链路聚合 H3C模拟器 韦家宁 2020-03-05 发表



组网说明:

本案例采用H3C HCL模拟器的F1060来模拟器F1060防火墙三层链路聚合典型组网配置。FW1与FW2 采用双物理链路互联,并通过三层链路聚合实现链路捆绑,最终实现PC之间能相互PING通。FW1与F W2之间运行OSPF路由协议。

配置步骤

- 1、按照网络拓扑图正确配置IP地址
- 2、FW1与FW2之间运行OSPF路由协议
- 3、FW1与FW2之间采用三层链路聚合实现物理链路的捆绑

配置关键点

FW1:

<H3C>sys System View: return to User View with Ctrl+Z. [H3C]sysname FW1 [FW1]acl basic 2001 [FW1-acl-ipv4-basic-2001]rule 0 permit source any [FW1-acl-ipv4-basic-2001]quit [FW1] [FW1]zone-pair security source trust destination untrust [FW1-zone-pair-security-Trust-Untrust]packet-filter 2001 [FW1-zone-pair-security-Trust-Untrust]quit [FW1] [FW1]zone-pair security source untrust destination trust [FW1-zone-pair-security-Untrust-Trust]packet-filter 2001 [FW1-zone-pair-security-Untrust-Trust]quit [FW1] [FW1]zone-pair security source trust destination local [FW1-zone-pair-security-Trust-Local]packet-filter 2001 [FW1-zone-pair-security-Trust-Local]quit [FW1] [FW1]zone-pair security source local destination trust [FW1-zone-pair-security-Local-Trust]packet-filter 2001 [FW1-zone-pair-security-Local-Trust]quit [FW1] [FW1]zone-pair security source untrust destination local [FW1-zone-pair-security-Untrust-Local]packet-filter 2001 [FW1-zone-pair-security-Untrust-Local]quit [FW1] [FW1]zone-pair security source local destination untrust [FW1-zone-pair-security-Local-Untrust]packet-filter 2001 [FW1-zone-pair-security-Local-Untrust]quit

[FW1]int loopback 0 [FW1-LoopBack0]ip address 1.1.1.1 32 [FW1-LoopBack0]quit [FW1]int gi 1/0/2 [FW1-GigabitEthernet1/0/2]ip address 192.168.10.1 24 [FW1-GigabitEthernet1/0/2]quit [FW1]int Route-Aggregation 1 [FW1-Route-Aggregation1]des <connect to FW2> [FW1-Route-Aggregation1]quit [FW1]int range gi 1/0/3 to gi 1/0/4 [FW1-if-range]port link-aggregation group 1 [FW1-if-range]quit [FW1]int Route-Aggregation 1 [FW1-Route-Aggregation1]ip address 10.0.0.1 30 [FW1-Route-Aggregation1]quit [FW1]security-zone name Trust [FW1-security-zone-Trust]import interface GigabitEthernet 1/0/2 [FW1-security-zone-Trust]quit [FW1]security-zone name Untrust [FW1-security-zone-Untrust]import interface LoopBack 0 [FW1-security-zone-Untrust]import interface GigabitEthernet 1/0/3 [FW1-security-zone-Untrust]import interface GigabitEthernet 1/0/4 [FW1-security-zone-Untrust]import interface Route-Aggregation 1 [FW1-security-zone-Untrust]quit [FW1]ospf 1 router-id 1.1.1.1 [FW1-ospf-1]area 0.0.0.0 [FW1-ospf-1-area-0.0.0.0]network 10.0.0.1 0.0.0.0 [FW1-ospf-1-area-0.0.0.0]network 1.1.1.1 0.0.0.0 [FW1-ospf-1-area-0.0.0.0]network 192.168.10.0 0.0.0.255 [FW1-ospf-1-area-0.0.0.0]quit [FW1-ospf-1]quit FW2: <H3C>sys System View: return to User View with Ctrl+Z. [H3C]sysname FW2 [FW2]acl basic 2001 [FW2-acl-ipv4-basic-2001]rule 0 permit source any [FW2-acl-ipv4-basic-2001]quit [FW2] [FW2]zone-pair security source trust destination untrust [FW2-zone-pair-security-Trust-Untrust]packet-filter 2001 [FW2-zone-pair-security-Trust-Untrust]quit [FW2] [FW2]zone-pair security source untrust destination trust [FW2-zone-pair-security-Untrust-Trust]packet-filter 2001 [FW2-zone-pair-security-Untrust-Trust]quit [FW2] [FW2]zone-pair security source trust destination local [FW2-zone-pair-security-Trust-Local]packet-filter 2001 [FW2-zone-pair-security-Trust-Local]quit [FW2] [FW2]zone-pair security source local destination trust [FW2-zone-pair-security-Local-Trust]packet-filter 2001 [FW2-zone-pair-security-Local-Trust]quit [FW2] [FW2]zone-pair security source untrust destination local [FW2-zone-pair-security-Untrust-Local]packet-filter 2001 [FW2-zone-pair-security-Untrust-Local]quit [FW2] [FW2]zone-pair security source local destination untrust [FW2-zone-pair-security-Local-Untrust]packet-filter 2001 [FW2-zone-pair-security-Local-Untrust]quit

FW2 三层链路聚合关键配置点: [FW2]int loopback 0 [FW2-LoopBack0]ip address 2.2.2.2 32 [FW2-LoopBack0]quit [FW2]int gi 1/0/2 [FW2-GigabitEthernet1/0/2]ip address 192.168.20.1 24 [FW2-GigabitEthernet1/0/2]quit [FW2]int Route-Aggregation 1 [FW2-Route-Aggregation1]des <connect to FW1> [FW2-Route-Aggregation1]quit [FW2]int range gi 1/0/3 to gi 1/0/4 [FW2-if-range]port link-aggregation group 1 [FW2-if-range]quit [FW2]int Route-Aggregation 1 [FW2-Route-Aggregation1]ip address 10.0.0.2 30 [FW2-Route-Aggregation1]quit [FW2]security-zone name Trust [FW2-security-zone-Trust]import interface GigabitEthernet 1/0/2 [FW2-security-zone-Trust]quit [FW2]security-zone name Untrust [FW2-security-zone-Untrust]import interface LoopBack 0 [FW2-security-zone-Untrust]import interface GigabitEthernet 1/0/3 [FW2-security-zone-Untrust]import interface GigabitEthernet 1/0/4 [FW2-security-zone-Untrust]import interface Route-Aggregation 1 [FW2-security-zone-Untrust]quit [FW2]ospf 1 router-id 2.2.2.2 [FW2-ospf-1]area 0.0.0.0 [FW2-ospf-1-area-0.0.0.0]network 192.168.20.0 0.0.0.255 [FW2-ospf-1-area-0.0.0.0]network 2.2.2.2 0.0.0.0 [FW2-ospf-1-area-0.0.0.0]network 10.0.0.2 0.0.0.0 [FW2-ospf-1-area-0.0.0.0]qu [FW2-ospf-1]qu

测试: 所有PC都填写IP地址:

| 接口 | 状态 | IPv4地址 | IPv6地址 | |
|---|--------------|-----------------|--------|-----|
| G0/0/1 | UP | 192.168.10.2/24 | | |
| | | | | |
| | | | | 「同時 |
| 後口管理 | | | | |
| | | | | |
|)禁用 | ◉ 启用 | | | |
| ◎ 禁用 ⊃v4配置: | ◉ 启用 | | | |
| 》禁用 Pv4配置:)DHCP | ● 启用 | | | |
|)禁用 Pv4配置:)DHCP)静态 | ● 启用 | | | |
|) 禁用 Pv4配置:) DHCP) 静态 Pv4地址: | ● 启用 192.168 | 8.10.2 | | |
| ● 禁用 Pv4配置: ● DHCP ● 静态 Pv4地址: = | 自用 | 3.10.2 | | |

| C | ▶ 配置PC_4 | | | | | × |
|---|----------|----------|-----------------|--------|----|---|
| | | | | | | |
| | 接口 | 状态 | IPv4地址 | IPv6地址 | | |
| | G0/0/1 | UP | 192.168.20.3/24 | | | |
| | | | | | | |
| | | | | | 局新 | |
| | 接口管理 | | | | | |
| | ◎ 禁用 @ |)启用 | | | | |
| | IPv4配置: | | | | | |
| | OHCP | | | | | |
| | • 静态 | | | | | |
| | IPv4地址: | 192.168. | 20.3 | | | |
| | 掩码地址: | 255.255. | 255.0 | | | |
| | IPv4网关: | 192.168. | 20.1 | | 启用 | |

PC之间能相互PING通:





查看FW1的OSPF邻居信息:

| [FW1]dis ospf peer | | | | | | | | |
|--------------------|---|---------------|----------|-----------|--|--|--|--|
| OSPF | OSPF Process 1 with Router ID 1.1.1.1 Neighbor Brief Information | | | | | | | |
| Area: 0.0.0.0 | Area: 0.0.0.0 | | | | | | | |
| Router ID | Address | Pri Dead-Time | State | Interface | | | | |
| 2.2.2.2 | | 1 36 | Full/BDR | RAGG1 | | | | |
| [FW1] | | | | | | | | |

查看FW2的OSPF邻居信息:

| [FW2]dis ospf | peer | | | | | | |
|---------------|---|-----|-----------|---------|-----------|--|--|
| OSPF | OSPF Frocess 1 with Router ID 2.2.2.2 Neighbor Brief Information | | | | | | |
| Area: 0.0.0. | | | | | | | |
| Router ID | Address | Pri | Dead-Time | State | Interface | | |
| 1.1.1.1 | | | | Full/DR | RAGG1 | | |
| [FW2] | | | | | | | |

查看FW1的链路聚合显示信息:

| [FW1]dis link-aggr | egation v | verbose | | | | | | | | |
|--|-----------|------------|-----------------------------|--|--|--|--|--|--|--|
| Loadsharing Type: | Shar 1 | Loadsharin | ng, Non5 Non-Loadsharing | | | | | | | |
| Port Status: S Selected, U Unselected, I Individual | | | | | | | | | | |
| Flags: A LACP Activity, B LACP Timeout, C Aggregation, | | | | | | | | | | |
| D Synch | ronizati | on, E (| Collecting, F Distributing, | | | | | | | |
| G Defau | lted, H | Expired | | | | | | | | |
| | | | | | | | | | | |
| Aggregate Interfac | e: Route | -Aggregat: | ion1 | | | | | | | |
| Aggregation Mode: | Static | | | | | | | | | |
| Loadsharing Type: | Shar | | | | | | | | | |
| Port | Status | Priority | Oper-Key | | | | | | | |
| | | | | | | | | | | |
| GE1/0/3 | | 32768 | | | | | | | | |
| GE1/0/4 | | 32768 | | | | | | | | |
| [FW1] | | | | | | | | | | |

| [FW1]dis int brief | | | | | |
|--|-------|-----------|----------------|----------------------------------|--|
| Brief information on interfaces in route mode: | | | | | |
| Link: ADM - administ: | rativ | ely down; | Stby - standby | | |
| Protocol: (s) - spoo | fing | | | | |
| Interface | Link | Protocol | Primary IP | Description | |
| GE1/0/0 | DOWN | DOWN | | | |
| GE1/0/1 | DOWN | DOWN | 192.168.0.1 | | |
| GE1/0/2 | UP | UP | 192.168.10.1 | | |
| GE1/0/3 | UP | UP | | | |
| GE1/0/4 | UP | UP | | | |
| GE1/0/5 | DOWN | DOWN | | | |
| GE1/0/6 | DOWN | DOWN | | | |
| GE1/0/7 | DOWN | DOWN | | | |
| GE1/0/8 | DOWN | DOWN | | | |
| GE1/0/9 | DOWN | DOWN | | | |
| GE1/0/10 | DOWN | DOWN | | | |
| GE1/0/11 | DOWN | DOWN | | | |
| GE1/0/12 | DOWN | DOWN | | | |
| GE1/0/13 | DOWN | DOWN | | | |
| GE1/0/14 | DOWN | DOWN | | | |
| GE1/0/15 | DOWN | DOWN | | | |
| GE1/0/16 | DOWN | DOWN | | | |
| GE1/0/17 | DOWN | DOWN | | | |
| GE1/0/18 | DOWN | DOWN | | | |
| GE1/0/19 | DOWN | DOWN | | | |
| GE1/0/20 | DOWN | DOWN | | | |
| GE1/0/21 | DOWN | DOWN | | | |
| GE1/0/22 | DOWN | DOWN | | | |
| GE1/0/23 | DOWN | DOWN | | | |
| InLoop0 | UP | UP(s) | | | |
| Loop0 | UP | UP(s) | 1.1.1.1 | | |
| NULLO | UP | UP(s) | | | |
| REGO | UP | | | | |
| RAGG1 | UP | UP | 10.0.0.1 | <connect fw2="" to=""></connect> | |
| | | | | | |
| [FW1] | | | | | |

查看FW2的链路聚合显示信息:

| [FW2]dis link-aggr | egation v | | | | | | | | |
|---|-----------|------------|-----------------------------|--|--|--|--|--|--|
| Loadsharing Type: | Shar I | Loadsharin | ng, NonS Non-Loadsharing | | | | | | |
| Port Status: S Selected, U Unselected, I Individual | | | | | | | | | |
| Flags: A LACP | Activity, | B LAC | CF Timeout, C Aggregation, | | | | | | |
| D Synch | | | Collecting, F Distributing, | | | | | | |
| G Defau | lted, H - | Expired | | | | | | | |
| | | | | | | | | | |
| Aggregate Interfac | e: Route- | Aggregati | | | | | | | |
| Aggregation Mode: | Static | | | | | | | | |
| Loadsharing Type: | Shar | | | | | | | | |
| | | | Oper-Key | | | | | | |
| | | | | | | | | | |
| GE1/0/3 | | 32768 | | | | | | | |
| GE1/0/4 | | 32768 | | | | | | | |
| 125321 | | | | | | | | | |

| [FW2]dis int brief | | | | |
|-----------------------|-------|-----------|----------------|----------------------------------|
| Brief information on | inte | rfaces in | route mode: | |
| Link: ADM - administ: | rativ | ely down; | Stby - standby | |
| Protocol: (s) - spoo: | fing | | | |
| Interface | Link | Protocol | Primary IP | Description |
| GE1/0/0 | DOWN | DOWN | | |
| GE1/0/1 | DOWN | DOWN | 192.168.0.1 | |
| GE1/0/2 | UP | UP | 192.168.20.1 | |
| GE1/0/3 | UP | UP | | |
| GE1/0/4 | UP | UP | | |
| GE1/0/5 | DOWN | DOWN | | |
| GE1/0/6 | DOWN | DOWN | | |
| GE1/0/7 | DOWN | DOWN | | |
| GE1/0/8 | DOWN | DOWN | | |
| GE1/0/9 | DOWN | DOWN | | |
| GE1/0/10 | DOWN | DOWN | | |
| GE1/0/11 | DOWN | DOWN | | |
| GE1/0/12 | DOWN | DOWN | | |
| GE1/0/13 | DOWN | DOWN | | |
| GE1/0/14 | DOWN | DOWN | | |
| GE1/0/15 | DOWN | DOWN | | |
| GE1/0/16 | DOWN | DOWN | | |
| GE1/0/17 | DOWN | DOWN | | |
| GE1/0/18 | DOWN | DOWN | | |
| GE1/0/19 | DOWN | DOWN | | |
| GE1/0/20 | DOWN | DOWN | | |
| GE1/0/21 | DOWN | DOWN | | |
| GE1/0/22 | DOWN | DOWN | | |
| GE1/0/23 | DOWN | DOWN | | |
| InLoop0 | UP | UP(s) | | |
| Loop0 | UP | UP(s) | 2.2.2.2 | |
| NULLO | UP | UP(s) | | |
| REGO | UP | | | |
| RAGG1 | UP | UP | 10.0.0.2 | <connect fw1="" to=""></connect> |
| | | | | |
| 1 220 2 1 | | | | |

至此, F1060三层链路聚合典型组网配置案例已完成!