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## Problem 1.

a) No. Because (700, 100, 200/500) is a illegal path, which exactly is a peer-AS-provider link. The export policy on AS100 and the import policy on AS200 AS500 will both prevent message sending from 100 to 200/500.

b) 5.

① (100, 500) ② (100, 500, 300, 400) ③ (100, 500, 400)

④ (100, 200, 300, 400) ⑤ (100, 200, 400)

c) illegal ones are the following:

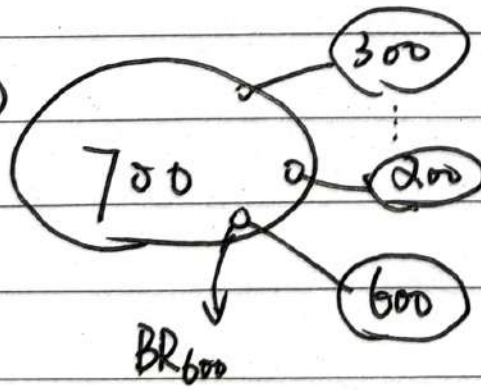
i) is illegal, because (200, 100, 700) is a provider-AS-peer link. AS100 doesn't get paid in it.

v) is illegal. Because (500, 600, 400) is a peer-AS-provider link. AS600 doesn't get paid.

Others (including ii), iii), iv)) are legal.

d)

i)




BR600 will send PrefD / (700) as the prefix AS path, while other boarder router of AS700 send PrefD / (700, 700, 700, 700, 700).

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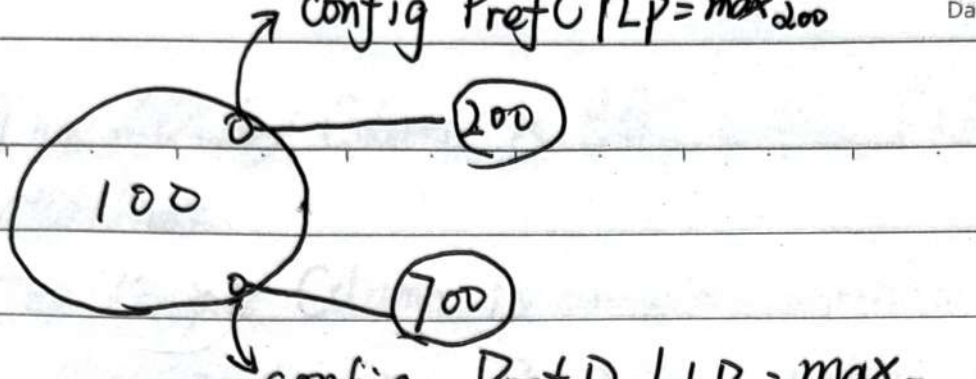
ii)




where $max_{200}$ is the maxium of PrefC's local preference value, and $max_{700}$ is the maxium of PrefD's local preference value.

Problem 2.

a) File: oix-full-snapshot-2021-08-01-0200.bz2

The information in this file:

① The first 2 character positions is the status of the route, like s-suppressed, d-damped, h-history, *-valid, >-best, i-internal.

② The Network Column is the BGP prefix for this route. If this column is blank, the prefix is as same as the prefix that appeared last.

③ The NextHop Column is the address to which traffic for this prefix will be forwarded.

④ The Metric Column is BGP MULTI_EXIT_DESCRIMINATOR attribute.

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⑤ The LOCPrf Column is BGP LOCAL_PREFERENCE attribute.

⑥ The Weight Column is an administrative preference particular to Cisco. The higest value is preferred.

⑦ The Path Column is AS_PATH attribute.

⑧ The last character is BGP ORIGIN attribute, where i is IGP, e is EGP and ? is incomplete.

b) Prefixes:

38.29.188.0/24 , 38.110.46.0/24 ,
128.61.0.0/19 , 128.61.32.0/19 , 128.61.64.0/18
128.61.128.0/17 , 130.207.0.0/16 , 130.207.218.0/24
143.215.0.0/16 , 192.76.181.0/24

No difference.

c)

| ASN | company/org |
|---|---|
| 10490 | southern-crossroads-sox |
| 174 | cogent-174 |
| 1299 | TELIANT - Telia company AB |

d) ① 3104, 3356, 1299, 174, 2637, 2637, 2637

② 3303, 174, 2637, 2637, 2637

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③ 2367, 3491, 174, 2637, 2637, 2637

④ 20912, 3257, 174, 2637, 2637, 2637

⑤ 8492, 20764, 174, 2637, 2637, 2637.

e) File: oix-full-1997-11-08-1724.dat.bz2

a) Except the beginning notes that explain the existing and the pending views, the layout is the same as the new file. So just turn to ⓐ to see the detailed explanation for each column.

b). only 3 network:

① 128.61.0.0 ② 130.207.0.0 ③ 199.77.128.0/17.

RIPE stat doesn't have available data ~~between~~ from 08/11/1997 to 09/11/1997.

c). ASN — com/org

| — LVLT-1

d) There are no instances of AS prepending in the data.