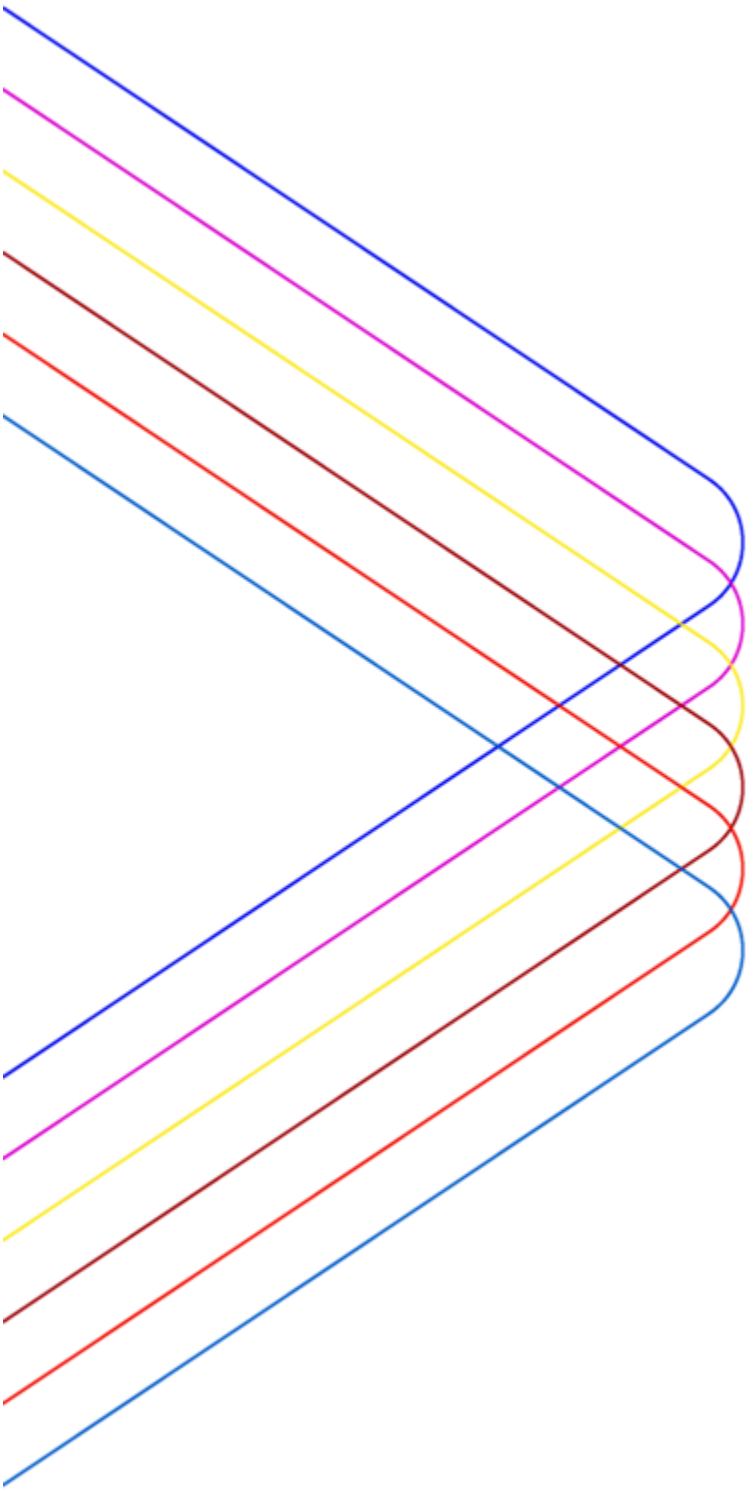


Network Team Project

Team : REST

강승환

고동우

유세종

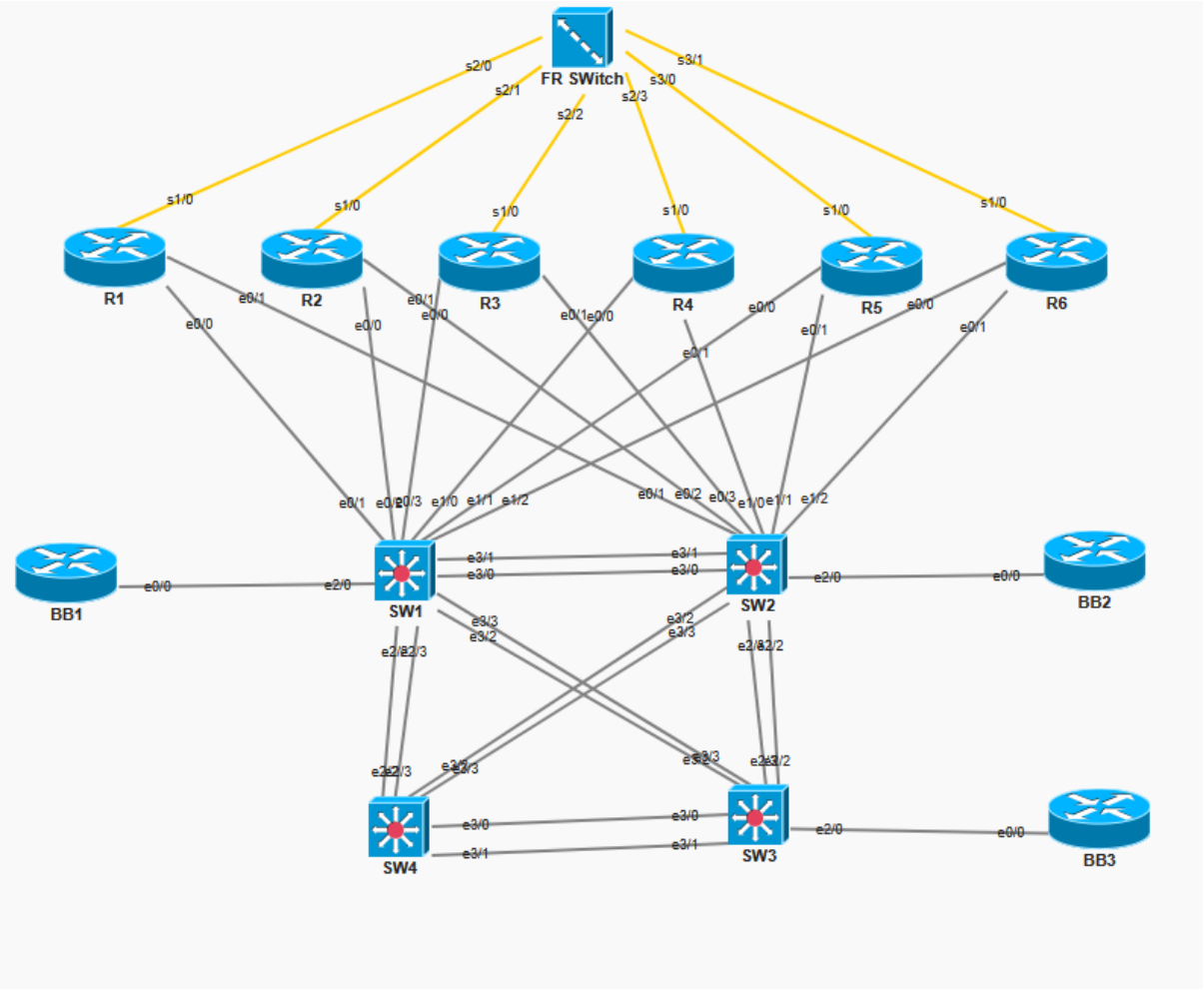
최성민

한시완

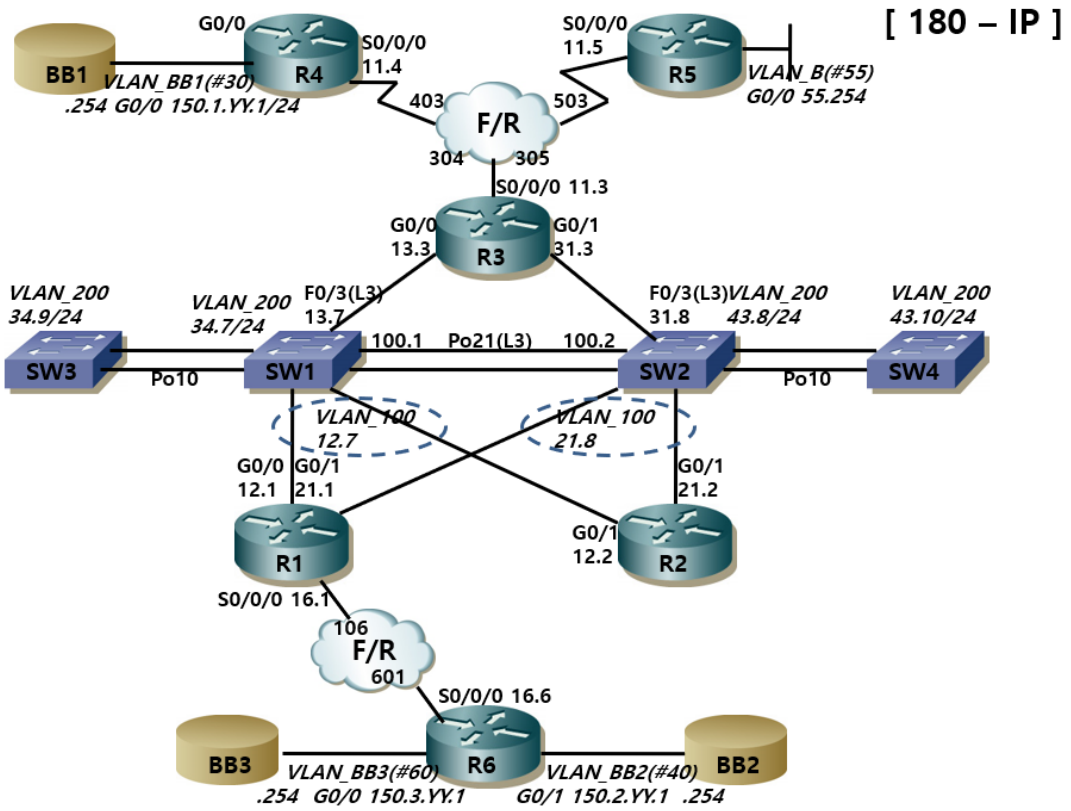
REST

목차

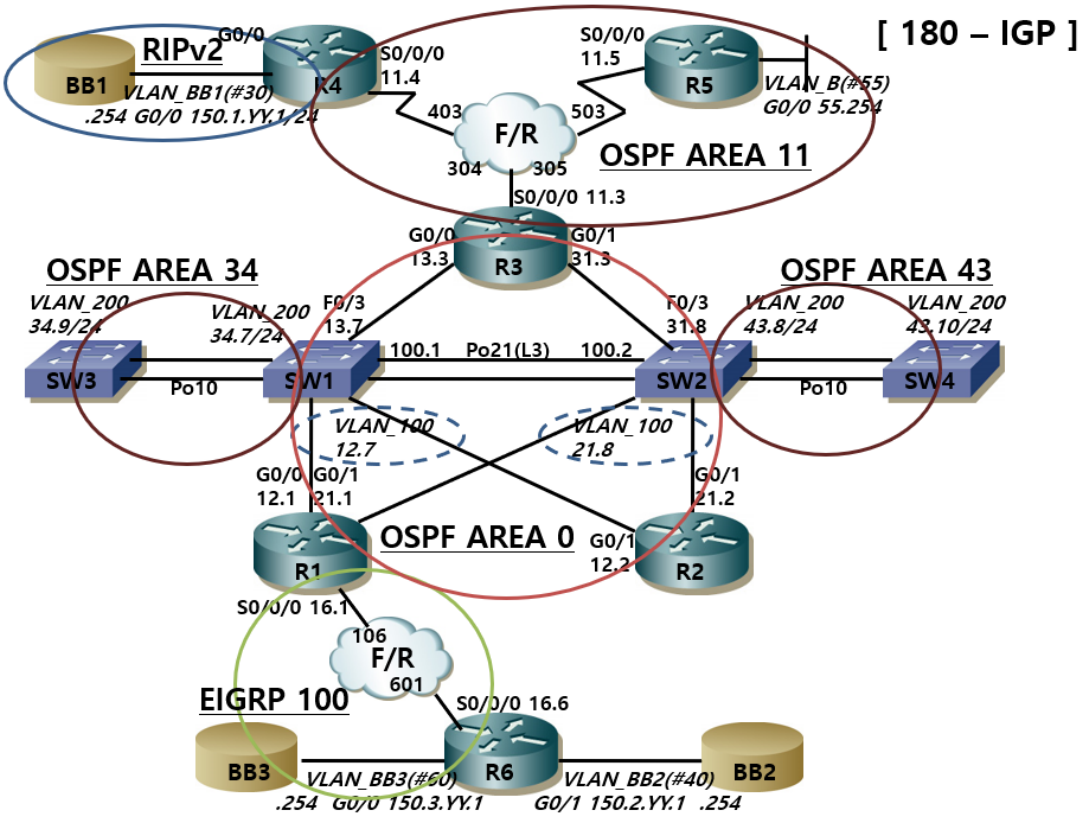
Ⅰ. 물리적 구성도


FR SWitch
s2/0
s2/1
s2/2
s2/3
s3/1
s3/0
R1
R2
R3
R4
R5
R6
s1/0
e0/0
e0/1
BB1
BB2
BB3
SW1
SW2
SW3
SW4
e2/0
e3/0
e3/1
e3/2
e3/3

Ⅱ. IP 구성도


[180 – IP]
BB1
G0/0
R4
S0/0/0
11.4
VLAN_BB1(#30)
.254 G0/0 150.1.YY.1/24
403
F/R
503
304
305
S0/0/0
11.5
R5
VLAN_B(#55)
G0/0 55.254
S0/0/0 11.3
G0/0
13.3
R3
G0/1
31.3
VLAN_200
34.9/24
VLAN_200
34.7/24
F0/3(L3)
13.7
F0/3(L3)
31.8
VLAN_200
43.8/24
VLAN_200
43.10/24
SW3
Po10
SW1
100.1
Po21(L3)
100.2
SW2
Po10
SW4
VLAN_100
12.7
VLAN_100
21.8
G0/0
12.1
G0/1
21.1
G0/1
21.2
R1
G0/1
12.2
R2
S0/0/0 16.1
106
F/R
601
S0/0/0 16.6
BB3
R6
BB2
VLAN_BB3(#60)
.254 G0/0 150.3.YY.1
VLAN_BB2(#40)
G0/1 150.2.YY.1 .254

Ⅲ. IGP 구성도


[180 – IGP]
RIPv2
BB1
VLAN_BB1(#30)
.254 G0/0 150.1.YY.1/24
G0/0
R4
S0/0/0
11.4
S0/0/0
11.5
R5
VLAN_B(#55)
G0/0 55.254
403
F/R
503
304
305
OSPF AREA 11
S0/0/0 11.3
G0/0
13.3
R3
G0/1
31.3
OSPF AREA 34
OSPF AREA 43
VLAN_200
34.9/24
VLAN_200
34.7/24
F0/3
13.7
F0/3
31.8
VLAN_200
43.8/24
VLAN_200
43.10/24
SW3
Po10
SW1
100.1
Po21(L3)
100.2
SW2
Po10
SW4
VLAN_100
12.7
VLAN_100
21.8
G0/0
12.1
G0/1
21.1
G0/1
21.2
R1
OSPF AREA 0
G0/1
12.2
R2
S0/0/0 16.1
106
F/R
601
EIGRP 100
S0/0/0 16.6
BB3
VLAN_BB3(#60)
.254 G0/0 150.3.YY.1
R6
VLAN_BB2(#40)
G0/1 150.2.YY.1 .254
BB2

IV. 설정 (YY → 19로 설정)

180

General Information

IOS 12.4
Doc CD : you have access to cisco.com/univercd
All configuration guides and master indexes are there
Tools : notepad and calculator are available

0. Address Allocation
모든 네트워크는 24bit 시리얼 구간 포함

Frame-relay : YY.YY.11.0/24(R3,R4,R5) , YY.YY.16.0(R1.R6)

SW1-SW2 L3 EtherChannel
SW1-SW3, SW2-SW4 L2 EtherChannel

Vlan_B(#55) 는 YY.YY.55.0/24
Vlan_100(#100) 는 YY.YY.12.0/24
Vlan_100(#100) 는 YY.YY.21.0/24
Vlan_200(#200) 는 YY.YY.34.0/24
Vlan_200(#200) 는 YY.YY.43.0/24
Vlan_BB1(#50) 는 150.1.YY.0/24
Vlan_BB2(#60) 는 150.2.YY.0/24
Vlan_BB3(#70) 는 150.3.YY.0/24

- Loopback IP Address

Hostname	Loopback 0 interface IP Address	Loopback 200 interface IP Address
RackYYR1	YY.YY.1.1/24	200.1YY.101.1/32
RackYYR2	YY.YY.2.2/24	200.1YY.102.1/32
RackYYR3	YY.YY.3.3/24	200.YY.3.1/32
RackYYR4	YY.YY.4.4/24	200.YY.4.1/32
RackYYR5	YY.YY.5.5/24	200.YY.5.1/32
RackYYR6	YY.YY.6.6/24	200.1YY.106.1/32
RackYYSW1	YY.YY.7.7/24	
RackYYSW2	YY.YY.8.8/24	
RackYYSW3	YY.YY.9.9/24	
RackYYSW4	YY.YY.10.10/24	

1. Bridging and Switching

1-1. Trunk

SW1

int ran e2/2 – 3
shutdown

int ran e3/0 – 1
switchport trunk encapsulation dot1q
switchport mode trunk

int ran e3/2 – 3
switchport trunk encapsulation dot1q
switchport mode trunk

SW2

int ran e2/2 – 3
sh

int ran e3/0 – 1
sw tr en dot
sw mo tr

int ran e3/2 – 3
sw tr en dot
sw mo tr

SW3

int ran e2/2 – 3
sh

int ran e3/0 – 1
sh

int ran e3/2 – 3
sw tr en dot
sw mo tr

SW4

int ran e2/2 – 3
sh

int ran e3/0 – 1
sh

int ran e3/2 – 3
sw tr en dot
sw mo tr

1-2. VTP

• SW1, SW2, SW3, SW4의 VTP Mode를 Transparent 로 설정
• VTP Domain은 VTPYY로 설정

vtp domain VTP19
vtp mode transparent

1-3. VLAN 설정

SW1

vlan 30
name VLAN_BB1

vlan55
name VLAN_B

vlan 60
name VLAN_BB3

```
vlan 100
name VLAN_100

vlan 120
name VLAN_120

vlan 200
name VLAN_200

int e0/1        //R1
switch mode access
switch access vlan 100

int e0/2        //R2
switch mode access
switch access vlan 100

int e0/3        //R3
no sw
ip add 19.19.13.7 255.255.255.0

int e1/0        //R4 → BB1
switch mode access
switch access vlan 30

int e1/1        //R5
switch mode access
switch access vlan 55

int e1/2        //R6 → BB3
switch mode access
switch access vlan 60

int vl 100
no sh
ip add 19.19.12.7 255.255.255.0

int vl 200
no sh
ip add 19.19.34.7 255.255.255.0

int vl 120
no sh
ip add 19.19.100.1 255.255.255.0

int lo0
ip add 19.19.7.7 255.255.255.0
```

SW2

```
vl 40
name VLAN_BB2

vl 100
name VLAN_100

vl 120
name VLAN_120

vl 200
name VLAN_200
int e0/1        //R1
sw mo acc
sw acc vl 100

int e0/2        //R2
sw mo acc
sw acc vl 100

int e0/3        //R3
no sw
ip add 19.19.31.8 255.255.255.0
```

```
int e1/2          //R6 → BB2
sw mo acc
sw acc vl 40

int vl 100        //SW2 ↔ R1
no sh
ip add 19.19.21.8 255.255.255.0

int vl 120        //SW2 ↔ SW1
no sh
ip add 19.19.100.2 255.255.255.0

int vl 200        //SW2 ↔ SW4
no sh
ip add 19.19.43.8 255.255.255.0

int lo0
ip add 19.19.8.8. 255.255.255.0
```

SW3

```
vlan 200
name VLAN_200

int vlan 200    //SW3 ↔ SW1
no sh
ip add 19.19.34.9 255.255.255.0
int lo0
ip add 19.19.9.9 255.255.255.0
```

SW4

```
vlan 200
name VLAN_200

int vlan 200
no sh
ip add 19.19.43.10 255.255.255.0

int lo0
ip add 19.19.10.10 255.255.255.0
```

1-4. F/R 및 라우터 IP 설정

• R3는 Multipoint Sub-Interface를 사용
• R4, R5는 point-to-point Sub-Interface를 사용
• R3 ~ R5까지 Sub-Interface 번호는 Router의 번호로 사용
• R3 ~ R5를 제외한 라우터에서는 frame-relay Sub-Interface를 사용할 수 없다.
• DLCI는 지정되어 있는 DLCI를 사용

R1

```
en
conf t

int lo0           //ospf 포함 X
ip add 19.19.1.1 255.255.255.0

int e0/0          //R1 ↔ SW1
no sh
ip add 19.19.12.1 255.255.255.0

int e0/1          //R1 ↔ SW2
no sh
ip add 19.19.21.1 255.255.255.0

int s1/0          //R1 → F/R → R6
en frame-relay
no frame-relay inverse-arp
no sh
ip add 19.19.16.1 255.255.255.0
```

frame-relay map ip 19.19.16.6 106 broadcast

R2

```
en
conf t

int lo0          //ospf 포함
ip add 19.19.2.2 255.255.255.0
ip os net point-to-point

int e0/0         //R2 ↔ SW1
no sh
ip add 19.19.12.2 255.255.255.0

int e0/1         //R2 ↔ SW2
no sh
ip add 19.19.21.2 255.255.255.0
```

R3

```
en
conf t

int lo0          //ospf 포함
ip add 19.19.3.3 255.255.255.0
ip os net point-to-p

int e0/0         //R3 ↔ SW1
no sh
ip add 19.19.13.3 255.255.255.0

int e0/1         //R3 ↔ SW2
no sh
ip add 19.19.31.3 255.255.255.0

int s1/0
en fram
no fram inv
no sh
int s1/0.3 m
ip add 19.19.11.3 255.255.255.0
fram map ip 19.19.11.4 304 br
fram map ip 19.19.11.5 305 br
```

R4

```
en
conf t

int lo0          //ospf 포함
ip add 19.19.4.4 255.255.255.0
ip os net point-to-p

int e0/0 //R4 → F/R → R3 → SW1 → BB1
no sh
ip add 105.1.19.1 255.255.255.0

int s1/0
en fram
no fram inv
fram int 403

int s1/0.4 p
ip add 19.19.11.4 255.255.255.0
fram int 403
```

R5

```
en
conf t

int lo0          //ospf 포함
ip add 19.19.5.5 255.255.255.0
ip os net point-to-p
```

```
int e0/0          //vl 55
no sh
ip add 19.19.55.254

int s1/0
no sh
no ip add
en fram

int s1/0.5 p
ip add 19.19.11.5 255.255.255.0
fram int 503
```

R6

```
en
conf t

int lo0           //ospf 포함 X
ip add 19.19.6.6 255.255.255.0

int e0/0          //R6 → SW1 → BB3
no sh
ip add 150.3.19.1 255.255.255.0

int e0/1          //R6 → SW2 → BB2
no sh
ip add 150.2.13.1 255.255.255.0

int s1/0
en fram
no fram inv
no sh
ip add 19.19.16.6 255.255.255.0
fram map ip 19.19.16.1 601 br
```

BB1

```
en
conf t

int e0/0
ip add 150.1.19.254 255.255.255.0
```

BB2

```
en
conf t

int e0/0          BB2 → SW1
ip add 150.2.19.254 255.255.255.0
```

BB3

```
en
conf t

int e0/0          BB3 → SW1 → R6
ip add 150.3.19.254 255.255.255.0
```

1-5. EtherChannel 설정

L3

• SW1과 SW2의 e3/0, e3/1 인터페이스를 사용해 L3 EtherChannel을 구성하라. Group 번호는 21만 사용한다.

• SW1의 IP YY.YY.100.1/24, SW2의 IP YY.YY.100.2/24를 사용하라.

• EtherChannel Type이 PAgP 또는 LAcP로 지정되지 않게 하라.

• ping이 가능해야 한다.

SW1

```
int ran e3/0 – 1
no sw
channel-group 21 mode on
```

int vlan120
no sh
ip add 19.19.100.1 255.255.255.0

SW2

int ran e3/0 – 1
no sw
channel-group 21 mode on
int vlan120
no sh
ip add 19.19.100.2 255.255.255.0

L2

• SW1과 SW3, SW2와 SW4의 e3/2, e3/3 인터페이스를 사용해 L2 EtherChannel을 구성하라. Group 번호는 10만 (SW1 – SW3 구간은 트렁크, SW2 – SW4 구간은 액세스 포트로 구성하라.)

• SW1, SW2, SW3, SW4에 Vlan 100, 200 인터페이스를 구성하라. (SW1 – SW3의 Vlan과 SW2 – SW4의 Vlan은 서로 다른 IP 대역을 갖는다.

• EtherChannel Type은 항상 PAgP가 되도록 설정하라.

• ping이 가능해야 한다.

SW1

int ran e3/2 – 3
sw tr en dot
sw mo tr
channel-group 10 mode desirable

SW3

int ran e3/2 – 3
sw tr en dot
sw mo tr
channel-group 10 mode desirable

SW2

int ran e3/2 – 3
sw mo acc
sw acc vl 200
channel-group 10 mode desirable

SW4

int ran e3/2 – 3
sw mo acc
sw acc vl 200
channel-group 10 mode desirable

2. IP IGP Protocols

2-1. OSPF AREA 0 라우팅 설정

R1

router ospf 1
network 19.19.12.1 0.0.0.0 area 0 → SW1
network 19.19.21.1 0.0.0.0 area 0 → SW2
auto-cost reference-bandwidth 1000

R2

router os 1
net 19.19.2.2 0.0.0.0 ar 0 → lo0
net 19.19.12.2 0.0.0.0 ar 0 → SW1
net 19.19.21.2 0.0.0.0 ar 0 → SW2
auto-cost reference-bandwidth 1000

R3

router os 1

net 19.19.3.3 0.0.0.0 ar 0 → lo0
net 19.19.13.3 0.0.0.0 ar 0 → SW1
net 19.19.31.3 0.0.0.0 ar 0 → SW2
auto-cost reference-bandwidth 1000

SW1

router os 1
net 19.19.7.7 0.0.0.0 ar 0 → lo0
net 19.19.12.7 0.0.0.0 ar 0 → vl 100
net 19.19.13.7 0.0.0.0 ar 0 → R3
net 19.19.100.7 0.0.0.0 ar 0 → vl 120
auto-cost reference-bandwidth 1000

SW1

router os 1
net 19.19.8.8 0.0.0.0 ar 0 → lo0
net 19.19.21.8 0.0.0.0 ar 0 → vl 100
net 19.19.31.8 0.0.0.0 ar 0 → R3
net 19.19.100.8 0.0.0.0 ar 0 → vl 120
auto-cost reference-bandwidth 1000

2-2. OSPF AREA 11 라우팅 설정

R3

router os 1
net 19.19.11.3 0.0.0.0 ar 11 → F/R

int s1/0.3
ip os net point-to-multipoint

R4

router os 1
net19.19.4.4 0.0.0.0 ar 11 → lo0
net 19.19.11.4 0.0.0.0 ar 11 → F/R
auto-cost reference-bandwidth 1000

int s1/0.4
ip os net point-to-multipoint

R5

router os 1
net 19.19.5.5 0.0.0.0 ar 11 → lo0
net 19.19.11.5 0.0.0.0 ar 11 → F/R
net 19.19.55.254 0.0.0.0 ar 11 → vl 55
auto-cost reference-bandwidth 1000

int s1/0.5
ip os net point-to-multipoint

2-3. RIPv2

• R4는 BB1으로부터 RIPv2를 통해 네트워크 정보를 받는다.
• 이중 199.172.0.0/16 범위에 속하는 네트워크만 받아라.(acl사용)
• BB1으로부터 받는 네트워크를 OSPF로 Redistribute 하라.

R4

router rip
version 2
no auto-summary
network 150.1.0.0
distribute-list RIP_NET in e0/0

ip access-list standard RIP_NET
permit 199.172.0.0 0.0.255.255

router os 1
redistribute rip subnets

• BB1으로는 YY.YY.0.0/16의 상세 정보 Individual YY.YY.0.0 Network를 전달하고 BB1에는 Our Network가 5 Hop 거리에 있어야 한다.
• b. 그 외의 다른 External 경로 정보들이 추가되어도 BB1에게 전달되지 말아야 한다.

R4

router rip
redistribute ospf 1 metric 5
distribute-list prefix TO_BB1 out e0/0
ip prefix-list TO_BB1 permit 19.19.0.0/16 le32

• BB1으로는 YY.YY.0.0/16만 보내고, BB1은 이 경로의 Metric을 '5'로 확인해야 한다.
• 향후에 YY.YY.0.0/16 외에 다른 External 경로 정보들이 추가되어도 BB1에게 전달되지 말아야 한다.

R1

router rip
redistribute ospf 1 metrix 4
distribute-list prefix TO_BB1 out e0/0

int e0/0
ip summary-address rip 19.19.0.0 255.255.0.0
ip prefix-list TO_BB1 permit 19.19.0.0/16

2-4. NSSA

• Area 11은 다른 ASBR에서 수신되는 외부 경로 정보(O E1, O E2)들을 수신하지 않을 것이며, LSA Type 3(O IA)는 허용할 것이다

R3

router os 1
area 11 nssa default-information-originate

R4

router os 1
area 11 nssa

R5

router os 1
area 11 nssa

2-5. OSPF ABR

• 최소한의 설정을 사용해서 (Fewer Commands) 모든 Area에 Default Route를 전파하라. (Static은 사용할 수 없다

R3

router os 1
default-intformation originate always

2-6. OSPF Area 34, 43

• SW1 – SW3 Area 34
• SW2 – SW4 Area 43

• SW3, SW4 Loopback0을 OSPF에 포함시켜라.
• OSPF 네이버를 확인하라. Ping이 가능해야 한다.

SW1

router ospf 1
net 19.19.34.7 0.0.0.0

SW2

router ospf 1
network 19.19.43.8 0.0.0.0 ar 43

SW3

router os 1
net 19.19.9.9 0.0.0.0 ar 34
net 19.19.34.9 0.0.0.0 ar 34
auto-cost reference-bandwidth 1000

SW4

router os 1
net 19.19.10.10 0.0.0.0 ar 43
net 19.19.43.10 0.0.0.0 ar 43
auto-cost reference-bandwidth 1000

2-7. Summarization

• R2에 다음 Loopback25, 35, 45을 설정하고 OSPF Area 0에 넣어라.

Loopback25 : 180.88.25.254/24
Loopback35 : 180.88.35.254/24
Loopback45 : 180.88.45.254/24

• R2에서 포함시킨 Loopback25, 35, 45은 다른 Area에서 하나의 경로로 보여야 하고, 최소한의 Prefix만을 사용해야 한다.
• R5에서 이 Loopback으로 반드시 Ping이 되어야 한다.

R2

int lo25
ip add 180.88.25.254 255.255.255.0
ip os net point-to-p

int lo35
ip add 180.88.35.254 255.255.255.0
ip os net point-to-p

int lo45
ip add 180.88.45.254 255.255.255.0
ip os net point-to-p

router os 1
net 180.88.25.254 0.0.0.0 ar 0
net 180.88.35.254 0.0.0.0 ar 0
net 180.88.45.254 0.0.0.0 ar 0

R3

router os 1
area 0 range 180.88.0.0 255.255.192.0

SW1

router os 1
area 0 range 180.88.0.0 255.255.192.0

SW2

router os 1
area 0 range 180.88.0.0 255.255.192.0

2-8. EIGRP 100

• R1 – R6 EIGRP 100으로 설정하라.
• R1에서는 VLAN_BB2의 경로 정보가 반드시 'D EX'

로 보여야 한다.
• R6에서는 YY.YY.0.0/16 정보가 보여야 한다. 단, route filter와 관련된 명령어는 사용할 수 없다.
• R1의 Loopback0을 EIGRP 100에 포함시켜라.
• EIGRP 100을 OSPF로 재분배하라.

R1

router eigrp 100
no auto-summary
net 19.19.1.1 0.0.0.0
net 19.19.16.1 0.0.0.0
redistribute ospf 1 metric 1 1 1 1 1

router os 1
redistribute eigrp 100 subnets
distribute-list prefix EIGRP_SUM out ei 100

ip prefix-list EIGRP_SUM deny 19.19.0.0/16
ip prefix-list EIGRP_SUM permit 0.0.0.0/0 le32

int s1/0
ip summary-address eigrp 100 19.19.0.0 255.255.0.0

R6

router ei 100
no auto
net 19.19.6.6 0.0.0.0
net 19.19.16.6 0.0.0.0

redistribute connected route-map VLAN_BB2
route-map VLAN_BB2
match ip address R6_BB2
ip access-list standard R6_BB2 permit 150.2.19.0 0.0.0.255

2-9. EIGRP 100-2

• R6-BB3 EIGRP 100으로 설정하라.
• BB3으로는 어떠한 라우팅 정보도 보내지 않는다.
• BB3으로부터 Class A,B,C 네트워크를 받는데 198.0.0.0와 추가될 수 있는 Class만 받아라(반드시 Prefix-list 이용)

R6

router eigrp 100
net 150.3.19.1 0.0.0.0
distribute-list prefix TO_BB3 out e0/0
ip prefix-list TO_BB3 deny 0.0.0.0/0 le 32

router ei 100
distribute-list prefix FROM_BB3 in e0/0
ip prefix-list FROM_BB3 permit 192.0.0.0/3 le 32

3. IOS/Feature

3-1. Dump

• FTP를 이용해 R4_DUMP 파일을 보내라
  • 150.1.YY.254
  • Username : cisco
  • Password : ccie

R4

ip ftp username cisco
ip tfp password ccie

exception core-file R4_DUMP
exception protocol ftp

exception dump 150.1.19.254

3-2. Systemlog

• R5에서 System Error Message를 아래 조건을 참조하여 Local Buffer에 저장하시오.

a. Buffer에는 Emergency, Alerts, Critical, Error 들이 저장된다.

b. Buffer Size는 8192Bytes로 설정하라.

c. 각 Log Entry에는 시간이 명시되어야 한다.

d. 각 Entry 별로 발생한 횟수를 알 수 있게 하라.

R5

service timestamps log datetime
logging on
logging buffered 8192 errors
logging count

3-3. DHCP Secured

R5에 설정한다.

- Domain : cisco.com

- DNS : YY.YY.55.50 , YY.YY.55.51

- Network : YY.YY.55.0 /24

- Lease : 10(days)

- Default-Route : YY.YY.55.254

- 오직 Trusted Mac Address로 부터의 ARP 요청에 대해서만 응답한다.

- update arp : DHCP DB에 등록된 호스트들의 존재 유무를 확인위해 주기적으로 arp 수행하여 응답있는지 확인

R5

ip dhcp excluded-address 19.19.55.50
ip dhcp excluded-address 19.19.55.51
ip dhcp excluded-address 19.19.55.254

ip dhcp pool DHCP
network 19.19.55.0 255.255.255.0
default-router 19.19.55.254
dns-server 19.19.55.50
dns-server 19.19.55.51
domain-name cisco.com
lease 10
update arp

Ⅴ. 결과

SWITCH

5-2. VLAN 정보 확인

SW1

```
SW1#sh int trunk

Port        Mode             Encapsulation  Status        Native vlan
Po10        on               802.1q         trunking      1

Port        Vlans allowed on trunk
Po10        1-4094

Port        Vlans allowed and active in management domain
Po10        1,30,55,60,100,120,200

Port        Vlans in spanning tree forwarding state and not pruned
Po10        1,30,55,60,100,120,200
```

SW3

```
SW3#sh int trunk

Port        Mode             Encapsulation  Status        Native vlan
Po10        on               802.1q         trunking      1

Port        Vlans allowed on trunk
Po10        1-4094

Port        Vlans allowed and active in management domain
Po10        1,200

Port        Vlans in spanning tree forwarding state and not pruned
Po10        1,200
```

5-2. VLAN 정보 확인

SW1

```
SW1>sh vl br

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Et0/0, Et1/3, Et2/0, Et2/1
                                                 Et2/2, Et2/3
30   VLAN_BB1                          active    Et1/0
55   VLAN_B                            active    Et1/1
60   VLAN_BB3                          active    Et1/2
100  VLAN_100                          active    Et0/1, Et0/2
120  VLAN_120                          active
200  VLAN_200                          active
1002 fddi-default                      act/unsup
1003 trcrf-default                     act/unsup
1004 fddinet-default                   act/unsup
1005 trbrf-default                     act/unsup
```

SW2

```
SW2>sh vl br

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Et0/0, Et1/0, Et1/1, Et1/3
                                                 Et2/0, Et2/1, Et2/2, Et2/3
40   VLAN_BB2                          active    Et1/2
100  VLAN_100                          active    Et0/1, Et0/2
120  VLAN_120                          active
200  VLAN_200                          active    Po10
1002 fddi-default                      act/unsup
1003 trcrf-default                     act/unsup
1004 fddinet-default                   act/unsup
1005 trbrf-default                     act/unsup
```

SW3

```
SW3#sh vl br

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Et0/0, Et0/1, Et0/2, Et0/3
                                                 Et1/0, Et1/1, Et1/2, Et1/3
                                                 Et2/0, Et2/1, Et2/2, Et2/3
                                                 Et3/0, Et3/1
200  VLAN_200                          active
1002 fddi-default                      act/unsup
1003 trcrf-default                     act/unsup
1004 fddinet-default                   act/unsup
1005 trbrf-default                     act/unsup
```

SW4

```
SW4>sh vl br

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Et0/0, Et0/1, Et0/2, Et0/3
                                                 Et1/0, Et1/1, Et1/2, Et1/3
                                                 Et2/0, Et2/1, Et2/2, Et2/3
                                                 Et3/0, Et3/1
200  VLAN_200                          active    Po10
1002 fddi-default                      act/unsup
1003 trcrf-default                     act/unsup
1004 fddinet-default                   act/unsup
1005 trbrf-default                     act/unsup
```

5-3. VTP 정보 확인

SW1

```
SW1>sh vtp status
VTP Version capable             : 1 to 3
VTP version running             : 2
VTP Domain Name                 : VTP19
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : aabb.cc00.0700
Configuration last modified by 19.19.12.7 at 7-3-25 01:32:51

Feature VLAN:
--------------
VTP Operating Mode                : Transparent
Maximum VLANs supported locally   : 1005
Number of existing VLANs          : 11
Configuration Revision            : 0
MD5 digest                        : 0x32 0xF4 0xFF 0x68 0x38 0xFB 0x5C 0xB5
                                    0xAE 0x53 0x1F 0x02 0xFB 0xA5 0x5A 0xD2
```

SW2

```
SW2>sh vtp status
VTP Version capable             : 1 to 3
VTP version running             : 2
VTP Domain Name                 : VTP19
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : aabb.cc00.0800
Configuration last modified by 19.19.21.8 at 7-3-25 01:32:51

Feature VLAN:
--------------
VTP Operating Mode              : Transparent
Maximum VLANs supported locally   : 1005
Number of existing VLANs          : 9
Configuration Revision            : 0
MD5 digest                        : 0x82 0x97 0x76 0x78 0x3D 0x1D 0xD2 0x9B
                                    0x4C 0x6F 0xF5 0xA8 0x9D 0x70 0xFF 0x65
```

SW3

```
SW3#sh vtp status
VTP Version capable             : 1 to 3
VTP version running             : 2
VTP Domain Name                 : VTP19
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : aabb.cc00.0900
Configuration last modified by 19.19.34.9 at 7-3-25 01:32:51

Feature VLAN:
--------------
VTP Operating Mode              : Transparent
Maximum VLANs supported locally   : 1005
Number of existing VLANs          : 6
Configuration Revision            : 0
MD5 digest                        : 0xB9 0x09 0xD6 0x67 0xD3 0xBB 0xF5 0x41
                                    0x7D 0x44 0x26 0x23 0xB2 0x3C 0x9E 0xD0
```

SW4

```
SW4#sh vtp status
VTP Version capable             : 1 to 3
VTP version running             : 2
VTP Domain Name                 : VTP19
VTP Pruning Mode                : Disabled
VTP Traps Generation            : Disabled
Device ID                       : aabb.cc00.0a00
Configuration last modified by 19.19.43.10 at 7-3-25 01:32:51

Feature VLAN:
--------------
VTP Operating Mode              : Transparent
Maximum VLANs supported locally   : 1005
Number of existing VLANs          : 6
Configuration Revision            : 0
MD5 digest                        : 0xD1 0x6F 0x51 0x0C 0x85 0xDD 0xD9 0xDD
                                    0xB7 0x15 0xCB 0x0F 0x59 0xFF 0x4E 0x22
```

5-4. IP 정보 확인

SW1

```
SW1>sh ip int b | e un
Interface              IP-Address      OK? Method Status                Protocol
Ethernet0/3            19.19.13.7      YES manual up                    up
Loopback0              19.19.7.7       YES manual up                    up
Vlan100                19.19.12.7      YES manual up                    up
Vlan120                19.19.100.1     YES manual up                    up
Vlan200                19.19.34.7      YES manual up                    up
```

SW2

```
SW2>sh ip int b | e un
Interface              IP-Address      OK? Method Status                Protocol
Ethernet0/3            19.19.31.8      YES manual up                    up
Loopback0              19.19.8.8       YES manual up                    up
Vlan100                19.19.21.8      YES manual up                    up
Vlan120                19.19.100.2     YES manual up                    up
Vlan200                19.19.43.8      YES manual up                    up
```

SW3

```
SW3#sh ip int b | e un
Interface              IP-Address      OK? Method Status                Protocol
Loopback0              19.19.9.9       YES manual up                    up
Vlan200                19.19.34.9      YES manual up                    up
```

SW4

```
SW4>sh ip int b | e un
Interface              IP-Address      OK? Method Status                Protocol
Loopback0              19.19.10.10     YES manual up                    up
Vlan200                19.19.43.10     YES manual up                    up
```

ROUTER

5-1. IP 정보 확인

R1

```
R1#sh ip int b | e un
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                19.19.12.1      YES manual up                    up
Ethernet0/1                19.19.21.1      YES manual up                    up
Serial1/0                  19.19.16.1      YES manual up                    up
Loopback0                  19.19.1.1       YES manual up                    up
```

R2

```
R2#sh ip int b | e un
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                19.19.12.2      YES manual up                    up
Ethernet0/1                19.19.21.2      YES manual up                    up
Loopback0                  19.19.2.2       YES manual up                    up
Loopback25                 180.88.25.254   YES manual up                    up
Loopback35                 180.88.35.254   YES manual up                    up
Loopback45                 180.88.45.254   YES manual up                    up
```

R3

```
R3#sh ip int b | e un
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                19.19.13.3      YES manual up                    up
Ethernet0/1                19.19.31.3      YES manual up                    up
Serial1/0                  19.19.11.3      YES manual up                    up
Loopback0                  19.19.3.3       YES manual up                    up
```

R4

```
R4#sh ip int b | e un
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                150.1.19.1      YES manual up                    up
Serial1/0                  19.19.11.4      YES manual up                    up
Loopback0                  19.19.4.4       YES manual up                    up
```

R5

```
R5#sh ip int b | e un
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                19.19.55.254    YES manual up                    up
Serial1/0                  19.19.11.5      YES manual up                    up
Loopback0                  19.19.5.5       YES manual up                    up
```

R6

```
R6#sh ip int b | e un
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                150.3.19.1      YES manual up                    up
Ethernet0/1                150.2.19.1      YES manual up                    up
Serial1/0                  19.19.16.6      YES manual up                    up
Loopback0                  19.19.6.6       YES manual up                    up
```

5-2. 라우팅 테이블 확인

R1

```
O*E2  0.0.0.0/0 [110/1] via 19.19.21.8, 01:25:03, Ethernet0/1
                [110/1] via 19.19.12.7, 01:25:13, Ethernet0/0
      19.0.0.0/8 is variably subnetted, 26 subnets, 2 masks
C        19.19.1.0/24 is directly connected, Loopback0
L        19.19.1.1/32 is directly connected, Loopback0
O        19.19.2.0/24 [110/101] via 19.19.21.2, 01:25:03, Ethernet0/1
                      [110/101] via 19.19.12.2, 01:25:13, Ethernet0/0
O        19.19.3.0/24 [110/201] via 19.19.21.8, 01:25:03, Ethernet0/1
                      [110/201] via 19.19.12.7, 01:25:13, Ethernet0/0
O IA     19.19.4.0/24 [110/265] via 19.19.21.8, 01:25:03, Ethernet0/1
                      [110/265] via 19.19.12.7, 01:25:13, Ethernet0/0
O IA     19.19.5.0/24 [110/265] via 19.19.21.8, 01:25:03, Ethernet0/1
                      [110/265] via 19.19.12.7, 01:25:13, Ethernet0/0
D        19.19.6.0/24 [90/2297856] via 19.19.16.6, 01:33:00, Serial1/0
O        19.19.7.0/24 [110/101] via 19.19.12.7, 01:25:18, Ethernet0/0
O        19.19.8.0/24 [110/101] via 19.19.21.8, 01:25:08, Ethernet0/1
O IA     19.19.9.0/24 [110/102] via 19.19.12.7, 01:25:04, Ethernet0/0
O IA     19.19.10.0/24 [110/102] via 19.19.21.8, 01:24:58, Ethernet0/1
O IA     19.19.11.3/32 [110/200] via 19.19.21.8, 01:25:08, Ethernet0/1
                       [110/200] via 19.19.12.7, 01:25:18, Ethernet0/0
O IA     19.19.11.4/32 [110/264] via 19.19.21.8, 01:25:08, Ethernet0/1
                       [110/264] via 19.19.12.7, 01:25:18, Ethernet0/0
O IA     19.19.11.5/32 [110/264] via 19.19.21.8, 01:25:08, Ethernet0/1
                       [110/264] via 19.19.12.7, 01:25:18, Ethernet0/0
C        19.19.12.0/24 is directly connected, Ethernet0/0
L        19.19.12.1/32 is directly connected, Ethernet0/0
O        19.19.13.0/24 [110/200] via 19.19.12.7, 01:25:18, Ethernet0/0
C        19.19.16.0/24 is directly connected, Serial1/0
L        19.19.16.1/32 is directly connected, Serial1/0
C        19.19.21.0/24 is directly connected, Ethernet0/1
L        19.19.21.1/32 is directly connected, Ethernet0/1
O        19.19.31.0/24 [110/200] via 19.19.21.8, 01:25:08, Ethernet0/1
O IA     19.19.34.0/24 [110/101] via 19.19.12.7, 01:25:08, Ethernet0/0
O IA     19.19.43.0/24 [110/101] via 19.19.21.8, 01:25:08, Ethernet0/1
O IA     19.19.55.0/24 [110/364] via 19.19.21.8, 01:25:08, Ethernet0/1
                       [110/364] via 19.19.12.7, 01:25:18, Ethernet0/0
O        19.19.100.0/24 [110/101] via 19.19.21.8, 01:25:08, Ethernet0/1
      150.1.0.0/24 is subnetted, 1 subnets
O E2     150.1.19.0 [110/20] via 19.19.21.8, 01:25:09, Ethernet0/1
                    [110/20] via 19.19.12.7, 01:25:19, Ethernet0/0
      150.3.0.0/24 is subnetted, 1 subnets
D        150.3.19.0 [90/2195456] via 19.19.16.6, 01:33:01, Serial1/0
      180.88.0.0/24 is subnetted, 3 subnets
O        180.88.25.0 [110/101] via 19.19.21.2, 01:25:09, Ethernet0/1
                     [110/101] via 19.19.12.2, 01:25:19, Ethernet0/0
O        180.88.35.0 [110/101] via 19.19.21.2, 01:25:09, Ethernet0/1
                     [110/101] via 19.19.12.2, 01:25:19, Ethernet0/0
O        180.88.45.0 [110/101] via 19.19.21.2, 01:25:09, Ethernet0/1
                     [110/101] via 19.19.12.2, 01:25:19, Ethernet0/0
```

R2

```
O*E2  0.0.0.0/0 [110/1] via 19.19.21.8, 01:34:42, Ethernet0/1
                [110/1] via 19.19.12.7, 01:34:42, Ethernet0/0
      19.0.0.0/8 is variably subnetted, 25 subnets, 2 masks
O E2     19.19.1.0/24 [110/20] via 19.19.21.1, 01:31:02, Ethernet0/1
                      [110/20] via 19.19.12.1, 01:31:02, Ethernet0/0
C        19.19.2.0/24 is directly connected, Loopback0
L        19.19.2.2/32 is directly connected, Loopback0
O        19.19.3.0/24 [110/201] via 19.19.21.8, 01:46:12, Ethernet0/1
                      [110/201] via 19.19.12.7, 01:46:12, Ethernet0/0
O IA     19.19.4.0/24 [110/265] via 19.19.21.8, 01:35:15, Ethernet0/1
                      [110/265] via 19.19.12.7, 01:35:15, Ethernet0/0
O IA     19.19.5.0/24 [110/265] via 19.19.21.8, 01:35:05, Ethernet0/1
                      [110/265] via 19.19.12.7, 01:35:05, Ethernet0/0
O E2     19.19.6.0/24 [110/20] via 19.19.21.1, 01:30:14, Ethernet0/1
                      [110/20] via 19.19.12.1, 01:30:14, Ethernet0/0
O        19.19.7.0/24 [110/101] via 19.19.12.7, 01:46:23, Ethernet0/0
O        19.19.8.0/24 [110/101] via 19.19.21.8, 01:46:13, Ethernet0/1
O IA     19.19.9.0/24 [110/102] via 19.19.12.7, 01:33:09, Ethernet0/0
O IA     19.19.10.0/24 [110/102] via 19.19.21.8, 01:32:53, Ethernet0/1
O IA     19.19.11.3/32 [110/200] via 19.19.21.8, 01:44:09, Ethernet0/1
                       [110/200] via 19.19.12.7, 01:44:09, Ethernet0/0
O IA     19.19.11.4/32 [110/264] via 19.19.21.8, 01:35:16, Ethernet0/1
                       [110/264] via 19.19.12.7, 01:35:16, Ethernet0/0
O IA     19.19.11.5/32 [110/264] via 19.19.21.8, 01:35:06, Ethernet0/1
                       [110/264] via 19.19.12.7, 01:35:06, Ethernet0/0
C        19.19.12.0/24 is directly connected, Ethernet0/0
L        19.19.12.2/32 is directly connected, Ethernet0/0
O        19.19.13.0/24 [110/200] via 19.19.12.7, 01:46:23, Ethernet0/0
O E2     19.19.16.0/24 [110/20] via 19.19.21.1, 01:31:03, Ethernet0/1
                       [110/20] via 19.19.12.1, 01:31:03, Ethernet0/0
C        19.19.21.0/24 is directly connected, Ethernet0/1
L        19.19.21.2/32 is directly connected, Ethernet0/1
O        19.19.31.0/24 [110/200] via 19.19.21.8, 01:46:13, Ethernet0/1
O IA     19.19.34.0/24 [110/101] via 19.19.12.7, 01:34:10, Ethernet0/0
O IA     19.19.43.0/24 [110/101] via 19.19.21.8, 01:34:06, Ethernet0/1
O IA     19.19.55.0/24 [110/364] via 19.19.21.8, 01:35:06, Ethernet0/1
                       [110/364] via 19.19.12.7, 01:35:06, Ethernet0/0
O        19.19.100.0/24 [110/101] via 19.19.21.8, 01:46:13, Ethernet0/1
      150.1.0.0/24 is subnetted, 1 subnets
O E2     150.1.19.0 [110/20] via 19.19.21.8, 01:35:11, Ethernet0/1
                    [110/20] via 19.19.12.7, 01:35:11, Ethernet0/0
      150.3.0.0/24 is subnetted, 1 subnets
O E2     150.3.19.0 [110/20] via 19.19.21.1, 01:29:51, Ethernet0/1
                    [110/20] via 19.19.12.1, 01:29:51, Ethernet0/0
      180.88.0.0/16 is variably subnetted, 6 subnets, 2 masks
C        180.88.25.0/24 is directly connected, Loopback25
L        180.88.25.254/32 is directly connected, Loopback25
C        180.88.35.0/24 is directly connected, Loopback35
L        180.88.35.254/32 is directly connected, Loopback35
C        180.88.45.0/24 is directly connected, Loopback45
L        180.88.45.254/32 is directly connected, Loopback45
```

R3

```
O E2     19.19.1.0/24 [110/20] via 19.19.31.8, 01:25:16, Ethernet0/1
                      [110/20] via 19.19.13.7, 01:25:26, Ethernet0/0
O        19.19.2.0/24 [110/12] via 19.19.31.8, 01:25:26, Ethernet0/1
                      [110/12] via 19.19.13.7, 01:25:26, Ethernet0/0
C        19.19.3.0/24 is directly connected, Loopback0
L        19.19.3.3/32 is directly connected, Loopback0
O        19.19.4.0/24 [110/65] via 19.19.11.4, 01:41:32, Serial1/0
O        19.19.5.0/24 [110/65] via 19.19.11.5, 01:33:12, Serial1/0
O E2     19.19.6.0/24 [110/20] via 19.19.31.8, 01:25:16, Ethernet0/1
                      [110/20] via 19.19.13.7, 01:25:26, Ethernet0/0
O        19.19.7.0/24 [110/11] via 19.19.13.7, 01:41:55, Ethernet0/0
O        19.19.8.0/24 [110/11] via 19.19.31.8, 01:41:55, Ethernet0/1
O IA     19.19.9.0/24 [110/12] via 19.19.13.7, 01:25:07, Ethernet0/0
O IA     19.19.10.0/24 [110/12] via 19.19.31.8, 01:25:07, Ethernet0/1
C        19.19.11.0/24 is directly connected, Serial1/0
L        19.19.11.3/32 is directly connected, Serial1/0
O        19.19.11.4/32 [110/64] via 19.19.11.4, 01:41:33, Serial1/0
O        19.19.11.5/32 [110/64] via 19.19.11.5, 01:33:13, Serial1/0
O        19.19.12.0/24 [110/11] via 19.19.13.7, 01:25:37, Ethernet0/0
C        19.19.13.0/24 is directly connected, Ethernet0/0
L        19.19.13.3/32 is directly connected, Ethernet0/0
O E2     19.19.16.0/24 [110/20] via 19.19.31.8, 01:25:17, Ethernet0/1
                       [110/20] via 19.19.13.7, 01:25:27, Ethernet0/0
O        19.19.21.0/24 [110/11] via 19.19.31.8, 01:25:27, Ethernet0/1
C        19.19.31.0/24 is directly connected, Ethernet0/1
L        19.19.31.3/32 is directly connected, Ethernet0/1
O IA     19.19.34.0/24 [110/11] via 19.19.13.7, 01:25:17, Ethernet0/0
O IA     19.19.43.0/24 [110/11] via 19.19.31.8, 01:41:56, Ethernet0/1
O        19.19.55.0/24 [110/164] via 19.19.11.5, 01:33:13, Serial1/0
O        19.19.100.0/24 [110/11] via 19.19.31.8, 01:41:56, Ethernet0/1
      150.1.0.0/24 is subnetted, 1 subnets
O N2     150.1.19.0 [110/20] via 19.19.11.4, 01:41:33, Serial1/0
      150.3.0.0/24 is subnetted, 1 subnets
O E2     150.3.19.0 [110/20] via 19.19.31.8, 01:25:17, Ethernet0/1
                    [110/20] via 19.19.13.7, 01:25:27, Ethernet0/0
      180.88.0.0/16 is variably subnetted, 4 subnets, 2 masks
O        180.88.0.0/18 is a summary, 01:25:28, Null0
O        180.88.25.0/24 [110/12] via 19.19.31.8, 01:25:28, Ethernet0/1
                        [110/12] via 19.19.13.7, 01:25:28, Ethernet0/0
O        180.88.35.0/24 [110/12] via 19.19.31.8, 01:25:28, Ethernet0/1
                        [110/12] via 19.19.13.7, 01:25:28, Ethernet0/0
O        180.88.45.0/24 [110/12] via 19.19.31.8, 01:25:28, Ethernet0/1
                        [110/12] via 19.19.13.7, 01:25:28, Ethernet0/0
```

R4

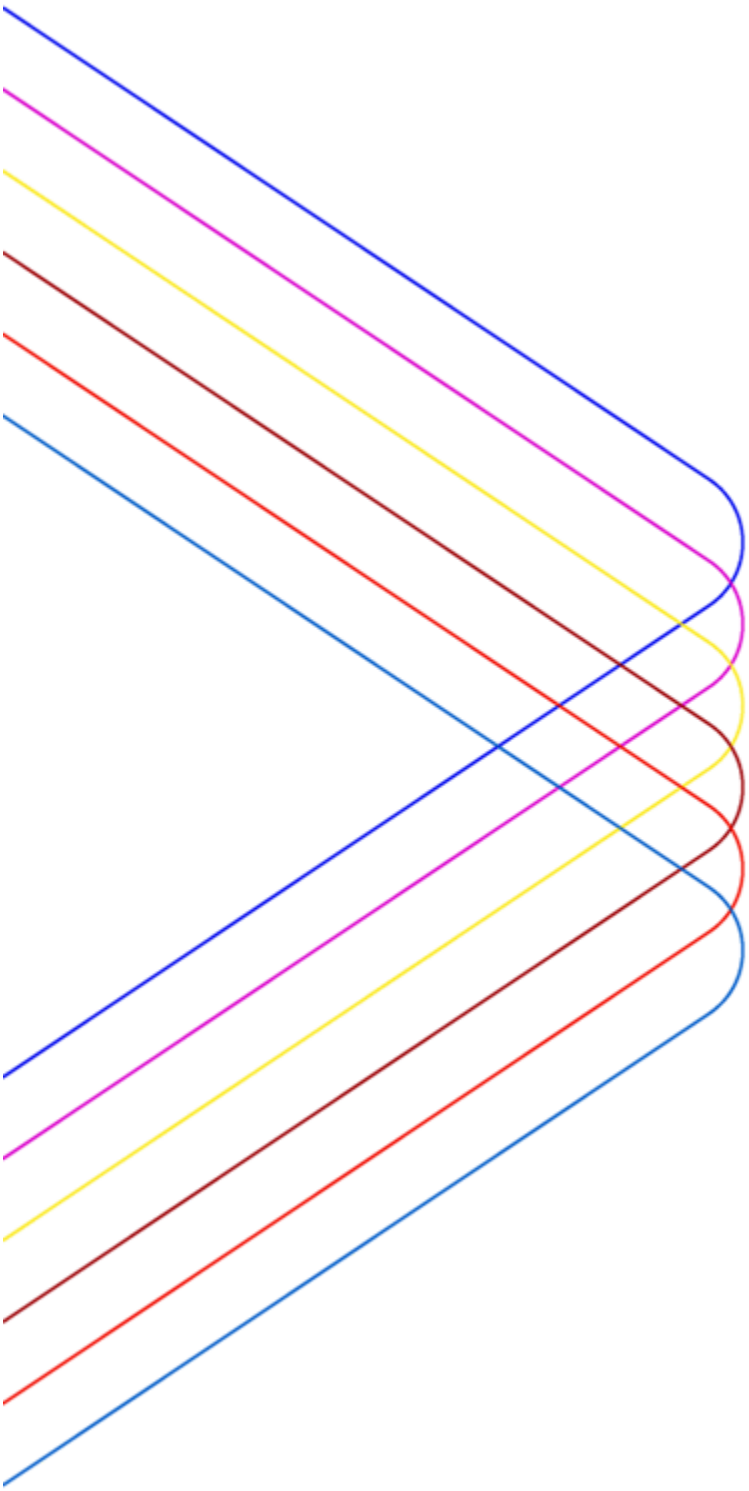
```
O*N2  0.0.0.0/0 [110/1] via 19.19.11.3, 01:41:37, Serial1/0
      19.0.0.0/8 is variably subnetted, 21 subnets, 2 masks
O IA     19.19.2.0/24 [110/659] via 19.19.11.3, 01:25:31, Serial1/0
O IA     19.19.3.0/24 [110/648] via 19.19.11.3, 01:41:37, Serial1/0
C        19.19.4.0/24 is directly connected, Loopback0
L        19.19.4.4/32 is directly connected, Loopback0
O        19.19.5.0/24 [110/648] via 19.19.11.5, 01:33:17, Serial1/0
O IA     19.19.7.0/24 [110/658] via 19.19.11.3, 01:41:37, Serial1/0
O IA     19.19.8.0/24 [110/658] via 19.19.11.3, 01:41:37, Serial1/0
O IA     19.19.9.0/24 [110/659] via 19.19.11.3, 01:25:11, Serial1/0
O IA     19.19.10.0/24 [110/659] via 19.19.11.3, 01:25:11, Serial1/0
C        19.19.11.0/24 is directly connected, Serial1/0
O        19.19.11.3/32 [110/647] via 19.19.11.3, 01:41:37, Serial1/0
L        19.19.11.4/32 is directly connected, Serial1/0
O        19.19.11.5/32 [110/647] via 19.19.11.5, 01:33:17, Serial1/0
O IA     19.19.12.0/24 [110/658] via 19.19.11.3, 01:41:37, Serial1/0
O IA     19.19.13.0/24 [110/657] via 19.19.11.3, 01:41:37, Serial1/0
O IA     19.19.21.0/24 [110/658] via 19.19.11.3, 01:41:37, Serial1/0
O IA     19.19.31.0/24 [110/657] via 19.19.11.3, 01:41:37, Serial1/0
O IA     19.19.34.0/24 [110/658] via 19.19.11.3, 01:25:16, Serial1/0
O IA     19.19.43.0/24 [110/658] via 19.19.11.3, 01:41:37, Serial1/0
O        19.19.55.0/24 [110/747] via 19.19.11.5, 01:33:17, Serial1/0
O IA     19.19.100.0/24 [110/658] via 19.19.11.3, 01:41:37, Serial1/0
      150.1.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        150.1.19.0/24 is directly connected, Ethernet0/0
L        150.1.19.1/32 is directly connected, Ethernet0/0
      180.88.0.0/18 is subnetted, 1 subnets
O IA     180.88.0.0 [110/659] via 19.19.11.3, 01:25:31, Serial1/0
```

R5

```
O*N2  0.0.0.0/0 [110/1] via 19.19.11.3, 01:33:16, Serial1/0
      19.0.0.0/8 is variably subnetted, 22 subnets, 2 masks
O IA     19.19.2.0/24 [110/659] via 19.19.11.3, 01:25:34, Serial1/0
O IA     19.19.3.0/24 [110/648] via 19.19.11.3, 01:33:16, Serial1/0
O        19.19.4.0/24 [110/648] via 19.19.11.4, 01:33:16, Serial1/0
C        19.19.5.0/24 is directly connected, Loopback0
L        19.19.5.5/32 is directly connected, Loopback0
O IA     19.19.7.0/24 [110/658] via 19.19.11.3, 01:33:16, Serial1/0
O IA     19.19.8.0/24 [110/658] via 19.19.11.3, 01:33:16, Serial1/0
O IA     19.19.9.0/24 [110/659] via 19.19.11.3, 01:25:14, Serial1/0
O IA     19.19.10.0/24 [110/659] via 19.19.11.3, 01:25:14, Serial1/0
C        19.19.11.0/24 is directly connected, Serial1/0
O        19.19.11.3/32 [110/647] via 19.19.11.3, 01:33:16, Serial1/0
O        19.19.11.4/32 [110/647] via 19.19.11.4, 01:33:16, Serial1/0
L        19.19.11.5/32 is directly connected, Serial1/0
O IA     19.19.12.0/24 [110/658] via 19.19.11.3, 01:33:16, Serial1/0
O IA     19.19.13.0/24 [110/657] via 19.19.11.3, 01:33:16, Serial1/0
O IA     19.19.21.0/24 [110/658] via 19.19.11.3, 01:33:16, Serial1/0
O IA     19.19.31.0/24 [110/657] via 19.19.11.3, 01:33:16, Serial1/0
O IA     19.19.34.0/24 [110/658] via 19.19.11.3, 01:25:19, Serial1/0
O IA     19.19.43.0/24 [110/658] via 19.19.11.3, 01:33:16, Serial1/0
C        19.19.55.0/24 is directly connected, Ethernet0/0
L        19.19.55.254/32 is directly connected, Ethernet0/0
O IA     19.19.100.0/24 [110/658] via 19.19.11.3, 01:33:16, Serial1/0
      150.1.0.0/24 is subnetted, 1 subnets
O N2     150.1.19.0 [110/20] via 19.19.11.4, 01:33:16, Serial1/0
      180.88.0.0/18 is subnetted, 1 subnets
O IA     180.88.0.0 [110/659] via 19.19.11.3, 01:25:34, Serial1/0
```

R6

```
D*EX  0.0.0.0/0 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
      19.0.0.0/8 is variably subnetted, 24 subnets, 2 masks
D        19.19.1.0/24 [90/2297856] via 19.19.16.1, 01:33:18, Serial1/0
D EX     19.19.2.0/24 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
D EX     19.19.3.0/24 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
D EX     19.19.4.0/24 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
D EX     19.19.5.0/24 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
C        19.19.6.0/24 is directly connected, Loopback0
L        19.19.6.6/32 is directly connected, Loopback0
D EX     19.19.7.0/24 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
D EX     19.19.8.0/24 [170/2560512256] via 19.19.16.1, 01:25:36, Serial1/0
D EX     19.19.9.0/24 [170/2560512256] via 19.19.16.1, 01:25:21, Serial1/0
D EX     19.19.10.0/24 [170/2560512256] via 19.19.16.1, 01:25:16, Serial1/0
D EX     19.19.11.3/32 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     19.19.11.4/32 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     19.19.11.5/32 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     19.19.12.0/24 [170/2560512256] via 19.19.16.1, 01:33:19, Serial1/0
D EX     19.19.13.0/24 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
C        19.19.16.0/24 is directly connected, Serial1/0
L        19.19.16.6/32 is directly connected, Serial1/0
D EX     19.19.21.0/24 [170/2560512256] via 19.19.16.1, 01:33:19, Serial1/0
D EX     19.19.31.0/24 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     19.19.34.0/24 [170/2560512256] via 19.19.16.1, 01:25:27, Serial1/0
D EX     19.19.43.0/24 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     19.19.55.0/24 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     19.19.100.0/24 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
      150.1.0.0/24 is subnetted, 1 subnets
D EX     150.1.19.0 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
      150.2.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        150.2.19.0/24 is directly connected, Ethernet0/1
L        150.2.19.1/32 is directly connected, Ethernet0/1
      150.3.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        150.3.19.0/24 is directly connected, Ethernet0/0
L        150.3.19.1/32 is directly connected, Ethernet0/0
      180.88.0.0/24 is subnetted, 3 subnets
D EX     180.88.25.0 [170/2560512256] via 19.19.16.1, 01:25:37, Serial1/0
D EX     180.88.35.0 [170/2560512256] via 19.19.16.1, 01:25:38, Serial1/0
D EX     180.88.45.0 [170/2560512256] via 19.19.16.1, 01:25:38, Serial1/0
```



Network Team Project

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최성민

한시완