L5000基于URL的二次跳转重定向七层负载业务异常案例

七层服务器负载均衡 吴昊A 2023-12-28 发表

组网及说明

客户端---LB---实服务器

问题描述

设备LB基于URL做七层负载，客户端请求来的流量先请求带有testzzwxyURL的域名，然后通过后再跳转请求带有ish URL的域名，测试时发现客户端无法访问成功。

主要地址如下：

虚服务地址：192.140.203.12

SNAT地址：192.140.203.12

testzzwxy实服务器地址：192.141.83.3 8081

ish实服务器地址：192.141.8.73 8081　192.141.8.74 8081

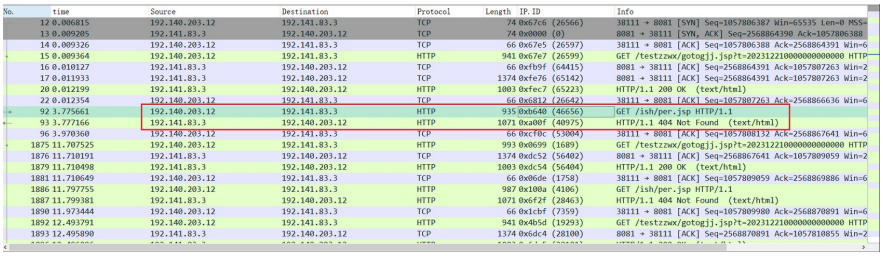
LB主要配置如下：

```
#
virtual-server gjjzzgrwsyw type http
 port 443
 virtual ip address 192.140.203.12
 parameter http pp-gjj
 lb-policy gjj_zzgrwsyw
 sticky COOKIE1
 ssl-server-policy gjj-20221221
 route-advertisement enable
 service enable
#
parameter-profile pp-gjj type http
 rebalance per-request
#
sticky-group COOKIE1 type http-COOKIE
 COOKIE insert
 check all-packet
#
loadbalance policy gjj_zzgrwsyw type http
 class gjj_zzgrwsyw_ish action https-upgrade
 class gjj_zzgrwsyw_testzzwx action gjjxcx_testzzwx
#
loadbalance class gjj_zzgrwsyw_ish type http match-any
 match 1 url ish
#
loadbalance class gjj_zzgrwsyw_testzzwx type http match-any
 match 1 url testzzwx
#
loadbalance action gjjxcx_testzzwx type http
 server-farm gjjxcx_testzzwx sticky COOKIE1
 header insert both name x-forwarded-for value %is
#
loadbalance action https-upgrade type http
 server-farm gjjzzgrwsyw_sf sticky COOKIE1
 header insert both name x-forwarded-for value %is
 header insert response name content-security-policy value upgrade-insecure-requests
#
server-farm gjjxcx_testzzwx
 predictor random
 snat-pool gjjzzgrwsyw_snat
 probe t1
 success-criteria at-least 1
 real-server gjjxcx_192.141.83.3_8081_testzzwx port 8081
  success-criteria at-least 1
  probe t1
#
```

```
real-server gjjxcx_192.141.83.3_8081_testzzwx
 ip address 192.141.83.3
 port 8081
 probe t1
 success-criteria at-least 1
#
server-farm gjjzzgrwsyw_sf
 predictor hash address source
 snat-pool gjjzzgrwsyw_snat
 probe t1
#
real-server gjjzzgrwsyw_192.141.80.73_8081
 ip address 192.141.80.73
 port 8081
 server-farm gjjzzgrwsyw_sf
#
real-server gjjzzgrwsyw_192.141.80.74_8081
 ip address 192.141.80.74
 port 8081
 server-farm gjjzzgrwsyw_sf
#
```

过程分析

通过再LB设备上抓包，发现LB七层负载代理请求时，针对testzzwxy URL的域名请求，设备可以正常转发到实服务器192.141.83.3 8081服务上，后续的域名跳转到ish后，设备依旧往192.141.83.3上负载，而不是向192.141.8.73/74上负载，导致服务器侧回复了404无效请求文件报错。



No.	time	Source	Destination	Protocol	Length	IP.ID	Info
12	0.006815	192.140.203.12	192.141.83.3	TCP	74	0x67c6 (26566)	38111 → 8081 [SYN] Seq=1057806387 Win=65535 Len=0 MSS=
13	0.009205	192.141.83.3	192.140.203.12	TCP	74	0x0000 (0)	8081 → 38111 [SYN, ACK] Seq=2568864390 Ack=1057806388
14	0.009326	192.140.203.12	192.141.83.3	TCP	66	0x67e5 (26597)	38111 → 8081 [ACK] Seq=1057806388 Ack=2568864391 Win=6
15	0.009364	192.140.203.12	192.141.83.3	HTTP	941	0x67e7 (26599)	GET /testzzwx/gotogjj.jsp?t=20231221000000000000 HTTP
16	0.010127	192.141.83.3	192.140.203.12	TCP	66	0xfb9f (64415)	8081 → 38111 [ACK] Seq=2568864391 Ack=1057807263 Win=2
17	0.011933	192.141.83.3	192.140.203.12	TCP	1374	0xfe76 (65142)	8081 → 38111 [ACK] Seq=2568864391 Ack=1057807263 Win=2
20	0.012199	192.141.83.3	192.140.203.12	HTTP	1003	0xfec7 (65223)	HTTP/1.1 200 OK (text/html)
22	0.012354	192.140.203.12	192.141.83.3	TCP	66	0x6812 (26642)	38111 → 8081 [ACK] Seq=1057807263 Ack=2568866636 Win=6
92	3.775661	192.140.203.12	192.141.83.3	HTTP	935	0xb640 (46656)	GET /ish/per.jsp HTTP/1.1
93	3.777166	192.141.83.3	192.140.203.12	HTTP	1071	0xa00f (40975)	HTTP/1.1 404 Not Found (text/html)
96	3.970360	192.140.203.12	192.141.83.3	TCP	66	0xcf0c (53004)	38111 → 8081 [ACK] Seq=1057808132 Ack=2568867641 Win=6
1875	11.707525	192.140.203.12	192.141.83.3	HTTP	993	0x0699 (1689)	GET /testzzwx/gotogjj.jsp?t=20231221000000000000 HTTP
1876	11.710191	192.141.83.3	192.140.203.12	TCP	1374	0xdc52 (56402)	8081 → 38111 [ACK] Seq=2568867641 Ack=1057809059 Win=2
1879	11.710498	192.141.83.3	192.140.203.12	HTTP	1003	0xdc54 (56404)	HTTP/1.1 200 OK (text/html)
1881	11.710649	192.140.203.12	192.141.83.3	TCP	66	0x06de (1758)	38111 → 8081 [ACK] Seq=1057809059 Ack=2568869886 Win=6
1886	11.797755	192.140.203.12	192.141.83.3	HTTP	987	0x100a (4106)	GET /ish/per.jsp HTTP/1.1
1887	11.799381	192.141.83.3	192.140.203.12	HTTP	1071	0x6f2f (28463)	HTTP/1.1 404 Not Found (text/html)
1890	11.973444	192.140.203.12	192.141.83.3	TCP	66	0x1cbf (7359)	38111 → 8081 [ACK] Seq=1057809980 Ack=2568870891 Win=6
1892	12.493791	192.140.203.12	192.141.83.3	HTTP	941	0x4b5d (19293)	GET /testzzwx/gotogjj.jsp?t=20231221000000000000 HTTP
1893	12.495890	192.141.83.3	192.140.203.12	TCP	1374	0x6dc4 (28100)	8081 → 38111 [ACK] Seq=2568870891 Ack=1057810855 Win=2

根据抓包定位问题出现在这个地方，针对这种二次跳转域名，并且域名服务器地址或者端口不同的业务模型，需要开启逐请求转发，即每来一个报文设备就重新根据LB policy策略进行负载调度。查看配置中是配置了并且调用了模版参数：

```
#
virtual-server gjjzzgrwsyw type http
 port 443
 virtual ip address 192.140.203.12
 parameter http pp-gjj
 lb-policy gjj_zzgrwsyw
 sticky COOKIE1
 ssl-server-policy gjj-20221221
 route-advertisement enable
 service enable
#
parameter-profile pp-gjj type http
 rebalance per-request
#
```

正常情况下调用了逐请求后，这种业务模型会重新负载到对应的域名服务器上请求报文，但是现场配置中在虚服务下调用了持续性组，虚服务下调度的持续性优先级最高，过来的流量匹配了持续性组后，就不会继续匹配lb-policy，所以导致后续跳转的ish域名请求不会负载到正确的实服务器上。

```
#
virtual-server gjjzzgrwsyw type http
 port 443
 virtual ip address 192.140.203.12
 parameter http pp-gjj
 lb-policy gjj_zzgrwsyw
 sticky COOKIE1
 ssl-server-policy gjj-20221221
```

```
 route-advertisement enable
 service enable
#
sticky-group COOKIE1 type http-COOKIE
 COOKIE insert
 check all-packet
#
```

解决方法

解决方案是取消虚服务下调用的持续性组

```
#
virtual-server gjjzzgrwsyw type http
 port 443
 virtual ip address 192.140.203.12
 parameter http pp-gjj
 lb-policy gjj_zzgrwsyw
 sticky COOKIE1          undo掉
 ssl-server-policy gjj-20221221
 route-advertisement enable
 service enable
#
```

如果客户又持续性组的需求，可以在负载动作中进行调用，例如：

```
#
loadbalance action gjjxcx_testzzwx type http
 server-farm gjjxcx_testzzwx sticky COOKIE1
 header insert both name x-forwarded-for value %is
#
loadbalance action https-upgrade type http
 server-farm gjjzzgrwsyw_sf sticky COOKIE1
 header insert both name x-forwarded-for value %is
 header insert response name content-security-policy value upgrade-insecure-requests
#
```

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