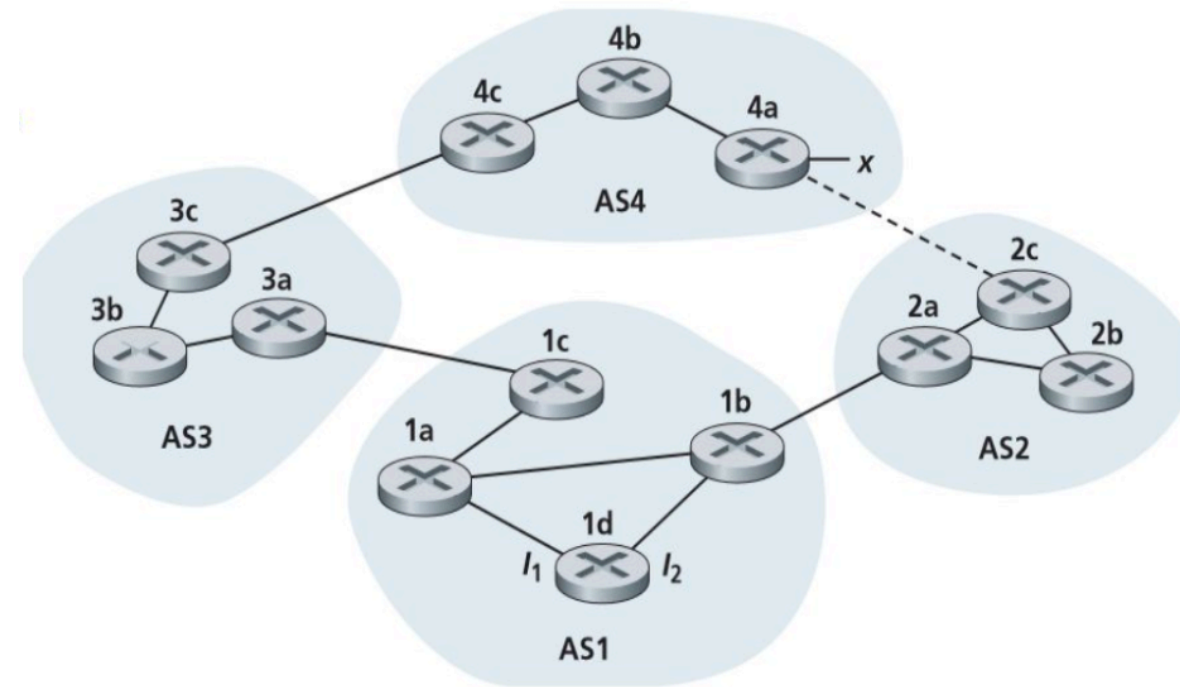# EECS 489 Discussion 9

Announcement

- Assignment 3 is due this Friday midnight (11/16)
- Hint1: check transferring binary files
- Hint2: check large latency

Q1 BGP

In the given network, suppose AS2 and AS3 are running OSPF for their intra-AS routing protocol. Suppose AS1 and AS4 are running RIP for their intra-AS routing protocol. Suppose eBGP and iBGP are used for the inter-AS routing protocol, and there is no physical link between AS2 and AS4. Assume every link in an AS has the same cost.

- Router 3c learns about prefix x from which routing protocol? eBGP
- Router 3a learns about prefix x from which routing protocol? iBGP
- Router 1c learns about prefix x from which routing protocol? eBGP
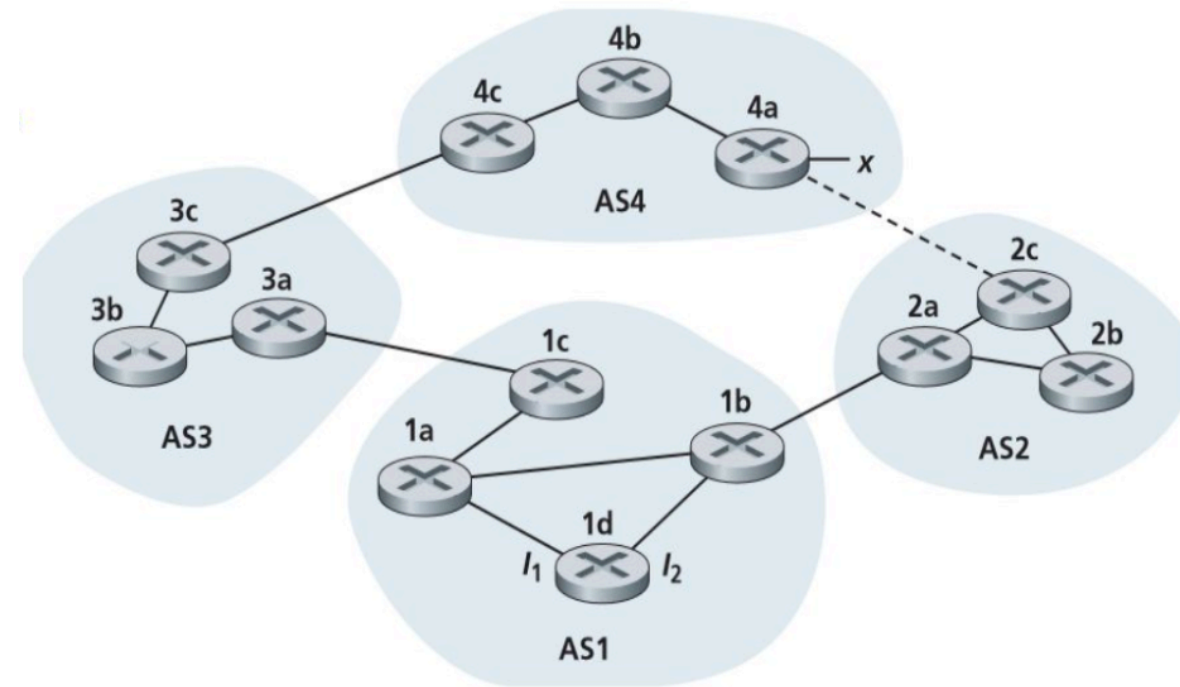
Once router 1d learns about x it will put an entry (x, I) in its forwarding table.

- Will I be equal to I_1 or I_2 for this entry? I_1
- Now suppose that there is a physical link between AS2 and AS4, shown by the dotted line. Suppose router 1d learns that x is accessible via AS2 as well as via AS3. Will I be set to I_1 or I_2? I_2
- Now suppose there is another AS, called AS5, which lies on the path between AS2 and AS4. Suppose router 1d learns that x is accessible via AS2, AS5, AS4 as well as AS3, AS4. Will I be set to I_1 or I_2? I_1

Q2 Inter-AS Relationship

Suppose AS X and AS Z are not directly connected but instead are connected by AS Y. Further suppose that X has a peering agreement with Y, and that Y has a peering agreement with Z. Finally, suppose that Z wants to transit all of Y's traffic but does not want to transit X's traffic. Draw the relationship graph similar to the the ones in the lecture slides and explain whether BGP allow Z to implement this policy.
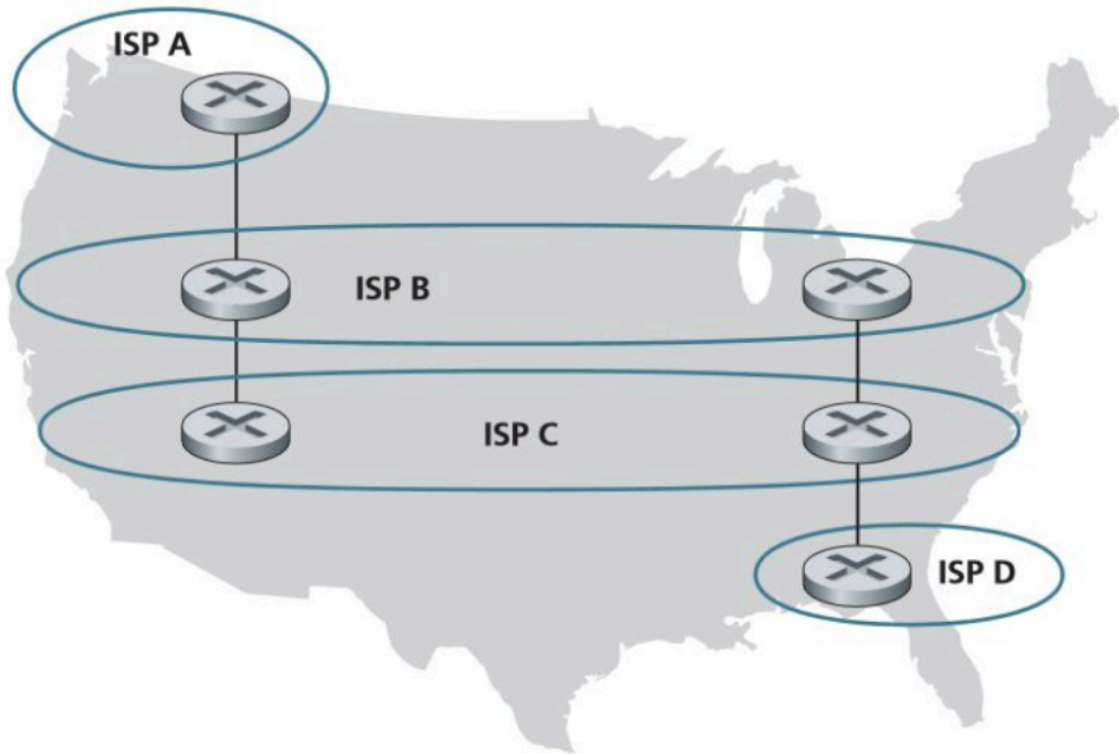
Peers do not provide transit between other peers

(Lec 11/07, Slide 45)
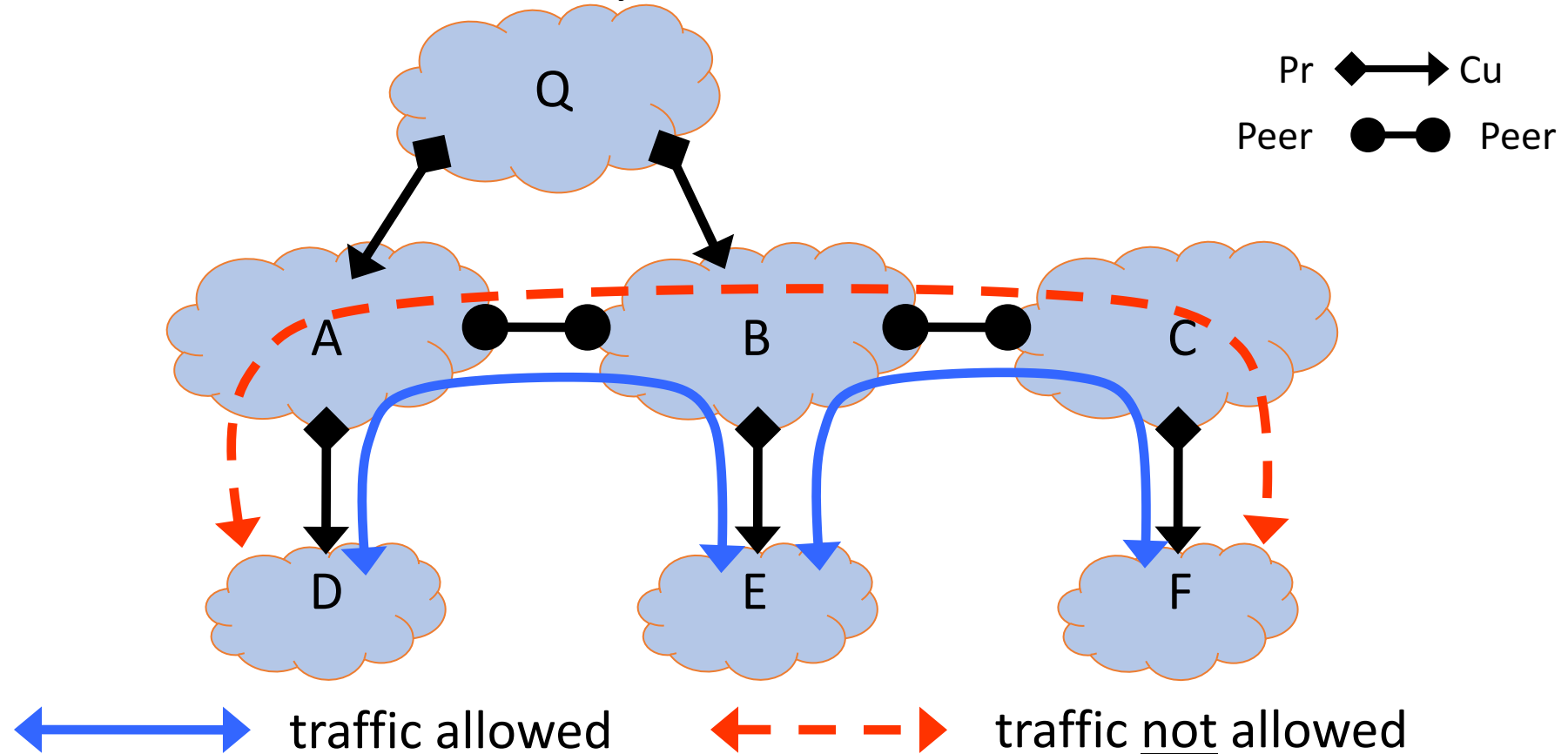
- ASes provide "transit" between their customers
- Peers do not provide transit between other peers

Q3 forwarding table

In the given network, ISP B provides national backbone service to regional ISP A. ISP C provides national backbone service to regional ISP D. Each ISP consists of one AS. B and C peer with each other in two places using GBP.

Consider traffic going from A to D. B would prefer to handle that traffic over to C on the West Coast (so that C would have to absorb the cost of carrying the traffic cross-country), while C would prefer to get the traffic via its East Coast peering point with B (so B would have carried the traffic across the country). What BGP mechanism might C use so that B would hand over A-to-D traffic at its East Coast peering point?

(Lec 11/12 Slide 24) Attributes: (3) MED

- **Multi-exit discriminator** is used when ASes are interconnected via 2 or more links; it specifies how close a prefix is to the link it is announced on

- **Lower is better**

- AS that announces a prefix sets MED

- AS receiving the prefix (optionally!) uses MED to select link

AS1

Link B

Link A

MED=50

MED=10

AS2

AS3

destination prefix