

# ipv6地址配置实验（GNS3/ENSP）

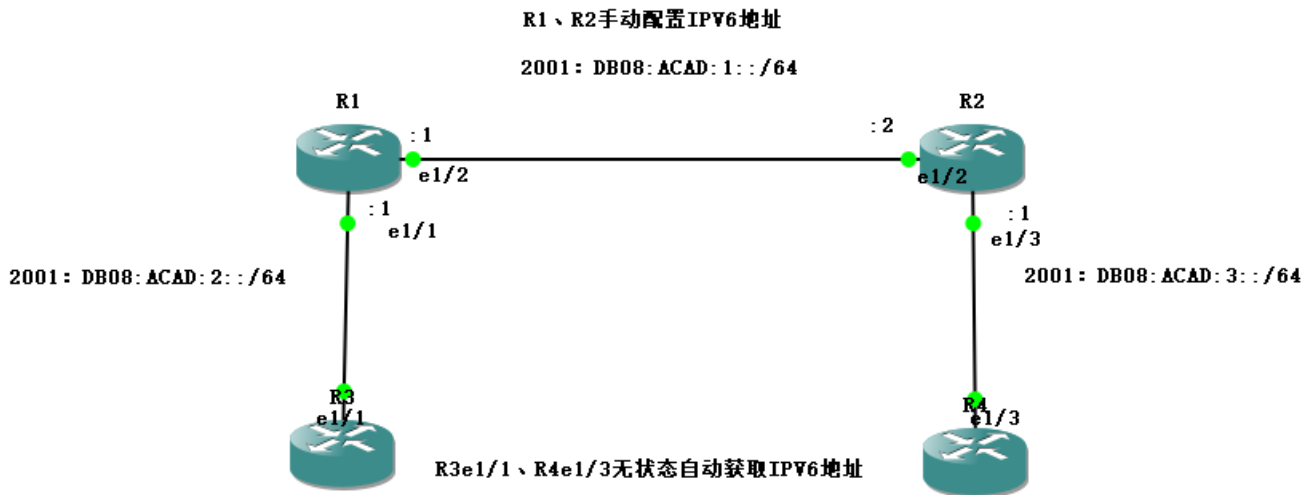
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实验拓扑:



IPv6地址配置如图所示，

配置ipv6指令（以R2为例，R1类似）：

```
int e1/2
```

```
R2(config-if)#ipv6 address 2001:db08:acad:1::2/64
```

```
R2(config-if)#no shutdown
```

验证一下：

```
R2#show ipv6 interface brief
FastEthernet0/0      [administratively down/down]
    unassigned
Ethernet1/0         [administratively down/down]
    unassigned
Ethernet1/1        [administratively down/down]
    unassigned
Ethernet1/2        [up/up]
    FE80::C802:7FF:FEBC:1E
    2001:DB08:ACAD:1::2
Ethernet1/3        [up/up]
    FE80::C802:7FF:FEBC:1F
    2001:DB08:ACAD:3::1
```

-----  
验证下R1的e1/2接口

```
Ethernet1/2 is up, line protocol is up
IPv6 is enabled, link-local address is FE80::C801:7FF:FEAD:1E
No Virtual link-local address(es):
Global unicast address(es):
  2001:DB08:ACAD:1::1, subnet is 2001:DB08:ACAD:1::/64
Joined group address(es):
  FF02::1
  FF02::2
  FF02::1:FF00:1
  FF02::1:FFAD:1E
MTU is 1500 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ICMP unreachable are sent
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds (using 32415)
ND advertised reachable time is 0 (unspecified)
ND advertised retransmit interval is 0 (unspecified)
ND router advertisements are sent every 200 seconds
ND router advertisements live for 1800 seconds
ND advertised default router preference is Medium
Hosts use stateless autoconfig for addresses.
```

可以发现配好IPv6全局单播地址的同时，它自己也会自动生成一个链路本地地址，当然我们也可以手动设置个链路本地地址

R1路由器配置类似，我们把与它相连的e1/1和e1/2也一起配好验证下

```
R1#show ipv6 interface brief
FastEthernet0/0      [administratively down/down]
  unassigned
Ethernet1/0          [administratively down/down]
  unassigned
Ethernet1/1          [up/up]
  FE80::C801:7FF:FEAD:1D
  2001:DB08:ACAD:2::1
Ethernet1/2          [up/up]
  FE80::C801:7FF:FEAD:1E
  2001:DB08:ACAD:1::1
Ethernet1/3          [administratively down/down]
  unassigned
```

2、下面我们来试一下无状态自动获取地址试试（在R3、R4上进行），以R3为例

我们首先进入R3的e1/1

```
R3(config)#int e1/1
```

```
R3(config-if)#ipv6 enable //接口上使能IPv6功能。
```

```
R3(config-if)#ipv6 address autoconfig //使它能无状态自动生成IPv6全局地址功能。
```

然后我们验证一下行不行

```
R3#show ipv6 interface brief
FastEthernet0/0      [administratively down/down]
    unassigned
Ethernet1/0          [administratively down/down]
    unassigned
Ethernet1/1          [up/up]
    FE80::C803:7FF:FECC:1D
```

发现并没有获取到全局单播地址，为什么呢？因为我们没在与之相连的R1路由器上没有配置ipv6 unicast-routing

它的作用好像是关于那个SLAAC进程的，就像那个RA/RS的消息，上课的内容可以去看看PPT

R1配置了ipv6 unicast-routing再验证一遍

```
R3#show ipv6 interface brief
FastEthernet0/0      [administratively down/down]
    unassigned
Ethernet1/0          [administratively down/down]
    unassigned
Ethernet1/1          [up/up]
    FE80::C803:7FF:FECC:1D
    2001:DB08:ACAD:2:C803:7FF:FECC:1D
```

地址出来了

3、我们做一下ping测试

```
R1#ping 2001:db08:acad:1::2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB08:ACAD:1::2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/24/68 ms
```

R1 ping R2

我们尝试用R1跟R3做一下联通测试

```
R1#ping 2001:db08:acad:2:c803:7ff:fecc:1d

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB08:ACAD:2:C803:7FF:FECC:1D, timeout is
2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 12/24/60 ms
```

还行吧，R4应该也是差不多的了。

```
R2#ping 2001:db08:acad:3:c804:7ff:fedb:1f R4 e1/3接口地址
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:DB08:ACAD:3:C804:7FF:FEDB:1F, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 12/25/64 ms
```

另外链路本地地址好像也可以手动配置的，当然让他自动获取也可以

ipv6 address fe80::1 link-local

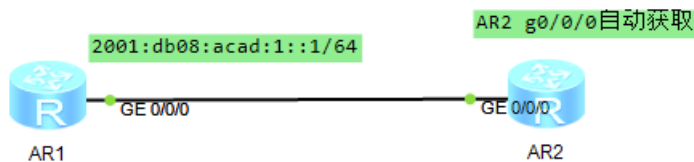
如果要删除多余的ipv6地址（例子）：

```
R2(config-if)#no ipv6 address 2001:db08:adad:3::1/64
```

----- 帅帅分割线 -----

下面我们用华为的ensp简单做一下这个实验

### 1、实验拓扑



### 2、AR1配置

```

AR1
The device is running!
<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]sysn
[Huawei]sysname R1
[R1]ipv
[R1]ipv6
[R1]int g0/0/0
[R1-GigabitEthernet0/0/0]ipv
[R1-GigabitEthernet0/0/0]ipv6 en
[R1-GigabitEthernet0/0/0]ipv6 enable
[R1-GigabitEthernet0/0/0]ipv
[R1-GigabitEthernet0/0/0]ipv6 ad
[R1-GigabitEthernet0/0/0]ipv6 address 2001:db08:acad:1::1/64
[R1-GigabitEthernet0/0/0]
Mar  9 2019 11:35:21-08:00 R1 IPV6/2/IF_IPV6CHANGE:OID 16777216.50331648.1006632
96.16777216.33554432.16777216.922746880.33554432.0.16777216 The status of the IP
v6 Interface changed. (IfIndex=50331648, IfDescr=HUAWEI, AR Series, GigabitEther
net0/0/0 Interface, IfOperStatus=16777216, IfAdminStatus=16777216)
  
```

### 3、AR1验证

```
[R1-GigabitEthernet0/0/0]display ipv6 interface g0/0/0
GigabitEthernet0/0/0 current state : UP
IPv6 protocol current state : UP
IPv6 is enabled, link-local address is FE80::2E0:FCFF:FEFC:2D85
Global unicast address(es):
  2001:DB08:ACAD:1::1, subnet is 2001:DB08:ACAD:1::/64
Joined group address(es):
  FF02::1:FF00:1
  FF02::2
  FF02::1
  FF02::1:FFFC:2D85
MTU is 1500 bytes
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND retransmit interval is 1000 milliseconds
Hosts use stateless autoconfig for addresses
```

[R1-GigabitEthernet0/0/0]undo ipv6 nd ra halt /\*使用这个命令能使系统发布RA报文

### 3、AR2配置及其验证

The device is running!

```

<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]sys
[Huawei]sysname R2
[R2]ipv
[R2]ipv6
[R2]int g0/0/0
[R2-GigabitEthernet0/0/0]ipv
[R2-GigabitEthernet0/0/0]ipv6 en
[R2-GigabitEthernet0/0/0]ipv6 enable
[R2-GigabitEthernet0/0/0]ipv
[R2-GigabitEthernet0/0/0]ipv6 ad
[R2-GigabitEthernet0/0/0]ipv6 address auty
[R2-GigabitEthernet0/0/0]ipv6 address aut
[R2-GigabitEthernet0/0/0]ipv6 address auto gl
[R2-GigabitEthernet0/0/0]dis
[R2-GigabitEthernet0/0/0]dis
[R2-GigabitEthernet0/0/0]display ipv
[R2-GigabitEthernet0/0/0]display ipv6 int
[R2-GigabitEthernet0/0/0]display ipv6 interface g0/0/0
Info: No IPv6 address exist on the specified interface.
[R2-GigabitEthernet0/0/0]ipv
[R2-GigabitEthernet0/0/0]ipv6 ad
[R2-GigabitEthernet0/0/0]ipv6 address aut
[R2-GigabitEthernet0/0/0]ipv6 address auto glo
[R2-GigabitEthernet0/0/0]ipv6 address auto global
[R2-GigabitEthernet0/0/0]ipv6 address auto global
Mar  9 2019 11:40:23-08:00 R2 IPV6/2/IF_IPV6CHANGE:OID 16777216.50331648.1006632
96.16777216.33554432.16777216.922746880.33554432.0.16777216 The status of the IP
v6 Interface changed. (IfIndex=50331648, IfDescr=HUAWEI, AR Series, GigabitEther
net0/0/0 Interface, IfOperStatus=16777216, IfAdminStatus=16777216)
[R2-GigabitEthernet0/0/0]ipv6 address auto global
Mar  9 2019 11:40:23-08:00 R2 %01IFNET/4/LINK_STATE(1)[0]:The line protocol IPV
6 on the interface GigabitEthernet0/0/0 has entered the UP state.
[R2-GigabitEthernet0/0/0]display ipv6 interface g0/0/0
GigabitEthernet0/0/0 current state : UP
IPv6 protocol current state : UP
IPv6 is enabled, link-local address is FE80::2E0:FCFF:FEBB:10B8
Global unicast address(es):
  2001:DB08:ACAD:1:2E0:FCFF:FEBB:10B8,
  subnet is 2001:DB08:ACAD:1::/64 [SLAAC 1970-01-01 00:10:10 2592000S]
Joined group address(es):
  FF02::1:FFBB:10B8
  FF02::2
  FF02::1
MTU is 1500 bytes
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND retransmit interval is 1000 milliseconds
Hosts use stateless autoconfig for addresses
[R2-GigabitEthernet0/0/0]

```

未成功获取地址

该命令用来使能无状  
态自动配置生成

IPV6全局地址

----- 帅帅的结束分割线 -----

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