Pivotal

Spring Cloud Netflix Eureka

李刚

目录

Eureka概述

Pivotal

Eureka，古希腊词语。含义为我找到了！ 我发现了！
相传阿基米德发现浮力原理时说出了这个词。

Spring Cloud架构中充当着注册中心的角色

GitHub地址：
https://github.com/Netflix/eureka

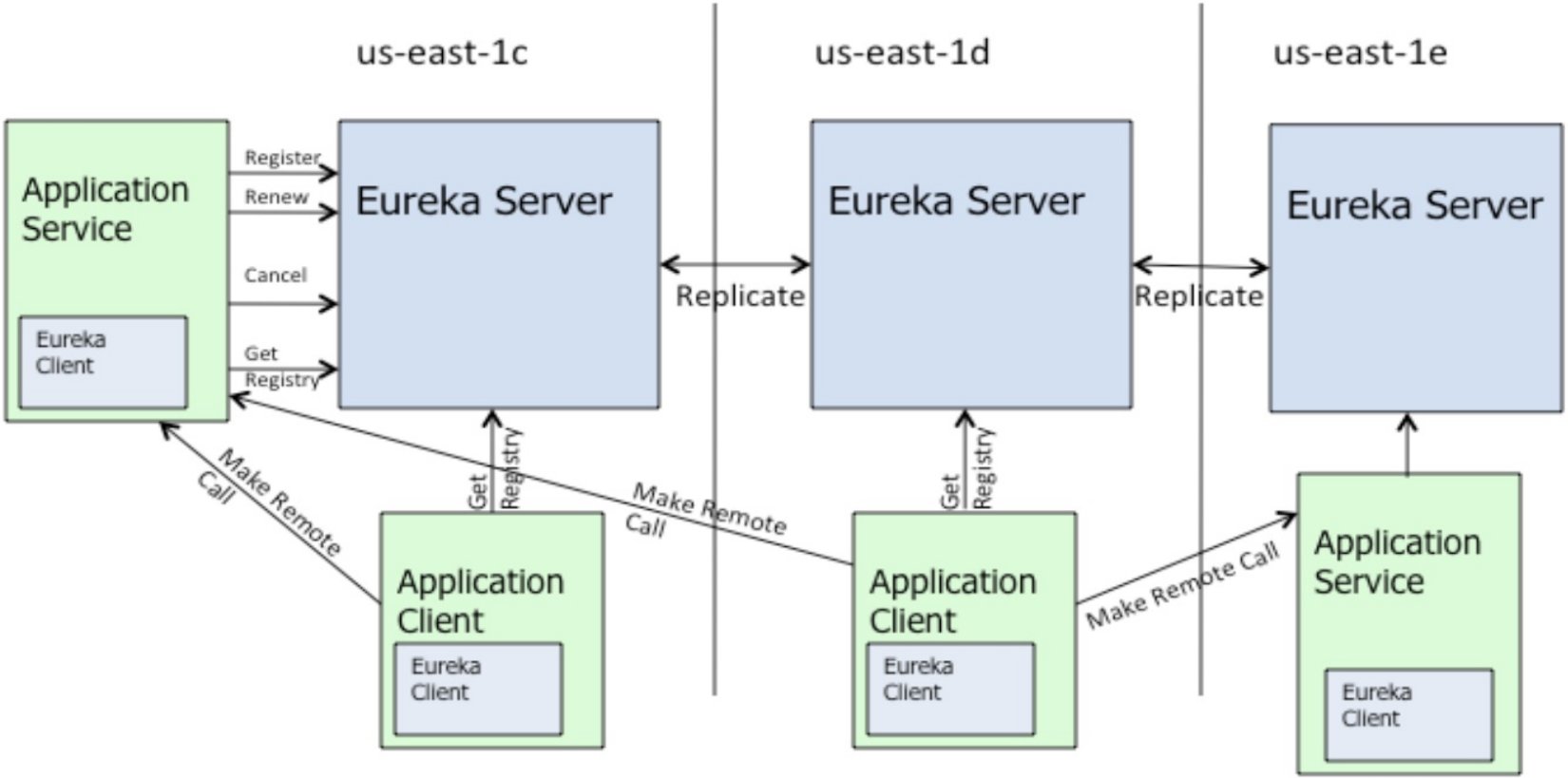
1.9.3 Release 2018年6月26日

1.9.2 Release 2018年6月2日

1.9.1 Release 2018年6月1日

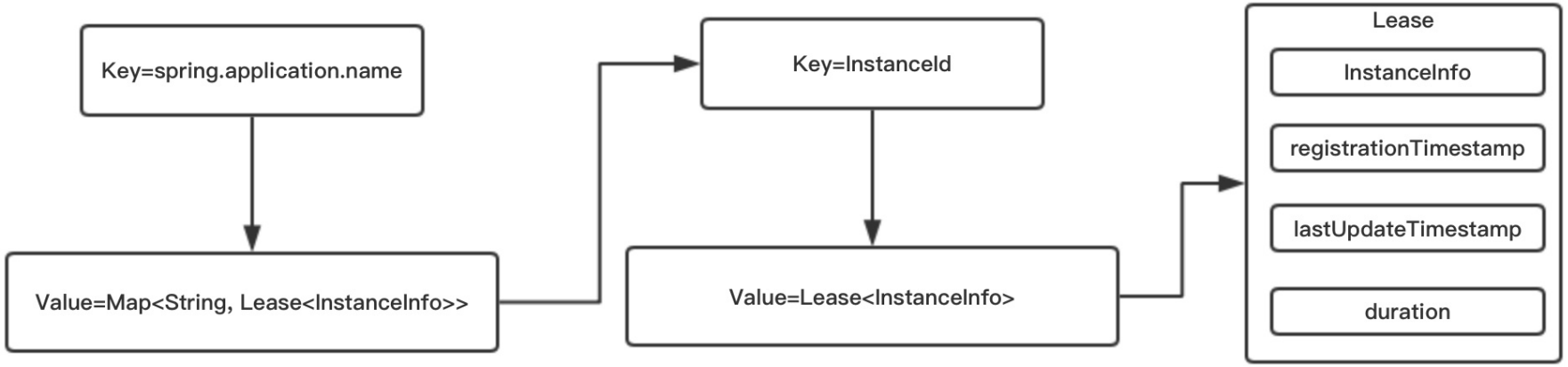
1.9.0 Release 2018年4月26日

1.8.8 Release 2018年4月10日


us-east-1c
us-east-1d
us-east-1e
Application Service
Eureka Client
Register
Renew
Cancel
Get Registry
Eureka Server
Eureka Server
Eureka Server
Replicate
Replicate
Make Remote Call
Get Registry
Application Client
Eureka Client
Make Remote Call
Get Registry
Application Client
Eureka Client
Make Remote Call
Application Service
Eureka Client

数据结构

Pivotal



Eureka Server作为注册中心，保存注册信息的数据结构是双层***MAP***.

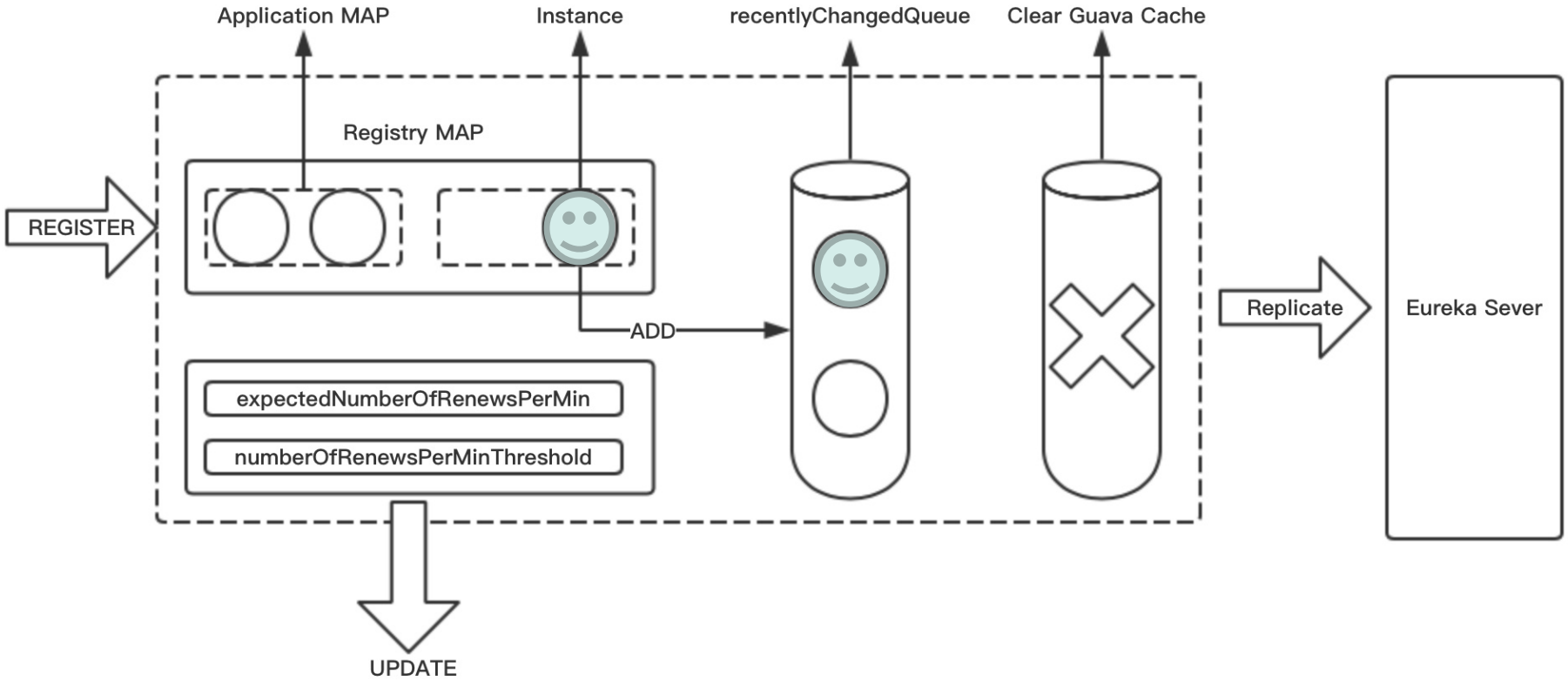
- 第一层***ConcurrentHashMap***：
  key值为***spring.application.name***
  value值为***MAP***

- 第二层***ConcurrentHashMap***:
  key值为***InstanceId***
  value值为***Lease***

```
public Lease(T r, int durationInSecs) {
    holder = r;
    registrationTimestamp = System.currentTimeMillis();
    lastUpdateTimestamp = registrationTimestamp;
    duration = (durationInSecs * 1000);

}
```

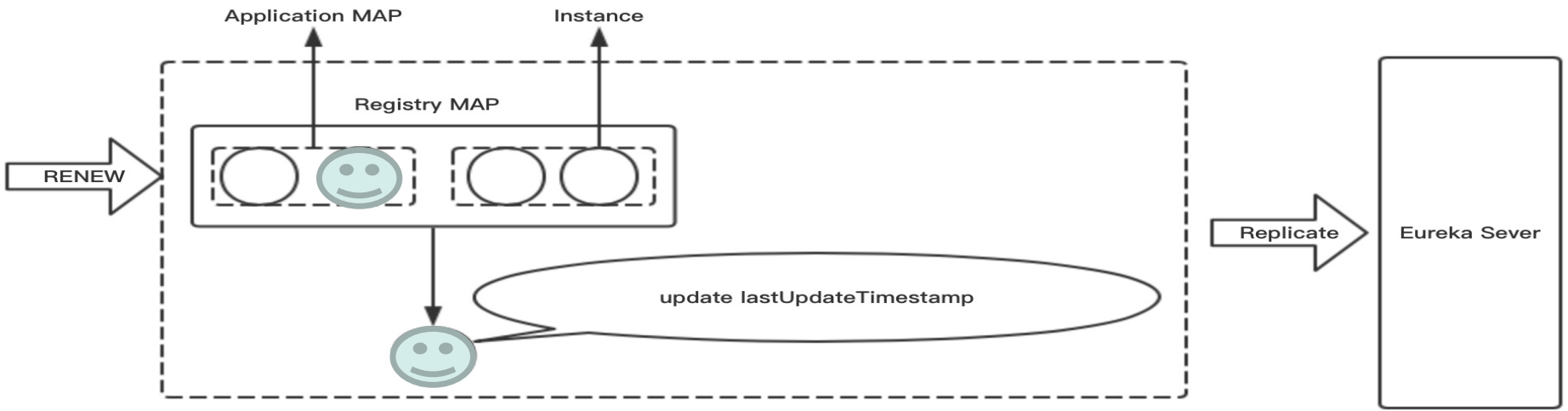
Pivotal



- ❑ 保存注册信息
- ❑ 更新阈值
- ❑ 将新增的实例保存到***Queue***中
- ❑ 清空缓存
- ❑ 复制给其他***Eureka Server***节点

Renew机制

Pivotal



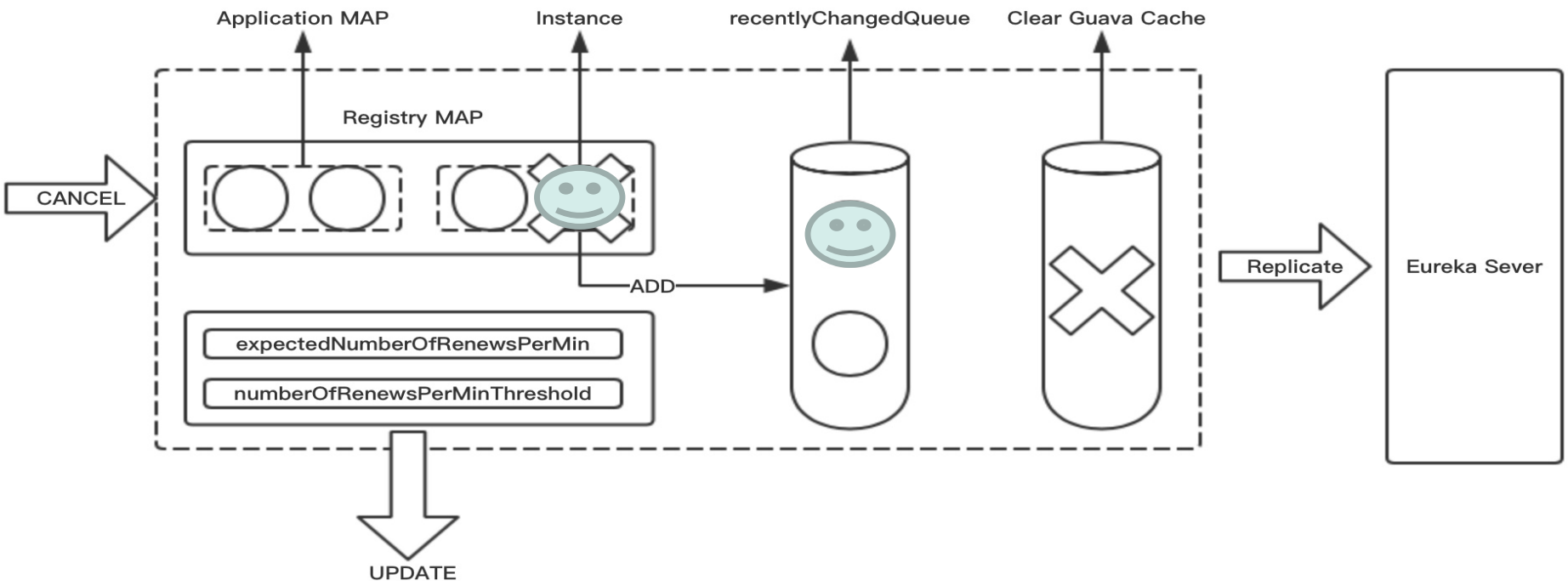
- 找到续约实例
- 更新续约时间
- 复制给其他***Eureka Server***节点

```
Map<String, Lease<InstanceInfo>> gMap = registry.get(appName);
Lease<InstanceInfo> leaseToRenew = gMap.get(id);
renewsLastMin.increment();
leaseToRenew.renew();
```

```
public void renew() {
    lastUpdateTimestamp = System.currentTimeMillis() + duration;

}
```


Cance机制



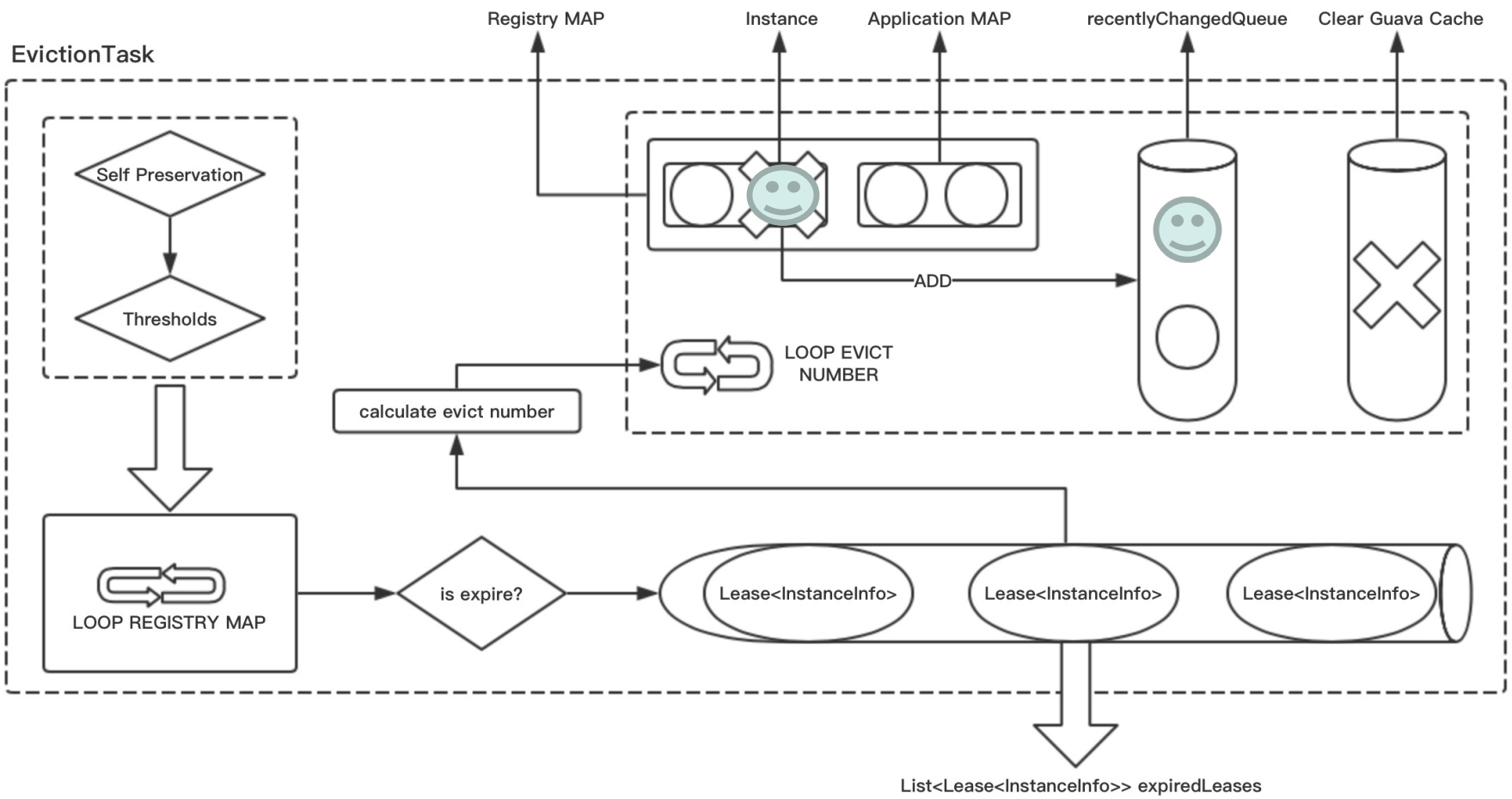
- 删除具体实例
- 将删除的实例保存到***Queue***中
- 清空缓存
- 复制给其他***Eureka Server***节点
- 更新属性

```
try {
    read.lock();
    Map<String, Lease<InstanceInfo>> gMap = registry.get(appName);
    Lease<InstanceInfo> leaseToCancel = gMap.remove(id);
    leaseToCancel.cancel();
    InstanceInfo instanceInfo = leaseToCancel.getHolder();
    if (instanceInfo != null) {
        instanceInfo.setActionType(ActionType.DELETED);
        recentlyChangedQueue.add(new RecentlyChangedItem(leaseToCancel));
    }

} finally {
    read.unlock();
}
```

Evict机制

Pivotal


Registry MAP
Instance
Application MAP
recentlyChangedQueue
Clear Guava Cache
EvictionTask
Self Preservation
Thresholds
ADD
LOOP EVICT NUMBER
calculate evict number
LOOP REGISTRY MAP
is expire?
Lease<InstanceInfo>
Lease<InstanceInfo>
Lease<InstanceInfo>
List<Lease<InstanceInfo>> expiredLeases

Eureka Server缓存机制

Pivotal

com.netflix.eureka.registry.ResponseCacheImpl

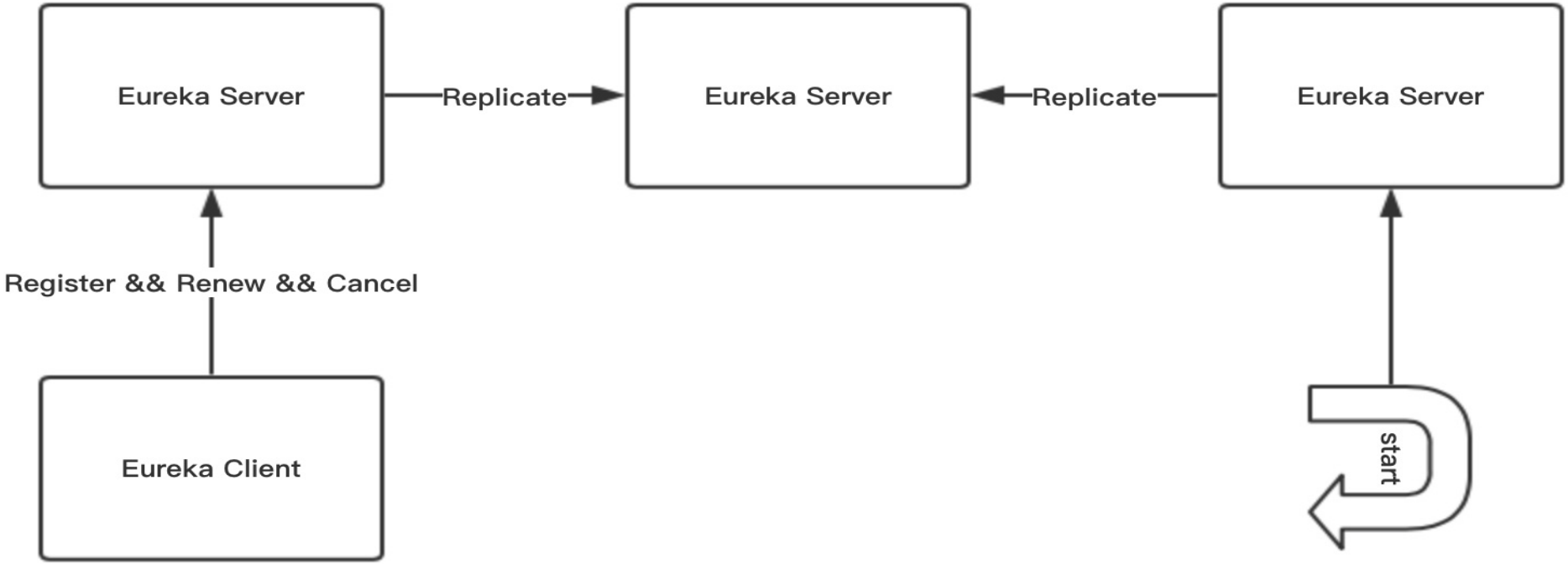
Eureka Server内置两层缓存

- ***readOnlyCacheMap***本质***MAP***,无过期时间
- ***readWriteCacheMap***本质***Guava***缓存，存在过期时间
- 通过参数可决定是否启用***MAP***缓存

```
if (shouldUseReadOnlyResponseCache) {
    timer.schedule(getCacheUpdateTask(),
            new Date(((System.currentTimeMillis() / responseCacheUpdateIntervalMs) * responseCacheUpdateIntervalMs)
                    + responseCacheUpdateIntervalMs),
            responseCacheUpdateIntervalMs);
}
```

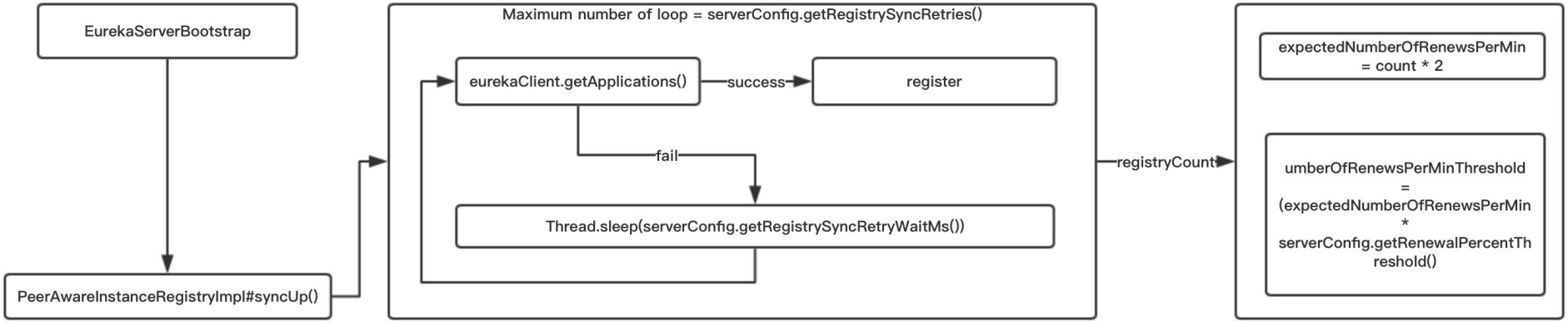
*Eureka Server*节点复制机制

Pivotal



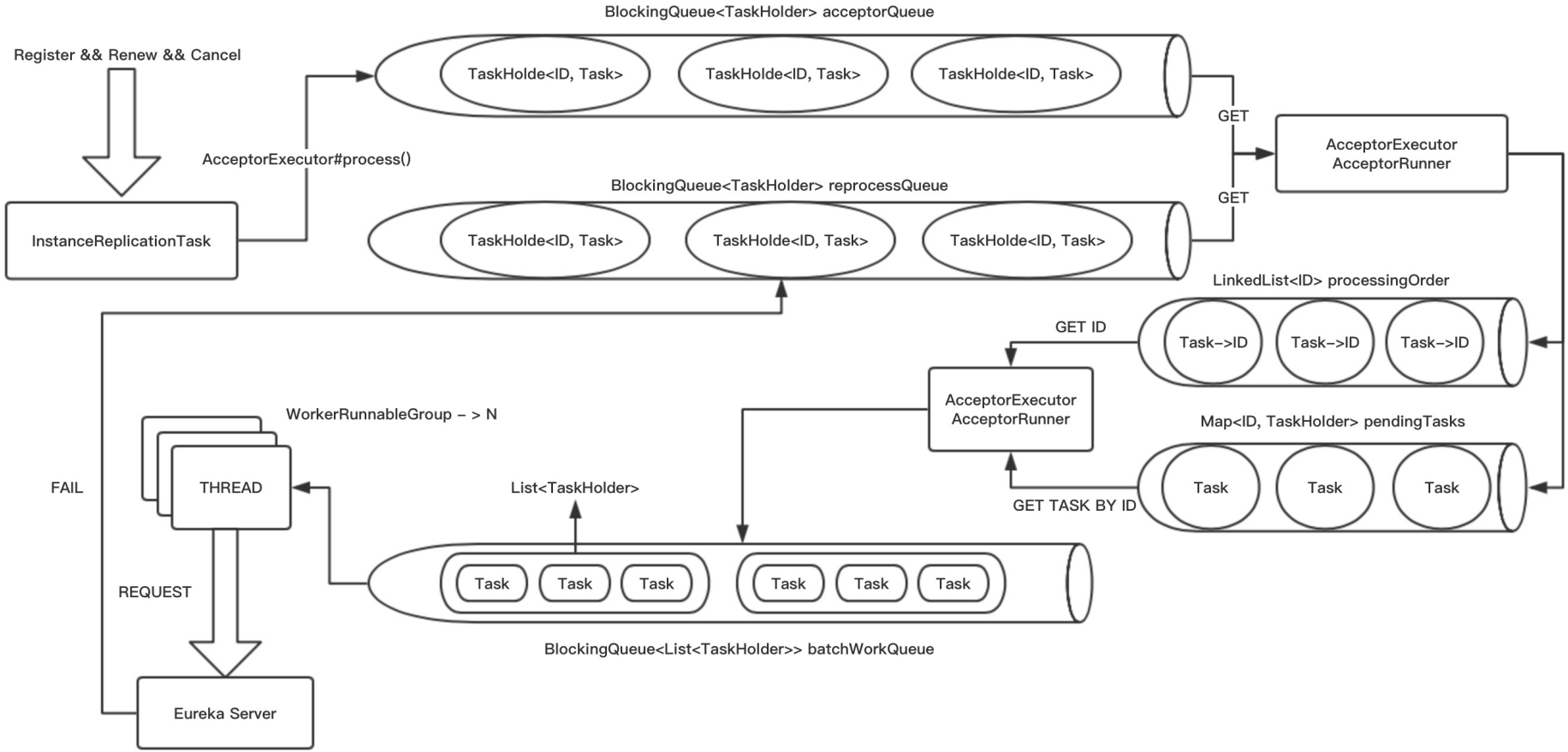
- ***Eureka Server***启动时从相邻节点同步已有注册信息
- ***Eureka Server***接收***register***、***renew***、***cancel***事件时会将此信息同步给相邻节点

*Eureka Server*启动时从相邻节点同步已有注册信息



- 循环次数
  serverConfig.getRegistrySynRetries()
- 循环间隔
  serverConfig.ferRegistrySyncRetryWaitMs()
- 更新阈值
  expectedNumberOfRenewsPerMin = registerConut * 2
  numberOfRenewsPerMinThreshold = expectedNumberOfRenewsPerMin * config
  config = config.getRenewalPercentThreshold()

向相邻*Eureka Server*节点同步*register*、*renew*、*cancel*事件



Pivotal

Eureka Client获取注册信息

Pivotal


```
@Override
public boolean shouldDisableDelta() {
    return configInstance.getBooleanProperty(
            propName: namespace + "disableDelta",
            defaultValue: false)
            .get();
}
```

全量

- 首次
- 增量同步失败，获取全量
- 开启增量与全量差异的日志信息

```
@Override
public boolean shouldLogDeltaDiff() {
    return configInstance.getBooleanProperty(
            propName: namespace + SHOULD_LOG_DELTA_DIFF_KEY,
            defaultValue: false)
            .get();
}
```

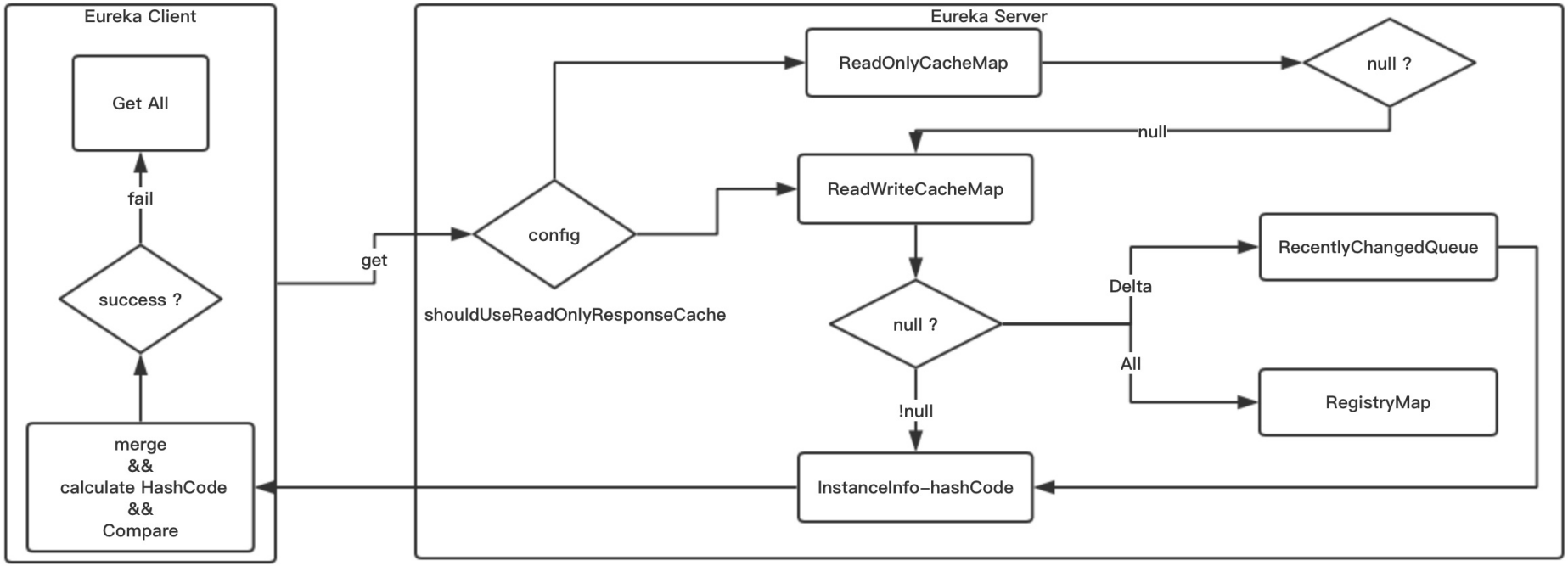
增量

- 通过参数限制，是否开启增量模式

缓存

- 缓存获取数据的逻辑

```
Value payload = null;
try {
    if (useReadOnlyCache) {
        final Value currentPayload = readOnlyCacheMap.get(key);
        if (currentPayload != null) {
            payload = currentPayload;
        } else {
            payload = readWriteCacheMap.get(key);
            readOnlyCacheMap.put(key, payload);
        }
    } else {
        payload = readWriteCacheMap.get(key);
    }
} catch (Throwable t) {
    logger.error("Cannot get value for key : {}", key, t);
}
return payload;
```


Eureka Client
Get All
fail
success ?
merge
&&
calculate HashCode
&&
Compare
get
Eureka Server
config
shouldUseReadOnlyResponseCache
ReadOnlyCacheMap
null ?
null
ReadWriteCacheMap
null ?
!null
Delta
All
RecentlyChangedQueue
RegistryMap
InstanceInfo-hashCode

THANK YOU!

Q&A

Transforming How The World Builds Software