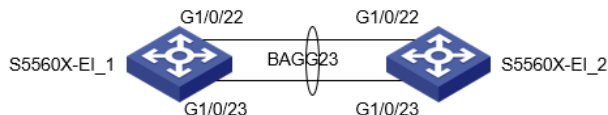


组网及说明

两台 S5560X-EI 交换机通过聚合口 Bridge-Aggregation23 互联（成员接口分别均为 G1/0/22 和 G1/0/23），如下图所示：



需求1：缺省 Bridge-Aggregation23 中，仅一条链路承担业务数据转发；若承担业务转发的链路 down，业务流量自动由另一条成员链路承担转发。

需求2：当需求1 中的故障链路恢复后，需要确保业务流量不自动切换回已恢复的链路。仅当当前承担业务转发的链路 down 后，业务流量才进行切换。减少流量切换次数。

配置步骤

对于需求1，可通过部署聚合最大选中端口数量的方式解决，即配置 link-aggregation selected-port maximum 1；

对于需求2，当故障线路恢复后，流量不切换到恢复的链路中转发，无论设备采用静态聚合还是动态聚合，均可采用EAA方式，自动根据聚合成员接口的状态，调整聚合接口优先级，进而确保选中的成员接口不出现抢占的情况。

采用动态聚合模式配置（S5560X-EI_1 与 S5560X-EI_2 下列关键配置相同）：

1. 关键配置如下

```
#
lacp system-priority 1024 // 其中一台设备部署该命令
#
interface Bridge-Aggregation23
link-aggregation mode dynamic
link-aggregation selected-port maximum 1
#
interface GigabitEthernet1/0/22
port link-mode bridge
link-aggregation port-priority 40000
lacp period short port
link-aggregation group 23
#
interface GigabitEthernet1/0/23
port link-mode bridge
link-aggregation port-priority 60000
lacp period short
port link-aggregation group 23
#
track 22 interface GigabitEthernet1/0/22
track 23 interface GigabitEthernet1/0/23
#
rtm cli-policy 22down
event track 22 state negative
action 0 cli system-view
action 1 cli int g 1/0/22
action 2 cli link-agg port-priorit 60000
action 3 cli quit
action 4 cli int g 1/0/23
action 5 cli link-agg port-priorit 40000
```

```

action 6 cli quit
commit
user-role network-admin
#
rtm cli-policy 23down
event track 23 state negative
action 0 cli system-view
action 1 cli int g 1/0/22
action 2 cli link-agg port-priorit 40000
action 3 cli quit
action 4 cli int g 1/0/23
action 5 cli link-agg port-priorit 60000
action 6 cli quit
commit // commit 为开始 rtm cli-policy 策略命令，在display current-configuration 中不显示
user-role network-admin
#

```

两端 S5560X-EI 交换机采用上述方式部署后，缺省 G1/0/22 为选中端口，流量转发如图1。

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

```

.....
Aggregate Interface: Bridge-Aggregation23
Creation Mode: Manual
Aggregation Mode: Dynamic
Loadsharing Type: Shar Management
VLANs: None
System ID: 0x400, 0868-8d3c-c74c
Local:
Port Status Priority Index Oper-Key Flag
GE1/0/22(R) S 40000 4 2 {ABCDEF}
GE1/0/23 U 60000 3 2 {ABCD}
Remote:
Actor Priority Index Oper-Key SystemID Flag
GE1/0/22 40000 2 1 0x8000, 9ce8-956a-f9e3 {ABCDEF}
GE1/0/23 60000 1 1 0x8000, 9ce8-956a-f9e3 {ABCD}

```

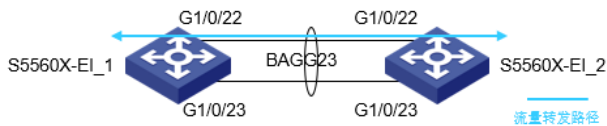


图1

2. 当 G1/0/22 链路故障 Down后，流量自动切换到G1/0/23接口转发，且触发CLI policy 22down策略，自动执行修改聚合接口优先级的策略。

此时流量转发如图2所示。

```
%Jul 1 10:57:02:144 2013 S5560X-EI_1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface GigabitEthernet1/0/22 changed to down.
```

.....

```
%Jul 1 10:57:02:426 2013 S5560X-EI_1 RTM/6/RTM_POLICY: CLI policy 22down is running successfully.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

```

.....
Aggregate Interface: Bridge-Aggregation23
Creation Mode: Manual
Aggregation Mode: Dynamic
Loadsharing Type: Shar Management
VLANs: None
System ID: 0x400, 0868-8d3c-c74c
Local:
Port Status Priority Index Oper-Key Flag
GE1/0/22 U 60000 4 2 {ABC}
GE1/0/23(R) S 40000 3 2 {ABCDEF}
Remote:
Actor Priority Index Oper-Key SystemID Flag
GE1/0/22 40000 2 1 0x8000, 9ce8-956a-f9e3 {ABEF}

```

GE1/0/23 40000 1 1 0x8000, 9ce8-956a-f9e3 {ABCDEF}



图2

3. 当 G1/0/22 接口链路恢复, 及G1/0/22接口 UP 后, 因为此时 G1/0/23 成员聚合接口优先级为40000, G1/0/22 成员聚合接口优先级为60000, 且 link-aggregation selected-port maximum 1, 因此 G1/0/23 仍然保持 Select 状态。G1/0/22不会因为恢复 UP, 而抢占 Select 状态。此时流量转发如图3所示。

```
%Jul 1 10:58:11:263 2013 S5560X-EI_1 IFNET/3/PHY_UPDOWN: Physical state on the interface GigabitEthernet1/0/22 changed to up.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```
Aggregate Interface: Bridge-Aggregation23
```

```
Creation Mode: Manual
```

```
Aggregation Mode: Dynamic
```

```
Loadsharing Type: Shar Management
```

```
VLANs: None
```

```
System ID: 0x400, 0868-8d3c-c74c
```

```
Local:
```

```
Port Status Priority Index Oper-Key Flag
```

```
GE1/0/22 U 60000 4 2 {ABC}
```

```
GE1/0/23(R) S 40000 3 2 {ABCDEF}
```

```
Remote:
```

```
Actor Priority Index Oper-Key SystemID Flag
```

```
GE1/0/22 60000 2 1 0x8000, 9ce8-956a-f9e3 {ABCD}
```

```
GE1/0/23 40000 1 1 0x8000, 9ce8-956a-f9e3 {ABCDEF}
```



图3

4. 当G1/0/23 链路故障 Down后, 流量自动切换到G1/0/22接口转发, 且触发CLI policy 23down策略, 自动执行修改聚合接口优先级的策略。

此时流量转发如图4所示。

```
%Jul 1 10:59:21:993 2013 S5560X-EI_1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface GigabitEthernet1/0/23 changed to down.
```

.....

```
%Jul 1 10:59:22:326 2013 S5560X-EI_1 RTM/6/RTM_POLICY: CLI policy 23down is running successfully.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```
Aggregate Interface: Bridge-Aggregation23
```

```
Creation Mode: Manual
```

```
Aggregation Mode: Dynamic
```

```
Loadsharing Type: Shar Management
```

```
VLANs: None
```

```
System ID: 0x400, 0868-8d3c-c74c
```

```
Local:
```

```
Port Status Priority Index Oper-Key Flag
```

```
GE1/0/22(R) S 40000 4 2 {ABCDEF}
```

```
GE1/0/23 U 60000 3 2 {ABC}
```

```
Remote:
```

```
Actor Priority Index Oper-Key SystemID Flag
```

```
GE1/0/22 40000 2 1 0x8000, 9ce8-956a-f9e3 {ABCDEF}
```

GE1/0/23 40000 1 1 0x8000, 9ce8-956a-f9e3 {ABEF}

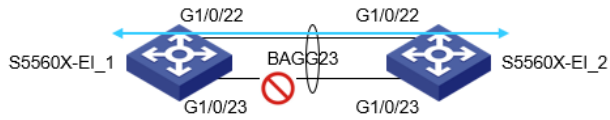


图4

5. 当 G1/0/23 接口链路恢复, 及G1/0/23接口 UP 后, 因为此时 G1/0/22 成员聚合接口优先级为40000, G1/0/23 成员聚合接口优先级为60000, 且 link-aggregation selected-port maximum 1, 因此 G1/0/22 仍然保持 Select 状态。G1/0/23不会因为恢复 UP, 而抢占 Select 状态。此时流量转发如图5所示。

```
%Jul 1 11:00:07:122 2013 S5560X_EI_1 IFNET/3/PHY_UPDOWN: Physical state on the interface GigabitEthernet1/0/23 changed to up.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```
Aggregate Interface: Bridge-Aggregation23
Creation Mode: Manual
Aggregation Mode: Dynamic
Loadsharing Type: Shar Management
VLANs: None
System ID: 0x400, 0868-8d3c-c74c
Local:
Port Status Priority Index Oper-Key Flag
GE1/0/22(R) S 40000 4 2 {ABCDEF}
GE1/0/23 U 60000 3 2 {ABCD}
Remote:
Actor Priority Index Oper-Key SystemID Flag
GE1/0/22 40000 2 1 0x8000, 9ce8-956a-f9e3 {ABCDEF}
GE1/0/23 60000 1 1 0x8000, 9ce8-956a-f9e3 {ABCD}
```

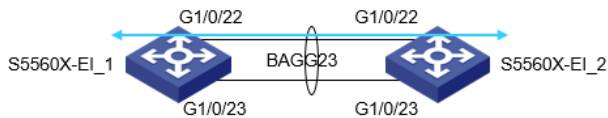


图5

采用静态聚合模式配置 (S5560X-EI_1 与 S5560X-EI_2 下列关键配置相同) :

```
1. 关键配置如下
#
interface Bridge-Aggregation23
link-aggregation selected-port maximum 1
#
interface GigabitEthernet1/0/22
port link-mode bridge
link-aggregation port-priority 40000
link-aggregation group 23
#
interface GigabitEthernet1/0/23
port link-mode bridge
link-aggregation port-priority 60000
port link-aggregation group 23
#
track 22 interface GigabitEthernet1/0/22
track 23 interface GigabitEthernet1/0/23
#
rtm cli-policy 22down
event track 22 state negative
action 0 cli system-view
action 1 cli int g 1/0/22
```

```

action 2 cli link-agg port-priorit 60000
action 3 cli quit
action 4 cli int g 1/0/23
action 5 cli link-agg port-priorit 40000
action 6 cli quit
commit
user-role network-admin
#
rtm cli-policy 23down
event track 23 state negative
action 0 cli system-view
action 1 cli int g 1/0/22
action 2 cli link-agg port-priorit 40000
action 3 cli quit
action 4 cli int g 1/0/23
action 5 cli link-agg port-priorit 60000
action 6 cli quit
commit // commit 为开始 rtm cli-policy 策略命令，在display current-configuration 中不显示
user-role network-admin
#

```

两端 S5560X-EI 交换机采用上述方式部署后，缺省 G1/0/22 为选中端口，流量转发如图1。

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```

Aggregate Interface: Bridge-Aggregation23
Aggregation Mode: Static
Loadsharing Type: Shar
Management VLANs: None
Port Status Priority Oper-Key
GE1/0/22(R) S 40000 2
GE1/0/23 U 60000 2

```



图1

2. 当 G1/0/22 链路故障 Down后，流量自动切换到G1/0/23接口转发，且触发CLI policy 22down策略，自动执行修改聚合接口优先级的策略。

此时流量转发如图2所示。

```
%Jul 1 11:37:05:578 2013 S5560X-EI_1 IFNET/3/PHY_UPDOWN: Physical state on the interface GigabitEthernet1/0/22 changed to down.
```

```
%Jul 1 11:37:05:797 2013 S5560X-EI_1 RTM/6/RTM_POLICY: CLI policy 22down is running successfully.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```

Aggregate Interface: Bridge-Aggregation23
Aggregation Mode: Static
Loadsharing Type: Shar
Management VLANs: None
Port Status Priority Oper-Key
GE1/0/22 U 60000 2
GE1/0/23(R) S 40000 2

```



图2

3. 当 G1/0/22 接口链路恢复，及G1/0/22接口 UP 后，因为此时 G1/0/23 成员聚合接口优先级为4000，G1/0/22 成员聚合接口优先级为60000，且 link-aggregation selected-port maximum 1，因此 G

1/0/23 仍然保持 Select 状态。G1/0/22不会因为恢复 UP，而抢占 Select 状态。此时流量转发如图3所示。

```
%Jul 1 11:37:18:720 2013 S5560X-EI_1 IFNET/3/PHY_UPDOWN: Physical state on the interface GigabitEthernet1/0/22 changed to up.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```
Aggregate Interface: Bridge-Aggregation23
```

```
Aggregation Mode: Static
```

```
Loadsharing Type: Shar
```

```
Management VLANs: None
```

```
Port Status Priority Oper-Key
```

```
GE1/0/22 U 60000 2
```

```
GE1/0/23(R) S 40000 2
```



图3

4. 当G1/0/23 链路故障 Down后，流量自动切换到G1/0/22接口转发，且触发CLI policy 23down策略，自动执行修改聚合接口优先级的策略。

此时流量转发如图4所示。

```
%Jul 1 11:37:39:513 2013 S5560X-EI_1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface GigabitEthernet1/0/23 changed to down
```

```
%Jul 1 11:37:39:790 2013 S5560X-EI_1 RTM/6/RTM_POLICY: CLI policy 23down is running successfully.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```
Aggregate Interface: Bridge-Aggregation23
```

```
Aggregation Mode: Static
```

```
Loadsharing Type: Shar
```

```
Management VLANs: None
```

```
Port Status Priority Oper-Key
```

```
GE1/0/22(R) S 40000 2
```

```
GE1/0/23 U 60000 2
```

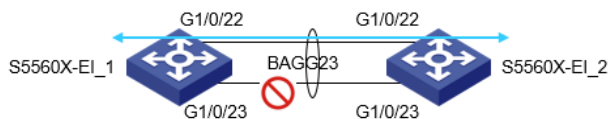


图4

5. 当 G1/0/23 接口链路恢复，及G1/0/23接口 UP 后，因为此时 G1/0/22 成员聚合接口优先级为40000，G1/0/23 成员聚合接口优先级为60000，且 link-aggregation selected-port maximum 1，因此 G1/0/22 仍然保持 Select 状态。G1/0/23不会因为恢复 UP，而抢占 Select 状态。此时流量转发如图5所示。

```
%Jul 1 11:38:02:234 2013 S5560X-EI_1 IFNET/3/PHY_UPDOWN: Physical state on the interface GigabitEthernet1/0/23 changed to up.
```

```
[S5560X-EI_1]display link-aggregation verbose bridge-aggregation 23
```

.....

```
Aggregate Interface: Bridge-Aggregation23
```

```
Aggregation Mode: Static
```

```
Loadsharing Type: Shar
```

```
Management VLANs: None
```

```
Port Status Priority Oper-Key
```

```
GE1/0/22(R) S 40000 2
```

```
GE1/0/23 U 60000 2
```

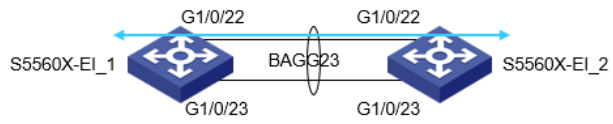


图5

配置关键点

采用EAA方式，管理员可让设备实现根据既定的触发条件，自动执行指令，实现一定程度的设备智能化。