

# 一、kafka-zookeeper监控工具

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## 1.1、kafka-eagle概述

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在开发工作中，消费在Kafka集群中消息，数据变化是我们关注的问题，当业务前提不复杂时，我们可以使用Kafka命令提供带有Zookeeper客户端工具的工具，可以轻松完成我们的工作。随着业务的复杂性，增加Group和Topic，那么我们使用Kafka提供命令工具，已经感到无能为力，那么Kafka监控系统目前尤为重要，我们需要观察消费者应用的细节。

监控系统行业有很多优秀的开源监控系统。我们在早期，使用KafkaMonitor和Kafka Manager，但随着业务的快速发展，以及Internet Co的一些具体要求，现有的开源效率监控系统，以及在性能上扩展DEVS的使用，并且一直无法满足。

因此，我们在过去的的时间里，从互联网公司的需求出发，从DEVS开始，使用经验和反馈，结合一些业界的大型开源Kafka消息监控，从一些关于监控，设计和开发的想法开始监控系统现在Kafka集群消息：Kafka Eagle。

## 1.2、环境和安装

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### 1.2.1、环境

#### 1.2.1.1、安装JDK

如果Linux服务器上有JDK环境，则可以忽略此步骤，并安装链接的第二部分。如果没有JDK，请先到Oracle官方网站下载JDK

#### 1.2.1.2、JAVA\_HOME配置

JDK提取可以根据自己的实际情况来提取路径，这里我们解压缩到解压缩 `/usr/java/jdk1.8`，如下图所示：

```
cd /usr/java
tar -zxvf jdk-xxxx.tar.gz
mv jdk-xxxx jdk1.8
...
vi /etc/profile

export JAVA_HOME=/usr/java/jdk1.8
export PATH=$PATH:$JAVA_HOME/bin
```

然后，我们使用它 `. /etc/profile` 来使配置立即生效。

#### 1.2.1.3、检验环境配置

最后，我们 `java -version` 根据以下信息输入：

```
java version "1.8.0_60"  
Java(TM) SE Runtime Environment (build 1.8.0_60-b27)  
Java HotSpot(TM) 64-Bit Server VM (build 25.60-b23, mixed mode)
```

## 1.2.2、安装

### 1.2.2.1、下载安装包

1、下载地址： (<http://download.smartloli.org/>)

```
https://github.com/smartloli/kafka-eagle-bin/archive/v1.2.6.tar.gz
```

2、下载地址： (<https://github.com/smartloli/kafka-eagle>)

### 1.2.2.2、解压

这里我们提取到/data/soft/new目录并解压缩，如下图所示：

```
tar -zxvf kafka-eagle-${version}-bin.tar.gz
```

如果您之前安装了该版本，请删除修改后的版本，并重命名当前版本，如下所示：

```
rm -rf kafka-eagle  
mv kafka-eagle-${version} kafka-eagle
```

### 1.2.2.3、配置Kafka Eagle环境变量

`vi /etc/profile`

```
export KE_HOME=/data/soft/new/kafka-eagle  
export PATH=$PATH:$KE_HOME/bin
```

### 1.2.2.4、配置Kafka Eagle系统配置文件

进入kafka-eagle的安装目录

```
cd ${KE_HOME}/conf
```

## vi system-config.properties

```
# Multi zookeeper&kafka cluster list -- The client connection address of the Zookeeper
cluster is set here
kafka.eagle.zk.cluster.alias=cluster1,cluster2
cluster1.zk.list=tdn1:2181,tdn2:2181,tdn3:2181
cluster2.zk.list=xtn1:2181,xtn2:2181,xtn3:2181

# Zkcli limit -- Zookeeper cluster allows the number of clients to connect to
kafka.zk.limit.size=25

# Kafka Eagle webui port -- WebConsole port access address
kafka.eagle.webui.port=8048

# Kafka offset storage -- Offset stored in a Kafka cluster, if stored in the zookeeper,
you can not use this option
cluster1.kafka.eagle.offset.storage=kafka
cluster2.kafka.eagle.offset.storage=kafka

# Whether the Kafka performance monitoring diagram is enabled
kafka.eagle.metrics.charts=false

# If offset is out of range occurs, enable this property -- Only suitable for kafka sql
kafka.eagle.sql.fix.error=false

# Delete kafka topic token -- Set to delete the topic token, so that administrators can
have the right to delete
kafka.eagle.topic.token=keadmin

# kafka sasl authenticate, current support SASL_PLAINTEXT
kafka.eagle.sasl.enable=false
kafka.eagle.sasl.protocol=SASL_PLAINTEXT
kafka.eagle.sasl.mechanism=PLAIN
kafka.eagle.sasl.client=<kafka_client_jaas.conf file path>

# Default use sqlite to store data
kafka.eagle.driver=org.sqlite.JDBC
# It is important to note that the '/hadoop/kafka-eagle/db' path must exist.
kafka.eagle.url=jdbc:sqlite:/hadoop/kafka-eagle/db/ke.db
kafka.eagle.username=root
kafka.eagle.password=smartloli

# <Optional> set mysql address
#kafka.eagle.driver=com.mysql.jdbc.Driver
#kafka.eagle.url=jdbc:mysql://127.0.0.1:3306/ke?useUnicode=true&characterEncoding=UTF-
8&zeroDateTimeBehavior=convertToNull
#kafka.eagle.username=root
#kafka.eagle.password=smartloli
```

### 1.2.2.5、启动

进入该目录中

```
cd ${KE_HOME}/bin
```

给启动脚本赋值权限并启动，如下所示

```
chmod +x ke.sh  
./ke.sh start
```

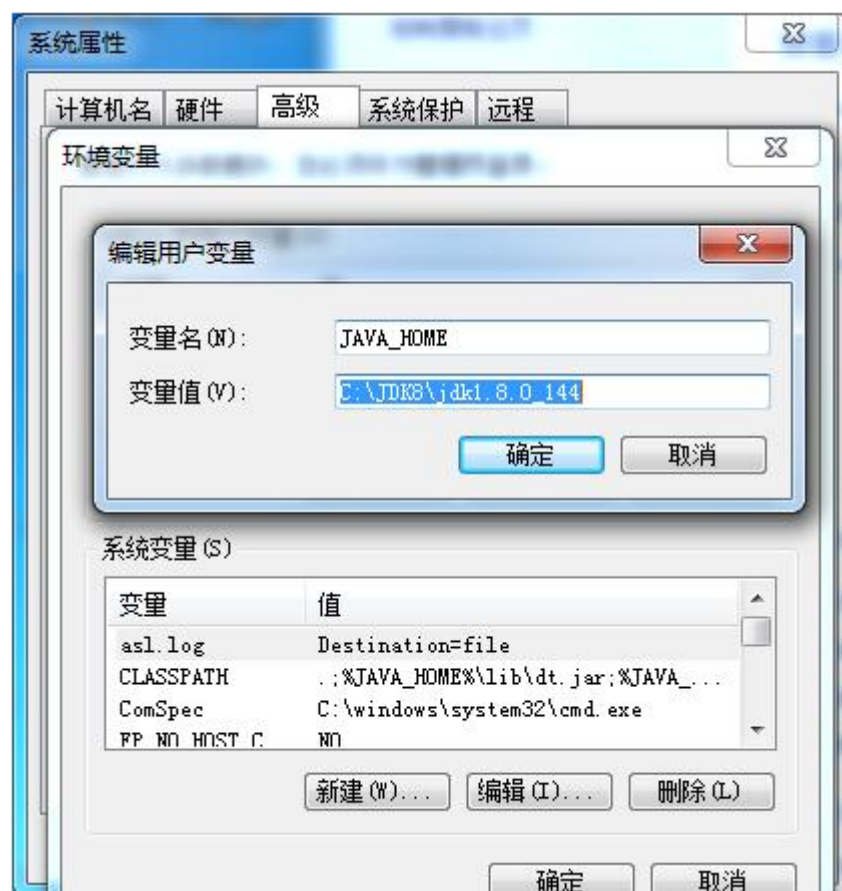
## 1.2.3、在windows上安装

### 1.2.3.1、安装jdk

在window上安装配置jdk，见百度

### 1.2.3.2、JAVA\_HOME配置

具体配置如下图所示：



### 1.2.3.3、检查JDK

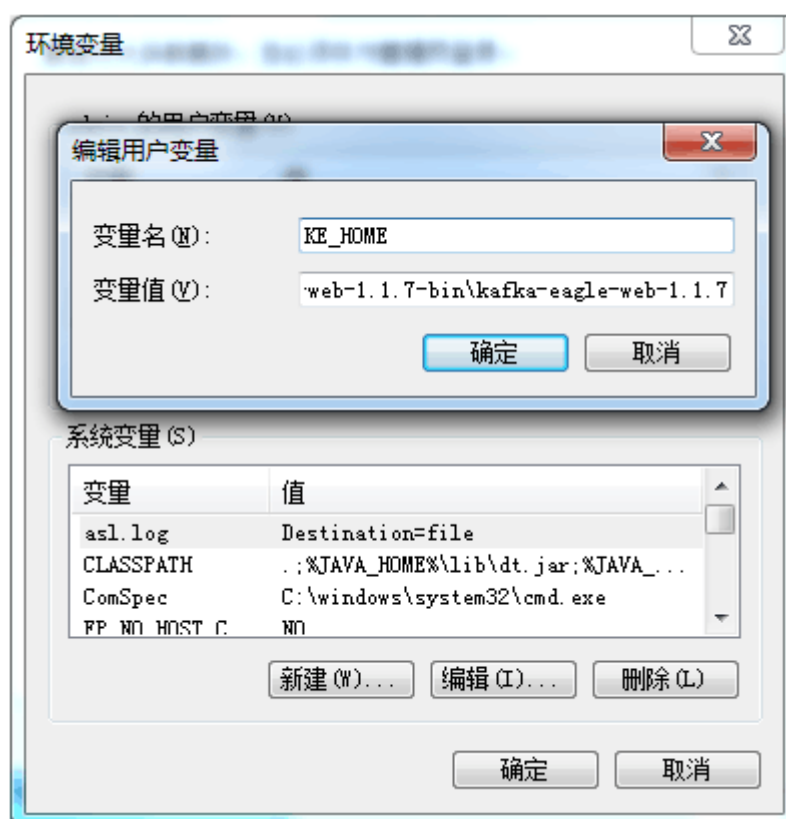
最后，我们 `java -version` 根据以下信息输入：

```
C:\windows\system32\cmd.exe
Microsoft Windows [版本 6.1.7601]
版权所有 (c) 2009 Microsoft Corporation。保留所有权利。

C:\Users\admin>java -version
java version "1.8.0_144"
Java(TM) SE Runtime Environment (build 1.8.0_144-b01)
Java HotSpot(TM) 64-Bit Server VM (build 25.144-b01, mixed mode)
```

### 1.2.3.4、KE\_HOME配置

配置环境变量，如下图所示：



### 1.2.3.5、启动

转到`%KE_HOME%\bin`目录并单击该`ke.bat`文件。

## 1.3、入门使用

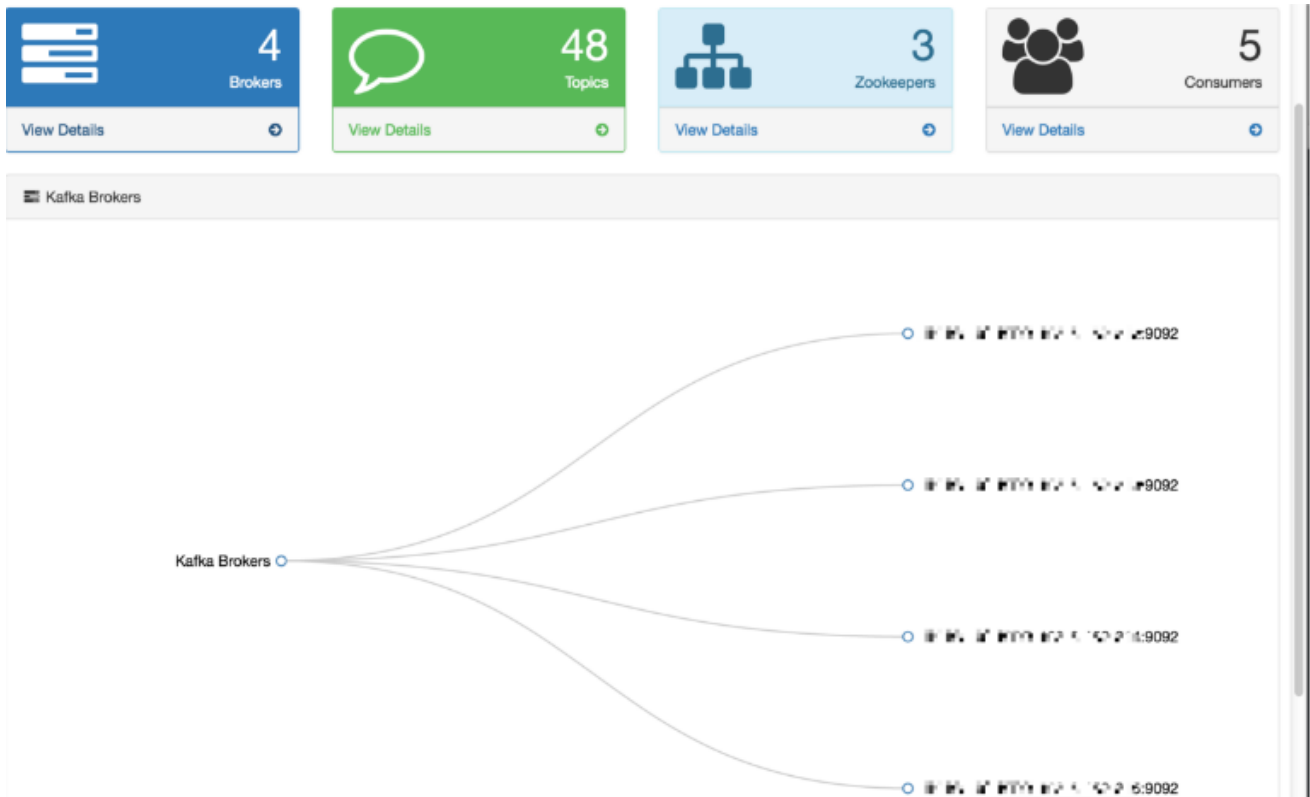
### 1.3.1、DashBoard(仪表盘)

我们 `http://host:port/ke` 通过浏览器进入，访问Kafka Eagle Dashboard页面。该页面包含以下内容：

- Brokers

- Topics
- Zookeepers
- Consumers
- Kafka Brokers Graph

如下图所示：



## 1.3.2、Topic（主题）

当前主题列包含创建和列表，通过创建模块可以创建自定义分区和备份主题的数量。如下图所示：

### 1.3.2.1、创建主题（Topic）

指定了Topic的名字，分区，副本数，点击【create】就可以创建主题，如下图所示

Create a new kafka's topic.

Topic Property

Topic Name (\*)

Made up of letters and digits or underscores . Such as "demo\_kafka\_topic\_1" .

Partitions (\*)

1

Partition parameters must be numeric .

Replication Factor (\*)

1

Replication Factor parameters must be numeric . Pay attention to available brokers must be larger than replication factor .

Create

### 1.3.2.2、主题（Topic）列表

该模块遵循Kafka集群中的所有主题，包括分区数，创建时间和修改主题，如下图所示：

List all topic information.

Topic List Info

ID	Topic Name	Partition Indexes	Partition Numbers	Created	Modify
1	usn...	["19","17","18","15","16","13","14","11","12","21"...	32	2015-08-07 00:57:36	2015-08-07 00:57:36
2	m...	["3","2","1","0","5","4"]	6	2016-04-05 17:15:08	2016-04-05 17:15:08
3	m...	["19","17","18","15","16","13","14","11","12","21"...	32	2016-05-18 11:38:48	2016-05-18 11:38:48
4	p...	["0"]	1	2016-03-08 10:44:16	2016-03-08 10:44:16
5	i...	["19","17","18","15","16","13","14","11","12","21"...	32	2015-08-07 00:57:38	2015-08-07 00:57:38
6	j...	["19","17","18","15","16","13","14","11","12","21"...	32	2015-08-07 00:57:38	2015-08-07 00:57:38
7	s...	["19","17","18","15","16","13","14","11","12","21"...	32	2016-04-05 15:46:44	2016-04-05 15:46:44
8	c...	["19","17","18","15","16","13","14","11","12","21"...	32	2015-08-07 01:33:19	2015-08-07 01:33:19
9	u...	["19","17","18","15","16","13","14","11","12","21"...	32	2015-08-07 00:57:37	2015-08-07 00:57:37
10	s...	["19","17","18","15","16","13","14","11","12","21"...	32	2015-08-07 00:57:35	2015-08-07 00:57:35

Showing 1 to 10 of 48 entries

Previous

1

2

3

4

5

Next

### 1.3.2.3、主题（Topic）详细信息

每个主题对应于一个超链接，则可以查看主题的细节，如：`partition index number`，`Leader`，`Replicas`和`Isr`，如下面的图中：

Topic Meta Info

Topic	Partition	Leader	Replicas	Isr
...	0	213	213	213
...	1	214	214	214
...	2	215	215	215
...	3	212	212	212
...	4	213	213	213
...	5	214	214	214
...	6	215	215	215
...	7	212	212	212
...	8	213	213	213
...	9	214	214	214

Showing 1 to 10 of 32 entries

Previous

1

2

3

4

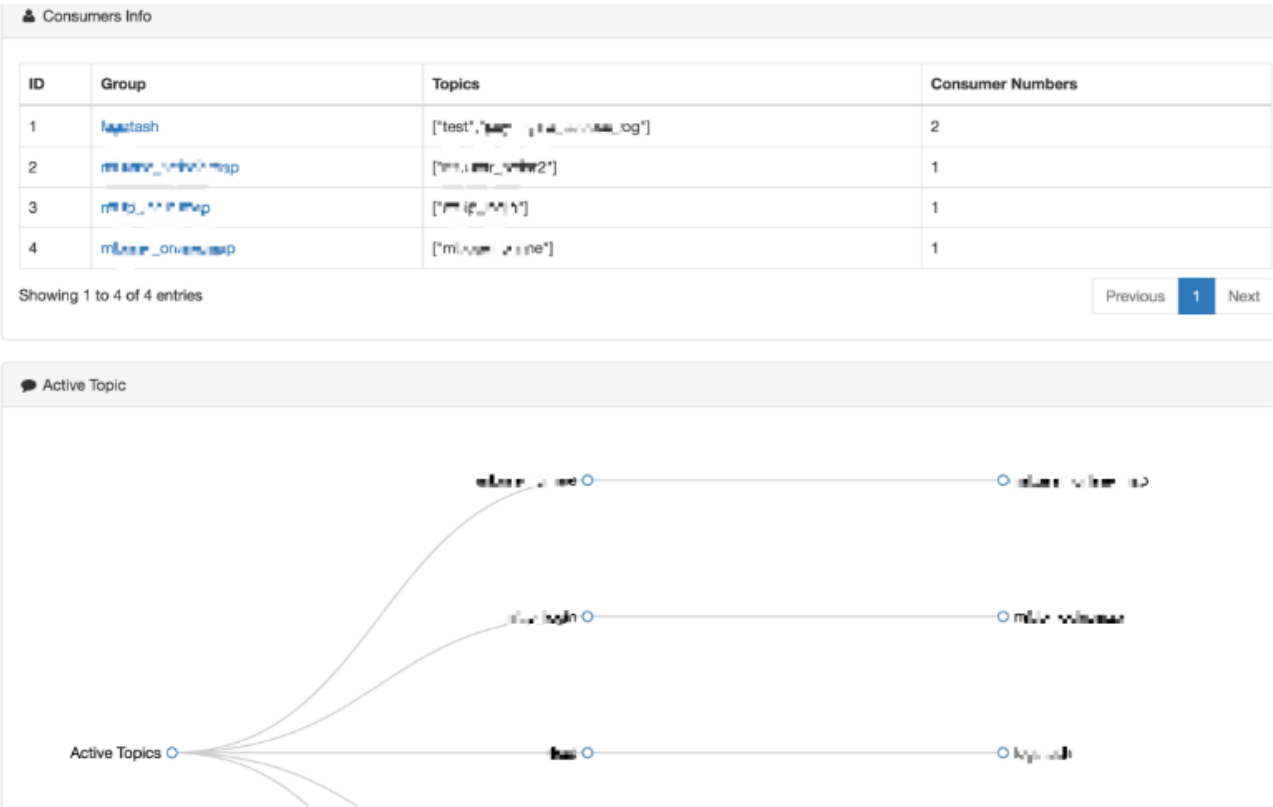
Next

### 1.3.3、消费者 (Consumer)

该模块显示消费者记录的主题信息，其中包含以下内容：

- Running
- Pending
- Active Topic Graph

如下图所示：



每个 `Group` 名称都是超链接，显示消费的详细信息，如下所示：



# Details of the consumer group

Consumer Topic

ID	Topic	Consumering
1	test	Running
2	pay_nginx_access_log	Running

Showing 1 to 2 of 2 entries

Previous 1 Next

## Consumers Offsets details

List the current consumers's offsets of topic.

test

Partition	LogSize	Offset	Lag	Owner	Created	Modify
22	1064	0	0			
23	1100	1100	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32
24	1033	1033	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32
25	1025	1025	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32
26	1070	1070	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32
27	1020	1020	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32
28	33534	33534	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32
29	1023	1023	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-11 15:48:28
30	1060	1060	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:35
31	1056	1056	0	logstash_1@160.160.160.160:9243 [GCP-Subnet-1] / 2016-07-08 14:44:46	2016-07-08 14:44:46	2016-07-08 15:28:32

Showing 1 to 10 of 32 entries

Previous 1 2 3 4 Next

单击 Topic 正在使用的名称，显示主题的消耗和生产率图表，如下所示：



# Cluster Info overview

Cluster information, in the form of tables to demonstrate the Kafka and Zookeeper cluster node IP, port, and its version number If you don't know the usage of Kafka and Zookeeper, you can visit the website of **Kafka** and **Zookeeper** to view the relevant usage.

## Kafka Cluster Info

ID	IP	Port	Created	Modify
1	10.10.10.10	9092	2015-11-10 19:29:10	2015-11-10 19:29:10
2	10.10.10.11	9092	2015-11-11 09:41:02	2015-11-11 09:41:02
3	10.10.10.12	9092	2015-11-20 18:24:15	2015-11-20 18:24:15
4	10.10.10.13	9092	2015-11-10 19:29:09	2015-11-10 19:29:09

## Zookeeper Cluster Info

ID	IP	Port
1	10.10.10.10	2181
2	10.10.10.11	2181
3	10.10.10.12	2181

## 1.3.5、报警

新的报警模块，要注意自己的Topic报警设置。主题时没有消费者信息，超过阈值，报警。目前，报警方式通过消息发出警报，设置如下图所示：

### 1.3.5.1、配置警报

## Alarm add

Create a certain threshold topic, and alarm.

## Topic Setting

### Topic Group (\*)

Type or click here

Select the group you need to alarm .

### Topic Name (\*)

Type or click here

Select the topic you need to alarm .

### Lag Threshold (\*)

1

Setting the blocking threshold, Parameters must be numeric .

### Owner Email (\*)

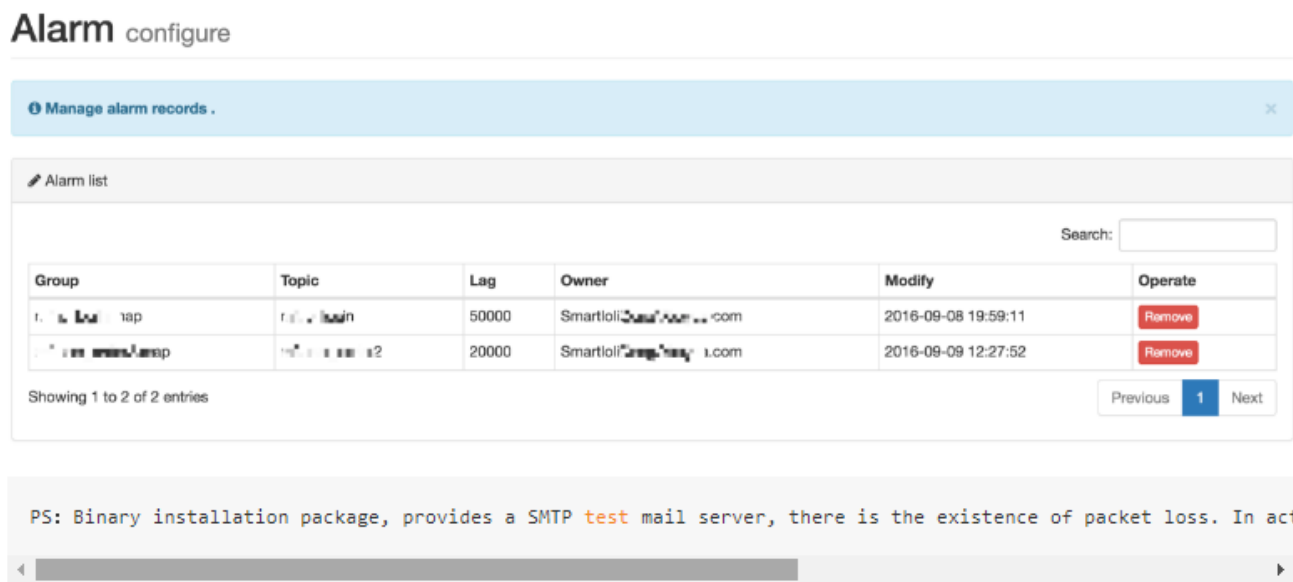
example1@email.com

To whom the alarm topic information, Such as 'example@email.com' .

Add

### 1.3.5.2、报警清单

报警清单主要列出来自己所配置的一些报警清单，用来展示具体配置了哪些清单，如下图所示：



### 1.3.6、脚本命令

ke.sh 启动脚本中包含以下命令：

命令	描述
ke.sh start	启动卡夫卡鹰
ke.sh status	查看Kafka Eagle的运行状态
ke.sh stop	停止卡夫卡鹰
ke.sh restart	重启卡夫卡鹰
ke.sh stats	查看Linux系统中的Kafka Eagle句柄数
ke.sh find [ClassName]	在jar中找到类名的位置

### 1.3.7、Zookeeper客户端

zookeeper客户端命令操作时，目前仅支持 ls , delete , get 命令操作时，命令不支持，如下所示：



使用SQL语句对主题中的新闻数据可视化，对于SQL查询和表名字段需要使用双引号进行标记，示例SQL如下：

```
select * from "ke_test_topic" where "partition" in (0,1,2) limit 100
```

如下图所示：

1.3.9.1、编辑SQL

Topic message

Sample SQL query: `SELECT "partition","offset","msg" FROM "KE_Test_Topic_NAME" WHERE "partition" IN (0,1,2) AND "offsets">=10001 limit 10`

Kafka Query SQL

1

Select "partition","offset","msg" from "mf.ip\_login" where "partition" in (0)

Query

Tasks Job Info

Logs

Result

1

Finished by [0.186s].

1.3.9.2、数据集

Tasks Job Info

Logs

Result

partition	offset	msg
0	39045	{ "_plat": "604", "_uid": "22079", "_tm": "1488164979", "reg": "0", "ip": "114.202.15.214", "country": "泰国", "city": "泰国", "location": [] }
0	39046	{ "_plat": "619", "_uid": "1554", "_tm": "1488165010", "reg": "0", "ip": "114.202.15.215", "country": "埃及", "city": "埃及", "location": [] }
0	39047	{ "_plat": "617", "_uid": "271155", "_tm": "1488165053", "reg": "1", "ip": "114.202.15.213", "country": "台湾", "city": "台湾", "location": [] }
0	39048	{ "_plat": "617", "_uid": "271135", "_tm": "1488165053", "reg": "0", "ip": "114.202.15.211", "country": "台湾", "city": "台湾", "location": [] }
0	39049	{ "_plat": "607", "_uid": "22079", "_tm": "1488165183", "reg": "0", "ip": "114.202.15.214", "country": "中国", "city": "中国", "location": [] }
0	39050	{ "_plat": "613", "_uid": "1554", "_tm": "1488165266", "reg": "0", "ip": "114.202.15.215", "country": "德国", "city": "德国", "location": [] }
0	39051	{ "_plat": "617", "_uid": "271103", "_tm": "1488165309", "reg": "0", "ip": "114.202.15.214", "country": "台湾", "city": "台湾", "location": [] }
0	39052	{ "_plat": "616", "_uid": "271135", "_tm": "1488165636", "reg": "0", "ip": "114.202.15.215", "country": "法国", "city": "法国", "location": [] }
0	39053	{ "_plat": "100", "_uid": "22079", "_tm": "1488165694", "reg": "0", "ip": "114.202.15.214", "country": "台湾", "city": "台湾", "location": [] }
0	39054	{ "_plat": "610", "_uid": "271103", "_tm": "1488165710", "reg": "0", "ip": "114.202.15.215", "country": "越南", "city": "越南", "location": [] }

Showing 1,601 to 1,610 of 1,611 entries

Previous

1

...

158

159

160

161

162

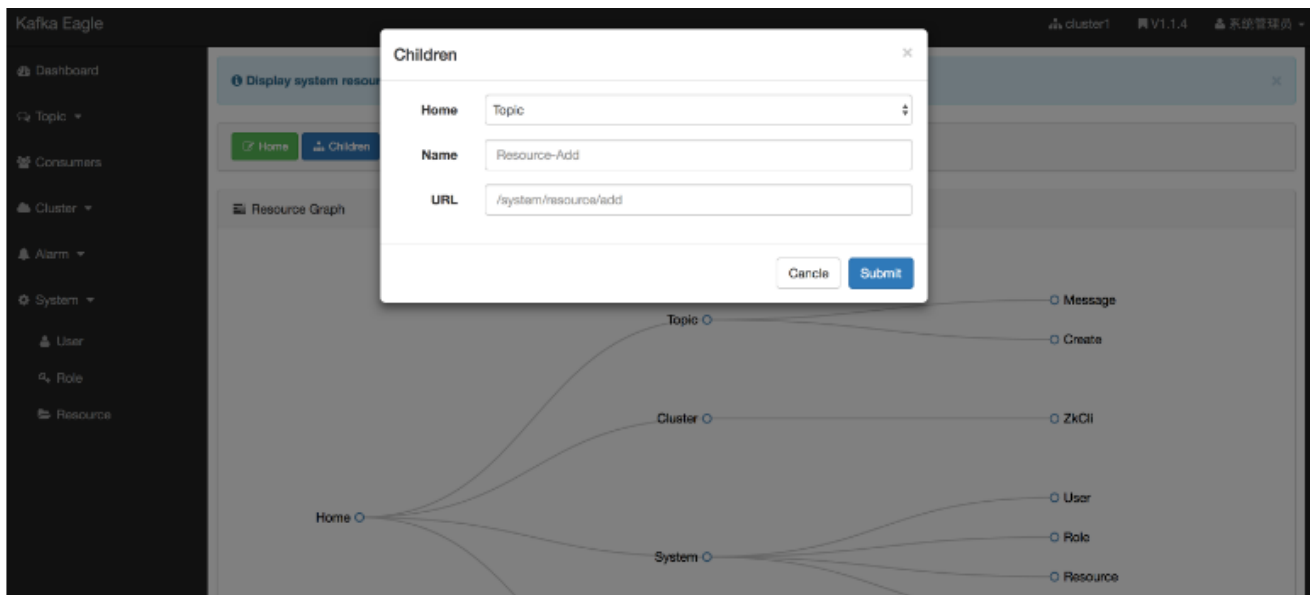
Next

note: Access to topic message data, depending on the underlying interface record of the earliest and latest offset, the default display up to 5000 records.

## 1.3.10、系统 (System)

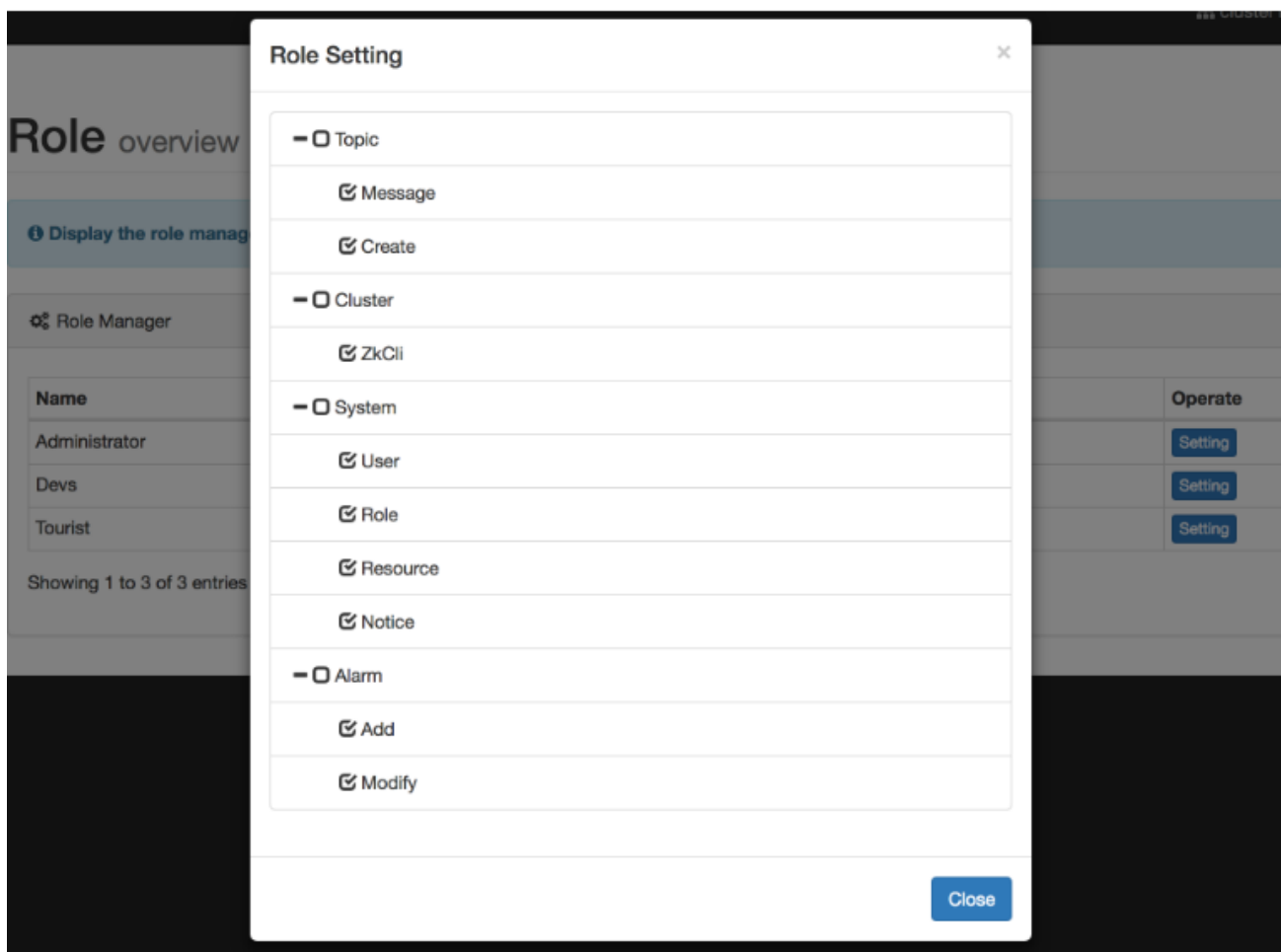
### 1.3.10.1、Resource

控制删除，编辑等操作的权限，并且不控制浏览操作。



### 1.3.10.2、Role

为每个角色分配一个可访问的目录。



### 1.3.10.3、User

添加用户，填写相应的用户信息，单击“提交”，然后填写邮箱将收到相应的登录信息（登录名和密码）。

### Add User

RtxNo

1000

RealName

萝莉

UserName

smartloli

Email

smartloli@email.com

Cancel

Submit



### 1.3.11、Metric (度量)

#### 1.3.11.1、MBean

通过JMX获取数据，监控Kafka客户端，生产端，消息数量，请求数量，处理时间和其他数据，以可视化性能。

Kafka Brokers MBean				
Rate	Mean	1 Minute	5 Minute	15 Minute
Messages in /sec	1.89K	1.68K	1.79K	1.62K
Bytes in /sec	256.42KB	233.16KB	245.79KB	250.79KB
Bytes out /sec	485.08KB	442.64KB	445.28KB	450.10KB
Bytes rejected	0B	0B	0B	0B
Failed fetch request /sec	0	0	0	0
Failed produce request /sec	0	0	0	0

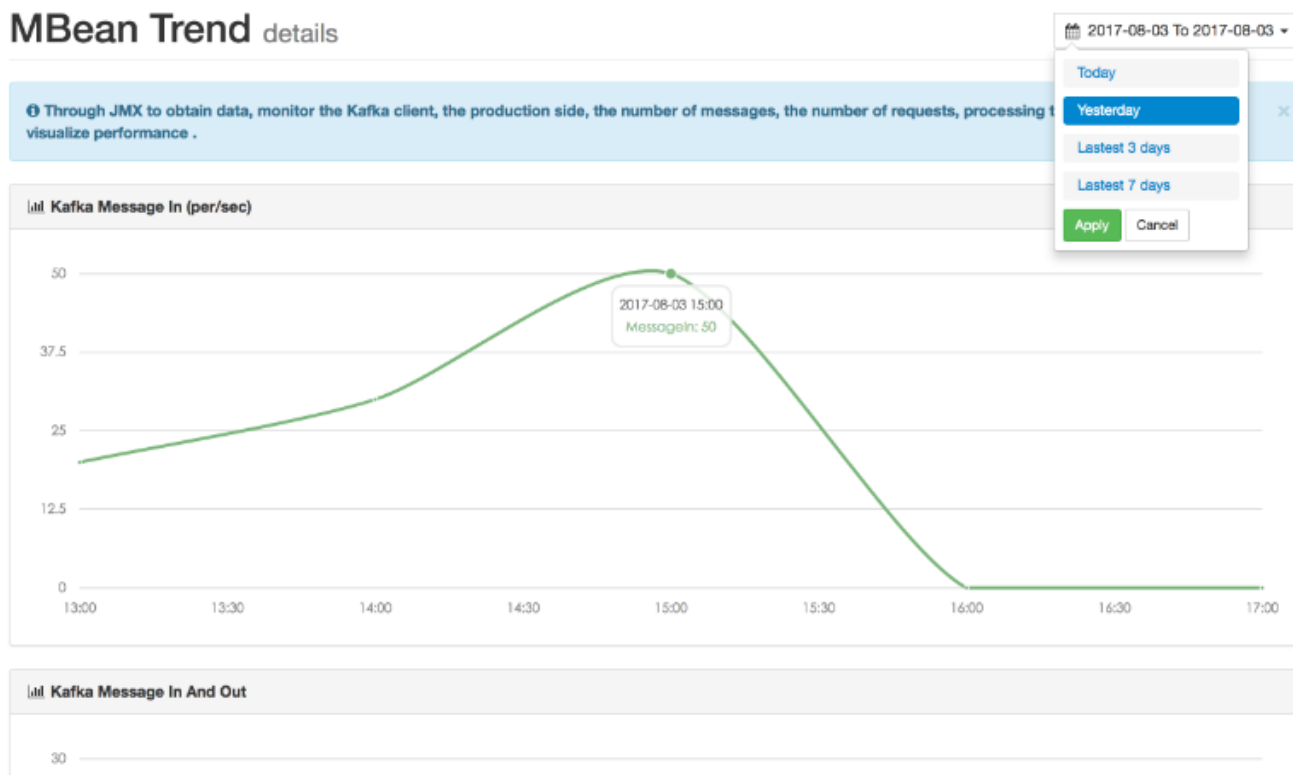
如果您的数据为空，请检查JMX的端口是否已启动。如果您没有启动，可以在开始之前编辑脚本。

```
vi kafka-server-start.sh
...
if [ "x$KAFKA_HEAP_OPTS" = "x" ]; then
    export KAFKA_HEAP_OPTS="-server -Xms2G -Xmx2G -XX:PermSize=128m -XX:+UseG1GC -
    XX:MaxGCPauseMillis=200 -XX:ParallelGCThreads=8 -XX:ConcGCThreads=5 -
    XX:InitiatingHeapOccupancyPercent=70"
    export JMX_PORT="9999"
    #export KAFKA_HEAP_OPTS="-Xmx1G -Xms1G"
fi
```

#### 1.3.11.2、Trend (趋势)

根据不同的维度观察Kafka索引数据。

## MBean Trend details



## 1.4、设计 (Design)

### 1.4.1、DataSet收集器

消息数据源kafkaEagle监测（兼容 `__consumer_offsets` 于 `offset` 从zookeeper）。由于创建，修改或消费Kafka消息将在Zookeeper中注册，我们可以从变更中获取数据，例如：主题，Brokers，分区和组，Kafka在Zookeeper的存储结构中，如下图所示：

