

实验：ISIS 双栈

HCIE 综合实验 - ISIS 双栈

臧家林制作



ISIS 双栈 1：ISIS 基础

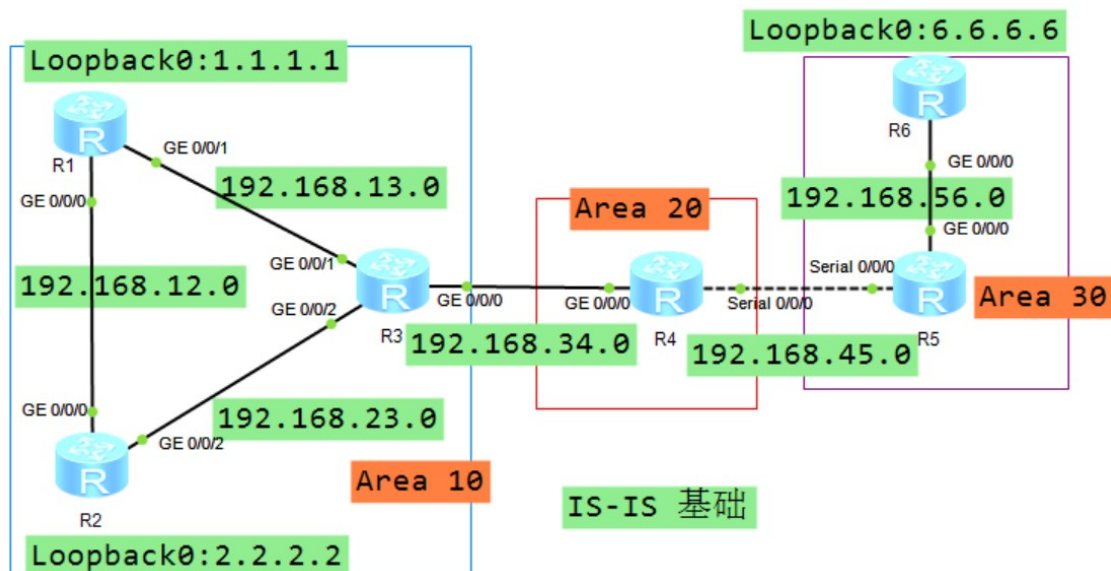
ISIS 双栈 2：ISIS 双栈

=====

ISIS 双栈 1：ISIS 基础

掌握基础的 ISIS 配置

IS-IS 属于内部网关协议，用于自治系统内部。IS-IS 是一种链路状态协议，使用最短路径优先算法进行路由计算。为了提供对 IP 的路由支持，IETF 在 RFC1195 中对 IS-IS 进行了扩充和修改，使它能够同时应用在 TCP/IP 和 OSI 环境中，称为集成化 IS-IS (Integrated IS-IS)，后面如果没有特别说明，提到的 IS-IS 都是指集成 IS-IS。



基本配置

R1:

```
undo ter mo
```

```
sys
```

```
sysname R1
```

```
user-interface console 0
```

```
idle-timeout 0 0
```

```
int loop 0
```

```
ip add 1.1.1.1 24
```

```
int g0/0/0
```

```
ip add 192.168.12.1 24
```

```
int g0/0/1
```

```
ip add 192.168.13.1 24
```

```
q
```

R2:

```
undo ter mo
```

```
sys
```

```
sysname R2
```

```
user-interface console 0
```

```
idle-timeout 0 0
```

```
int loop 0
ip add 2.2.2.2 24
int g0/0/0
ip add 192.168.12.2 24
int g0/0/2
ip add 192.168.23.2 24
q
```

```
R3:
undo ter mo
sys
sysname R3
user-interface console 0
idle-timeout 0 0
int g0/0/1
ip add 192.168.13.3 24
int g0/0/2
ip add 192.168.23.3 24
int g0/0/0
ip add 192.168.34.3 24
q
```

```
R4:
undo ter mo
sys
sysname R4
user-interface console 0
idle-timeout 0 0
int g0/0/0
ip add 192.168.34.4 24
int s0/0/0
ip add 192.168.45.4 24
q
```

```
R5:
undo ter mo
sys
sysname R5
user-interface console 0
idle-timeout 0 0
int s0/0/0
ip add 192.168.45.5 24
int g0/0/0
ip add 192.168.56.5 24
q
```

```
R6:
undo ter mo
sys
sysname R6
user-interface console 0
idle-timeout 0 0
int loop 0
ip add 6.6.6.6 24
int g0/0/0
ip add 192.168.56.6 24
q
```

配置 IS-IS 协议

```
R1:
isis
network-entity 10.0000.0000.0001.00
is-name R1
int LoopBack 0
isis enable
int g0/0/0
isis enable
int g0/0/1
```

isis enable

R2:

isis

network-entity 10.0000.0000.0002.00

is-name R2

int LoopBack 0

isis enable

int g0/0/0

isis enable

int g0/0/2

isis enable

R3:

isis

network-entity 10.0000.0000.0003.00

is-name R3

int g0/0/0

isis enable

int g0/0/1

isis enable

int g0/0/2

isis enable

R4:

isis

network-entity 20.0000.0000.0004.00

is-name R4

int g0/0/0

isis enable

int s0/0/0

isis enable

R5:

```
isis
network-entity 30.0000.0000.0005.00
is-name R5
int g0/0/0
isis enable
int s0/0/0
isis enable
```

```
R6:
isis
network-entity 30.0000.0000.0006.00
is-name R6
int LoopBack 0
isis enable
int g0/0/0
isis enable
```

=====

修改 IS-IS 路由器的级别

```
R1:
isis
is-level level-1
```

```
R2:
isis
is-level level-1
```

```
R4:
isis
is-level level-2
```

```
R6 :
isis
is-level level-1
```

=====

修改 IS-IS 路由器接口的级别

```
R3:
int g0/0/1
isis circuit-level level-1
int g0/0/2
isis circuit-level level-1
```

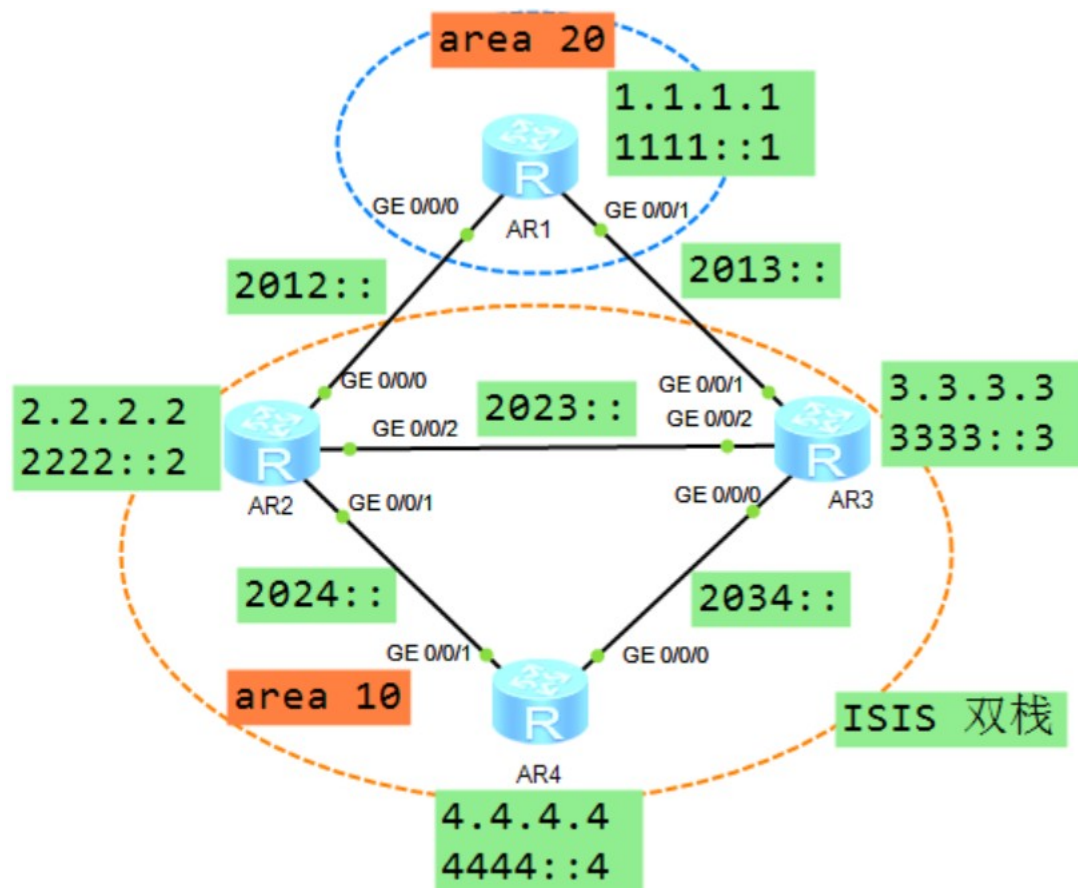
```
R5:
int g0/0/0
isis circuit-level level-1
int s0/0/0
isis circuit-level level-2
```

优化之后，测试 R1 R6 的连通性，不受影响

=====

ISIS 双栈 2：ISIS 双栈

ISIS 协议是当今全球 IP 网络部署的主流 IGP 协议，随着 IPV6 的到来，ISIS 协议因为其 TLV 的强扩展性越来越受到社会各界 IP 网络的青睐，本实验主要介绍 ISIS 协议的双栈分区域部署，并在此基础上部署相关的过滤策略和路由渗透技术。



ipv6 enable topology ipv6 使能 ISIS 进程多拓扑，默认为单拓扑

基本配置

R1:

undo ter mo

sys

sysname R1

user-interface console 0

idle-timeout 0 0

ipv6

int loop 0

ip add 1.1.1.1 24

ipv6 enable


```
ipv6 add 1111::1 64
int g0/0/0
ipv6 enable
ipv6 add 2012::1 64
ip add 192.168.12.1 24
int g0/0/1
ipv6 enable
ipv6 add 2013::1 64
ip add 192.168.13.1 24
q
```

```
R2:
undo ter mo
sys
sysname R2
user-interface console 0
idle-timeout 0 0
ipv6
int loop 0
ip add 2.2.2.2 24
ipv6 enable
ipv6 add 2222::2 64
int g0/0/0
ipv6 enable
ipv6 add 2012::2 64
ip add 192.168.12.2 24
int g0/0/1
ipv6 enable
ipv6 add 2024::2 64
ip add 192.168.24.2 24
int g0/0/2
ipv6 enable
ipv6 add 2023::2 64
ip add 192.168.23.2 24
```

q

R3:

undo ter mo

sys

sysname R3

user-interface console 0

idle-timeout 0 0

ipv6

int loop 0

ip add 3.3.3.3 24

ipv6 enable

ipv6 add 3333::3 64

int g0/0/0

ipv6 enable

ipv6 add 2034::3 64

ip add 192.168.34.3 24

int g0/0/1

ipv6 enable

ipv6 add 2013::3 64

ip add 192.168.13.3 24

int g0/0/2

ipv6 enable

ipv6 add 2023::3 64

ip add 192.168.23.3 24

q

R4:

undo ter mo

sys

sysname R4

user-interface console 0

idle-timeout 0 0

ipv6

```
int loop 0
ip add 4.4.4.4 24
ipv6 enable
ipv6 add 4444::4 64
int g0/0/0
ipv6 enable
ipv6 add 2034::4 64
ip add 192.168.34.4 24
int g0/0/1
ipv6 enable
ipv6 add 2024::4 64
ip add 192.168.24.4 24
q
```

配置 ISIS 协议

```
R1:
isis
network-entity 20.0000.0000.0001.00
is-name R1
is-level level-2
ipv6 enable topology ipv6
int loo0
isis enable
isis ipv6 enable
int g0/0/1
isis enable
isis ipv6 enable
int g0/0/0
isis enable
isis ipv6 enable
q
```

```
R2:
isis
```

```
network-entity 10.0000.0000.0002.00
is-name R2
ipv6 enable topology ipv6
int loo0
isis enable
isis ipv6 enable
isis circuit-level level-2
int g0/0/1
isis enable
isis ipv6 enable
isis circuit-level level-1
int g0/0/0
isis enable
isis ipv6 enable
isis circuit-level level-2
int g0/0/2
isis enable
isis ipv6 enable
isis circuit-level level-2
q
```

```
R3:
isis
network-entity 10.0000.0000.0003.00
is-name R3
ipv6 enable topology ipv6
int loo0
isis enable
isis ipv6 enable
isis circuit-level level-2
int g0/0/1
isis enable
isis ipv6 enable
isis circuit-level level-2
```

```
int g0/0/0
isis enable
isis ipv6 enable
isis circuit-level level-1
int g0/0/2
isis enable
isis ipv6 enable
isis circuit-level level-2
q
```

```
R4:
isis
network-entity 10.0000.0000.0004.00
is-name R4
is-level level-1
ipv6 enable topology ipv6
int loo0
isis enable
isis ipv6 enable
int g0/0/1
isis enable
isis ipv6 enable
int g0/0/0
isis enable
isis ipv6 enable
q
```

在 R2 和 R3 上部署路由渗透

```
R2:
isis
import-route isis level-2 into level-1
q
```

```
R3:
```

```
isis
import-route isis level-2 into level-1
q
```

配置路由策略过滤

在 R1 上配置两条静态路由，引入时只引入其中的一条

R1:

```
ip route-static 100.1.1.1 32 NULL 0
ip route-static 200.1.1.1 32 NULL 0
```

```
ip ip-prefix 200 permit 200.1.1.1 32
```

```
route-policy 200 permit node 10
if-match ip-prefix 200
```

```
isis
import-route static route-policy 200
```

配置完成后在 R1 上查看，只学习到 200.1.1.1 路由，另一条路由没有学习到

R2 : dis ipv6 routing-table protocol isis

```
Destination      : 1111::
PrefixLength     : 64
NextHop          :
FE80::2E0:FCFF:FE9C:2F7
Preference       : 15
Cost             : 10
Protocol         : ISIS-L2
RelayNextHop     : ::
TunnelID         : 0x0
```

Interface : GigabitEthernet0/0/0
Flags : D

Destination : 2013::
PrefixLength : 64

NextHop :
FE80::2E0:FCFF:FE14:723C

Preference : 15

Cost : 20

Protocol : **ISIS-L2**

RelayNextHop : ::

TunnelID : 0x0

Interface : GigabitEthernet0/0/2
Flags : D