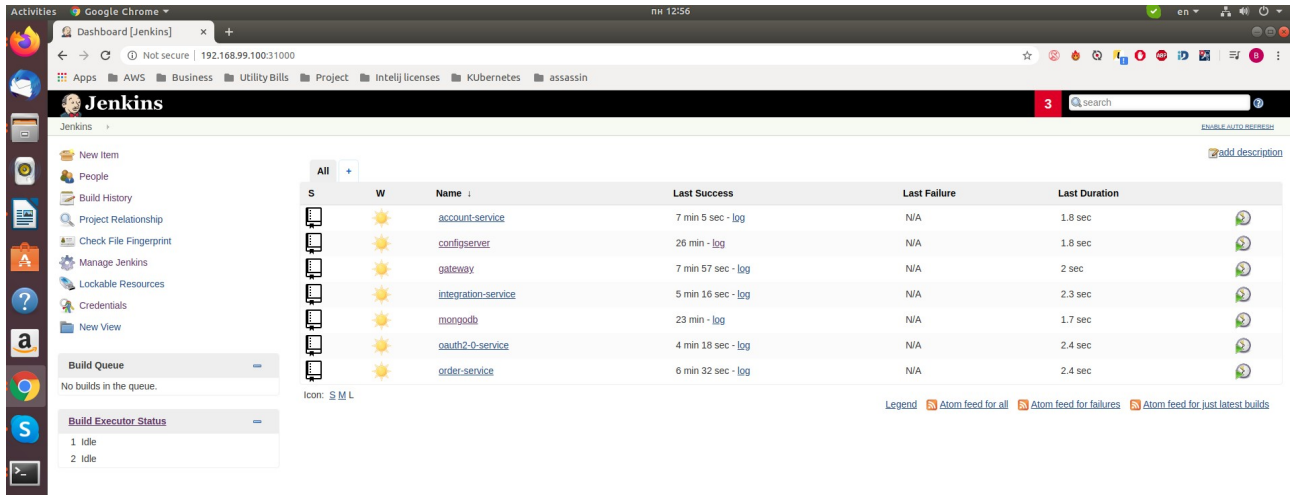
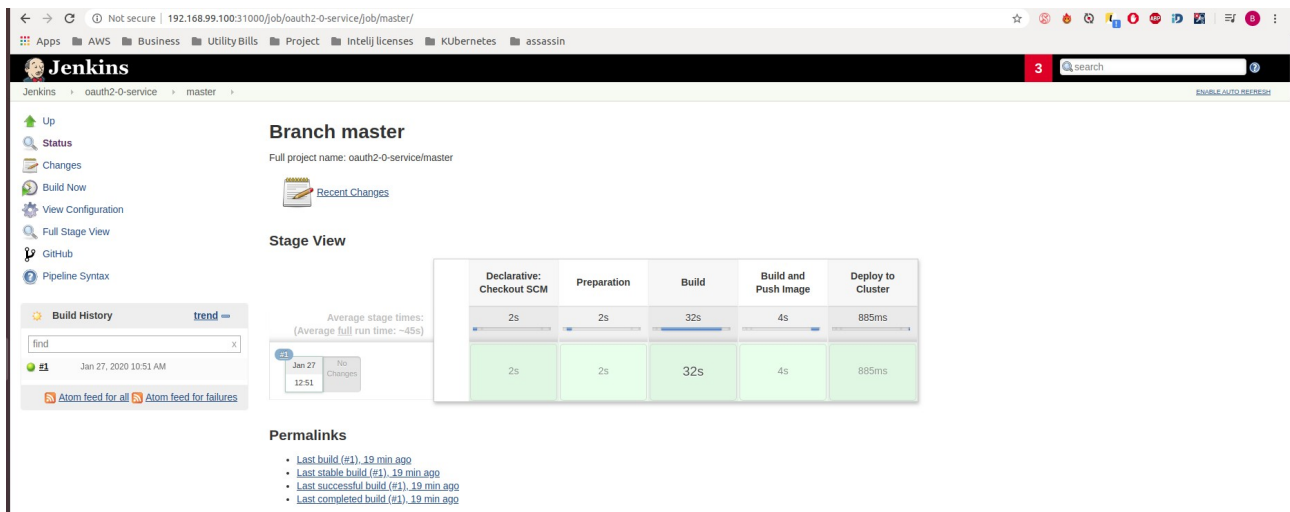


1) Deployed Jenkins as Kubernetes Pod to practice with setting up simple CI/CD platform for my project. All services are deployed successfully on GitHub WebHook on merge to master



The screenshot shows the Jenkins Dashboard in a web browser. The dashboard has a sidebar on the left with navigation links: New Item, People, Build History, Project Relationship, Check File Fingerprint, Manage Jenkins, Lockable Resources, Credentials, and New View. The main area displays a table of builds for the 'oauth2-o-service' project. The table has columns for Status (S), Weather icon (W), Name, Last Success, Last Failure, and Last Duration. There are 7 builds listed, all with a status of 'Success' (S) and a weather icon of a sun. The builds are: account-service, configserver, gateway, integration-service, monopoda, oauth2-o-service, and order-service. The 'Build Queue' section on the left shows 'No builds in the queue.' and the 'Build Executor Status' shows 1 Idle and 2 Idle executors.

S	W	Name	Last Success	Last Failure	Last Duration
S	☀	account-service	7 min 5 sec - log	N/A	1.8 sec
S	☀	configserver	26 min - log	N/A	1.8 sec
S	☀	gateway	7 min 57 sec - log	N/A	2 sec
S	☀	integration-service	5 min 16 sec - log	N/A	2.3 sec
S	☀	monopoda	23 min - log	N/A	1.7 sec
S	☀	oauth2-o-service	4 min 18 sec - log	N/A	2.4 sec
S	☀	order-service	6 min 32 sec - log	N/A	2.4 sec



The screenshot shows the Jenkins 'Branch master' view for the 'oauth2-o-service' project. The page includes a 'Recent Changes' section, a 'Stage View' table, and a 'Build History' section. The 'Stage View' table shows the duration of each stage for the current build (Jan 27, 2020 12:51). The stages are: Declarative: Checkout SCM (2s), Preparation (2s), Build (32s), Build and Push Image (4s), and Deploy to Cluster (885ms). The 'Build History' section shows a list of builds, with the most recent build (Jan 27, 2020 10:51 AM) highlighted.

Declarative: Checkout SCM	Preparation	Build	Build and Push Image	Deploy to Cluster
2s	2s	32s	4s	885ms

Permalinks

- Last build (#1) .19 min ago
- Last stable build (#1) .19 min ago
- Last successful build (#1) .19 min ago
- Last completed build (#1) .19 min ago

2) Here you can see all deployed pods

```
user@sys-009:~/Documents/03. Education/financial-stock-broker-2/jenkins$ kubectl get all
```

NAME	READY	STATUS	RESTARTS	AGE
pod/account-5b5797b599-mmqr	1/1	Running	0	21m
pod/auth-984864b7b-r4x4v	1/1	Running	0	18m
pod/configserver-768cf48485-mqntv	1/1	Running	0	39m
pod/feign-656f4cc9f5-7qf7f	1/1	Running	0	18m
pod/gateway-74754c568d-pvqbz	1/1	Running	2	21m
pod/jenkins-9f877b65c-75jhp	1/1	Running	0	65m
pod/mongodb-7dc4596644-5zx7s	1/1	Running	0	38m
pod/order-6fdfccbf5d-zh1b4	1/1	Running	0	19m

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
service/account	NodePort	10.96.165.133	<none>	8081:31380/TCP	21m
service/auth	NodePort	10.96.59.143	<none>	8084:32540/TCP	18m
service/configserver	NodePort	10.96.153.46	<none>	8888:32251/TCP	39m
service/feign	NodePort	10.96.14.96	<none>	8099:30715/TCP	18m
service/fleetman-mongodb	ClusterIP	10.96.73.215	<none>	27017/TCP	38m
service/gateway	NodePort	10.96.128.130	<none>	5000:31547/TCP	21m
service/jenkins	NodePort	10.96.89.69	<none>	8080:31000/TCP,50000:32370/TCP	65m
service/kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	66m
service/order	NodePort	10.96.196.242	<none>	8092:32457/TCP	19m

NAME	READY	UP-T0-DATE	AVAILABLE	AGE
deployment.apps/account	1/1	1	1	21m
deployment.apps/auth	1/1	1	1	18m
deployment.apps/configserver	1/1	1	1	39m
deployment.apps/feign	1/1	1	1	18m
deployment.apps/gateway	1/1	1	1	21m
deployment.apps/jenkins	1/1	1	1	65m
deployment.apps/mongodb	1/1	1	1	38m
deployment.apps/order	1/1	1	1	19m

NAME	DESIRED	CURRENT	READY	AGE
replicaset.apps/account-5b5797b599	1	1	1	21m
replicaset.apps/auth-984864b7b	1	1	1	18m
replicaset.apps/configserver-768cf48485	1	1	1	39m
replicaset.apps/feign-656f4cc9f5	1	1	1	18m
replicaset.apps/gateway-74754c568d	1	1	1	21m
replicaset.apps/jenkins-9f877b65c	1	1	1	65m
replicaset.apps/mongodb-7dc4596644	1	1	1	38m
replicaset.apps/order-6fdfccbf5d	1	1	1	19m

3) Setup of Kubernetes UI for management of deployment. Example of scaling services

Workloads

Workload Status

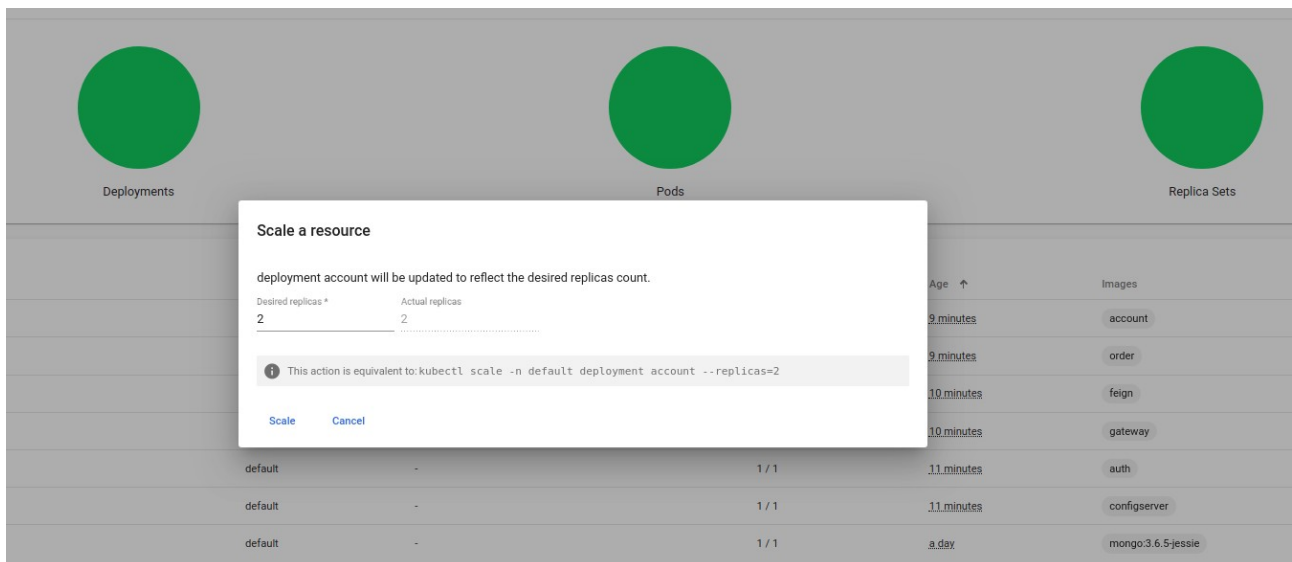
Deployments

Pods

Replica Sets

Name	Namespace	Labels	Pods	Age	Images
account	default	-	1 / 1	6 minutes	account
order	default	-	1 / 1	6 minutes	order
feign	default	-	1 / 1	6 minutes	feign
gateway	default	-	1 / 1	7 minutes	gateway
auth	default	-	1 / 1	7 minutes	auth
configserver	default	-	1 / 1	8 minutes	configserver
mongodb	default	-	1 / 1	a day	mongo:3.6.5-jessie
jenkins	default	-	1 / 1	2 days	myjenkins:latest

1 - 8 of 8 |< < > >|

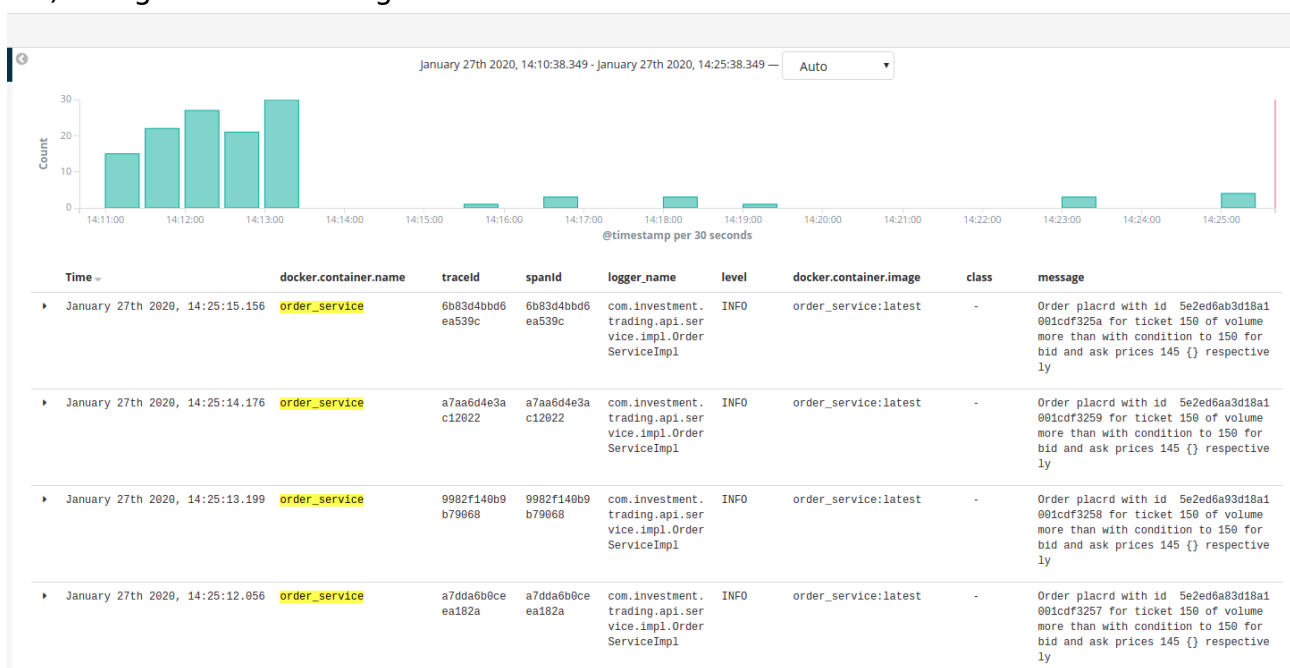


4) We can check if our services have scaled up as expected

Name	Namespace	Labels	Pods	Age	Images
✓ account	default	-	2 / 2	9 minutes	account
✓ order	default	-	3 / 3	9 minutes	order

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
deployment.apps/account	2/2	2	2	43m
deployment.apps/auth	1/1	1	1	41m
deployment.apps/configserver	1/1	1	1	61m
deployment.apps/feign	1/1	1	1	41m
deployment.apps/gateway	1/1	1	1	44m
deployment.apps/jenkins	1/1	1	1	88m
deployment.apps/mongodb	1/1	1	1	61m
deployment.apps/order	3/3	3	3	42m

5) Using ELK to trace logs



5) Kafka Connect with Cassandra setup

Kafka Connect UI: Create New Connector

Search connectors

CassandraSinkConnector

Kafka Connect: /api/kafka-connect-1
Kafka Connect Version: 1.1.0-cp1
Kafka Connect UI Version: 0.9.7

Powered by LANDOOP

Properties:

```
3 connect.cassandra.key.space=mykeyspace
4 topic=quote
5 tasks.max=1
6 connect.cassandra.kql=INSERT INTO cassandra.table_1 SELECT * FROM quote
7 internal.key.converter.schemas.enable=false
8 value.converter.schema.registry.url=http://schema-registry:8081
9 internal.key.converter=io.confluent.connect.avro.AvroConverter
10 key.converter.schemas.enable=false
11 connect.cassandra.contact.points=cassandra
12 connect.cassandra.port=9042
13 internal.value.converter=io.confluent.connect.avro.AvroConverter
14 value.converter.schemas.enable=false
15 value.converter=io.confluent.connect.avro.AvroConverter
16 key.converter.schema.registry.url=http://schema-registry:8081
17 key.converter=io.confluent.connect.avro.AvroConverter
```

CREATE

Kafka Connect: Configuration is valid.
Warning: Config "internal.key.converter.schemas.enable" is unknown
Warning: Config "value.converter.schema.registry.url" is unknown
Warning: Config "internal.key.converter" is unknown
Warning: Config "key.converter.schemas.enable" is unknown
Warning: Config "internal.value.converter" is unknown
Warning: Config "value.converter.schemas.enable" is unknown
Warning: Config "key.converter.schema.registry.url" is unknown

Kafka Connect UI: Dashboard

Search connectors

CassandraSinkConnector

Kafka Connect: /api/kafka-connect-1
Kafka Connect Version: 1.1.0-cp1
Kafka Connect UI Version: 0.9.7

Powered by LANDOOP

Dashboard

EXPORT CONFIG

SINK CONNECTORS: 1

SOURCE CONNECTORS: 0

TOPICS USED BY CONNECTORS: 1

Connect topology

quote

CassandraSinkConnector

6) Data sent to Kafka topic are sent to Cassandra Sink in Kafka as Avro:

```
root@broker:/# kafka-console-consumer --bootstrap-server localhost:9092 --topic quote --from-beginning
g1&2019-12-20 16:00:0MSFT157.5200157.5300157.4000
785507157.2400
g2&2019-12-20 15:59:0MSFT157.4600157.5300157.5250
214735157.4600
g3&2019-12-20 15:58:0MSFT157.4300157.5000157.4650
146344157.4200
g4&2019-12-20 15:57:0MSFT157.4000157.4600157.4400
167296157.3800
g5&2019-12-20 16:00:0MSFT157.5200157.5300157.4000
785507157.2400
g6&2019-12-20 15:59:0MSFT157.4600157.5300157.5250
214735157.4600
g7&2019-12-20 15:58:0MSFT157.4300157.5000157.4650
146344157.4200
g8&2019-12-20 15:57:0MSFT157.4000157.4600157.4400
167296157.3800
g9&2019-12-20 16:00:0MSFT157.5200157.5300157.4000
785507157.2400
```

in Cassandra mirrored through Kafka Connect:

```
cqlsh:mykeyspace> select * from cassandra_table_1;

id | close | date | high | low | open | ticket | volume
-----+-----+-----+-----+-----+-----+-----+-----
(0 rows)
cqlsh:mykeyspace> select * from cassandra_table_1;

id | close | date | high | low | open | ticket | volume
-----+-----+-----+-----+-----+-----+-----+-----
g3 | 157.4650 | 2019-12-20 15:58:00 | 157.5000 | 157.4200 | 157.4300 | MSFT | 146344
g2 | 157.5250 | 2019-12-20 15:59:00 | 157.5300 | 157.4600 | 157.4600 | MSFT | 214735
g10 | 157.5250 | 2019-12-20 15:59:00 | 157.5300 | 157.4600 | 157.4600 | MSFT | 214735
g6 | 157.5250 | 2019-12-20 15:59:00 | 157.5300 | 157.4600 | 157.4600 | MSFT | 214735
g8 | 157.4400 | 2019-12-20 15:57:00 | 157.4600 | 157.3800 | 157.4000 | MSFT | 167296
g7 | 157.4650 | 2019-12-20 15:58:00 | 157.5000 | 157.4200 | 157.4300 | MSFT | 146344
g5 | 157.4000 | 2019-12-20 16:00:00 | 157.5300 | 157.2400 | 157.5200 | MSFT | 785507
g1 | 157.4000 | 2019-12-20 16:00:00 | 157.5300 | 157.2400 | 157.5200 | MSFT | 785507
g4 | 157.4400 | 2019-12-20 15:57:00 | 157.4600 | 157.3800 | 157.4000 | MSFT | 167296
g11 | 157.4650 | 2019-12-20 15:58:00 | 157.5000 | 157.4200 | 157.4300 | MSFT | 146344
g12 | 157.4400 | 2019-12-20 15:57:00 | 157.4600 | 157.3800 | 157.4000 | MSFT | 167296
g9 | 157.4000 | 2019-12-20 16:00:00 | 157.5300 | 157.2400 | 157.5200 | MSFT | 785507
```

Avro schema in Schema Registry Client

POST GET POST POST GET POST GET POST POST POST POST GET GET

No Environment

Untitled Request

GET http://localhost:8081/subjects/quote-value/versions/1 Send Save

Params Authorization Headers (19) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION
Key	Value	Description

Body Cookies Headers (5) Test Results Status: 200 OK Time: 29ms Size: 365 B Save Response

Pretty Raw Preview Visualize BETA JSON

```
1 {
2   "subject": "quote-value",
3   "version": 1,
4   "id": 1,
5   "schema": "{\n  \"type\": \"record\", \"name\": \"Quote\", \"namespace\": \"avro\", \"fields\": [\n    {\n      \"name\": \"id\", \"type\": \"string\", \"order\": 1\n    },\n    {\n      \"name\": \"date\", \"type\": \"string\", \"order\": 2\n    },\n    {\n      \"name\": \"ticket\", \"type\": \"string\", \"order\": 3\n    },\n    {\n      \"name\": \"open\", \"type\": \"string\", \"order\": 4\n    },\n    {\n      \"name\": \"high\", \"type\": \"string\", \"order\": 5\n    },\n    {\n      \"name\": \"close\", \"type\": \"string\", \"order\": 6\n    },\n    {\n      \"name\": \"volume\", \"type\": \"string\", \"order\": 7\n    },\n    {\n      \"name\": \"low\", \"type\": \"string\", \"order\": 8\n    }\n  ]\n}"
6 }
```

7) Zipkin Traces Request:

localhost:9411/zipkin/?serviceName=order&spanName=post+%2Forder&remoteServiceName=all&lookback=900000&startTs=1580139727874&endTs=1580140627874&annotationQuery=&minDuration=&limit=10&sort=... Try Lens UI Go to trace Search

Investigate system behavior Find a trace View Saved Trace Dependencies

Service Name: order

Span Name: post /order

Remote Service Name: all

Lookback: 15 minutes

Annotation Query: For example: http.path=/foo/bar/ and cluster=foo and cache.miss

Duration (µs) >=: Ex: 100ms or 5s

Limit: 10

Sort: Longest First

Find Traces Showing: 2 of 2 Services: order JSON

158.665ms 1 spans order 100% order x1 158.665ms 3 minutes ago

11.804ms 1 spans order 100% order x1 11.804ms 2 minutes ago

← → localhost:9411/zipkin/traces/8953580fb19f0b98

Apps AWS Business Utility Bills Project IntelliJ licenses Kubernetes assassinn

Investigate system behaviorFind a traceView Saved Traces

Duration: 158.665msServices: 1

Expand AllCollapse All

order x1

Services

order

158.665ms : post /order

31.733

126.932ms

Try Lens UIGo to trace

order.post /order: 158.665ms

Services: order

Date Time	Relative Time	Annotation	Address
1/27/2020, 6:11:31 PM		Server Start	172.25.0.14 (order)
1/27/2020, 6:11:31 PM	158.665ms	Server Finish	172.25.0.14 (order)

Key	Value
http.method	POST
http.path	/order
mvc.controller.class	OrderController
mvc.controller.method	create
Client Address	172.25.0.1:44146

Show IDs