

2024-08-20

네트워크

# 본딩 모드

네트워크 본딩에는 다양한 모드가 있으며, 각 모드는 특정한 목적과 환경에 맞게 설계되었습니다. 대표적인 본딩 모드는 다음과 같습니다:

- **Mode 0 (Round Robin):** 여러 NIC를 통해 패킷을 순서대로 전송하여 대역폭을 확장합니다. 이 모드는 대역폭 확장에 효과적입니다.
- **Mode 1 (Active-Backup):** 한 개의 NIC만 활성 상태에서 작동하고, 나머지 NIC는 백업으로 대기합니다. 주 NIC에 문제가 발생하면 백업 NIC이 자동으로 작동합니다.
- **Mode 4 (802.3ad/LACP):** 이 모드는 Link Aggregation Control Protocol을 지원하는 스위치와 함께 사용되며, 여러 연결을 논리적인 하나의 링크로 결합합니다. 이는 로드 밸런싱과 장애 복구를 동시에 제공합니다.

# EtherChannel

다수의 Port를 하나의 논리적 Port로 묶어서 사용하는 기술을 의미

EtherChannel은 Cisco 사용하는 용어이고, 다른 벤더는 Link-Aggregation 혹은 Trunk라고 표현

# 본딩 모드 예제

Switch0 Fa/00 ~05 와 Switch Fa0/0~05를 연결



# 본딩 모드 예제

Switch0 Fa/00 ~05 연결 상태

```
Device Name: Switch0
Custom Device Model: 2960 IOS15
Hostname: Switch
```

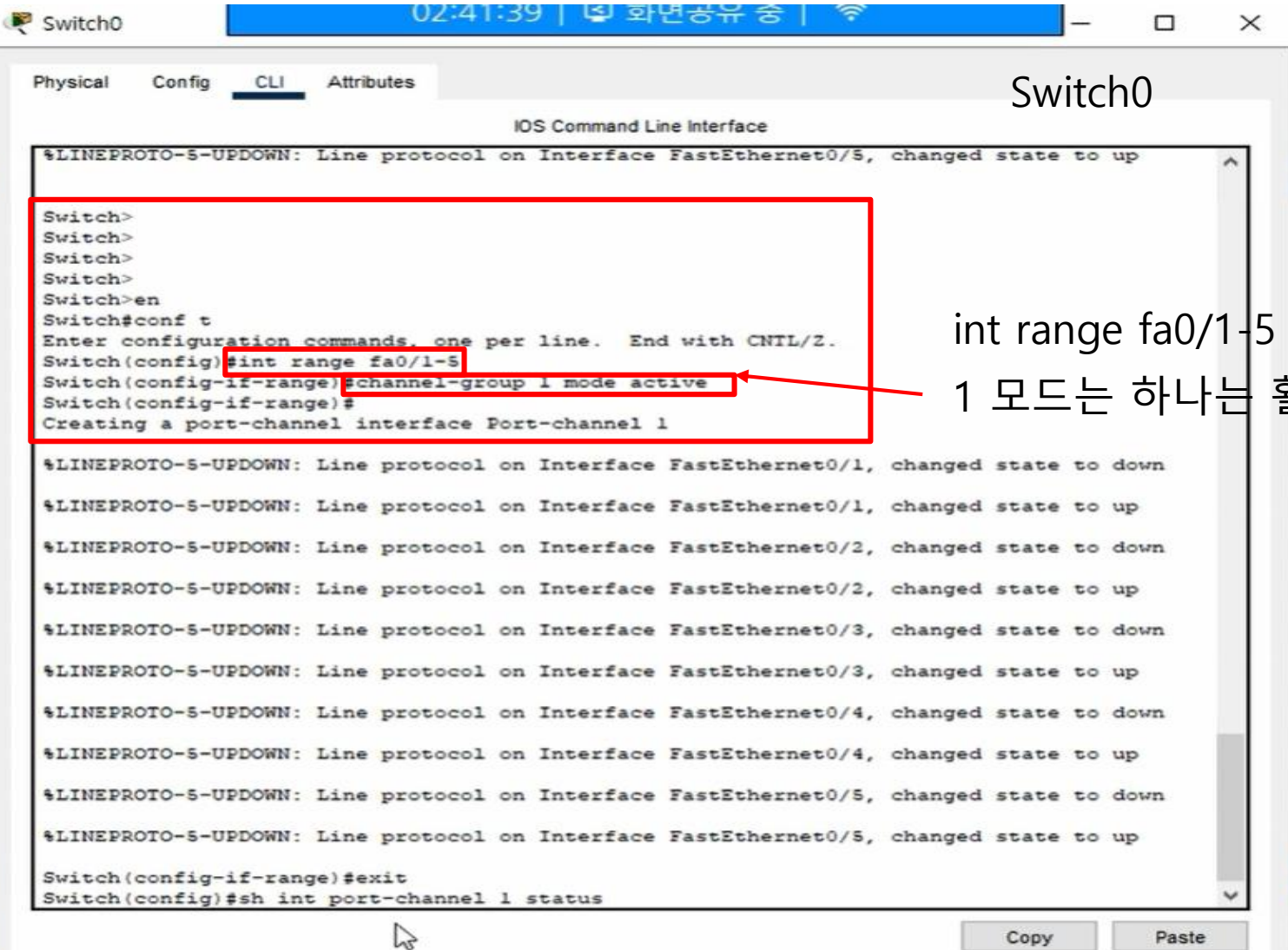
Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Up	1	--	000B.BE60.1701
FastEthernet0/2	Up	1	--	000B.BE60.1702
FastEthernet0/3	Up	1	--	000B.BE60.1703
FastEthernet0/4	Up	1	--	000B.BE60.1704
FastEthernet0/5	Up	1	--	000B.BE60.1705
FastEthernet0/6	Down	1	--	000B.BE60.1706
FastEthernet0/7	Down	1	--	000B.BE60.1707
FastEthernet0/8	Down	1	--	000B.BE60.1708
FastEthernet0/9	Down	1	--	000B.BE60.1709
FastEthernet0/10	Down	1	--	000B.BE60.170A
FastEthernet0/11	Down	1	--	000B.BE60.170B
FastEthernet0/12	Down	1	--	000B.BE60.170C
FastEthernet0/13	Down	1	--	000B.BE60.170D
FastEthernet0/14	Down	1	--	000B.BE60.170E
FastEthernet0/15	Down	1	--	000B.BE60.170F
FastEthernet0/16	Down	1	--	000B.BE60.1710
FastEthernet0/17	Down	1	--	000B.BE60.1711
FastEthernet0/18	Down	1	--	000B.BE60.1712
FastEthernet0/19	Down	1	--	000B.BE60.1713
FastEthernet0/20	Down	1	--	000B.BE60.1714
FastEthernet0/21	Down	1	--	000B.BE60.1715
FastEthernet0/22	Down	1	--	000B.BE60.1716
FastEthernet0/23	Down	1	--	000B.BE60.1717
FastEthernet0/24	Up	1	--	000B.BE60.1718
GigabitEthernet0/1	Down	1	--	000B.BE60.1719
GigabitEthernet0/2	Down	1	--	000B.BE60.171A
Vlan1	Down	1	<not set>	00D0.D32E.5D3A

Switch1 Fa/00 ~05 연결 상태

```
Device Name: Switch0
Custom Device Model: 2960 IOS15
Hostname: Switch
```

Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Up	1	--	000B.BE60.1701
FastEthernet0/2	Up	1	--	000B.BE60.1702
FastEthernet0/3	Up	1	--	000B.BE60.1703
FastEthernet0/4	Up	1	--	000B.BE60.1704
FastEthernet0/5	Up	1	--	000B.BE60.1705
FastEthernet0/6	Down	1	--	000B.BE60.1706
FastEthernet0/7	Down	1	--	000B.BE60.1707
FastEthernet0/8	Down	1	--	000B.BE60.1708
FastEthernet0/9	Down	1	--	000B.BE60.1709
FastEthernet0/10	Down	1	--	000B.BE60.170A
FastEthernet0/11	Down	1	--	000B.BE60.170B
FastEthernet0/12	Down	1	--	000B.BE60.170C
FastEthernet0/13	Down	1	--	000B.BE60.170D
FastEthernet0/14	Down	1	--	000B.BE60.170E
FastEthernet0/15	Down	1	--	000B.BE60.170F
FastEthernet0/16	Down	1	--	000B.BE60.1710
FastEthernet0/17	Down	1	--	000B.BE60.1711
FastEthernet0/18	Down	1	--	000B.BE60.1712
FastEthernet0/19	Down	1	--	000B.BE60.1713
FastEthernet0/20	Down	1	--	000B.BE60.1714
FastEthernet0/21	Down	1	--	000B.BE60.1715
FastEthernet0/22	Down	1	--	000B.BE60.1716
FastEthernet0/23	Down	1	--	000B.BE60.1717
FastEthernet0/24	Up	1	--	000B.BE60.1718
GigabitEthernet0/1	Down	1	--	000B.BE60.1719
GigabitEthernet0/2	Down	1	--	000B.BE60.171A
Vlan1	Down	1	<not set>	00D0.D32E.5D3A

# 본딩 모드 예제



```
Switch0
02:41:39 | 화면공유 중 |
Physical Config CLI Attributes Switch0
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
Switch>
Switch>
Switch>
Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int range fa0/1-5
Switch(config-if-range)#channel-group 1 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
Switch(config-if-range)#exit
Switch(config)#sh int port-channel 1 status
```

int range fa0/1-5 가 1번부터 5번까지 묶는다는거  
1 모드는 하나는 활성화 나머지는 대기상태

# 본딩 모드 예제

```
Switch(config-if-range)#exit  
Switch(config)#sh int port-channel 1 status
```

int port-channel 1: 설정한 port-channel 1 번 Status 확인

```
% Invalid input detected at '^' marker.
```

```
Switch(config)#exit
```

```
Switch# switch# 상태에서 sh int port-channel 1 status 입력
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch#sh int port-channel 1 status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Pol		notconnect	1	auto	auto	

```
Switch#
```

# 본딩 모드 예제

```
Switch# show etherchannel summary
```

show etherchannel summary: **ether channel** 정보 확인

```
Flags:  D - down          P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port
```

```
Number of channel-groups in use: 1
```

```
Number of aggregators: 1
```

Group	Port-channel	Protocol	Ports
1	Pol(SD)	LACP	Fa0/1(I) Fa0/2(I) Fa0/3(I) Fa0/4(I) Fa0/5(I)

```
Switch#
```



# 본딩 모드 예제

Switch1

```
Switch>
Switch>
Switch>
Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int range fa0/1-5
Switch(config-if-range)#channel-group 1 mode active
Switch(config-if-range)#
Creating a port-channel interface Port-channel 1

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINK-5-CHANGED: Interface Port-channel1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed state to up
```

# 본딩 모드 예제

## PC0 확인



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time=9ms TTL=128
Reply from 192.168.10.1: bytes=32 time=4ms TTL=128
Reply from 192.168.10.1: bytes=32 time=5ms TTL=128
Reply from 192.168.10.1: bytes=32 time=6ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 9ms, Average = 6ms

C:\>
```

# 본딩 모드 예제

## PC1 확인

