RR based Traffic Steering Use Cases

draft-chen-idr-rr-based-traffic-steering-usecase-00

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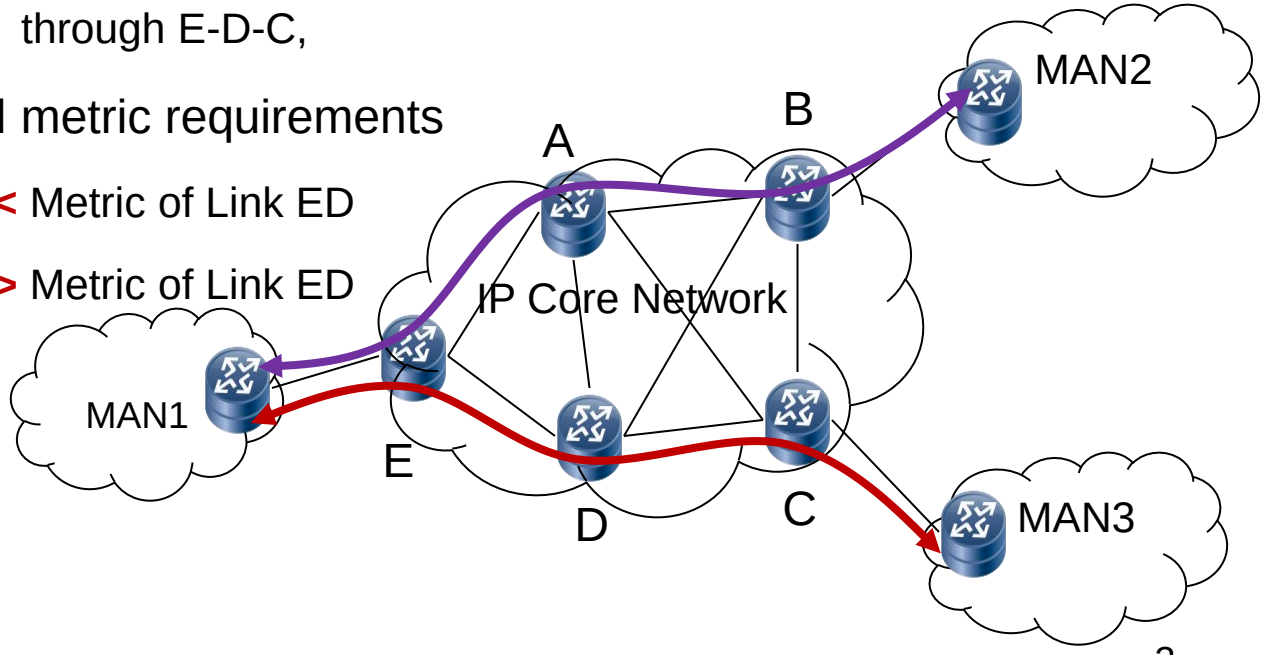
Problem Statement

- For Inter-AS scenario, BGP and IGP control traffic forwarding
  - BGP determines the exit ASBR of an AS
  - IGP determines how to reach to the exit ASBR of the AS
  - Both calculate route from the perspective of the calculator
- To fully use the network resource, reduce network congestion
  - Operators have to design and adjust the IGP metrics and relevant BGP policies frequently
  - IGP metric adjustment is the major method, but not efficient
  - BGP policies are troublesome and prone to configuration error

Problem Statement (cont.)

- Example of “helpless” IGP metric adjustment
  - A, B, C and D connect each other with links having the same metric
  - Requirements:
    - MAN1 <--> MAN2: through E-A-B,
    - MAN1<--> MAN3: through E-D-C,
  - Result in paradoxical metric requirements
    - Metric of Link EA **<** Metric of Link ED
    - Metric of Link EA **>** Metric of Link ED



Use Cases and Requirements (1)

- Multihoming Scenario
  - Different MAN pairs, different paths
    - MAN1-MAN3: A-B
    - MAN2-MAN4: D-C
  - Working and backup with different paths
    - Working path: A-B
    - Backup path: D-C
  - Different service types with different paths
    - VoIP: A-B
    - Other: D-C
  - Other requirements

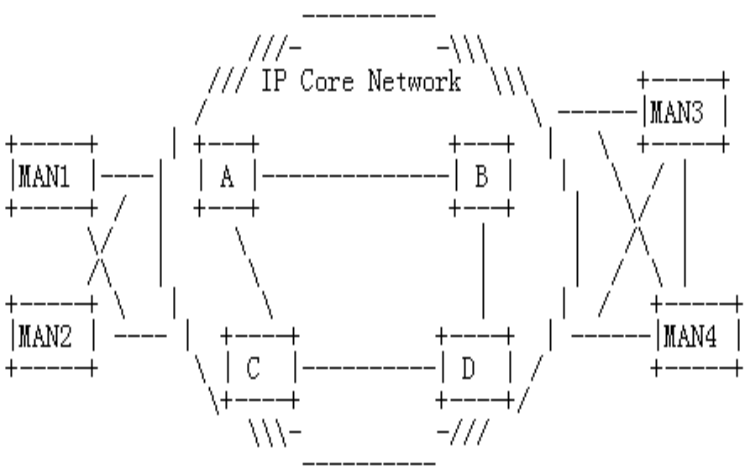


Figure 2: Multihoming Scenarios

Use Cases and Requirements (2)

- Multiple Planes
  - Different MAN pairs, different Planes
    - MAN1-MAN11: Plane1
    - MAN2-MAN12: Plane2
  - Working and backup with different Planes
    - Working path: A-B
    - Backup path: D-C
  - Different service types with different Planes
    - VoIP: A-B
    - Other: D-C
  - Load balancing based on the capacity of planes

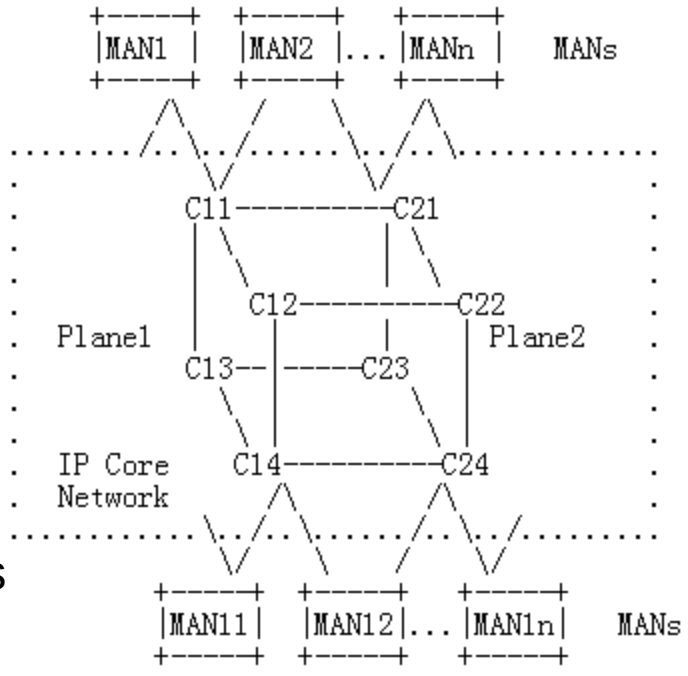


Figure 3: Multiple Planes Scenarios

Use Cases and Requirements (3)

- Multiple Exit/Entry
  - Choose the proper entry/exit based on link price and/or service type
  - Dynamically adjust the entry/exit based on link load and/or link price

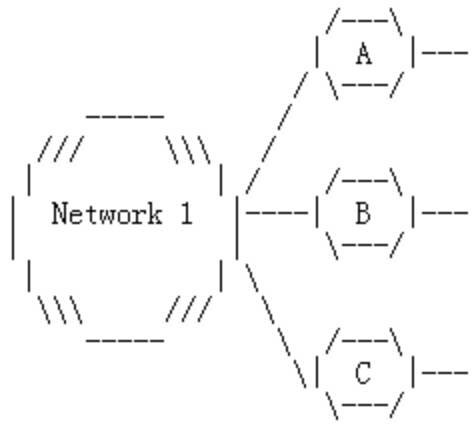


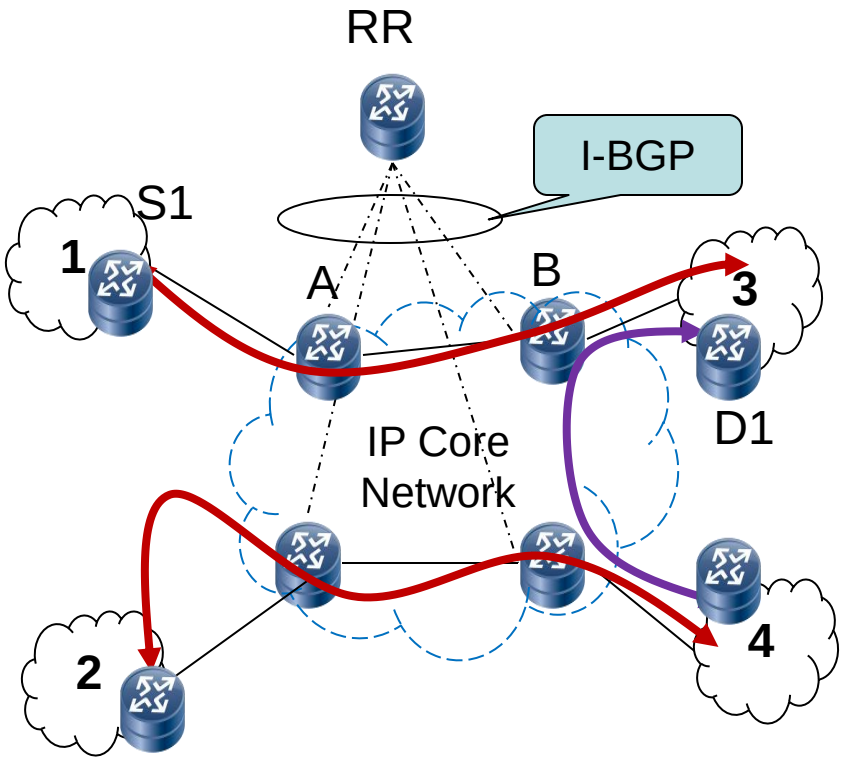
Figure 4: Multiple Entry/Exit (MEE)

RR based Traffic Steering

- RR can be seen as a centralized “controller”
  - The RR collects and maintains the topology, capacity, status of the network
  - TE like path calculation(e.g., CSPF)
  - Use IP routes to realize explicit path(could be either loose or strict)
  - Leverage the existing Route Reflection mechanism to advertise/”install” the routes to relevant clients (not to all clients)
  - Based on the fact that:
    - “A Route Reflector (RR) has the ability to "install"/distribute a route to its client with the nexthop that can be set to either the RR itself or any other different BGP speakers “

RR based Traffic Steering

- Example of RRTS
  - Path: S1-A-B-D1
  - RR will distribute:
    - a route (D1) to B with the nexthop set to D1; and
    - a route (D1) to A with the nexthop set to B, and
    - the route (D1) will be distributed to S1 by A.
- Except for the RR, no device is required to upgrade



Next Steps

- There is a pending implementation.
- Would like to solicit comments and feedbacks of the WG.
- Enrich and update the draft.