AR系列路由器debug ospf命令(一)

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【命令】

debugging ospf [*process-id*] { **event** | **lsa- originate** | **packet** [**ack** | **dd** | **hello** | **request** | **update** | **interface** { **Aux** *number* | **Ethernet** *number* | **LoopBack** *number* | **Serial** *number* | **Virtual-Template** *number* |…}] | **spf** }
undo debugging ospf [*process-id*] { **event** | **lsa- originate** | **packet** [**ack** | **dd** | **hello** | **request** | **update**| **interface** { **Aux** *number* | **Ethernet** *number* | **LoopBack** *number* | **Serial** *number* | **Virtual-Template** *number* |…}] | **spf** }

【视图】

用户视图

【参数】

process-id： OSPF进程号。如果不指定进程号，则打开或关闭所有进程的调试信息开关。
event：表示打开OSPF事件信息调试开关。
lsa-originate：表示打开OSPF LSA报文信息调试开关。
packet：表示打开OSPF报文信息调试开关，OSPF有如下五种报文类型：
ack：LSAck报文；
dd：Database Descrition报文；
hello：Hello报文；
request：Link State Request报文；
update：Link State Update报文。
interface {…} :表示只打开相应接口的OSPF报文信息调试开关
spf：表示打开OSPF最小树计算信息调试开关。

【描述】

debugging ospf命令用来打开所有与OSPF相关调试开关，**undo debugging ospf**命令用来取消当前设置。
缺省情况下，关闭OSPF调试功能。
表1-1 debugging ospf event命令输出信息列表

字段	含义
Setting Router Id *id-number* for OSPF Process *number* Succeed!	设置OSPF进程的router id
RM Creating OSPF SOCKET Task Succeed!	路由管理创建OSPF SOCKET 任务
RM Creating OSPF Task Succeed!	路由管理创建OSPF 任务
Creating Timers for OSPF Process *number* Succeed!	为某个OSPF进程创建计时器
Intf *address* Rcv WaitTimer State Waiting -> DR	等待超时，接口状态由等待转变为DR
Creating OSPF Process *number* Succeed!	创建某个OSPF进程
OSPF Process *number*	指出对某个OSPF进程进行操作
ospf_interface_init: initializing interface *address* area *area-id*	在某一区域中初始化一个接口地址
OSPF TRANSITION Broadcast Interface *address* EVENT Interface Up Down -> Waiting	发生接口UP事件，该与广播网络相连接口的状态由失效（Down）转变为等待（Waiting）
ADD *address* type *number* interface *address* (*interface-number*)	添加某个类型的接口
OSPF DR ELECTION Interface *address*: DR: *address* BDR: *address*	选举出某个接口所在网络的指定路由器（DR）和备份路由器（BDR）
OSPF TRANSITION Broadcast Interface *address* EVENT Wait Timer Waiting -> DR	等待计时器超时，某个与广播网络相连接口的状态由等待（Waiting）转变为指定路由器（DR）
ospf_nbr_add: interface *address* (*interface-number*) ADD neighbor 192.168.1.2 (ID *router-id*)	为某接口添加OSPF邻居

OSPF TRANSITION Neighbor *address* EVENT Hello Received Down -> Init	收到Hello事件后，相应的邻居状态由失效（Down）转变为初始（Init）
OSPF TRANSITION Broadcast Interface *address* EVENT Neighbor Change DR -> DR	邻居发生变化，接口的状态由指定路由器（DR）转变为指定路由器（DR）
OSPF TRANSITION Neighbor *address* EVENT TwoWay Received Init -> Two Way	收到TwoWay事件，邻居状态由初始状态（Init）转变为双向通信（2-Way）
OSPF TRANSITION Neighbor *address* EVENT Adjacency OK Two Way -> Exstart	发生Adjacency OK事件，邻居状态由双向通信（2-Way）转变为信息交换初始态（ExStart）
Received DD Packet<Externals> in Ex-Start state	在信息交换初始态收到数据库报文
NBR:router-id INTF:interface-number AREA:area-id	显示邻居路由器ID，相连接口和所在区域
Switch neighbor's Opaque-Capability from OFF to OFF	邻居不具备Opaque能力
OSPF TRANSITION Neighbor *address* EVENT Negotiation Done Exstart -> Exchange	协商结束，邻居状态由信息交换初始状态（Extart）转变为信息交换状态（Exchange）
OSPF TRANSITION Neighbor *address* EVENT Exchange Done Exchange -> Loading	信息交换完成，邻居状态由信息交换状态（Exchange）转变为加载状态（Loading）
OSPF TRANSITION Neighbor *address* EVENT Loading Done Loading -> Full	加载完成，邻居状态由加载状态（Loading）转变为完全邻接状态（Full）
OSPF RECV Area *area-id address* -> 224.0.0.5: LS ACK: duplicate ack	收到从该邻居发送的LSA确认报文
OSPF TRANSITION Broadcast Interface *address* EVENT Backup Seen Waiting -> BackupDR	发生Backup Seen事件，接口状态由等待（Waiting）转变为备份路由器（BDR）
OSPF TRANSITION Broadcast Interface *address* EVENT Backup Seen Waiting -> DROther	Backup Seen事件，接口状态由等待（Waiting）转变为其他路由器（DR Other）
ospf_ifdown: Interface *number* (interface-number) DOWN	接口状态变为down
OSPF TRANSITION Broadcast Interface *address* EVENT Interface Down DR -> Down	发生接口down的事件，相应接口状态由指定路由器（DR）转变为失效（Down）状态
OSPF TRANSITION Neighbor *address* EVENT Inactivity Timer Full -> Down	休止计时器超时，邻居相应的邻居状态有完全邻接状态（Full）转变为失效（Down）状态
ospf_nbr_delete: interface *address* (*interface-number*) DELETE neighbor *address* (ID *router-id*)	将某一邻居中删除
Lost Neighbor *id* with address *address* due to HELLO received without my ID.	由于HELLO报文中不包含自己的ID，因此丢失相应的邻居路由器
OSPF TRANSITION Neighbor *address* EVENT Oneway Full -> Init	发生Oneway事件，邻居状态由完全邻接（Full）转变为初始（Init）状态
OSPF TRANSITION Broadcast Interface *address* EVENT Neighbor Change DROther -> BackupDR	邻居发生变化，接口状态由其他路由器（DRother）转变为备份路由器（BDR）
OSPF RECV Area *area-id address* -> 224.0.0.6: LS UPD: neighbor state low	邻居处于低级别状态时收到LS UPD报文
OSPF RECV Area 0.0.0.0 192.168.1.1 -> 224.0.0.6: LS ACK: neighbor state low	邻居处于低级别状态时收到LS ACK报文
OSPF TRANSITION Broadcast Interface 192.168.1.2 EVENT Neighbor Change BackupDR -> DR	邻居发生变化，接口状态由备份路由器（BDR）转变为指定路由器（DR）
ospf_nh_collect: DELETE *address* type *number* interface address (*interface-number*)	删除某种类型的接口
OSPF TRANSITION Point To Point Interface *address* 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）
OSPF RECV Area area-id address -> 224.0.0.5: HELLO: extern option mismatch	收到HELLO报文，但扩展选项字段不匹配
ADD neighbor address (ID Unknown)	添加ID未知的邻居

OSPF TRANSITION Neighbor address EVENT Start Down -> Attempt	启动事件发生，邻居状态由失效 (Down)状态转变为尝试（Attempt）
OSPF TRANSITION Neighbor *address* EVENT Hello Received Attempt -> Init	收到Hello报文，邻居状态由尝试（Attempt）转变为初始（Init）状态
initializing virtual interface to neighbor ID address area area-id	初始化虚拟接口
OSPF TRANSITION Virtual Interface *address* EVENT Interface Up Down -> PtoP	发生接口UP事件，虚拟接口的状态由失效（Down）转变为点到点（PtoP）
OSPF RECV Area *area-id address* -> 224.0.0.5: HELLO: dead timer mismatch	收到hello报文中dead timer和本地的不匹配
OSPF RECV Area *area-id address* -> 224.0.0.5: HELLO: hello timer mismatch	收到hello报文中hello timer和本地的不匹配
OSPF RECV Area *area-id address* -> 224.0.0.5: OSPF: wrong authentication type	认证不匹配
OSPF RECV Area *area-id address* -> 224.0.0.5: HELLO: netmask mismatch	收到Hello报文的掩码不匹配
OSPF RECV *address* -> *address*: IP: wrong destination 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

表1-2 debugging ospf lsa-originate命令输出信息列表

字段	含义
OSPF LSA BUILD Area: *area-id*	在某个区域中创建LSA
OSPF LSA BUILD *lsa-type* Id: *address* AdvRtr: *address* Age: *number*	创建某种类型的LSA，并显示LSA的Id,通告路由器和Age,LSA的类型包括：Router，Stub，Net ,SumNet，ASE，NSSA
OSPF LSA BUILD Len: *number* Seq #: *number* Checksum: *number*	显示LSA的长度，序列号及检验和
OSPF LSA BUILD Options:()	显示LSA的选项字段
Capabilities: As Border: Off/On Area Border: Off/On	显示LSA的通告路由器是不是ASBR或ABR
OSPF LSA BUILD StubNet ID: *network* Data: *mask* metric: 1	显示LSA的StubNet ID，数据和度量值
OSPF LSA BUILD TransNet ID: *address* Data: *address* metric: *number*	显示LSA的TransNet ID，数据和度量值
OSPF LSA FREE Area: area-id	从区域中删除LSA
OSPF LSA FREE Stub Id:address AdvRtr: address Age: number	显示LSA的类型，Id，通告路由器，Age
OSPF LSA FREE Len: number Seq #: number Checksum: number	显示LSA的长度，序列号，检验和
OSPF LSA FREE Options:()	显示LSA的选项字段
build_inter: Summary Net *net-address* generated for Area area-id	在某区域中生成网络汇总LSA
OSPF LSA BUILD From Area:*area-id* To Area: *area-id*	在某个区域中生成LSA
OSPF LSA BUILD Mask: *mask*	显示LSA的掩码
OSPF LSA BUILD Tos *number* metric: *number*	显示LSA的Tos和度量值
OSPF LSA BUILD Mask: net-mask Tos number metric: number Type: number	显示LSA的子网掩码，Tos字段，度量值，和引入类型
OSPF LSA BUILD Forwarding Address: address Tag: number	显示LSA的Forwarding Address和Tag值
build_sum_asb: ASB Summary network generated for Area area-id From/Sum Area area-id/area-id	在某一区域生成ASB Summary LSA
OSPF LSA BUILD Attached router:address	显示链路关联路由器的id

表1-3 debugging ospf packet ack命令输出信息列表

字段	含义

OSPF {RECV|SENT} *address* (*interface-number*) -> *address* Link State Ack Vers: 2 Len: *number*	从某个接口收到/发送了版本2的OSPF链路状态确认报文
OSPF {RECV|SENT} RouterID: *address* Area: *address* Checksum: *number*	显示确认报文的通告路由器ID，所在区域及检验和
OSPF {RECV|SENT} Auth: Type: *number* Key: *number*	显示报文的认证类型及密码
OSPF {RECV|SENT} *lsa-type* Id: id-number AdvRtr: id-number Age: *number*	显示确认的LSA的类型，ID，通告路由器及Age
OSPF {RECV|SENT} Len: *number* Seq #: *number* Checksum: *number*	显示所确认LSA的长度，序列号及检验和
OSPF {RECV|SENT} Options:()	显示所确认LSA的选项字段

表1-4 debugging ospf packet dd命令输出信息列表

字段	含义
OSPF {RECV|SENT} *address* (*interface-number*) -> *address* Database Description Vers: 2 Len: *number*	从某个接口收到/发送了版本2的OSPF数据库描述报文
OSPF {RECV|SENT} RouterID: *address* Area: *address* Checksum: *number*	显示描述报文的通告路由器ID，所在区域及检验和
OSPF {RECV|SENT} Auth: Type: *number* Key: *number*	显示报文的认证类型及密码
OSPF SENT Flags <I M MS> {RECV|SENT} Options: <*name*> seq: *number*	显示报文的标志位，可选项字段及序列号
OSPF {RECV|SENT} *lsa-type* Id: *id-number* AdvRtr: *id-number* Age: *number*	显示描述的LSA的类型，ID，通告路由器及Age；LSA的类型包括：Router，Stub，Net ,SumNet，ASE，NSSA
OSPF {RECV|SENT} Len: *number* Seq #: *number* Checksum: *number*	显示所描述LSA的长度，序列号及检验和
OSPF {RECV|SENT} Options:()	显示所描述LSA的选项字段

表1-5 debugging ospf packet hello命令输出信息列表

字段	含义
OSPF {RECV|SENT} *address* (*interface-number*) -> *address* Hello Vers: 2 Len: *number*	从某个接口收到/发送了版本2的OSPF Hello报文
OSPF {RECV|SENT} RouterID: *address* Area: *address* Checksum: *number*	显示Hello报文的通告路由器ID，所在区域及检验和
OSPF {RECV|SENT} Auth: Type: *number* Key: *number*	显示报文的认证类型及密码
OSPF {RECV|SENT} Netmask: *netmask* Hello Int: *number* Options: <Externals>	显示报文的网络掩码字段,Hello间隔时间：10和选项字段
OSPF {RECV|SENT} Pri: *number* DeadInt: *number* DR: *address* BDR: *address*	显示路由器优先级，无效时间间隔，DR和BDR
OSPF SENT Attached routers: *router-id*	显示邻居路由器ID

表1-6 debugging ospf packet request命令输出信息列表

字段	含义
OSPF {RECV|SENT} *address* (*interface-number*) -> *address* Link State Request Vers: 2 Len: *number*	从某个接口收到/发送了版本2的OSPF链路状态请求报文
OSPF {RECV|SENT} RouterID: *address* Area: *address* Checksum: *number*	显示请求报文的通告路由器ID，所在区域及检验和
OSPF {RECV|SENT} Auth: Type: *number* Key: *number*	显示报文的认证类型及密码
OSPF {RECV|SENT} *lsa-type* Id: id-number AdvRtr: id-number	显示请求的LSA的类型，ID，通告路由器；LSA的类型包括：Router，Stub，Net ,SumNet，ASE，NSSA

表1-7 debugging ospf packet update命令输出信息列表

字段	含义

OSPF {RECV|SENT} *address* (*interface-number*) -> *address* Link State Update Vers: 2 Len: *number*	从某个接口收到/发送了版本2的OSPF链路状态更新报文
OSPF {RECV|SENT} RouterID: *address* Area: *address* Checksum: *number*	显示更新报文的通告路由器ID，所在区域及检验和
OSPF {RECV|SENT} Auth: Type: *number* Key: *number*	显示报文的认证类型及密码
OSPF {RECV|SENT} Advertisement count: number	显示报文包含的LSA的数量
OSPF {RECV|SENT} *lsa-type* Id: *address* AdvRtr: *address* Age: *number*	显示LSA的类型，Id，通告路由器和Age；LSA的类型包括：Router，Stub，Net ,SumNet，ASE，NSSA
OSPF {RECV|SENT} Len: *number* Seq #: *number* Checksum: *number*	显示LSA的长度，序列号及检验和
OSPF {RECV|SENT} Options:()	显示LSA的选项字段
OSPF {RECV|SENT} StubNet ID: *network* Data: *mask* metric: 1	显示LSA的StubNet ID，数据和度量值
OSPF {RECV|SENT} Mask: *mask*	显示LSA的掩码
OSPF {RECV|SENT} Tos *number* metric: *number*	显示LSA的Tos和度量值
OSPF {RECV|SENT} Mask: net-mask Tos number metric: number Type: number	显示LSA的子网掩码，Tos字段，度量值，和引入类型
OSPF {RECV|SENT} Forwarding Address: address Tag: number	显示LSA的Forwarding Address和Tag值
OSPF {RECV|SENT} Attached router:address	显示链路关联路由器的id

表1-8 debugging ospf spf命令输出信息列表

字段	含义
OSPF policy: route update, total 11 changed number	路由变化的数量
OSPF SPF Start	SPF计算开始
OSPF SPF Area *area-id* Scheduled:	显示SPF计算等级
OSPF SPF Area *area-id* running {Intra | NetWork Summary | ASBR Summary | ASE | NSSA}	开始进行某种LSA的SPF运算
OSPF SPF Area *area-id* running ASE, finished at 2500, *number* route updated, partial=0	区域SPF计算完成，显示路由更新的数量