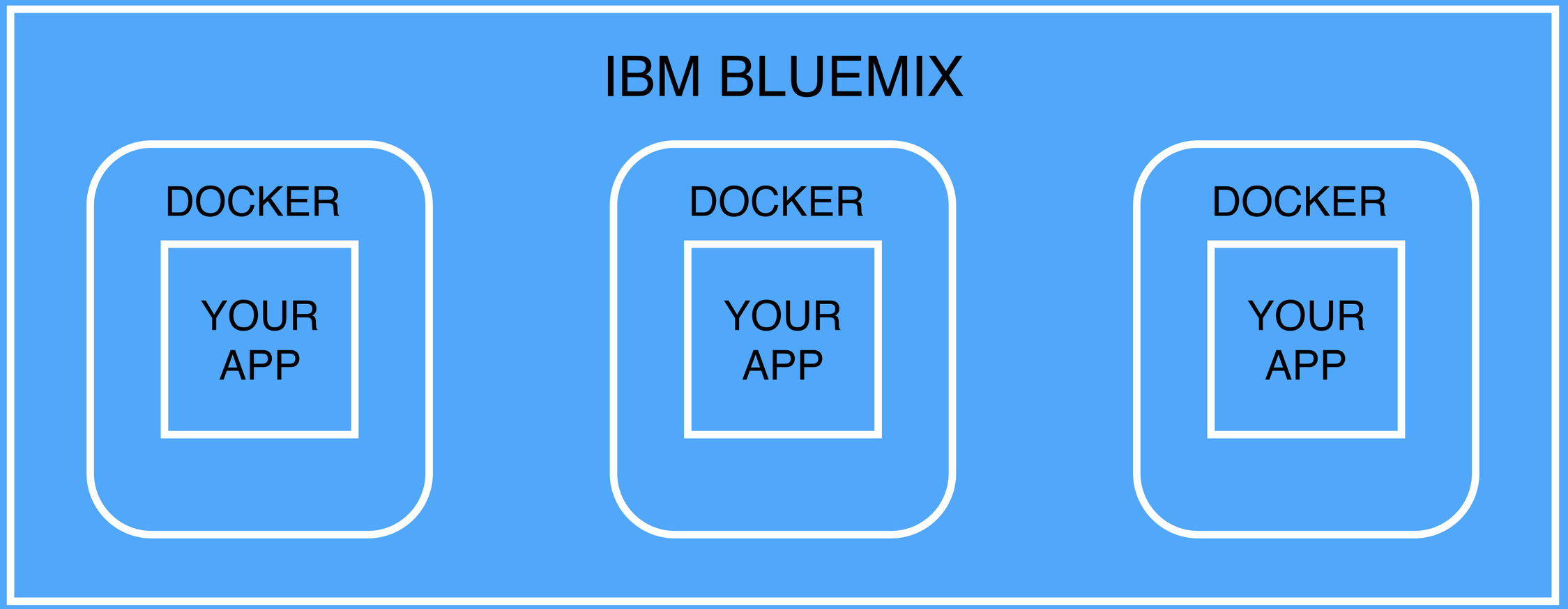

DOCKER
YOUR
APP


DOCKER
YOUR
APP



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RESOURCES

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Docker Toolbox	https://www.docker.com/toolbox
IBM Containers	https://www.ng.bluemix.net/docs/containers/container_index.html
Bluechatter Sample App	https://github.com/IBM-Bluemix/bluechatter

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QUESTIONS

Ryan Baxter - @ryanjbaxter - 11.16.15

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