

1 BGP

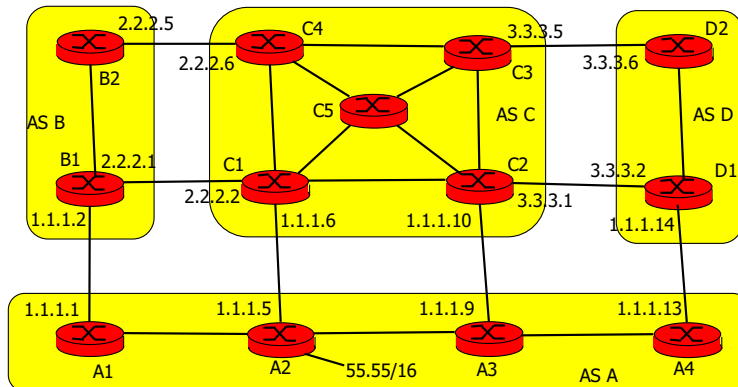


Figure 1: Example of a network

Consider the network in Figure 1. A1 to D2 are routers. There are 4 autonomous systems A - D. All links between routers are shown in the figure and there are no other routers nor prefixes. All routers run RIP inside an AS and BGP for external routing. All physical links are shown in the figure. There are e-BGP sessions between routers belonging to different ASs like between A1-B1. There are all required i-BGP sessions.

The choice of a route within an AS is done according to the following rules:

1. route with the shortest AS path
2. route with the smallest MED
3. route with the shortest IGP distance to the NEXT-HOP of the route
4. route learnt through E-BGP with respect to the one learnt through I-BGP
5. route with the smallest IP address in NEXT-HOP

Routers do not filter routes and accept all announcements.

1. Routers in A send the following announcements:

- A1 to B1 : 55.55/16, AS-PATH=A, NEXT-HOP=1.1.1.1, MED=20
- A2 to C1 : 55.55/16, AS-PATH=A, NEXT-HOP=1.1.1.5, MED=10
- A3 to C2 : 55.55/16, AS-PATH=A, NEXT-HOP=1.1.1.9, MED=20
- A4 to D1 : 55.55/16, AS-PATH=A, NEXT-HOP=1.1.1.13, MED=30

AS A and C are “peers”. After convergence, what is the route to 55.55/16 chosen by C1 (explain)? The same question for C2.

2. AS A and C are not “peers”. After convergence, what is the route to 55.55/16 chosen by C1 (explain)? The same question for C2.

Solution:

1. Peers: ignore MED - C1-A2, C2-A3-A2

2. Not Peers: do not ignore MED - C1-A2, C2-C1-A2

3. C1-B1-A1, C4-C1-B1-A1