

```
R1:
conf t
int e0/0
Desc conn to Transit NW in Area 1
ip add 10.123.1.1 255.255.255.0
no sh
int lo 0
ip add 192.168.0.1 255.255.255.0
int lo 1
ip add 192.168.1.1 255.255.255.0
int lo 2
ip add 192.168.2.1 255.255.255.0
int lo 3
ip add 192.168.3.1 255.255.255.0
exit
```

```
router ospf 1
router-id 1.1.1.1
exit
```

```
int range e0/0, lo 0-3
ip ospf 1 area 1
exit
```

```
int range lo 0-3
ip ospf network point-to-point
exit
```

```
R2:
conf t
int e0/0
Desc conn to Transit NW in Area 1
ip add 10.123.1.2 255.255.255.0
no sh
int s2/0
Desc conn to R4 (ABR)
ip add 10.24.1.2 255.255.255.0
no sh
exit
```

```
router ospf 1
router-id 2.2.2.2
net 10.123.1.2 0.0.0.0 area 1
net 10.24.1.2 0.0.0.0 area 1
exit
```

```
R3:
conf t
int e0/0
Desc conn to Transit NW in Area 1
ip add 10.123.1.3 255.255.255.0
no sh
int e0/1
Desc conn to Stub NW
ip add 10.3.3.3 255.255.255.0
no sh
exit
```

```
router ospf 1
router-id 3.3.3.3
passive-interface e0/1
net 10.0.0.0 0.255.255.255 area 1
exit
```

```
R4:ABR
conf t
int s2/0
Desc conn to R2 in area 1
ip add 10.24.1.4 255.255.255.0
no sh
int e0/0
Desc conn to R5 in area 0
ip add 172.16.45.4 255.255.255.0
no shut
exit
```

```
router ospf 1
router-id 4.4.4.4
net 10.24.1.0 0.0.0.255 area 1
net 172.16.45.0 0.0.0.255 area 0
exit
```

```
R5:Backbone router
conf t
int e0/0
Desc conn to R4 in area 0
ip add 172.16.45.5 255.255.255.0
int e0/1
Desc conn to R6 in area 0
ip add 172.16.56.5 255.255.255.0
no shut
exit
```

```
Router ospf 1
net 0.0.0.0 255.255.255.255 area 0
exit
```

```
R6: ASBR
conf t
int e0/0
Desc conn to R5 in Area 0
ip add 172.16.56.6 255.255.255.0
no shut
int e0/1
Desc conn to Eigrp NW
ip add 200.200.200.200 255.255.255.0
no shut
int e0/2
Desc conn to Rip NW
ip add 150.150.0.1 255.255.255.0
no shut
exit
```

```

Router ospf 1
net 172.16.56.6 0.0.0.0 area 0
Redistribute eigrp 100 subnets metric-type 2
Redistribute rip subnets metric-type 1
exit

```

```

Router eigrp 100
net 200.200.200.0
exit

```

```

Router rip
ver 2
no auto
net 150.150.0.0
exit

```

```

=====
LSA type 1 : Router link
Generated by any ospf router DR,BDR,Drother,P2p,P2Mp
LSA type 2 : Network link
Generated by DR on the segment.
LSA type 3 : Summary LSA
Generated by ABR
Injects routes from one area into another
LSA type 4 : Summary ASB
Generated by ABR to inform about the presence of ASBR in another area
LSA type 4 is not generated in the area where ASBR is present
LSA type 5 : External LSA
Generated by ASBR

```

Seq number 32 bit written in hexa

```

-----
1 bit MSB
Signed integer
(- ,+)
Negative =1
Positive =0
 8421
xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx
1000 0000 0000 0000 0000 0000 0000 0001
 8      0      0      0      0      0      0      0      1
=0X80000001
 8      0      0      0      0      0      0      0      10
=0X80000001
1111 1111 1111 1111 1111 1111 1111 1111 =0XFFFFFFFF
  F      F      F      F      F      F      F      F      F
0000 0000 0000 0000 0000 0000 0000 0001
0111 1111 1111 1111 1111 1111 1111 1111
 7      F      F      F      F      F      F      F      F

```

0X80000001 to 0x7FFFFFFF

```

3.3.3.3      3.3.3.3      1363      0x80000004 0x001FB4 2
3.3.3.3      3.3.3.3      163       0x80000006 0x001EB2 2

```

```

R1
1.1.1.1      1.1.1.1      1789      0x80000003 0x00A878 5
1.1.1.1      1.1.1.1      0         0x80000004 0x00A679 5
1.1.1.1      1.1.1.1      34        0x80000005 0x009E74 5

```

```

Type 1      Link ID      Adv router
Type 2      RID          ALL routers
Type 3      Interface ip of DR      DR
Type 4      Network ID of Inter area      ABR
Type 5      RID of ASBR          ABR
Type 5      Network ID of external      ASBR

```

Summarization on ABR:

```

R2
0 IA 192.168.0.0/24 [110/99] via 172.16.56.5, 00:05:30, Ethernet0/0
0 IA 192.168.1.0/24 [110/99] via 172.16.56.5, 00:05:30, Ethernet0/0
0 IA 192.168.2.0/24 [110/99] via 172.16.56.5, 00:05:30, Ethernet0/0
0 IA 192.168.3.0/24 [110/95] via 172.16.56.5, 00:05:30, Ethernet0/0

```

```

      8      8
      n      n      x      h
192.168.0.0
192.168.1.0
192.168.2.0
192.168.3.0

```

```

Third octet
      128 64 32 16      8      4      2      1
0      0      0      0      0      0      0      0      0
3      0      0      0      0      0      0      1      1
A      0      0      0      0      0      0      0      0      =0

```

```

192.168.0.0/22
255.255.252.0

```

```

Router ospf 1
area 1 range 192.168.0.0 255.255.252.0
exit

```

```

0 IA 192.168.0.0/22 [110/95] via 172.16.56.5, 00:00:37, Ethernet0/0

```

To leak a specific route along with summary

```

Router ospf 1
area 1 range 192.168.1.0 255.255.255.0
exit

```

```

0 IA 192.168.0.0/22 [110/95] via 172.16.56.5, 00:00:37, Ethernet0/0
0 IA 192.168.1.0/24 [110/99] via 172.16.56.5, 00:05:30, Ethernet0/0

```


