

开源项目：Apollo

简介

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- 随着程序功能的日益复杂，程序的配置日益增多：各种功能的开关、参数的配置、服务器的地址等。
- 对程序配置的期望值也越来越高：配置修改后实时生效，分环境、分集群管理配置，完善的权限、审核机制等
- 在这样的大环境下，传统的通过配置文件、数据库等方式已经越来越无法满足开发人员对配置管理的需求。

简介

Apollo（阿波罗）是携程框架部门研发的配置管理平台，能够集中化管理应用不同环境、不同集群的配置，配置修改后能够实时推送到应用端，并且具备规范的权限、流程治理等特性。

服务端基于Spring Boot和Spring Cloud开发，打包后可以直接运行，不需要额外安装Tomcat等应用容器。

Java客户端不依赖任何框架，能够运行于所有Java运行时环境，同时对Spring环境也有较好的支持。.Net客户端不依赖任何框架，能够运行于所有.Net运行时环境。

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部署

环境准备

Java

Java1.8以上。

```
Error: A fatal exception has occurred. Program will exit.  
C:\Users\zcy>java -version  
openjdk version "15.0.2" 2021-01-19  
OpenJDK Runtime Environment (build 15.0.2+7-27)  
OpenJDK 64-Bit Server VM (build 15.0.2+7-27, mixed mode, sharing)  
C:\Users\zcy>
```

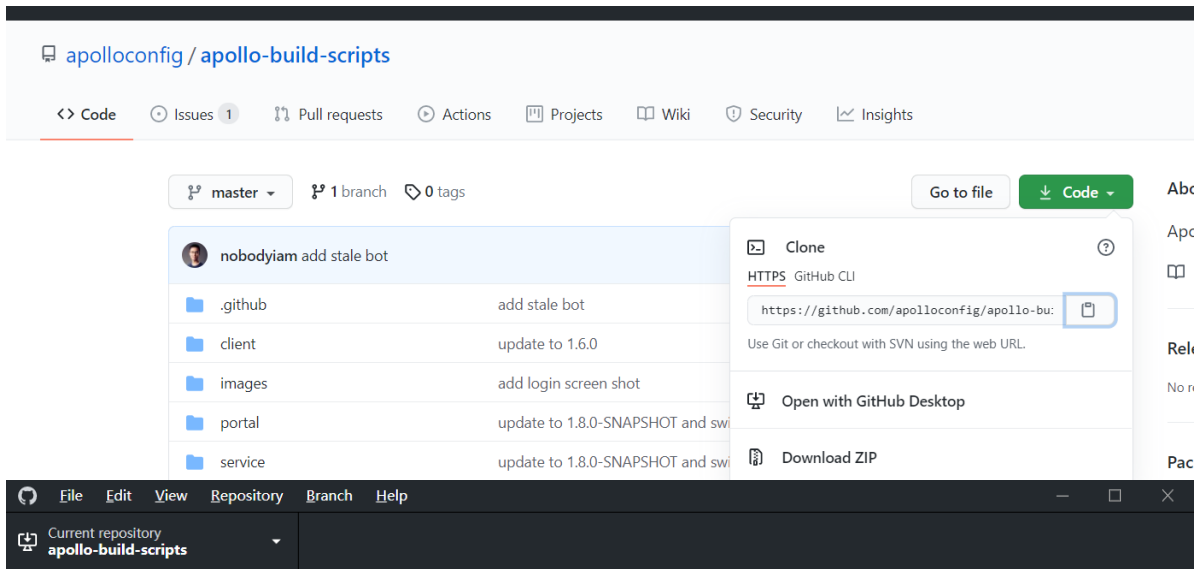
mysql

5.6以上

```
C:\Users\zcy>mysql -u root -p  
Enter password: ****  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 2  
Server version: 5.7.32-log MySQL Community Server (GPL)  
Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

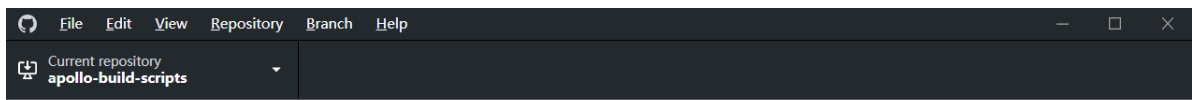
Apollo-quick-start 下载

仓库下载



Cloning apollo-build-scripts

Cloning into 'E:\MyJavaProject\apolloquickstart\apollo-build-scripts'...



Cloning apollo-build-scripts

Receiving objects: 25% (81/316), 252.01 KiB | 38.00 KiB/s

创建数据库

创建ApolloPortalDB

新建数据库

常规

SQL 预览

数据库名:

apolloconfigdb

字符集:

utf8mb4

排序规则:

utf8mb4_unicode_ci

确定

取消



创建ApolloConfigDB

新建数据库

×

常规

SQL 预览

数据库名:

apolloportaldb

字符集:

utf8mb4

▼

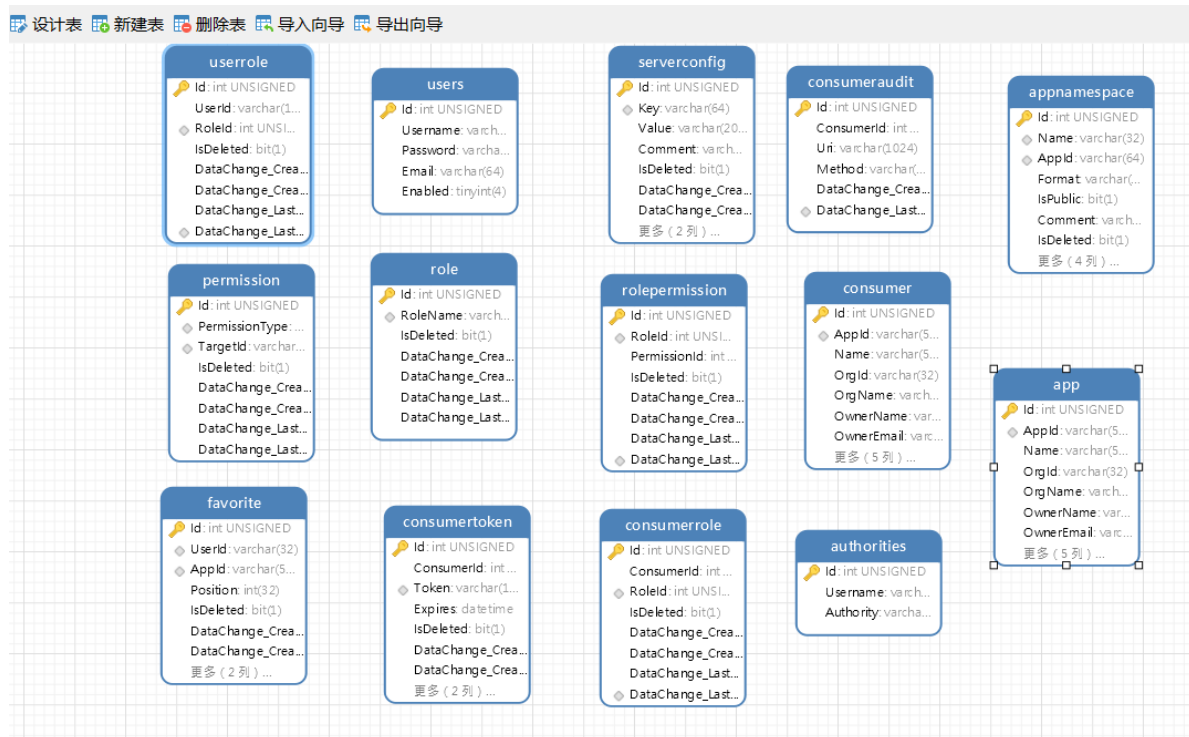
排序规则:

utf8mb4_unicode_ci

▼

确定

取消



启动Apollo配置中心

确定端口未占用

Quick Start脚本会在本地启动3个服务，分别使用8070, 8080, 8090端口，请确保这3个端口当前没有被使用。

```
C:\Users\zcy>
C:\Users\zcy>netstat -aon|findstr "8080"

C:\Users\zcy>netstat -aon|findstr "8070"

C:\Users\zcy>netstat -aon|findstr "8090"
```

3个端口均为占用

执行./sh文件，发现不能执行sh文件

处理方法：

- 在windows下想要执行shell脚本，需要使用到"Git Bash"，所以我们需要先安装Git。
- 配置Git环境变量

但是最终启动失败

```
zcy@DESKTOP-0F11RIE MINGW64 /e/MyJavaProject/apolloquickstart/apollo-build-scripts (master)
$ ./demo.sh start
Windows new JAVA_HOME is: /c/Users/zcy/JDKS~1/OPENJD~1.2

==== starting service ====
Service logging file is ./service/apollo-service.log
Started [1498]
Waiting for config service startup.....
Config service failed to start in 120 seconds! Please check ./service/apollo-service.log for more information.

zcy@DESKTOP-0F11RIE MINGW64 /e/MyJavaProject/apolloquickstart/apollo-build-scripts (master)
$

zcy@DESKTOP-0F11RIE MINGW64 /e/MyJavaProject/apolloquickstart/apollo-build-scripts (master)
$
```

查看Apollo-service.log 日志后，发现

```
2021-07-23 21:43:28.235 INFO 4100 --- [main] o.hibernate.jpa.internal.util.LogHelper : HHH000204: Processing PersistenceUnitInfo [name: default]
2021-07-23 21:43:28.364 INFO 4100 --- [main] org.hibernate.Version : HHH000412: Hibernate ORM core version 5.4.27.Final
2021-07-23 21:43:28.648 INFO 4100 --- [main] o.hibernate.annotations.common.Version : HCANN000001: Hibernate Commons Annotations (5.1.2.Final)
2021-07-23 21:43:28.856 INFO 4100 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
2021-07-23 21:43:29.885 ERROR 4100 --- [main] com.zaxxer.hikari.pool.HikariPool : HikariPool-1 - Exception during pool initialization.

java.sql.SQLException: Access denied for user 'root'@'localhost' (using password: NO)
    at com.mysql.cj.jdbc.exceptions.SQLException.createSQLException(SQLException.java:129)
    at com.mysql.cj.jdbc.exceptions.SQLException.createSQLException(SQLException.java:97)
    at com.mysql.cj.jdbc.exceptions.SQLExceptionsMapping.translateException(SQLExceptionsMapping.java:122)
    at com.mysql.cj.jdbc.ConnectionImpl.createNewIO(ConnectionImpl.java:835)
    at com.mysql.cj.jdbc.ConnectionImpl.<init>(ConnectionImpl.java:455)
    at com.mysql.cj.jdbc.ConnectionImpl.getInstance(ConnectionImpl.java:240)
    at com.mysql.cj.jdbc.NonRegisteringDriver.connect(NonRegisteringDriver.java:199)
    at com.zaxxer.hikari.util.DriverDataSource.getConnection(DriverDataSource.java:138)
    at com.zaxxer.hikari.pool.PoolBase.newConnection(PoolBase.java:358)
    at com.zaxxer.hikari.pool.PoolBase.newPoolEntry(PoolBase.java:206)
    at com.zaxxer.hikari.pool.HikariPool.createPoolEntry(HikariPool.java:477)
    at com.zaxxer.hikari.pool.HikariPool.checkFailFast(HikariPool.java:560)
    at com.zaxxer.hikari.pool.HikariPool.<init>(HikariPool.java:115)
    at com.zaxxer.hikari.HikariDataSource.getConnection(HikariDataSource.java:112)
    at org.hibernate.engine.jdbc.connections.internal.DatasourceConnectionProviderImpl.getConnection(DatasourceConnectionProviderImpl.java:122)
    at org.hibernate.engine.jdbc.env.internal.JdbcEnvironmentInitiator$ConnectionProviderJdbcConnectionAccess.obtainConnection(JdbcEnvironmentInitiator.java:180)
```

MySQL相关配置不正确：

修改后如下：

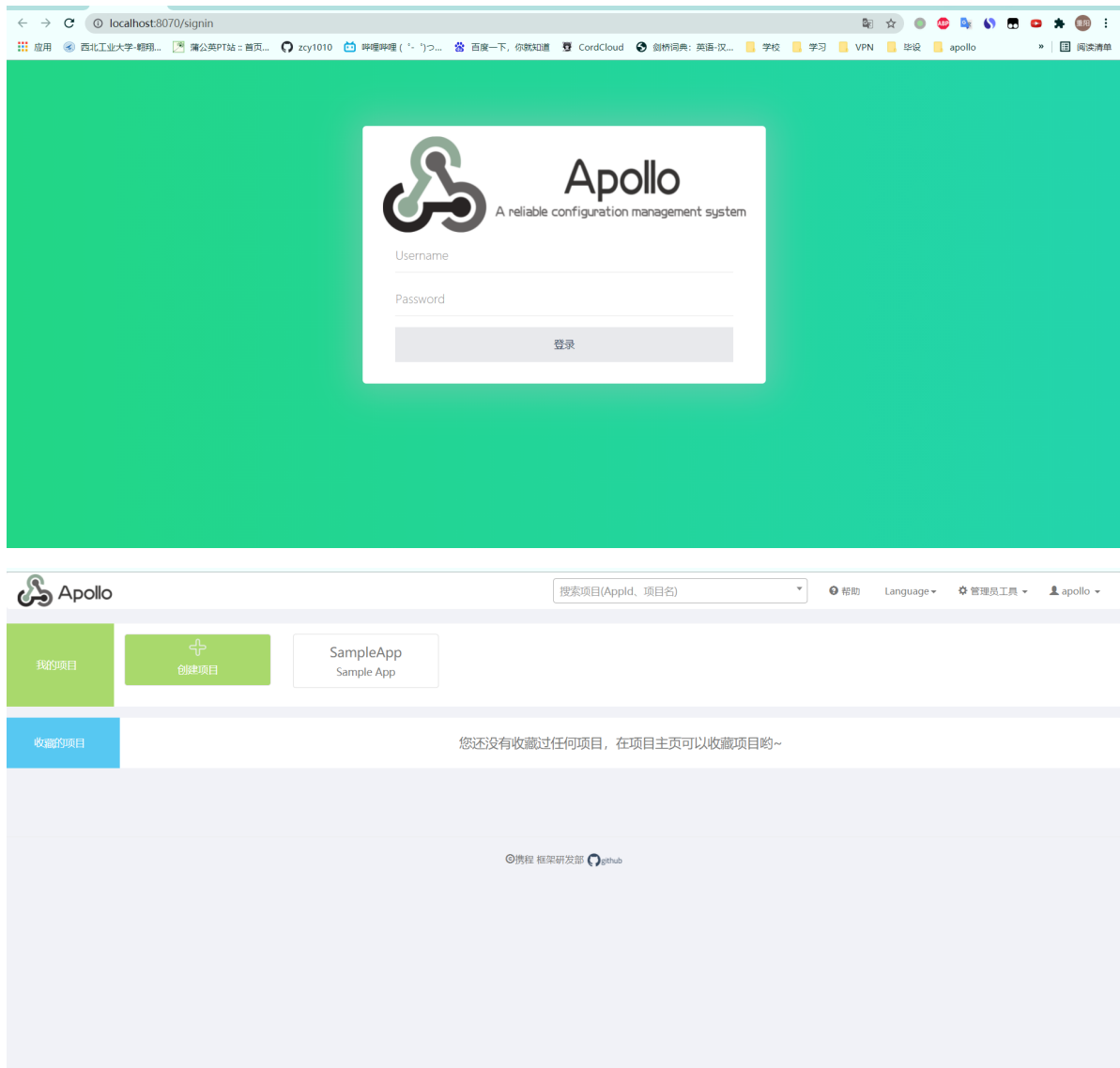
```
> MyJavaProject > apolloquickstart > apollo-build-scripts > demo.sh
1  #!/bin/bash
2
3  # apollo config db info
4  apollo_config_db_url="jdbc:mysql://localhost:3306/ApolloConfigDB?characterEncoding=utf8
5  apollo_config_db_username=root
6  apollo_config_db_password=root
7
8  # apollo portal db info
9  apollo_portal_db_url="jdbc:mysql://localhost:3306/ApolloPortalDB?characterEncoding=utf8
10 apollo_portal_db_username=root
11 apollo_portal_db_password=root
12
```

启动成功：

```
zcy@DESKTOP-0F11RIE MINGW64 /e/MyJavaProject/apolloquickstart/apollo-build-scripts (master)
$ ./demo.sh start
Windows new JAVA_HOME is: /c/Users/zcy/JDKS~1/OPENJD~1.2
==== starting service ====
Service logging file is ./service/apollo-service.log
Started [1640]
Waiting for config service startup.....
Config service started. You may visit http://localhost:8080 for service status now!
Waiting for admin service startup
Admin service started
==== starting portal ====
Portal logging file is ./portal/apollo-portal.log
Started [1688]
Waiting for portal startup...
Portal started. You can visit http://localhost:8070 now!
```

成功启动：

1. 输入用户名apollo， 密码admin后登录



启动客户端程序

准备了一个简单的Demo客户端来演示从Apollo配置中心获取配置。

程序很简单，就是用户输入一个key的名字，程序会输出这个key对应的值。

如果没找到这个key，则输出undefined。

同时，客户端还会监听配置变化事件，一旦有变化就会输出变化的配置信息。

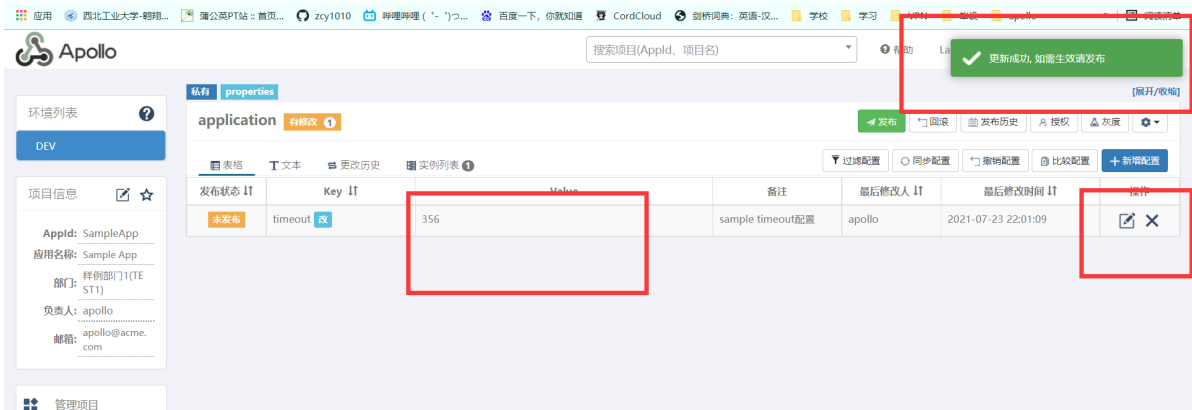
运行 `./demo.sh client` 启动Demo客户端，忽略前面的调试信息，可以看到如下提示：


```
cyg@DESKTOP-0F11RIE WING64 /e/MyJavaProject/apolloquickstart/apollo-build-scripts (master)
$ ./demo.sh client
Windows new JAVA_HOME is: /c/Users/zcy/DKS-1/OPENID-1.2
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.google.inject.internal.cglib.core.$ReflectUtils$1 (file:/E:/MyJavaProject/apolloquickstart/apollo-build-scripts/client/apollo-demo.jar) to method java.lang.ClassLoader.
defineClass(java.lang.String,byte[],int,int,java.security.ProtectionDomain)
WARNING: Please consider reporting this to the maintainers of com.google.inject.internal.cglib.core.$ReflectUtils$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
[apollo-demo][main]2021-07-23 22:00:11.246 INFO [com.ctrip.framework.foundation.internal.provider.DefaultApplicationProvider] App ID is set to SampleApp by app.id property from /META-INF/app.properties
[apollo-demo][main]2021-07-23 22:00:11.248 INFO [com.ctrip.framework.foundation.internal.provider.DefaultServerProvider] Environment is set to [dev] by JVM system property 'env'.
[apollo-demo][main]2021-07-23 22:00:11.273 INFO [com.ctrip.framework.apollo.internal.DefaultMetaServerProvider] Located meta services from apollo.meta configuration: http://localhost:8080!
[apollo-demo][main]2021-07-23 22:00:11.273 INFO [com.ctrip.framework.apollo.core.MetaDomainConsts] Located meta server address http://localhost:8080 for env DEV from com.ctrip.framework.apollo.internals.DefaultMetaServerProvider
Apollo Config Demo. Please input key to get the value. Input quit to exit.
|
```

输入 timeout，会看到如下信息：

```
portal started. You can visit http://localhost:8070 now!
cyg@DESKTOP-0F11RIE WING64 /e/MyJavaProject/apolloquickstart/apollo-build-scripts (master)
$ ./demo.sh client
Windows new JAVA_HOME is: /c/Users/zcy/DKS-1/OPENID-1.2
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.google.inject.internal.cglib.core.$ReflectUtils$1 (file:/E:/MyJavaProject/apolloquickstart/apollo-build-scripts/client/apollo-demo.jar) to method java.lang.ClassLoader.
defineClass(java.lang.String,byte[],int,int,java.security.ProtectionDomain)
WARNING: Please consider reporting this to the maintainers of com.google.inject.internal.cglib.core.$ReflectUtils$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
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[apollo-demo][main]2021-07-23 22:00:11.246 INFO [com.ctrip.framework.foundation.internal.provider.DefaultApplicationProvider] App ID is set to SampleApp by app.id property from /META-INF/app.properties
[apollo-demo][main]2021-07-23 22:00:11.248 INFO [com.ctrip.framework.foundation.internal.provider.DefaultServerProvider] Environment is set to [dev] by JVM system property 'env'.
[apollo-demo][main]2021-07-23 22:00:11.273 INFO [com.ctrip.framework.apollo.internal.DefaultMetaServerProvider] Located meta services from apollo.meta configuration: http://localhost:8080!
[apollo-demo][main]2021-07-23 22:00:11.273 INFO [com.ctrip.framework.apollo.core.MetaDomainConsts] Located meta server address http://localhost:8080 for env DEV from com.ctrip.framework.apollo.internals.DefaultMetaServerProvider
Apollo Config Demo. Please input key to get the value. Input quit to exit.
> timeout
Loading key : timeout with value: 100
```

在配置界面点击timeout这一项的编辑按钮



点击发布按钮，并填写发布信息



发布 (只有发布过的配置才会被客户端获取到，此次发布只会作用于当前环境:DEV)

Changes	Key	发布的值	未发布的值	修改人	修改时间
	timeout 改	100	356	apollo	2021-07-23 22:01:09

* Release Name

20210723220149-release

Comment

Add an optional extended description...

取消

发布

客户端一直在运行的话，在配置发布后就会监听到配置变化，并输出修改的配置信息：

```
[apollo-demo][main]2021-07-23 22:00:11,273 INFO [com.ctrip.framework.apollo.tMetaServerProvider]
Apollo Config Demo. Please input key to get the value. Input quit to exit.
> timeout
Loading key : timeout with value: 100
> Changes for namespace application
Change - key: timeout, oldValue: 100, newValue: 356, changeType: MODIFIED
```

再次输入 `timeout` 查看对应的值，会看到如下信息：

```
[apollo-demo][main]2021-07-23 22:00:11,273 INFO [com.ctrip.framework.apollo.core.MetaDomainConsts] L
tMetaServerProvider
Apollo Config Demo. Please input key to get the value. Input quit to exit.
> timeout
Loading key : timeout with value: 100
> Changes for namespace application
Change - key: timeout, oldValue: 100, newValue: 356, changeType: MODIFIED

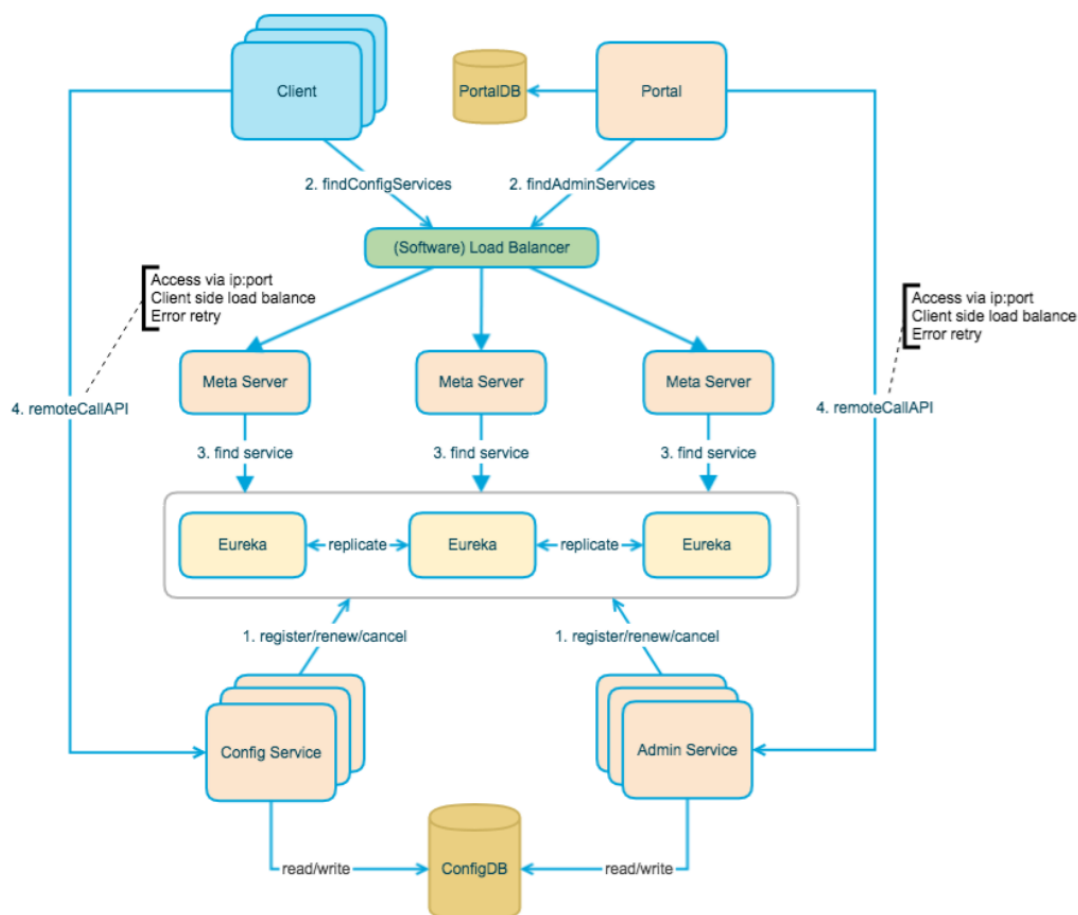
> timeout
Loading key : timeout with value: 356
> |
```

接入新的apollo

//TODO

Apollo 框架介绍

下图是Apollo的作者宋顺给出的架构图：



四个核心模块及其主要功能

1. ConfigService

- 提供配置获取接口
- 提供配置推送接口
- 服务于Apollo客户端

2. AdminService

- 提供配置管理接口
- 提供配置修改发布接口
- 服务于管理界面Portal

3. Client

- 为应用获取配置，支持实时更新
- 通过MetaServer获取ConfigService的服务列表
- 使用客户端软负载SLB方式调用ConfigService

4. Portal

- 配置管理界面
- 通过MetaServer获取AdminService的服务列表
- 使用客户端软负载SLB方式调用AdminService

三个辅助服务发现模块

1. Eureka

- 用于服务发现和注册
- Config/AdminService注册实例并定期报心跳
- 和ConfigService住在一起部署

2. MetaServer

- Portal通过域名访问MetaServer获取AdminService的地址列表
- Client通过域名访问MetaServer获取ConfigService的地址列表
- 相当于一个Eureka Proxy
- 逻辑角色，和ConfigService住在一起部署

3. NginxLB

- 和域名系统配合，协助Portal访问MetaServer获取AdminService地址列表
- 和域名系统配合，协助Client访问MetaServer获取ConfigService地址列表
- 和域名系统配合，协助用户访问Portal进行配置管理

更详细的介绍可见<https://mp.weixin.qq.com/s/-hUaQPzfsI9Lm3IqQW3VDQ>