

AR系列路由器debugging ospf命令(二)

【举例】

例1: 三台设备之间建立OSPF邻居, 打开OSPF事件信息调试开关:

```
<ar46one>debugging ospf event
```

```
[ar46one]ospf
```

```
*0.699278100 ar46one RM/7/RTDBG:Setting Router Id 11.1.1.1 for OSPF Process 1 Succeed!
```

```
//成功设置OSPF进程1的Router Id为11.1.1.1
```

```
*0.699278210 ar46one RM/7/RTDBG:RM Creating OSPF SOCKET Task Succeed!
```

```
//路由管理创建OSPF SOCKET任务
```

```
*0.699278290 ar46one RM/7/RTDBG:RM Creating OSPF Task Succeed!
```

```
//路由管理创建OSPF任务
```

```
*0.699278370 ar46one RM/7/RTDBG:Creating Timers for OSPF Process 1 Succeed!
```

```
//为OSPF进程1创建计时器
```

```
*0.699278460 ar46one RM/7/RTDBG:Creating OSPF Process 1 Succeed!
```

```
//OSPF进程1创建成功
```

```
[ar46one-ospf-1-area-0.0.0.0]net 192.168.1.0 255.255.255.0
```

```
*0.699454260 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699454320 ar46one RM/7/RTDBG:ospf_interface_init: initializing interface 192.168.1.1 area 0.0.0.0
```

```
//在OSPF区域0.0.0.0中初始化接口地址192.168.1.1
```

```
*0.699454440 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699454500 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT Interface Up Down -> Waiting
```

```
//发生接口UP事件, 与广播网络相连的地址为192.168.1.1的状态由Down转变为Waiting
```

```
*0.699454650 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699454710 ar46one RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.1 type 1 interface 192.168.1.1 (Ethernet0/0/1)
```

```
//添加类型1的接口192.168.1.1
```

```
*0.699494280 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699494340 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 11.1.1.1 BDR: none
```

```
//OSPF为接口192.168.1.1所在网络选举DR为11.1.1.1, 没有BDR
```

```
*0.699494460 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699494520 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT Wait Timer Waiting -> DR
```

```
//等待计时器超时, 接口192.168.1.1的状态由Waiting转变为DR
```

```
*0.699496330 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699496390 ar46one RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.1(Ethernet0/0/1) ADD neighbor 192.168.1.2 (ID 5.0.0.2)
```

```
//为接口地址为192.168.1.1的Ethernet0/0/1接口增加邻居192.168.1.2 (ID为5.0.0.2)
```

```
*0.699496540 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699496600 ar46one RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.2 type 2 interface 192.168.1.1 (Ethernet0/0/1)
```

```
//添加类型2的接口192.168.1.2
```

```
*0.699496730 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699496790 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Hello Received Down -> Init
```

```
//收到Hello报文, 邻居192.168.1.2的状态由Down转变为Init
```

```
*0.699505280 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699505340 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 11.1.1.1 BDR: 5.0.0.2
```

```
//选举接口192.168.1.1所在网络的DR路由器为11.1.1.1, BDR路由器为5.0.0.2
```

```
*0.699505460 ar46one RM/7/RTDBG:OSPF Process 1
```

```
*0.699505520 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT Neighbor Change DR -> DR
```

```
//发生邻居变化事件, 接口192.168.1.1的状态有DR转变为DR
```

```
*0.699505670 ar46one RM/7/RTDBG:OSPF Process 1
```

*0.699505730 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT TwoWay Received Init -> Two Way
//收到TwoWay事件, 邻居192.168.1.2的状态由Init转变为Two Way

*0.699505880 ar46one RM/7/RTDBG:OSPF Process 1

*0.699505940 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Adjacency OK Two Way -> Exstart
//发生可以建立邻接事件, 邻居192.168.1.2的状态由Two Way转变为Exstart

*0.699506080 ar46one RM/7/RTDBG:OSPF Process 1

*0.699506140 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
//在Ex-Start状态收到DD (数据库描述) 报文

*0.699506250 ar46one RM/7/RTDBG: NBR:5.0.0.2 INTF:Ethernet0/0/1 AREA:0.0.0.0
//邻居路由器ID为5.0.0.2, 相连接口为Ethernet0/0/1,所在区域为0.0.0.0

*0.699506350 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
//邻居不具备Opaque能力

*0.699506450 ar46one RM/7/RTDBG:OSPF Process 1

*0.699506510 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.

*0.699506610 ar46one RM/7/RTDBG: NBR:5.0.0.2 INTF:Ethernet0/0/1 AREA:0.0.0.0

*0.699506710 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF

*0.699506810 ar46one RM/7/RTDBG:OSPF Process 1

*0.699506870 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Negotiation Done Exstart -> Exchange
//协商结束, 邻居192.168.1.2的状态由Exstart转变为Exchange

*0.699507020 ar46one RM/7/RTDBG:OSPF Process 1

*0.699507080 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Exchange Done Exchange -> Loading
// Exchange完成, 邻居192.168.1.2的状态由Exchange转变为Loading

*0.699507230 ar46one RM/7/RTDBG:OSPF Process 1

*0.699507290 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Loading Done Loading -> Full
// Loading完成, 邻居192.168.1.2的状态由Loading转变为Full

*0.699507430 ar46one RM/7/RTDBG:OSPF Process 1

*0.699507490 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.2 -> 224.0.0.5: LS ACK : duplicate ack
//在区域0.0.0.0收到从192.168.1.2发来的LS ACK报文

*0.699507620 ar46one RM/7/RTDBG:OSPF Process 1

*0.699507680 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 11.1.1.1 BDR: 5.0.0.2

*0.699507800 ar46one RM/7/RTDBG:OSPF Process 1

*0.699507860 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT Neighbor Change DR -> DR

*0.699511020 ar46one RM/7/RTDBG:OSPF Process 1

*0.699511080 ar46one RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.1(Ethernet0/0/1) ADD neighbor 192.168.1.3 (ID 3.0.0.1)

*0.699511230 ar46one RM/7/RTDBG:OSPF Process 1

*0.699511290 ar46one RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.3 type 2 interface 192.168.1.1 (Ethernet0/0/1)

*0.699511420 ar46one RM/7/RTDBG:OSPF Process 1

*0.699511480 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Hello Received Down -> Init

*0.699517640 ar46one RM/7/RTDBG:OSPF Process 1

*0.699517700 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 11.1.1.1 BDR: 5.0.0.2

*0.699517820 ar46one RM/7/RTDBG:OSPF Process 1

*0.699517880 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1EVENT Neighbor Change DR -> DR

*0.699518030 ar46one RM/7/RTDBG:OSPF Process 1

*0.699518090 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT TwoWay Received Init -> Two Way

*0.699518240 ar46one RM/7/RTDBG:OSPF Process 1

*0.699518300 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Adjacency OK Two Way -> Exstart

*0.699518440 ar46one RM/7/RTDBG:OSPF Process 1

*0.699518500 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.

*0.699518610 ar46one RM/7/RTDBG: NBR:3.0.0.1 INTF:Ethernet0/0/1 AREA:0.0.0.0

*0.699518710 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.699518810 ar46one RM/7/RTDBG:OSPF Process 1
*0.699518870 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.699518970 ar46one RM/7/RTDBG: NBR:3.0.0.1 INTF:Ethernet0/0/1 AREA:0.0.0.0
*0.699519070 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.699519170 ar46one RM/7/RTDBG:OSPF Process 1
*0.699519230 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT
Negotiation Done Exstart -> Exchange
*0.699519380 ar46one RM/7/RTDBG:OSPF Process 1
*0.699519440 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Exchange
Done Exchange -> Loading
*0.699519590 ar46one RM/7/RTDBG:OSPF Process 1
*0.699519650 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Loading D
one Loading -> Full
*0.699519790 ar46one RM/7/RTDBG:OSPF Process 1
*0.699519850 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.3 -> 224.0.0.6: LS ACK
: duplicate ack

[AR28two-ospf-1-area-0.0.0.0]net 192.168.1.0 255.255.255.0

*0.55570005 AR28two RM/7/RTDBG:OSPF Process 1
*0.55570060 AR28two RM/7/RTDBG:ospf_interface_init: initializing interface 192.168.1.2 area 0.0.0.
0
*0.55570180 AR28two RM/7/RTDBG:OSPF Process 1
*0.55570240 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT I
nterface Up Down -> Waiting
*0.55570390 AR28two RM/7/RTDBG:OSPF Process 1
*0.55570450 AR28two RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.2 type 1 interface 192.168.1.2 (E
thernet7/0)
*0.55578867 AR28two RM/7/RTDBG:OSPF Process 1
*0.55578920 AR28two RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.2(Ethernet7/0) ADD neighbo
r 192.168.1.1 (ID 11.1.1.1)
*0.55579070 AR28two RM/7/RTDBG:OSPF Process 1
*0.55579130 AR28two RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.1 type 2 interface 192.168.1.2 (E
thernet7/0)
*0.55579260 AR28two RM/7/RTDBG:OSPF Process 1
*0.55579320 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT HelloRecei
ved Down -> Init
*0.55579460 AR28two RM/7/RTDBG:OSPF Process 1
*0.55579520 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Two Way
Received Init -> Two Way
*0.55579660 AR28two RM/7/RTDBG:OSPF Process 1
*0.55579720 AR28two RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.2: DR: 11.1.1.1 BD
R: 5.0.0.2
*0.55579840 AR28two RM/7/RTDBG:OSPF Process 1
*0.55579900 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Adjacency
OK Two Way -> Exstart
*0.55580040 AR28two RM/7/RTDBG:OSPF Process 1
*0.55580100 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT B
ackup Seen Waiting -> BackupDR
//发生Backup Seen事件, 接口192.168.1.2状态由Waiting转变为BackupDR
*0.55580250 AR28two RM/7/RTDBG:OSPF Process 1
*0.55580310 AR28two RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state
*0.55580410 AR28two RM/7/RTDBG: NBR:11.1.1.1 INTF:Ethernet7/0 AREA:0.0.0.0
*0.55580500 AR28two RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.55580600 AR28two RM/7/RTDBG:OSPF Process 1
*0.55580660 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT
Negotiation Done Exstart -> Exchange
*0.55580810 AR28two RM/7/RTDBG:OSPF Process 1
*0.55580870 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Exchange
Done Exchange -> Loading
*0.55581010 AR28two RM/7/RTDBG:OSPF Process 1
*0.55581070 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Loading D
one Loading -> Full
*0.55584557 AR28two RM/7/RTDBG:OSPF Process 1

```
*0.55584610 AR28two RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.2(Ethernet7/0)ADD neighbor
192.168.1.3 (ID 3.0.0.1)
*0.55584750 AR28two RM/7/RTDBG:OSPF Process 1
*0.55584810 AR28two RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.3 type 2 interface 192.168.1.2 (E
thernet7/0)
*0.55584940 AR28two RM/7/RTDBG:OSPF Process 1
*0.55585000 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Hello Rece
ived Down -> Init
*0.55591105 AR28two RM/7/RTDBG:OSPF Process 1
*0.55591160 AR28two RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.2: DR: 11.1.1.1 BD
R: 5.0.0.2
*0.55591280 AR28two RM/7/RTDBG:OSPF Process 1
*0.55591340 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2EVENT N
eighbor Change BackupDR -> BackupDR
*0.55591490 AR28two RM/7/RTDBG:OSPF Process 1
*0.55591550 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Two Way
Received Init -> Two Way
*0.55591690 AR28two RM/7/RTDBG:OSPF Process 1
*0.55591750 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Adjacency
OK Two Way -> Exstart
*0.55591890 AR28two RM/7/RTDBG:OSPF Process 1
*0.55591950 AR28two RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state
*0.55592050 AR28two RM/7/RTDBG: NBR:3.0.0.1 INTF:Ethernet7/0 AREA:0.0.0.0
*0.55592141 AR28two RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF toOFF
*0.55592240 AR28two RM/7/RTDBG:OSPF Process 1
*0.55592300 AR28two RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state
*0.55592400 AR28two RM/7/RTDBG: NBR:3.0.0.1 INTF:Ethernet7/0 AREA:0.0.0.0
*0.55592490 AR28two RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF toOFF
*0.55592590 AR28two RM/7/RTDBG:OSPF Process 1
*0.55592650 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT
Negotiation Done Exstart -> Exchange
*0.55592790 AR28two RM/7/RTDBG:OSPF Process 1
*0.55592850 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Exchange
Done Exchange -> Loading
*0.55593000 AR28two RM/7/RTDBG:OSPF Process 1
*0.55593060 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Loading D
one Loading -> Full
*0.55593200 AR28two RM/7/RTDBG:OSPF Process 1
*0.55593260 AR28two RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.3 -> 224.0.0.6: LS ACK
: duplicate ack
*0.55596521 AR28two RM/7/RTDBG:OSPF Process 1
*0.55596580 AR28two RM/7/RTDBG:OSPF DR ELECTION Interface 40.1.1.2: DR: 5.0.0.2BDR: non
e
*0.55596690 AR28two RM/7/RTDBG:OSPF Process 1
*0.55596750 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 40.1.1.2 EVENT Wait
Timer Waiting -> DR

[ar28four-ospf-1-area-0.0.0.0]net 192.168.1.0 255.255.255.0
*0.4970856 ar28four RM/7/RTDBG:OSPF Process 1
*0.4970856 ar28four RM/7/RTDBG:ospf_interface_init: initializing interface 192.168.1.3 area 0.0.0.0
*0.4970857 ar28four RM/7/RTDBG:OSPF Process 1
*0.4970857 ar28four RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.3 EVENT Int
erface Up Down -> Waiting
*0.4970857 ar28four RM/7/RTDBG:OSPF Process 1
*0.4970857 ar28four RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.3 type 1 interface 192.168.1.3 (Eth
ernet0/0)
[ar28four-ospf-1-area-0.0.0.0]
*0.4975106 ar28four RM/7/RTDBG:OSPF Process 1
*0.4975106 ar28four RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.3(Ethernet0/0) ADD neighbor
192.168.1.1 (ID 11.1.1.1)
*0.4975106 ar28four RM/7/RTDBG:OSPF Process 1
*0.4975106 ar28four RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.1 type 2 interface 192.168.1.3 (Eth
ernet0/0)
*0.4975106 ar28four RM/7/RTDBG:OSPF Process 1
```

```
*0.4975106 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Hello Received Down -> Init
*0.4975106 ar28four RM/7/RTDBG:OSPF Process 1
*0.4975107 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Two Way Received Init -> Two Way
*0.4977403 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977403 ar28four RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.3(Ethernet0/0) ADD neighbor 192.168.1.2 (ID 5.0.0.2)
*0.4977403 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977404 ar28four RM/7/RTDBG:ospf_nh_add: ADD 192.168.1.2 type 2 interface 192.168.1.3 (Ethernet0/0)
*0.4977404 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977404 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT HelloReceived Down -> Init
*0.4977404 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977404 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Two Way Received Init -> Two Way
*0.4977404 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977404 ar28four RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.3: DR: 11.1.1.1 BDR: 5.0.0.2
*0.4977405 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977405 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Adjacency OK Two Way -> Exstart
*0.4977405 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977405 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Adjacency OK Two Way -> Exstart
*0.4977405 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977405 ar28four RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.3 EVENT Backup Seen Waiting -> DROther
//发生Backup Seen事件, 接口192.168.1.3的状态由Waiting转变为DROther
*0.4977412 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977412 ar28four RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state
*0.4977412 ar28four RM/7/RTDBG: NBR:11.1.1.1 INTF:Ethernet0/0 AREA:0.0.0.0
*0.4977412 ar28four RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.4977412 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977412 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Negotiation Done Exstart -> Exchange
*0.4977412 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977413 ar28four RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.3: DR: 11.1.1.1 BDR: 5.0.0.2
*0.4977413 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977413 ar28four RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.3 EVENT Neighbor Change DROther -> DROther
*0.4977413 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977413 ar28four RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state
*0.4977413 ar28four RM/7/RTDBG: NBR:5.0.0.2 INTF:Ethernet0/0 AREA:0.0.0.0
*0.4977413 ar28four RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.4977414 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977414 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Negotiation Done Exstart -> Exchange
*0.4977417 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977417 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Exchange Done Exchange -> Loading
*0.4977420 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977421 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Exchange Done Exchange -> Loading
*0.4977421 ar28four RM/7/RTDBG:OSPF Process 1
*0.4977421 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Loading Done Loading -> Full
将其中一台设备的接口OSPF DR值设置为0:
[ar46one-Ethernet0/0/1]ospf dr 0
*0.718924800 ar46one RM/7/RTDBG:OSPF Process 1
*0.718924860 ar46one RM/7/RTDBG:ospf_ifdown: Interface Ethernet0/0/1 (Ethernet0/0/1) DOWN
//接口Ethernet0/0/1断开连接
```

*0.718924970 ar46one RM/7/RTDBG:OSPF Process 1
*0.718925030 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT I
nterface Down DR -> Down
//发生接口down事件, 接口192.168.1.1的状态由DR转变为Down
*0.718925180 ar46one RM/7/RTDBG:OSPF Process 1
*0.718925240 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Inactivity T
imer Full -> Down
//无效计时器超时, 邻居192.168.1.2状态由Full转变为Down
*0.718925390 ar46one RM/7/RTDBG:OSPF Process 1
*0.718925450 ar46one RM/7/RTDBG:ospf_nbr_delete: interface 192.168.1.1(Ethernet0/0/1) DELETE
neighbor 192.168.1.2 (ID 5.0.0.2)
//接口地址为192.168.1.1的Ethernet0/0/1清除邻居192.168.1.2 (ID 5.0.0.2)
*0.718925610 ar46one RM/7/RTDBG:OSPF Process 1
*0.718925670 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Inactivity T
imer Full -> Down
//无效计时器超时, 邻居192.168.1.3状态由Full转变为Down
*0.718925830 ar46one RM/7/RTDBG:OSPF Process 1
*0.718925890 ar46one RM/7/RTDBG:ospf_nbr_delete: interface 192.168.1.1(Ethernet0/0/1) DELETE
neighbor 192.168.1.3 (ID 3.0.0.1)
//接口地址为192.168.1.1的Ethernet0/0/1清除邻居192.168.1.3 (ID 3.0.0.1)
*0.718926050 ar46one RM/7/RTDBG:OSPF Process 1
*0.718926110 ar46one RM/7/RTDBG:ospf_interface_init: initializing interface 192.168.1.1 area 0.0.0.
0
*0.718926230 ar46one RM/7/RTDBG:OSPF Process 1
*0.718926290 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT I
nterface Up Down -> DROther
*0.718926440 ar46one RM/7/RTDBG:OSPF Process 1
*0.718926500 ar46one RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.1(Ethernet0/0/1) ADD neigh
bor 192.168.1.3 (ID 3.0.0.1)
*0.718926650 ar46one RM/7/RTDBG:OSPF Process 1
*0.718926710 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Hello Rece
ived Down -> Init
*0.718926860 ar46one RM/7/RTDBG:OSPF Process 1
*0.718926920 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 3.0.0.1 BDR
: 3.0.0.1
*0.718927040 ar46one RM/7/RTDBG:OSPF Process 1
*0.718927100 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Adjacency
OK Two Way -> Exstart
*0.718927240 ar46one RM/7/RTDBG:OSPF Process 1
*0.718927300 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT
Neighbor Change DROther -> DROther
*0.718927450 ar46one RM/7/RTDBG:OSPF Process 1
*0.718927510 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT TwoWay R
eceived Init -> Exstart
*0.718931520 ar46one RM/7/RTDBG:OSPF Process 1
*0.718931580 ar46one RM/7/RTDBG:ospf_nbr_add: interface 192.168.1.1(Ethernet0/0/1) ADD neigh
bor 192.168.1.2 (ID 5.0.0.2)
*0.718931730 ar46one RM/7/RTDBG:OSPF Process 1
*0.718931790 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Hello Rece
ived Down -> Init
*0.718931930 ar46one RM/7/RTDBG:OSPF Process 1
*0.718931990 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 5.0.0.2 BDR
: 5.0.0.2
*0.718932110 ar46one RM/7/RTDBG:OSPF Process 1
*0.718932170 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Adjacency
OK Two Way -> Exstart
*0.718932310 ar46one RM/7/RTDBG:OSPF Process 1
*0.718932370 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Reset Adja
cency Exstart -> Two Way
*0.718932520 ar46one RM/7/RTDBG:OSPF Process 1
*0.718932580 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT
Neighbor Change DROther -> DROther
*0.718932730 ar46one RM/7/RTDBG:OSPF Process 1
*0.718932790 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT TwoWay R

eceived Init -> Exstart
*0.718932940 ar46one RM/7/RTDBG:OSPF Process 1
*0.718933000 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 5.0.0.2 BDR : 3.0.0.1
*0.718933120 ar46one RM/7/RTDBG:OSPF Process 1
*0.718933180 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT Neighbor Change DROther -> DROther
*0.718933330 ar46one RM/7/RTDBG:OSPF Process 1
*0.718933390 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.718933500 ar46one RM/7/RTDBG: NBR:5.0.0.2 INTF:Ethernet0/0/1 AREA:0.0.0.0
*0.718933600 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.718933700 ar46one RM/7/RTDBG:OSPF Process 1
*0.718933760 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.718933860 ar46one RM/7/RTDBG: NBR:5.0.0.2 INTF:Ethernet0/0/1 AREA:0.0.0.0
*0.718933960 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.718934060 ar46one RM/7/RTDBG:OSPF Process 1
*0.718934120 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.718934220 ar46one RM/7/RTDBG: NBR:5.0.0.2 INTF:Ethernet0/0/1 AREA:0.0.0.0
*0.718934320 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.718934430 ar46one RM/7/RTDBG:OSPF Process 1
*0.718934490 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Negotiation Done Exstart -> Exchange
*0.718934640 ar46one RM/7/RTDBG:OSPF Process 1
*0.718934700 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Exchange Done Exchange -> Loading
*0.718934840 ar46one RM/7/RTDBG:OSPF Process 1
*0.718934900 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.2 EVENT Loading Done Loading -> Full
*0.718935040 ar46one RM/7/RTDBG:OSPF Process 1
*0.718935100 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.3 -> 224.0.0.5: LS ACK: neighbor state low
*0.718935440 ar46one RM/7/RTDBG:OSPF Process 1
*0.718935500 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.1: DR: 5.0.0.2 BDR : 3.0.0.1
*0.718935620 ar46one RM/7/RTDBG:OSPF Process 1
*0.718935680 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Adjacency OK Two Way -> Exstart
*0.718935820 ar46one RM/7/RTDBG:OSPF Process 1
*0.718935880 ar46one RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.1 EVENT Neighbor Change DROther -> DROther
*0.718936030 ar46one RM/7/RTDBG:OSPF Process 1
*0.718936090 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.718936190 ar46one RM/7/RTDBG: NBR:3.0.0.1 INTF:Ethernet0/0/1 AREA:0.0.0.0
*0.718936290 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.718936400 ar46one RM/7/RTDBG:OSPF Process 1
*0.718936460 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.3 -> 224.0.0.5: LS UPD: neighbor state low
*0.718936600 ar46one RM/7/RTDBG:OSPF Process 1
*0.718936660 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.718936760 ar46one RM/7/RTDBG: NBR:3.0.0.1 INTF:Ethernet0/0/1 AREA:0.0.0.0
*0.718936860 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.718936960 ar46one RM/7/RTDBG:OSPF Process 1
*0.718937020 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Negotiation Done Exstart -> Exchange
*0.718937170 ar46one RM/7/RTDBG:OSPF Process 1
*0.718937230 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Exchange Done Exchange -> Loading
*0.718937380 ar46one RM/7/RTDBG:OSPF Process 1
*0.718937440 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Loading Done Loading -> Full

*0.24190344 ar28four RM/7/RTDBG:OSPF Process 1
*0.24190344 ar28four RM/7/RTDBG:Lost Neighbor 11.1.1.1 with address 192.168.1.1 due to HELLO received without my ID.

```
//收到的Hello报文中不包含本地路由器ID因此丢失地址为192.168.1.1的11.1.1.1这个邻居
*0.24190345 ar28four RM/7/RTDBG:OSPF Process 1
*0.24190345 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Oneway
Full -> Init
//发生Oneway事件, 邻居192.168.1.1的状态由Full转变为Init
*0.24196993 ar28four RM/7/RTDBG:OSPF Process 1
*0.24196993 ar28four RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.3 EVENT N
eighbor Change DROther -> BackupDR
//邻居发生变化, 接口192.168.1.3状态由DROther转变为BackupDR
*0.24197781 ar28four RM/7/RTDBG:OSPF Process 1
*0.24197782 ar28four RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.1 -> 224.0.0.6: LS UPD:
neighbor state low
//在区域0中收到了192.168.1.1发送的LS UPD报文, 但此时的邻居状态级别较低
*0.24197979 ar28four RM/7/RTDBG:OSPF Process 1
*0.24197979 ar28four RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.1 -> 224.0.0.6: LS ACK:
neighbor state low
//在区域0中收到了192.168.1.1发送的LS ACK报文, 但此时的邻居状态级别较低
*0.24200875 ar28four RM/7/RTDBG:OSPF Process 1
*0.24200876 ar28four RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.24200876 ar28four RM/7/RTDBG: NBR:11.1.1.1 INTF:Ethernet0/0 AREA:0.0.0.0
*0.24200876 ar28four RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.24200876 ar28four RM/7/RTDBG:OSPF Process 1
*0.24200876 ar28four RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Negotiation
Done Exstart -> Exchange
*0.74804395 AR28two RM/7/RTDBG:OSPF Process 1
*0.74804450 AR28two RM/7/RTDBG:Lost Neighbor 11.1.1.1 with address 192.168.1.1 due to HELLO
received without my ID.
*0.74804590 AR28two RM/7/RTDBG:OSPF Process 1
*0.74804650 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT One
way Full -> Init
*0.74804780 AR28two RM/7/RTDBG:OSPF Process 1
*0.74804840 AR28two RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.2: DR: 5.0.0.2 BDR
: 3.0.0.1
*0.74804960 AR28two RM/7/RTDBG:OSPF Process 1
*0.74805020 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT
Neighbor Change BackupDR -> DR
//邻居变化, 接口192.168.1.2状态由BackupDR转变为DR
*0.74811045 AR28two RM/7/RTDBG:OSPF Process 1
*0.74811100 AR28two RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.2: DR: 5.0.0.2 BDR
: 3.0.0.1
*0.74811220 AR28two RM/7/RTDBG:OSPF Process 1
*0.74811280 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT
Neighbor Change DR -> DR
*0.74811430 AR28two RM/7/RTDBG:OSPF Process 1
*0.74811490 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Two Way
Received Init -> Two Way
*0.74811630 AR28two RM/7/RTDBG:OSPF Process 1
*0.74811690 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Adjacency
OK Two Way -> Exstart
*0.74811830 AR28two RM/7/RTDBG:OSPF Process 1
*0.74811890 AR28two RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state
*0.74811990 AR28two RM/7/RTDBG: NBR:11.1.1.1 INTF:Ethernet7/0 AREA:0.0.0.0
*0.74812080 AR28two RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.74812180 AR28two RM/7/RTDBG:OSPF Process 1
*0.74812240 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT
Negotiation Done Exstart -> Exchange
*0.74812380 AR28two RM/7/RTDBG:OSPF Process 1
*0.74812440 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Exchange
Done Exchange -> Loading
*0.74812580 AR28two RM/7/RTDBG:OSPF Process 1
*0.74812640 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Loading D
one Loading -> Full
*0.74814923 AR28two RM/7/RTDBG:OSPF Process 1
*0.74814980 AR28two RM/7/RTDBG:OSPF DR ELECTION Interface 192.168.1.2: DR: 5.0.0.2 BDR
```


: 3.0.0.1

*0.74815100 AR28two RM/7/RTDBG:OSPF Process 1

*0.74815160 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT Neighbor Change DR -> DR

将其中一台设备使能OSPF的接口shutdown:

[AR28two-Ethernet7/0]shut

*0.78703023 AR28two RM/7/RTDBG:OSPF Process 1

*0.78703080 AR28two RM/7/RTDBG:ospf_nh_collect: DELETE 192.168.1.2 type 1 interface 192.168.1.2 (Ethernet7/0)

//删除类型1的接口192.168.1.2

*0.78703210 AR28two RM/7/RTDBG:OSPF Process 1

*0.78703270 AR28two RM/7/RTDBG:ospf_ifdown: Interface Ethernet7/0 (Ethernet7/0)DOWN

*0.78703370 AR28two RM/7/RTDBG:OSPF Process 1

*0.78703430 AR28two RM/7/RTDBG:OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT Interface Down DR -> Down

*0.78703580 AR28two RM/7/RTDBG:OSPF Process 1

*0.78703640 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.1 EVENT Inactivity Timer Full -> Down

*0.78703780 AR28two RM/7/RTDBG:OSPF Process 1

*0.78703840 AR28two RM/7/RTDBG:ospf_nbr_delete: interface 192.168.1.2(Ethernet7/0) DELETE neighbor 192.168.1.1 (ID 11.1.1.1)

*0.78703990 AR28two RM/7/RTDBG:OSPF Process 1

*0.78704050 AR28two RM/7/RTDBG:OSPF TRANSITION Neighbor 192.168.1.3 EVENT Inactivity Timer Full -> Down

*0.78704190 AR28two RM/7/RTDBG:OSPF Process 1

*0.78704250 AR28two RM/7/RTDBG:ospf_nbr_delete: interface 192.168.1.2(Ethernet7/0) DELETE neighbor 192.168.1.3 (ID 3.0.0.1)

*0.78704400 AR28two RM/7/RTDBG:OSPF Process 1

*0.78704460 AR28two RM/7/RTDBG:ospf_nh_collect: DELETE 192.168.1.1 type 2 interface 192.168.1.2 (Ethernet7/0)

//删除类型2的接口192.168.1.1

*0.78704590 AR28two RM/7/RTDBG:OSPF Process 1

*0.78704650 AR28two RM/7/RTDBG:ospf_nh_collect: DELETE 192.168.1.3 type 2 interface 192.168.1.2 (Ethernet7/0)

将同一链路上两个接口的OSPF类型改变为ptop类型后, 可以看到

*0.885000660 ar46one RM/7/RTDBG:OSPF Process 1

*0.885000720 ar46one RM/7/RTDBG:ospf_interface_init: initializing interface 10.1.1.1 area 0.0.0.1

*0.885000840 ar46one RM/7/RTDBG:OSPF Process 1

*0.885000900 ar46one RM/7/RTDBG:OSPF TRANSITION Point To Point Interface 10.1.1.1 EVENT Interface Up Down -> PtoP

//发生接口up事件, 接口状态由失效 (Down) 转变为点到点 (PtoP)

*0.885001050 ar46one RM/7/RTDBG:OSPF Process 1

*0.885001110 ar46one RM/7/RTDBG:ospf_nh_add: ADD 10.1.1.1 type 1 interface 10.1.1.1 (Ethernet 2/0/0)

*0.885001650 ar46one RM/7/RTDBG:OSPF Process 1

*0.885001710 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.1 10.1.1.2 -> 224.0.

0.5: HELLO: extern option mismatch

//收到HELLO报文, 但扩展选项字段不匹配

*0.885072230 ar46one RM/7/RTDBG:OSPF Process 1

*0.885072290 ar46one RM/7/RTDBG:ospf_nh_add: ADD 10.1.1.2 type 2 interface 10.1.1.1 (Ethernet 2/0/0)

*0.885072410 ar46one RM/7/RTDBG:OSPF Process 1

*0.885072470 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Hello Received Down -> Init

*0.885082270 ar46one RM/7/RTDBG:OSPF Process 1

*0.885082330 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Two Way Received Init -> Two Way

*0.885082470 ar46one RM/7/RTDBG:OSPF Process 1

*0.885082530 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Adjacency OK Two Way -> Exstart

将同一链路上两个接口的OSPF类型改变为NBMA类型, 可以看到:

*0.886981610 ar46one RM/7/RTDBG:OSPF Process 1

```

*0.886981670 ar46one RM/7/RTDBG:ospf_interface_init: initializing interface 10.1.1.1 area 0.0.0.1
*0.886981790 ar46one RM/7/RTDBG:OSPF Process 1
*0.886981850 ar46one RM/7/RTDBG:OSPF TRANSITION Nonbroadcast Interface 10.1.1.1 EVENT I
nterface Up Down -> Waiting
*0.886982000 ar46one RM/7/RTDBG:OSPF Process 1
*0.886982060 ar46one RM/7/RTDBG:ospf_nh_add: ADD 10.1.1.1 type 1 interface 10.1.1.1 (Ethernet
2/0/0)
[ar46one-ospf-1]peer 10.1.1.2
//配置OSPF对端
*0.887014330 ar46one RM/7/RTDBG:OSPF Process 1
*0.887014390 ar46one RM/7/RTDBG:ospf_nbr_add: interface 10.1.1.1(Ethernet2/0/0) ADD neighbor
10.1.1.2 (ID Unknown)
//为接口10.1.1.1添加ID未知的邻居10.1.1.2
*0.887014530 ar46one RM/7/RTDBG:OSPF Process 1
*0.887014590 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Start
Down -> Attempt
//启动事件发生, 邻居10.1.1.2的状态由失效 (Down)状态转变为尝试 (Attempt) 状态
*0.887090410 ar46one RM/7/RTDBG:OSPF Process 1
*0.887090470 ar46one RM/7/RTDBG:ospf_nh_add: ADD 10.1.1.2 type 2 interface 10.1.1.1 (Ethernet
2/0/0)
*0.887090590 ar46one RM/7/RTDBG:OSPF Process 1
*0.887090650 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Hello Receive
d Attempt -> Init
//收到Hello报文, 邻居10.1.1.2的状态由尝试 (Attempt) 转变为初始 (Init) 状态
*0.887101680 ar46one RM/7/RTDBG:OSPF Process 1
*0.887101740 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 10.1.1.1: DR: 4.1.1.2 BDR: no
ne
*0.887101850 ar46one RM/7/RTDBG:OSPF Process 1
*0.887101910 ar46one RM/7/RTDBG:OSPF TRANSITION Nonbroadcast Interface 10.1.1.1 EVENT
Wait Timer Waiting -> DR
*0.887107680 ar46one RM/7/RTDBG:OSPF Process 1
*0.887107740 ar46one RM/7/RTDBG:OSPF DR ELECTION Interface 10.1.1.1: DR: 4.1.1.2 BDR: 19
2.168.5.1
*0.887107860 ar46one RM/7/RTDBG:OSPF Process 1
*0.887107920 ar46one RM/7/RTDBG:OSPF TRANSITION Nonbroadcast Interface 10.1.1.1 EVENT
Neighbor Change DR -> DR
*0.887108070 ar46one RM/7/RTDBG:OSPF Process 1
*0.887108130 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Two Way Rec
eived Init -> Two Way
*0.887108270 ar46one RM/7/RTDBG:OSPF Process 1
*0.887108330 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Adjacency OK
Two Way -> Exstart
*0.887108470 ar46one RM/7/RTDBG:OSPF Process 1
*0.887108530 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.887108640 ar46one RM/7/RTDBG: NBR:192.168.5.1 INTF:Ethernet2/0/0 AREA:0.0.0.1
*0.887108740 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.887108840 ar46one RM/7/RTDBG:OSPF Process 1
*0.887108900 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Negotiation D
one Exstart -> Exchange
*0.887109040 ar46one RM/7/RTDBG:OSPF Process 1
*0.887109100 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Exchange
Done Exchange -> Loading
*0.887109240 ar46one RM/7/RTDBG:OSPF Process 1
*0.887109300 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT LoadingDone
Loading -> Full

```

例2：建立虚连接，打开OSPF事件信息调试开关：

```

[ar46one-ospf-1-area-0.0.0.1]vlink 192.168.5.1
*0.889355110 ar46one RM/7/RTDBG:OSPF Process 1
*0.889355170 ar46one RM/7/RTDBG:ospf_interface_init: initializing virtual interface to neighbor ID 19
2.168.5.1 area 0.0.0.0
//初始化到邻居192.168.5.1的虚拟接口
*0.889355320 ar46one RM/7/RTDBG:OSPF Process 1
*0.889355380 ar46one RM/7/RTDBG:OSPF TRANSITION Virtual Interface 10.1.1.2 EVENT Interfac

```

```

e Up Down -> PtoP
//发生接口UP事件, 虚拟接口10.1.1.2的状态由失效 (Down) 转变为点到点 (PtoP)
*0.889359900 ar46one RM/7/RTDBG:OSPF Process 1
*0.889359960 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Hello Receive
d Down -> Init
*0.889365180 ar46one RM/7/RTDBG:OSPF Process 1
*0.889365240 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Two WayRece
ived Init -> Two Way
*0.889365380 ar46one RM/7/RTDBG:OSPF Process 1
*0.889365440 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Adjacency OK
Two Way -> Exstart
*0.889365580 ar46one RM/7/RTDBG:OSPF Process 1
*0.889365640 ar46one RM/7/RTDBG: Received DD Packet<Externals> in Ex-Start state.
*0.889365740 ar46one RM/7/RTDBG: NBR:192.168.5.1 INTF:Ethernet2/0/0 AREA:0.0.0.0
*0.889365840 ar46one RM/7/RTDBG: Switch neighbor's Opaque-Capability from OFF to OFF
*0.889365940 ar46one RM/7/RTDBG:OSPF Process 1
*0.889366000 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Negotiation D
one Exstart -> Exchange
*0.889366140 ar46one RM/7/RTDBG:OSPF Process 1
*0.889366200 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Exchange
Done Exchange -> Loading
*0.889366340 ar46one RM/7/RTDBG:OSPF Process 1
*0.889366400 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT LoadingDone
Loading -> Full
*0.889366540 ar46one RM/7/RTDBG:OSPF Process 1
*0.889366600 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 10.1.1.2 -> 10.1.1
.1: LS ACK: duplicate ack
// 删除虚连接:
*0.889630510 ar46one RM/7/RTDBG:OSPF Process 1
*0.889630570 ar46one RM/7/RTDBG:ospf_ifdown: Interface Ethernet2/0/0 (Ethernet2/0/0) DOWN
*0.889630740 ar46one RM/7/RTDBG:OSPF TRANSITION Virtual Interface 10.1.1.2 EVENT Interfac
e Down PtoP -> Down
//发生接口Down的事件, 虚拟接口10.1.1.2的状态有点到点 (PtoP) 转变为失效 (Down) 状态
*0.889630890 ar46one RM/7/RTDBG:OSPF Process 1
*0.889630950 ar46one RM/7/RTDBG:OSPF TRANSITION Neighbor 10.1.1.2 EVENT Inactivity Time
r Full -> Down

```

例3. 打开ospf事件调试信息开关, 发生一些错误时显示的调试信息:

```

*0.957154280 ar46one RM/7/RTDBG:OSPF Process 1
*0.957154340 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.2 -> 224.0.
0.5: HELLO: dead timer mismatch
//收到hello报文中dead timer和本地的不匹配
*0.957293430 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.2 -> 224.0.
0.5: HELLO: hello timer mismatch
//收到报文中的hello timer和本地的不匹配
*0.957559280 ar46one RM/7/RTDBG:OSPF Process 1
*0.957559340 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.2 -> 224.0.
0.5: OSPF: wrong authentication type
//认证不匹配
*0.957677330 ar46one RM/7/RTDBG:OSPF Process 1
*0.957677390 ar46one RM/7/RTDBG:OSPF RECV Area 0.0.0.0 192.168.1.2 -> 224.0.
0.5: HELLO: netmask mismatch
//收到Hello报文的掩码不匹配
[ar46one-ospf-1-area-0.0.0.0]
*0.957955370 ar46one RM/7/RTDBG:OSPF RECV 192.168.1.2 -> 192.168.1.1: IP: wrong destinati
on
*0.957955490 ar46one RM/7/RTDBG:The Input Intf of OSPF at OSPF is NULL
//未使能OSPF的ATM接口收到hello报文时, 提示接口未使能OSPF

```

例4: 四台设备之间建立OSPF邻居, 并在其中一些设备上引入外部路由, 打开OSPF LSA报文信息调试开关:

```

<ar28three>debugging ospf lsa-originate
[ar28three-ospf-1-area-0.0.0.1]net 10.1.1.0 255.255.255.0
*0.151748466 ar28three RM/7/RTDBG:OSPF Process 1

```

```
*0.151748520 ar28three RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
//在区域0.0.0.1中创建OSPF LSA
*0.151748600 ar28three RM/7/RTDBG:OSPF LSA BUILD Router Id: 192.168.5.1 Ad
vRtr: 192.168.5.1 Age: 0
//创建LSA为Router类型, Id为192.168.5.1, 通告路由器: 192.168.5.1, Age为0
*0.151748730 ar28three RM/7/RTDBG:OSPF LSA BUILD Len: 24 Seq #: 800000
01 Checksum: 0
//创建LSA的长度为: 24bytes, 序列号: 80000001, 检验和: 0
*0.151748840 ar28three RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
//创建LSA的Options为:DC
*0.151748920 ar28three RM/7/RTDBG:OSPF LSA BUILD Capabilities: As Border
: Off Area Border: Off
//路由器既不是ABR也不是ASBR
*0.151749040 ar28three RM/7/RTDBG:OSPF Process 1
*0.151749100 ar28three RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.151749180 ar28three RM/7/RTDBG:OSPF LSA BUILD Router Id: 192.168.5.1 Ad
vRtr: 192.168.5.1 Age: 0
*0.151749310 ar28three RM/7/RTDBG:OSPF LSA BUILD Len: 36 Seq #: 800000
02 Checksum: 0
*0.151749430 ar28three RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.151749510 ar28three RM/7/RTDBG:OSPF LSA BUILD Capabilities: As Border
: Off Area Border: Off
*0.151749630 ar28three RM/7/RTDBG:OSPF LSA BUILD StubNet ID: 10.1.1.0
Data: 255.255.255.0 metric: 1
//LSA包含的StubNet ID: 10.1.1.0, 数据为: 255.255.255.0, 度量值: 1
*0.151754280 ar28three RM/7/RTDBG:OSPF Process 1
*0.151754340 ar28three RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.151754420 ar28three RM/7/RTDBG:OSPF LSA BUILD Stub Id: 10.1.1.0 Ad
vRtr: 192.168.5.1 Age: 0
//LSA类型为Stub, Id: 10.1.1.0, 通告路由器:192.168.5.1, Age:0
*0.151754560 ar28three RM/7/RTDBG:OSPF LSA BUILD Len: 24 Seq #:
0 Checksum: 0x610b
//LSA的长度: 24bytes, 序列号: 0, 检验和: 0x610b
*0.151754670 ar28three RM/7/RTDBG:OSPF LSA BUILD Options:(Non DC)
//LSA的Options为:DC
[ar46one-ospf-1-area-0.0.0.1]net 10.1.1.0 255.255.255.0
*0.797944380 ar46one RM/7/RTDBG:OSPF Process 1
*0.797944440 ar46one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.797944510 ar46one RM/7/RTDBG:OSPF LSA BUILD Router Id: 11.1.1.1 Ad
vRtr: 11.1.1.1 Age: 0
*0.797944640 ar46one RM/7/RTDBG:OSPF LSA BUILD Len: 36 Seq #: 800000
03 Checksum: 0
*0.797944750 ar46one RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.797944820 ar46one RM/7/RTDBG:OSPF LSA BUILD Capabilities: As Border
: Off Area Border: Off
*0.797944930 ar46one RM/7/RTDBG:OSPF LSA BUILD StubNet ID: 10.1.1.0
Data: 255.255.255.0 metric: 1
*0.797945070 ar46one RM/7/RTDBG:OSPF Process 1
*0.797945130 ar46one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.797945200 ar46one RM/7/RTDBG:OSPF LSA BUILD Stub Id: 10.1.1.0 Ad
vRtr: 11.1.1.1 Age: 0
*0.797945340 ar46one RM/7/RTDBG:OSPF LSA BUILD Len: 24 Seq #:
0 Checksum: 0x1eaf
*0.797945450 ar46one RM/7/RTDBG:OSPF LSA BUILD Options:(Non DC)
//LSA的Option为: Non DC
*0.797949310 ar46one RM/7/RTDBG:OSPF Process 1
*0.797949370 ar46one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.797949440 ar46one RM/7/RTDBG:OSPF LSA BUILD Router Id: 11.1.1.1 Ad
vRtr: 11.1.1.1 Age: 0
*0.797949570 ar46one RM/7/RTDBG:OSPF LSA BUILD Len: 36 Seq #: 800000
04 Checksum: 0
*0.797949680 ar46one RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.797949750 ar46one RM/7/RTDBG:OSPF LSA BUILD Capabilities: As Border
: Off Area Border: Off
```

```

*0.797949860 ar46one RM/7/RTDBG:OSPF LSA BUILD      TransNet ID: 10.1.1.1
  Data: 10.1.1.1    metric: 1
// LSA的链路ID为10.1.1.2, Data为: 10.1.1.1 度量: 1
*0.817019260 ar46one RM/7/RTDBG:OSPF Process 1
*0.817019320 ar46one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.817019390 ar46one RM/7/RTDBG:OSPF LSA BUILD Net  Id: 10.1.1.1    Ad
vRtr: 11.1.1.1    Age: 0
//创建Net类型的LSA, Id:10.1.1.1,通告路由器为11.1.1.1, Age: 0
*0.817019530 ar46one RM/7/RTDBG:OSPF LSA BUILD      Len: 32 Seq #: 800000
01 Checksum: 0x891a
*0.817019640 ar46one RM/7/RTDBG:OSPF LSA BUILD      Options:(DC)
*0.817019710 ar46one RM/7/RTDBG:OSPF LSA BUILD      Mask: 255.255.255.0
// LSA中的掩码为255.255.255.0
*0.817019790 ar46one RM/7/RTDBG:OSPF LSA BUILD      Attached router: 11.1.1
.1
//关联路由器的ID为: 11.1.1.1
*0.817019880 ar46one RM/7/RTDBG:OSPF LSA BUILD      Attached router: 192.16
8.5.1
//关联路由器ID为192.168.5.1
*0.797954300 ar46one RM/7/RTDBG:OSPF Process 1
*0.797954360 ar46one RM/7/RTDBG:OSPF LSA FREE Area: 0.0.0.1
//从区域1中删除LSA
*0.797954430 ar46one RM/7/RTDBG:OSPF LSA FREE Stub Id: 10.1.1.0    Ad
vRtr: 11.1.1.1    Age: 0
// LSA的类型为Stub,Id为10.1.1.0的, 通告路由器为 11.1.1.1, Age为0的
*0.797954560 ar46one RM/7/RTDBG:OSPF LSA FREE      Len: 24 Seq #:
0 Checksum: 0x1eaf
//删除LSA, 长度为: 24bytes,序列号为: 0, 检验和为0x1eaf
*0.797954670 ar46one RM/7/RTDBG:OSPF LSA FREE      Options:(Non DC)
//删除LSA, 选项字段为: Non DC

[ar46one-ospf-1-area-0.0.0.0]net 30.1.1.0 255.255.255.0
*0.803878450 ar46one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.1
*0.803878520 ar46one RM/7/RTDBG:OSPF LSA BUILD Router Id: 11.1.1.1    Ad
vRtr: 11.1.1.1    Age: 0
*0.803878650 ar46one RM/7/RTDBG:OSPF LSA BUILD      Len: 36 Seq #: 800000
06 Checksum: 0
*0.803878760 ar46one RM/7/RTDBG:OSPF LSA BUILD      Options:(DC)
*0.803878830 ar46one RM/7/RTDBG:OSPF LSA BUILD      Capabilities: As Border
: Off Area Border: On
//路由器不是ASBR路由器, 是ABR路由器
*0.803878940 ar46one RM/7/RTDBG:OSPF LSA BUILD      TransNet ID: 10.1.1.2
  Data: 10.1.1.1    metric: 1
*0.803879090 ar46one RM/7/RTDBG:OSPF Process 1
*0.803879150 ar46one RM/7/RTDBG:build_inter: Summary Net 10.1.1.0 generated for Area 0.0.0.0
//在区域0.0.0.0中生成网络10.1.1.0的网络汇总LSA
*0.803879260 ar46one RM/7/RTDBG:OSPF Process 1
*0.803879320 ar46one RM/7/RTDBG:OSPF LSA BUILD From Area: 0.0.0.0 To Area: 0.0.0.0
//在区域0.0.0.0中创建LSA
*0.803879420 ar46one RM/7/RTDBG:OSPF LSA BUILD SumNet Id: 10.1.1.0    Ad
vRtr: 11.1.1.1    Age: 0
//创建网络汇总LSA, Id为10.1.1.0, 通告路由器为11.1.1.1, Age为0
*0.803879550 ar46one RM/7/RTDBG:OSPF LSA BUILD      Len: 28 Seq #: 800000
01 Checksum: 0x9f84
*0.803879660 ar46one RM/7/RTDBG:OSPF LSA BUILD      Options:(Non DN, DC)
//所创建LSA的选项字段为: Non DN, DC
*0.803879740 ar46one RM/7/RTDBG:OSPF LSA BUILD      Mask: 255.255.255.0
//所创建LSA的掩码为255.255.255.0
*0.803879820 ar46one RM/7/RTDBG:OSPF LSA BUILD      Tos 0 metric: 1
//所创建LSA的Tos为0, 度量值为1
*0.803884530 ar46one RM/7/RTDBG:OSPF Process 1
*0.803884590 ar46one RM/7/RTDBG:build_inter: Summary Net 30.1.1.0 generated for Area 0.0.0.1
//在区域0.0.0.1中生成网络30.1.1.0的网络汇总LSA
*0.803884700 ar46one RM/7/RTDBG:OSPF Process 1

```

```
*0.803884760 ar46one RM/7/RTDBG:OSPF LSA BUILD From Area: 0.0.0.0 To Area: 0.0.0.1
//在区域1中创建LSA
*0.803884860 ar46one RM/7/RTDBG:OSPF LSA BUILD SumNet Id: 30.1.1.0 Ad
vRtr: 11.1.1.1 Age: 0
*0.803885000 ar46one RM/7/RTDBG:OSPF LSA BUILD Len: 28 Seq #: 800000
01 Checksum: 0x9a75
*0.803885110 ar46one RM/7/RTDBG:OSPF LSA BUILD Options:(Non DN, DC)
*0.803885190 ar46one RM/7/RTDBG:OSPF LSA BUILD Mask: 255.255.255.0
*0.803885270 ar46one RM/7/RTDBG:OSPF LSA BUILD Tos 0 metric: 1
```

在设备中引入外部路由:

```
[ar28one-ospf-1]import static
*0.200418 ar28one RM/7/RTDBG:OSPF Process 1
*0.200470 ar28one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.2
*0.200540 ar28one RM/7/RTDBG:OSPF LSA BUILD Router Id: 50.1.1.2 Ad
vRtr: 50.1.1.2 Age: 0
*0.200670 ar28one RM/7/RTDBG:OSPF LSA BUILD Len: 36 Seq #: 800000
05 Checksum: 0
*0.200780 ar28one RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.200850 ar28one RM/7/RTDBG:OSPF LSA BUILD Capabilities: As Border
: On Area Border: Off
//路由器是ASBR但不是ABR
*0.200960 ar28one RM/7/RTDBG:OSPF LSA BUILD TransNet ID: 50.1.1.1
Data: 50.1.1.2 metric: 1
*0.202442 ar28one RM/7/RTDBG:OSPF Process 1
*0.202500 ar28one RM/7/RTDBG:OSPF LSA BUILD ASE Id: 110.1.1.0 Ad
vRtr: 50.1.1.2 Age: 0
//创建ASE类 (自主系统外部) LSA, Id为110.1.1.0, 通告路由器为50.1.1.2, Age为0
*0.202630 ar28one RM/7/RTDBG:OSPF LSA BUILD Len: 36 Seq #: 800000
01 Checksum: 0xa962
*0.202740 ar28one RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.202810 ar28one RM/7/RTDBG:OSPF LSA BUILD Mask: 255.255.255.0
Tos 0 metric: 1 Type: 2
//LSA的掩码为255.255.255.0, Tos字段为0, 度量值为1, 引入类型为2类
*0.202930 ar28one RM/7/RTDBG:OSPF LSA BUILD Forwarding Address: 0.0.0.0 Tag:
1
//LSA的Forwarding Address为0.0.0.0,Tag为1
```

在其他路由器上可以看到生成了ASBR汇总LSA:

```
*0.812816220 ar46two RM/7/RTDBG:OSPF Process 1
*0.812816280 ar46two RM/7/RTDBG:build_sum_asb: ASB Summary 50.1.1.2 generated for Area 0.0
.0.0. From/Sum Area 0.0.0.2/0.0.0.2
//在区域0中生成50.1.1.2的ASB Summary LSA
*0.812816430 ar46two RM/7/RTDBG:OSPF Process 1
*0.812816490 ar46two RM/7/RTDBG:OSPF LSA BUILD From Area: 0.0.0.2 To Area: 0.0.0.0
//在区域0中创建LSA
*0.812816590 ar46two RM/7/RTDBG:OSPF LSA BUILD SumASB Id: 50.1.1.2 Ad
vRtr: 11.0.0.2 Age: 0
//创建SumASB (ASBR 汇总LSA) 类LSA, Id为50.1.1.2, 通告路由器为11.0.0.2, Age为0
*0.812816720 ar46two RM/7/RTDBG:OSPF LSA BUILD Len: 28 Seq #: 800000
01 Checksum: 0x7c7d
*0.812816830 ar46two RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.812816900 ar46two RM/7/RTDBG:OSPF LSA BUILD Tos 0 metric: 1
```

设置在NSSA区域中引入静态路由:

```
[ar28one-ospf-1]import static
*0.2005771 ar28one RM/7/RTDBG:OSPF Process 1
*0.2005830 ar28one RM/7/RTDBG:OSPF LSA BUILD Area: 0.0.0.2
*0.2005900 ar28one RM/7/RTDBG:OSPF LSA BUILD Router Id: 50.1.1.2 Ad
vRtr: 50.1.1.2 Age: 0
*0.2006030 ar28one RM/7/RTDBG:OSPF LSA BUILD Len: 36 Seq #: 800000
0f Checksum: 0
*0.2006140 ar28one RM/7/RTDBG:OSPF LSA BUILD Options:(DC)
*0.2006210 ar28one RM/7/RTDBG:OSPF LSA BUILD Capabilities: As Border
: On Area Border: Off
```

```

*0.2006320 ar28one RM/7/RTDBG:OSPF LSA BUILD      TransNet ID: 50.1.1.2
  Data: 50.1.1.2   metric: 1
*0.2007772 ar28one RM/7/RTDBG:OSPF Process 1
*0.2007830 ar28one RM/7/RTDBG:OSPF LSA BUILD  NSSA  Id: 110.1.1.0   Ad
vRtr: 50.1.1.2   Age: 0
//创建NSSA类 (NSSA外部LSA) , Id为110.1.1.0, 通告路由器为50.1.1.2, Age为0
*0.2007960 ar28one RM/7/RTDBG:OSPF LSA BUILD      Len: 36 Seq #: 800000
01 Checksum: 0x7259
*0.2008070 ar28one RM/7/RTDBG:OSPF LSA BUILD      Options:(Type 7/5 trans
lation, DC)
//LSA的Options字段为: Type 7/5 translation (允许NSSA类LSA转换为ASE类LSA) , DC
*0.2008170 ar28one RM/7/RTDBG:OSPF LSA BUILD      Mask: 255.255.255.0
Tos 0 metric: 1   Type: 2
*0.2008290 ar28one RM/7/RTDBG:OSPF LSA BUILD      Forwarding Address: 50.1.1.2   Tag:
1
*0.2008400 ar28one RM/7/RTDBG:OSPF Process 1
*0.2008460 ar28one RM/7/RTDBG:OSPF LSA BUILD  ASE  Id: 110.1.1.0   Ad
vRtr: 50.1.1.2   Age: 0
*0.2008590 ar28one RM/7/RTDBG:OSPF LSA BUILD      Len: 36 Seq #: 800000
01 Checksum: 0xa962
*0.2008700 ar28one RM/7/RTDBG:OSPF LSA BUILD      Options:(DC)
*0.2008770 ar28one RM/7/RTDBG:OSPF LSA BUILD      Mask: 255.255.255.0
Tos 0 metric: 1   Type: 2
*0.2008890 ar28one RM/7/RTDBG:OSPF LSA BUILD      Forwarding Address: 0.0.0.0   Tag:
1

```

```
[ar28one-ospf-1]undo import static
```

```
//取消外部路由的引入:
```

```

*0.815701620 ar46two RM/7/RTDBG:OSPF Process 1
*0.815701680 ar46two RM/7/RTDBG:OSPF LSA FREE  NSSA  Id: 110.1.1.0   Ad
vRtr: 50.1.1.2   Age: 1:00:00
//删除NSSA类LSA, Id为110.1.1.0, 通告路由器为50.1.1.2, Age为1:00:00
*0.815701820 ar46two RM/7/RTDBG:OSPF LSA FREE      Len: 36 Seq #: 800000
04 Checksum: 0x6c5c
*0.815701930 ar46two RM/7/RTDBG:OSPF LSA FREE      Options:(Type 7/5 trans
lation, DC)
*0.815702030 ar46two RM/7/RTDBG:OSPF LSA FREE      Mask: 255.255.255.0
Tos 0 metric: 1   Type: 2
*0.815702150 ar46two RM/7/RTDBG:OSPF LSA FREE      Forwarding Address: 50.1.1.2
Tag: 1
*0.815702310 ar46two RM/7/RTDBG:OSPF Process 1
*0.815702370 ar46two RM/7/RTDBG:OSPF LSA FREE  ASE  Id: 110.1.1.0   Ad
vRtr: 11.0.0.2   Age: 1:00:00
*0.815702510 ar46two RM/7/RTDBG:OSPF LSA FREE      Len: 36 Seq #: 800000
01 Checksum: 0x7688
*0.815702620 ar46two RM/7/RTDBG:OSPF LSA FREE      Options:(DC)
*0.815702690 ar46two RM/7/RTDBG:OSPF LSA FREE      Mask: 255.255.255.0
Tos 0 metric: 1   Type: 2
*0.815702810 ar46two RM/7/RTDBG:OSPF LSA FREE      Forwarding Address: 50.1.1.2
Tag: 1

```