Zone设计方案测试

Zone 设计目的

随着Nebula性能与稳定性的不断增强，在生产系统中承担的任务愈发重要，越来越多的重要数据被存储在Nebula中。用户在使用Nebula的过程中，期望将Space创建在某些指定的Storage节点上，从而达到资源隔离的目的。当集群需要滚动升级时，一般是取出一个或者多个服务器停止服务，执行更新，并重新将其投入使用，直到集群中所有的实例都更新成新版本，便于管理更新操作。为解决上述问题，Nebula将提供Zone功能.

Zone 设计原则

1. Zone是一个Storage节点集合，每个Storage节点仅属于一个Zone，Zone中Storage节点不允许交叠。
2. 一个Zone中持有多个Part的副本，且同一个Part在一个Zone中只持有一个副本。
3. Group是一个Zone的集合，用于管理Zone，并进行资源隔离。创建Space时如果指定Group，该Space的副本将均匀分布在该Group上的各个Zone中。一个Group之中包含Space的所有分区的副本。同一个Zone可以属于多个Group。
4. 一个Group上可以创建多个Space。Group中Zone的数量需要大于等于与之关联的Space的最大副本数。例如有两个Space创建在Group-0之上，一个副本数为3，另一个副本数为5，则Group-0中Zone数量至少为5。

服务器集群配置

- meta服务配置
  --serve_addrs:192.168.8.5
  --port：5885
- graph服务配置
  --meta_server_addrs:192.168.8.5:5885
  --local_ip=192.168.8.5
  --port=6996
- storaege服务配置
  本文档预设了4个storage服务，其基本信息如下图所示：

Host	Port	Status
"192.168.8.5"	7757	"ONLINE"
"192.168.8.5"	7557	"ONLINE"
"192.168.8.5"	7857	"ONLINE"
"192.168.8.5"	7657	"ONLINE"

ZONE 相关语句及其测试

ADD ZONE

含义:在指定集群上新增Zone
如果zone-name已存在或host列表为空，则添加失败
命令:ADD ZONE zone-name hosts-list

命令测试

命令
add zone zone1 192.168.8.5:7757
add zone zone2 192.168.8.5:7557,192.168.8.5:7657;
add zone zone3 192.168.8.5:7857

执行后ZONE STATUS

```
+-----------+-----------------+--------+
| Name      | Host            | Port   |
+-----------+-----------------+--------+
| "zone1"   | "192.168.8.5"   | 7757   |
+-----------+-----------------+--------+
| "zone2"   | "192.168.8.5"   | 7557   |
+-----------+-----------------+--------+
| "zone2"   | "192.168.8.5"   | 7657   |
+-----------+-----------------+--------+
| "zone3"   | "192.168.8.5"   | 7857   |
+-----------+-----------------+--------+
```

DEBUG测试:选择不存在的节点新建ZONE

命令
add zone zone4 192.168.8.5:7777
执行结果

```
[(root@nebula) [(none)]> add zone zone4 192.168.8.5:7777
 [ERROR (-8)]: Invalid parm!
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

####DEBUG测试:选择已有的ZONE名字新建ZONE

命令

add zone zone1 192.168.8.5::7757

执行结果

```
[(root@nebula) [(none)]> add zone zone1 192.168.8.5:7757
[ERROR (-8)]: Existed!
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

####DEBUG测试:在新建ZONE时host选择已有所属ZONE的节点

命令

add zone zone4 192.168.8.5:7757

执行结果

```
[(root@nebula) [(none)]> add zone zone4 192.168.8.5:7757
 [ERROR (-8)]: Invalid parm!
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

####DEBUG测试:在新建ZONE时不选择host

命令

add zone zone4

执行结果

```
[(root@nebula) [(none)]> add zone zone4
 [ERROR (-7)]: SyntaxError: syntax error near `zone4'
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

DROP HOST FROM ZONE

命令测试
drop HOST 192.168.8.5:7757 from zone zone1

ZONE STATUS

Name	Host	Port
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

DEBUG测试:DROP一个并不在ZONE中的节点

命令
drop HOST 192.168.8.5:6734 from zone zone2

执行结果

```
[(root@nebula) [(none)]> drop HOST 192.168.8.5:6734 from zone zone2
[ERROR (-8)]: Not existed!
```

ZONE STATUS

Name	Host	Port
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

DEBUG测试:DROP的节点在其他zone中

命令
drop HOST 192.168.8.5:7757 from zone zone2

执行结果
```
(root@nebula) [(none)]> drop HOST 192.168.8.5:7757 from zone zone2
[ERROR (-8)]: Not existed!
```

ZONE STATUS

```
+----------+----------------+-------+
| Name     | Host           | Port  |
+----------+----------------+-------+
| "zone2"  | "192.168.8.5"  | 7557  |
+----------+----------------+-------+
| "zone2"  | "192.168.8.5"  | 7657  |
+----------+----------------+-------+
| "zone3"  | "192.168.8.5"  | 7857  |
+----------+----------------+-------+
```

ADD HOST INTO ZONE

命令测试

add HOST 192.168.8.5:7757 into zone zone1

ZONE STATUS

```
+----------+----------------+-------+
| Name     | Host           | Port  |
+----------+----------------+-------+
| "zone1"  | "192.168.8.5"  | 7757  |
+----------+----------------+-------+
| "zone2"  | "192.168.8.5"  | 7557  |
+----------+----------------+-------+
| "zone2"  | "192.168.8.5"  | 7657  |
+----------+----------------+-------+
| "zone3"  | "192.168.8.5"  | 7857  |
+----------+----------------+-------+
```

DEBUG测试:add的节点不存在

命令
add HOST 192.168.8.5:234 into zone zone1

执行结果
```
(root@nebula) [(none)]> add HOST 192.168.8.5:234 into zone zone1
[ERROR (-8)]: Invalid parm!
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

DEBUG测试:add的节点已在其他ZONE中

命令

add HOST 192.168.8.5:7557 into zone zone1

执行结果

```
(root@nebula) [(none)]> add HOST 192.168.8.5:7557 into zone zone1
Execution succeeded (time spent 2467/2869 us)
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone1"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

####DEBUG测试:add的ZONE不存在

命令

add HOST 192.168.8.5:7557 into zone zone4

执行结果

```
(root@nebula) [(none)]> add HOST 192.168.8.5:7557 into zone zone4
[ERROR (-8)]: Not existed!
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone1"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

####DEBUG测试:ZONE中已存在目标host

命令

add HOST 192.168.8.5:7557 into zone zone2

执行结果

```
(root@nebula) [(none)]> add HOST 192.168.8.5:7557 into zone zone2
[ERROR (-8)]: Existed!
```

ZONE STATUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone1"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

###ADD GROUP

含义:新增Group（权限问题）

如果group-name已经存在，则添加失败。

如果zone列表为空或其中含有不存在的zone，则添加失败。

创建Group之后不允许修改，Replica不能修改，Zone数不会有变化。

命令:ADD GROUP group-name zone-names-list

####命令测试

命令
```
 add group group1 zone1,zone2,zone3
 add group group2 zone1,zone2
 add group group3 zone1,zone3
```

执行结果

```
[(root@nebula) [(none)]> add group group1 zone1,zone2,zone3
 Execution succeeded (time spent 3185/3968 us)

 Thu, 27 May 2021 21:57:15 CST

[(root@nebula) [(none)]> add group group2 zone1,zone2
 Execution succeeded (time spent 3192/3986 us)

 Thu, 27 May 2021 21:58:27 CST

[(root@nebula) [(none)]> add group group3 zone1,zone3
 Execution succeeded (time spent 3191/4029 us)
```

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group3"	"zone1"
"group3"	"zone3"

####DEBUG测试:选择不存在的ZONE新建GROUP

命令

add group group4 zone4

执行结果

```
[(root@nebula) [(none)]> add group group4 zone4
Execution succeeded (time spent 3370/4102 us)
```

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"

ZONE STAUS

Name	Host	Port
"zone1"	"192.168.8.5"	7757
"zone1"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7557
"zone2"	"192.168.8.5"	7657
"zone3"	"192.168.8.5"	7857

####DEBUG测试:选择已有的GRORP名字新建GROUP

命令
add group group2 zone1,zone2

执行结果

```
[(root@nebula) [(none)]> add group group2 zone1,zone2
[ERROR (-8)]: Existed!
```

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"

####DEBUG测试:新建GROUP时，有部分ZONE不存在

命令

add group group6 zone10086,zone1,zone2

执行结果

```
(root@nebula) [(none)]> add group group6 zone10086,zone1,zone2
Execution succeeded (time spent 3343/4234 us)
```

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

####DEBUG测试:在新建GROUP时不选择ZONE

命令
add group group5

执行结果

```
[(root@nebula) [(none)]> add group group5
[ERROR (-7)]: SyntaxError: syntax error near ` '
```

GROUP STATUS

```
+------------+-----------------+
|  Name      |  Zone           |
+------------+-----------------+
|  "group1"  |  "zone1"        |
+------------+-----------------+
|  "group1"  |  "zone2"        |
+------------+-----------------+
|  "group1"  |  "zone3"        |
+------------+-----------------+
|  "group2"  |  "zone1"        |
+------------+-----------------+
|  "group2"  |  "zone2"        |
+------------+-----------------+
|  "group3"  |  "zone1"        |
+------------+-----------------+
|  "group3"  |  "zone3"        |
+------------+-----------------+
|  "group4"  |  "zone4"        |
+------------+-----------------+
|  "group6"  |  "zone10086"    |
+------------+-----------------+
|  "group6"  |  "zone1"        |
+------------+-----------------+
|  "group6"  |  "zone2"        |
+------------+-----------------+
```

ADD ZONE INTO GROUP

命令测试

命令
add zone zone3 into group group2

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

####DEBUG测试:add的zone不存在

命令
add zone zone10086 into group group2

执行结果

```
(root@nebula) [(none)]> add zone zone10086 into group group2
[ERROR (-8)]: Not existed!
```

GROUP STATUS

```
+-----------+----------------+
| Name      | Zone           |
+-----------+----------------+
| "group1"  | "zone1"        |
+-----------+----------------+
| "group1"  | "zone2"        |
+-----------+----------------+
| "group1"  | "zone3"        |
+-----------+----------------+
| "group2"  | "zone1"        |
+-----------+----------------+
| "group2"  | "zone2"        |
+-----------+----------------+
| "group2"  | "zone3"        |
+-----------+----------------+
| "group3"  | "zone1"        |
+-----------+----------------+
| "group3"  | "zone3"        |
+-----------+----------------+
| "group4"  | "zone4"        |
+-----------+----------------+
| "group6"  | "zone10086"    |
+-----------+----------------+
| "group6"  | "zone1"        |
+-----------+----------------+
| "group6"  | "zone2"        |
+-----------+----------------+
```

####DEBUG测试:add的GROUP不存在

命令

add zone zone1 into group group10086

执行结果

```
(root@nebula) [(none)]> add zone zone1 into group group10086
[ERROR (-8)]: Not existed!
```

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

####DEBUG测试:GROUP中已存在目标ZONE

命令

add zone zone1 into group group1

执行结果

```
(root@nebula) [(none)]> add zone zone1 into group group1
[ERROR (-8)]: Existed!
```

GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

DROP ZONE FROM GROUP
命令测试
drop zone zone1 from group group1

执行前GROUP STATUS

Name	Zone
"group1"	"zone1"
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

执行结果

```
[(root@nebula) [(none)]> drop zone zone1 from group group1
 Execution succeeded (time spent 2992/3740 us)
```

执行后GROUP STATUS

Name	Zone
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

####DEBUG测试:DROP GROUP中一个不存在的ZONE

命令

drop zone zone10086 from group group1

执行结果

```
(root@nebula) [(none)]> drop zone zone10086 from group group1
[ERROR (-8)]: Not existed!
```

GROUP STATUS

Name	Zone
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"

####DEBUG测试:将ZONE从一个不存在的GROUP DROP

命令

drop zone zone1 from group group65536

执行结果

```
(root@nebula) [(none)]> drop zone zone1 from group group65536
[ERROR (-8)]: Not existed!
```

GROUP STATUS

Name	Zone
"group1"	"zone2"
"group1"	"zone3"
"group2"	"zone1"
"group2"	"zone2"
"group2"	"zone3"
"group3"	"zone1"
"group3"	"zone3"
"group4"	"zone4"
"group6"	"zone10086"
"group6"	"zone1"
"group6"	"zone2"