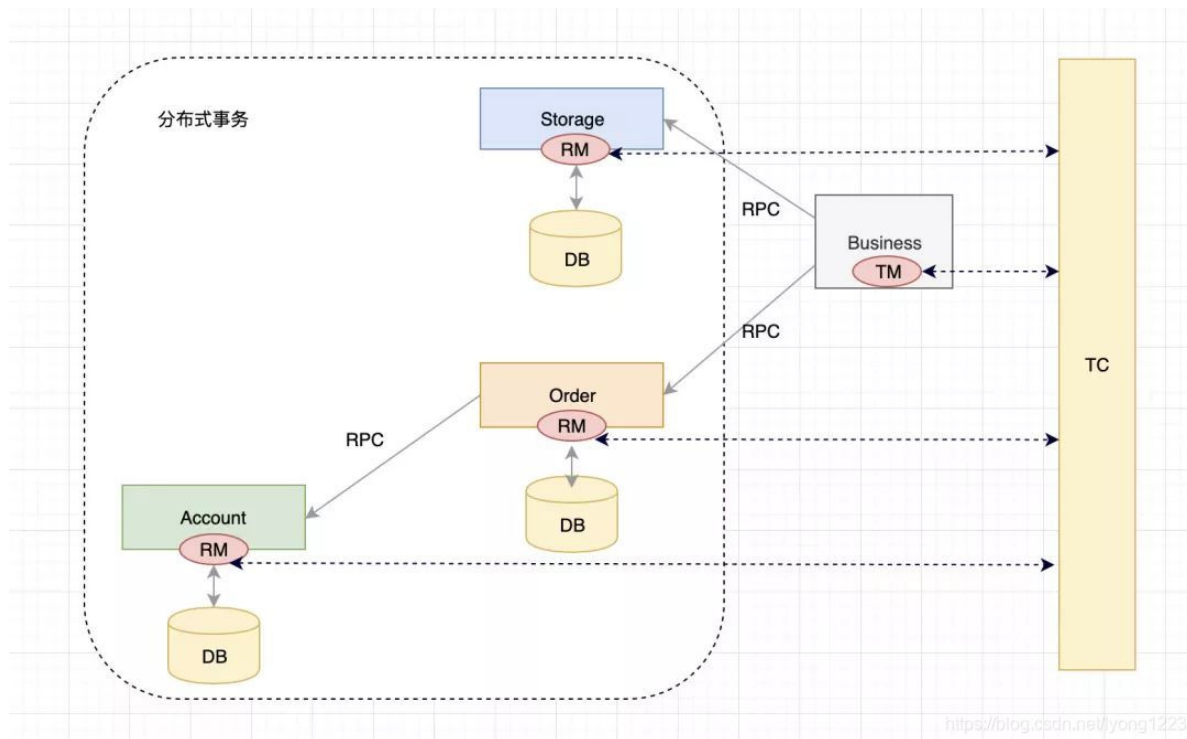


# 一、Seata 简介

查看源码 <https://github.com/Xiao-Y/seata-demo>

[查看源码](#) [查看源码](#) [查看源码](#) [查看源码](#)

## 1. Seata 如何处理呢



Business 是业务入口，在程序中会通过**注解**来说明他是一个**全局事务**，这时他的角色为 TM（事务管理者）。

Business 会请求 TC（事务协调器，一个独立运行的服务），说明自己要开启一个全局事务，TC 会生成一个全局事务ID（XID），并返回给 Business。

Business 得到 XID 后，开始调用微服务，例如调用 Storage。

Storage 会收到 XID，知道它的事务属于这个全局事务。Storage 执行自己的业务逻辑，操作本地数据库。

Storage 会把自己的事务注册到 TC，作为这个 XID 下面的一个**分支事务**，并且把自己的事务执行结果也告诉 TC。

此时 Storage 的角色是 RM（资源管理者），资源是指本地数据库。

Order、Account 的执行逻辑与 Storage 一致。

在各个微服务都执行完成后，TC 可以知道 XID 下各个分支事务的执行结果，TM（Business）也就知道了。

Business 如果发现各个微服务的本地事务都执行成功了，就请求 TC 对这个 XID 提交，否则回滚。

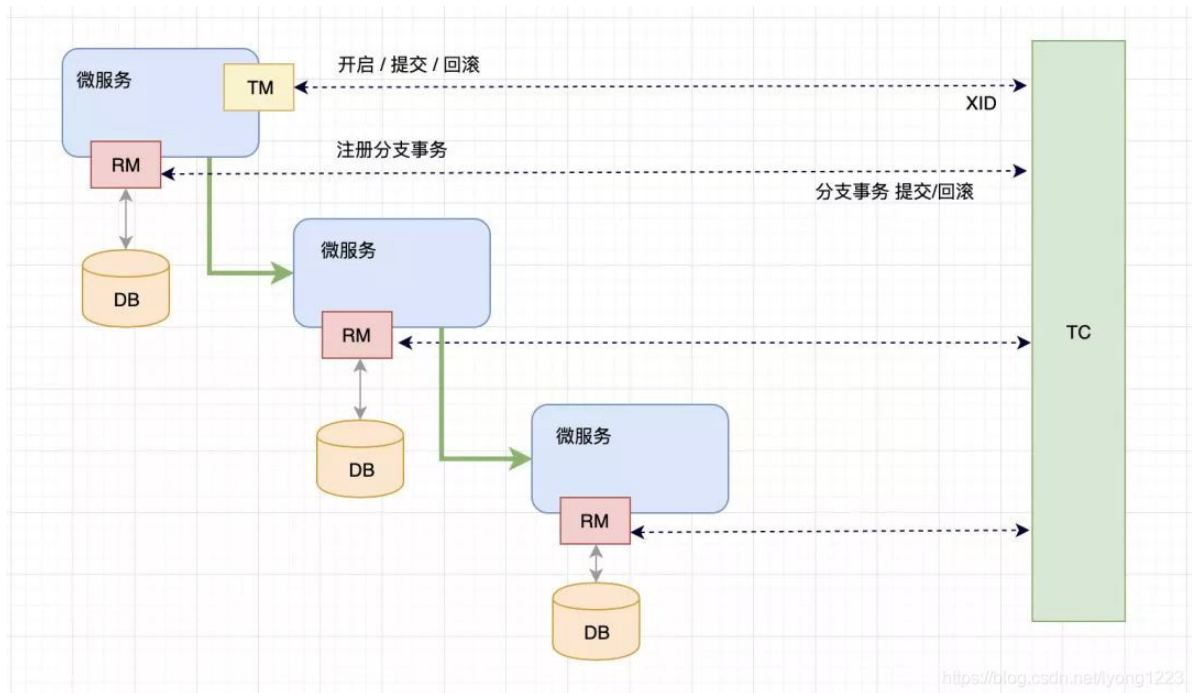
TC 收到请求后，向 XID 下的所有分支事务发起相应请求。

各个微服务收到 TC 的请求后，执行相应指令，并把执行结果上报 TC

## 2. 核心组件

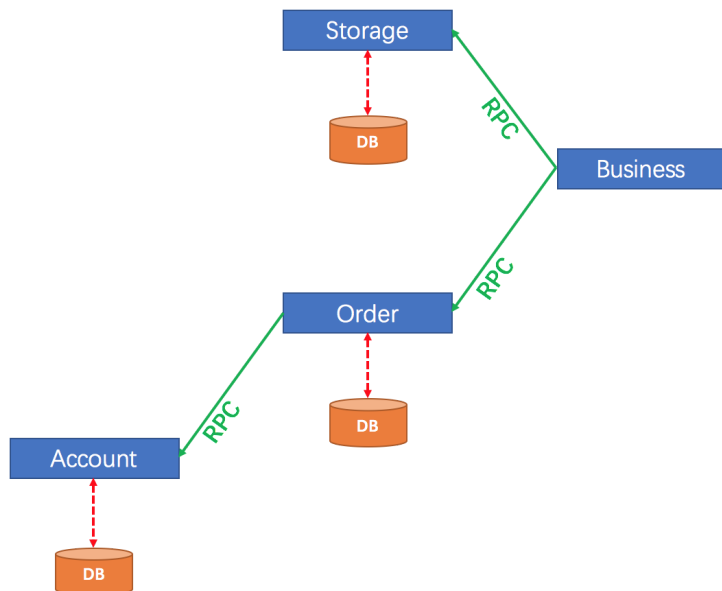
- 事务协调器 TC：维护全局和分支事务的状态，指示全局提交或者回滚。
- 事务管理者 TM：开启、提交或者回滚一个全局事务。
- 资源管理者 RM：管理执行分支事务的那些资源，向TC注册分支事务、上报分支事务状态、控制分支事务的提交或者回滚。

## 3. 具体工作过程



- TM 请求 TC，开始一个新的全局事务，TC 会为此全局事务生成一个 XID。
- XID 通过微服务的调用链传递到其他微服务。
- RM 把本地事务作为这个XID的分支事务注册到TC。
- TM 请求 TC 对这个 XID 进行提交或回滚。
- TC 指挥这个 XID 下面的所有分支事务进行提交、回滚。

## 二、Seata 详细工作流程示例



100  
Star

## 三、启动 seata 服务端





seata 在读取配置文件时有多种方式，这里采用 nacos 的方式，生产上优先使用这种方式。

### 1. 下载seatea 服务端

我的源码工程中已经存在，在 temp 文件夹中

Also, we receive many valuable issues, questions and advices from our community. Thanks for you all.

Assets 4

 <a href="#">seata-server-1.4.1.tar.gz</a>	40.7 MB
 <a href="#">seata-server-1.4.1.zip</a>	40.7 MB
 <a href="#">Source code (zip)</a>	
 <a href="#">Source code (tar.gz)</a>	

<https://blog.csdn.net/lyong1223>

### 2.修改 config.txt 文件，根据需保存。修改数据库相关

config.txt 文件在源码中需要下载 Source code(zip)（我的源码工程中已经存在，在 temp 文件夹中）解压后 seata-1.4.1\script\config-center。

执行 seata-1.4.1\script\config-center\nacos\nacos-config.sh 将配置文件导入到 nacos 中

```
nacos-config.sh -h <ip> -p <port> -g SEATA_GROUP -t <namespace> -u <username> -w  
<password>
```

例如：

不带命名空间的

```
nacos-config.sh -h 127.0.0.1 -p 8761 -g SEATA_GROUP -u nacos -w nacos
```

带命名空间的，新建命名空间 seata-dev

```
nacos-config.sh -h 127.0.0.1 -p 8761 -g SEATA_GROUP -u nacos -w nacos -t seata-dev
```

```

service.vgroupMapping.my_test_tx_group=seata-server-cluster
service.seata-server-cluster.groupList=127.0.0.1:8091,127.0.0.1:8092
store.mode=db
store.db.datasource=druid
store.db.dbType=mysql
store.db.driverClassName=com.mysql.cj.jdbc.Driver
store.db.url=jdbc:mysql://127.0.0.1:3306/seata?
useUnicode=true&characterEncoding=utf8&useSSL=false&autoReconnect=true&serverTimezone=Asia/Shanghai
store.db.user=root
store.db.password=root

```

public | pro | dev | **seata-dev**

配置管理 | seata-dev seata-dev 查询结果: 共查询到 9 条满足要求的配置。

Data ID:  Group:

<input type="checkbox"/>	Data Id	Group
<input type="checkbox"/>	service.vgroupMapping.my_test_tx_group	SEATA_GROUP
<input type="checkbox"/>	service. <b>seata-server-cluster</b> .groupList	SEATA_GROUP
<input type="checkbox"/>	store.mode	SEATA_GROUP
<input type="checkbox"/>	store.db.datasource	SEATA_GROUP
<input type="checkbox"/>	store.db.dbType	SEATA_GROUP
<input type="checkbox"/>	store.db.driverClassName	SEATA_GROUP
<input type="checkbox"/>	store.db.url	SEATA_GROUP
<input type="checkbox"/>	store.db.user	SEATA_GROUP
<input type="checkbox"/>	store.db.password	SEATA_GROUP

<https://blog.csdn.net/yong1223>

### 3.修改 registry.conf 文件，修改 nacos 的地址、用户名和密码。

配置信息从 nacos 中获取（就是上面导入的）

```

# 注册中心配置
registry {
    # file 、nacos 、eureka、redis、zk、consul、etcd3、sofa
    type = "nacos"
    loadBalance = "RandomLoadBalance"
    loadBalanceVirtualNodes = 10
    nacos {
        application = "seata-server"
        serverAddr = "119.23.27.78:8761"
        group = "SEATA_GROUP"
        namespace = "seata-dev"
        cluster = "seata-server-cluster"
        username = "nacos"
        password = "nacos"
    }
}

```

```
# 配置中心配置
config {
    # file、nacos 、apollo、zk、consul、etcd3
    type = "nacos"
    nacos {
        serverAddr = "119.23.27.78:8761"
        namespace = "seata-dev"
        group = "SEATA_GROUP"
        username = "nacos"
        password = "nacos"
    }
}
```

### 3. 启动 seata-server.bat

```
C:\Windows\System32\cmd.exe
10:19:25.514 |-INFO in ch.qos.logback.core.rolling.SizeAndTimeBasedFNATP@67205a84 - The date pattern is 'yyyy-MM-dd' from file name pattern 'C:/Users/122356560/Logs/seata/history/seata-server.8091.error.%d(yyyy-MM-dd).%i.log.gz'
10:19:25.514 |-INFO in ch.qos.logback.core.rolling.SizeAndTimeBasedFNATP@67205a84 - Roll-over at midnight.
10:19:25.515 |-INFO in ch.qos.logback.core.rolling.SizeAndTimeBasedFNATP@67205a84 - Setting initial period to Tue Mar 02 10:19:25 CST 2021
10:19:25.515 |-INFO in ch.qos.logback.core.rolling.SizeAndTimeBasedRollingPolicy@1538737493 - Cleaning on start up
10:19:25.515 |-INFO in ch.qos.logback.core.rolling.helper.TimeBasedArchiveRemover - first clean up after appender initialization
10:19:25.515 |-INFO in ch.qos.logback.core.rolling.helper.TimeBasedArchiveRemover - Multiple periods, i.e. 32 periods, seem to have elapsed. This is expected at application start.
10:19:25.515 |-INFO in ch.qos.logback.core.joran.action.NestedComplexPropertyIA - Assuming default type [ch.qos.logback.classic.encoder.PatternLayoutEncoder]
10:19:25.516 |-INFO in ch.qos.logback.core.rolling.RollingFileAppender[ERROR] - Active log file name: C:\Users\122356560\Logs\seata\seata-server.8091.error.log
10:19:25.516 |-INFO in ch.qos.logback.core.rolling.RollingFileAppender[ERROR] - File property is set to [C:\Users\122356560\Logs\seata\seata-server.8091.error.log]
10:19:25.520 |-INFO in ch.qos.logback.classic.joran.action.RootLoggerAction - Setting level of ROOT logger to INFO
10:19:25.520 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [ALL] to Logger[ROOT]
10:19:25.520 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Removed 0 Bytes of files
10:19:25.520 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [WARN] to Logger[ROOT]
10:19:25.520 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [ERROR] to Logger[ROOT]
10:19:25.520 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [CONSOLE] to Logger[ROOT]
10:19:25.520 |-INFO in ch.qos.logback.classic.joran.action.ConfigurationAction - End of configuration.
10:19:25.521 |-INFO in ch.qos.logback.classic.joran.JoranConfigurator@7d0587f1 - Registering current configuration as safe fallback point

SLF4J: A number (18) of logging calls during the initialization phase have been intercepted and are
SLF4J: now being replayed. These are subject to the filtering rules of the underlying logging system.
SLF4J: See also http://www.slf4j.org/codes.html#replay
10:19:25.537 INFO --- [main] io.seata.config.FileConfiguration : The file name of the operation is registry
10:19:25.591 INFO --- [main] io.seata.config.FileConfiguration : The configuration file used is E:\seata\conf\registry.conf
10:19:26.978 INFO --- [main] i.s.core.rpc.netty.NettyServerBootstrap : Server started, listen port: 8091

https://blog.csdn.net/lyong1234567890
```

```
seata-server.bat -p 8091
```

```
seata-server.bat -p 8092
```

## 四、调用端

### 1. 新建测试库 seata、account、order、storage

```
-- seata 库
DROP TABLE IF EXISTS `branch_table`;
CREATE TABLE `branch_table` (
    `branch_id` bigint(0) NOT NULL,
    `xid` varchar(128) CHARACTER SET utf8 COLLATE utf8_general_ci NOT NULL,
    `transaction_id` bigint(0) NULL DEFAULT NULL,
    `resource_group_id` varchar(32) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
    `resource_id` varchar(256) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
    `branch_type` varchar(8) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
    `status` tinyint(0) NULL DEFAULT NULL,
    `client_id` varchar(64) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
```

```

`application_data` varchar(2000) CHARACTER SET utf8 COLLATE utf8_general_ci
NULL DEFAULT NULL,
`gmt_create` datetime(6) NULL DEFAULT NULL,
`gmt_modified` datetime(6) NULL DEFAULT NULL,
PRIMARY KEY (`branch_id`) USING BTREE,
INDEX `idx_xid`(`xid`) USING BTREE
) ENGINE = InnoDB CHARACTER SET = utf8 COLLATE = utf8_general_ci ROW_FORMAT =
Dynamic;

DROP TABLE IF EXISTS `global_table`;
CREATE TABLE `global_table` (
  `xid` varchar(128) CHARACTER SET utf8 COLLATE utf8_general_ci NOT NULL,
  `transaction_id` bigint(0) NULL DEFAULT NULL,
  `status` tinyint(0) NOT NULL,
  `application_id` varchar(32) CHARACTER SET utf8 COLLATE utf8_general_ci NULL
DEFAULT NULL,
  `transaction_service_group` varchar(32) CHARACTER SET utf8 COLLATE
utf8_general_ci NULL DEFAULT NULL,
  `transaction_name` varchar(128) CHARACTER SET utf8 COLLATE utf8_general_ci
NULL DEFAULT NULL,
  `timeout` int(0) NULL DEFAULT NULL,
  `begin_time` bigint(0) NULL DEFAULT NULL,
  `application_data` varchar(2000) CHARACTER SET utf8 COLLATE utf8_general_ci
NULL DEFAULT NULL,
  `gmt_create` datetime(0) NULL DEFAULT NULL,
  `gmt_modified` datetime(0) NULL DEFAULT NULL,
PRIMARY KEY (`xid`) USING BTREE,
INDEX `idx_gmt_modified_status`(`gmt_modified`, `status`) USING BTREE,
INDEX `idx_transaction_id`(`transaction_id`) USING BTREE
) ENGINE = InnoDB CHARACTER SET = utf8 COLLATE = utf8_general_ci ROW_FORMAT =
Dynamic;

DROP TABLE IF EXISTS `lock_table`;
CREATE TABLE `lock_table` (
  `row_key` varchar(128) CHARACTER SET utf8 COLLATE utf8_general_ci NOT NULL,
  `xid` varchar(96) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT
NULL,
  `transaction_id` bigint(0) NULL DEFAULT NULL,
  `branch_id` bigint(0) NOT NULL,
  `resource_id` varchar(256) CHARACTER SET utf8 COLLATE utf8_general_ci NULL
DEFAULT NULL,
  `table_name` varchar(32) CHARACTER SET utf8 COLLATE utf8_general_ci NULL
DEFAULT NULL,
  `pk` varchar(36) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
  `gmt_create` datetime(0) NULL DEFAULT NULL,
  `gmt_modified` datetime(0) NULL DEFAULT NULL,
PRIMARY KEY (`row_key`) USING BTREE,
INDEX `idx_branch_id`(`branch_id`) USING BTREE
) ENGINE = InnoDB CHARACTER SET = utf8 COLLATE = utf8_general_ci ROW_FORMAT =
Dynamic;

-- storage 添加测试表
DROP TABLE IF EXISTS `storage_tbl`;
CREATE TABLE `storage_tbl` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `commodity_code` varchar(255) DEFAULT NULL,
  `count` int(11) DEFAULT 0,
PRIMARY KEY (`id`),

```

```

        UNIQUE KEY (`commodity_code`)
    ) ENGINE=InnoDB DEFAULT CHARSET=utf8;

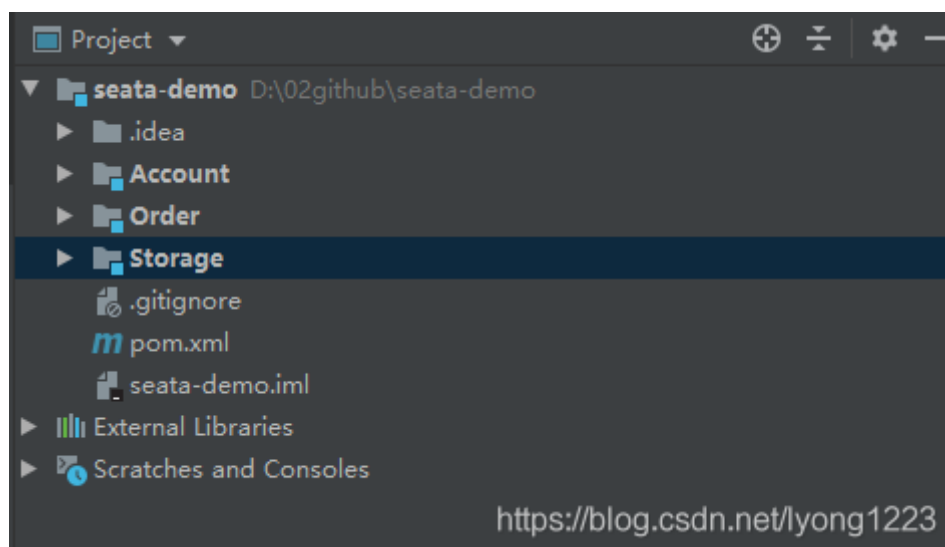
-- order 添加测试表
DROP TABLE IF EXISTS `order_tbl`;
CREATE TABLE `order_tbl` (
    `id` int(11) NOT NULL AUTO_INCREMENT,
    `user_id` varchar(255) DEFAULT NULL,
    `commodity_code` varchar(255) DEFAULT NULL,
    `count` int(11) DEFAULT 0,
    `money` int(11) DEFAULT 0,
    PRIMARY KEY (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

-- account 添加测试表
DROP TABLE IF EXISTS `account_tbl`;
CREATE TABLE `account_tbl` (
    `id` int(11) NOT NULL AUTO_INCREMENT,
    `user_id` varchar(255) DEFAULT NULL,
    `money` int(11) DEFAULT 0,
    PRIMARY KEY (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

-- 创建 UNDO_LOG 表, 每个库中都要执行
CREATE TABLE `undo_log` (
    `id` bigint(20) NOT NULL AUTO_INCREMENT,
    `branch_id` bigint(20) NOT NULL,
    `xid` varchar(100) NOT NULL,
    `context` varchar(128) NOT NULL,
    `rollback_info` longblob NOT NULL,
    `log_status` int(11) NOT NULL,
    `log_created` datetime NOT NULL,
    `log_modified` datetime NOT NULL,
    `ext` varchar(100) DEFAULT NULL,
    PRIMARY KEY (`id`),
    UNIQUE KEY `ux_undo_log` (`xid`,`branch_id`)
) ENGINE=InnoDB AUTO_INCREMENT=1 DEFAULT CHARSET=utf8;

```

## 2. 新建工程



Account、Order、Storage中的pom.xml中添加

```
<dependency>
  <groupId>com.alibaba.cloud</groupId>
  <artifactId>spring-cloud-starter-alibaba-seata</artifactId>
  <exclusions>
    <exclusion>
      <groupId>io.seata</groupId>
      <artifactId>seata-spring-boot-starter</artifactId>
    </exclusion>
  </exclusions>
</dependency>
<!-- 对应 seata 的版本 -->
<dependency>
  <groupId>io.seata</groupId>
  <artifactId>seata-spring-boot-starter</artifactId>
  <version>1.4.1</version>
</dependency>
```

application.yml 中添加

```
seata:
  # 开启自动装配
  enabled: true
  # 本客户端的微服务名称
  application-id: ${spring.application.name}
  # 读取哪个事务分组
  tx-service-group: my_test_tx_group
  # 配置中心设置
  config:
    type: nacos
    nacos:
      # 与上面的命名空间相同
      namespace: seata-dev
      username: nacos
      password: nacos
      # nacos 的ip和端口
      server-addr: ${nacos-server-addr}
      # 读取的配置分组
      group: SEATA_GROUP
  # 注册中心设置
  registry:
    type: nacos
    nacos:
      # SEATA服务中心的微服务名，此处与服务端保持一致
      application: seata-server
      # 与上面的命名空间相同
      namespace: seata-dev
      # nacos 的ip和端口
      server-addr: ${nacos-server-addr}
      username: nacos
      password: nacos
```

## 3. 测试



POST

127.0.0.1:8080/business/business

Params

Authorization

Headers (9)

Body

Pre-request Script

Tests

Settings

none

form-data

x-www-form-urlencoded

raw

binary

GraphQL

JSON

1

2

3

4

5

6

"userId": "1",

"commodityCode": "1",

"count": 1,

"money": 10

Body

Cookies

Headers (5)

Test Results

Pretty

Raw

Preview

Visualize

JSON

1true

2021-03-03 09:43:01.290 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-3] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8092:110312626856194048] commit status: Committed

2021-03-03 09:43:05.413 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-2] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8091:110312649807425536]

2021-03-03 09:43:07.111 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-2] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8091:110312649807425536] commit status: Committed

2021-03-03 09:43:10.594 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-5] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8091:110312672028848128]

2021-03-03 09:43:12.172 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-5] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8091:110312672028848128] commit status: Committed

2021-03-03 09:43:19.656 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-6] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8091:110312710058602496]

2021-03-03 09:43:20.683 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-6] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8091:110312710058602496] commit status: Committed

2021-03-03 09:43:24.185 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-7] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8091:110312729146880000]

2021-03-03 09:43:25.850 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-7] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8091:110312729146880000] commit status: Committed

2021-03-03 09:43:29.749 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-8] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8092:110312752463015936]

2021-03-03 09:43:31.380 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-8] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8092:110312752463015936] commit status: Committed

2021-03-03 09:43:38.132 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-9] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8092:110312787619672064]

2021-03-03 09:43:39.391 [Business-Service - 8080] INFO 13548 --- [nio-8080-exec-9] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8092:110312787619672064] commit status: Committed

2021-03-03 09:43:43.176 [Business-Service - 8080] INFO 13548 --- [io-8080-exec-10] i.seata.tm.api.DefaultGlobalTransaction : Begin new global transaction [172.25.104.15:8092:110312808603774976]

2021-03-03 09:43:44.607 [Business-Service - 8080] INFO 13548 --- [io-8080-exec-10] i.seata.tm.api.DefaultGlobalTransaction : [172.25.104.15:8092:110312808603774976] commit status: Committed

查看源码 <https://github.com/Xiao-Y/seata-demo>

[查看源码](#) [查看源码](#) [查看源码](#) [查看源码](#)