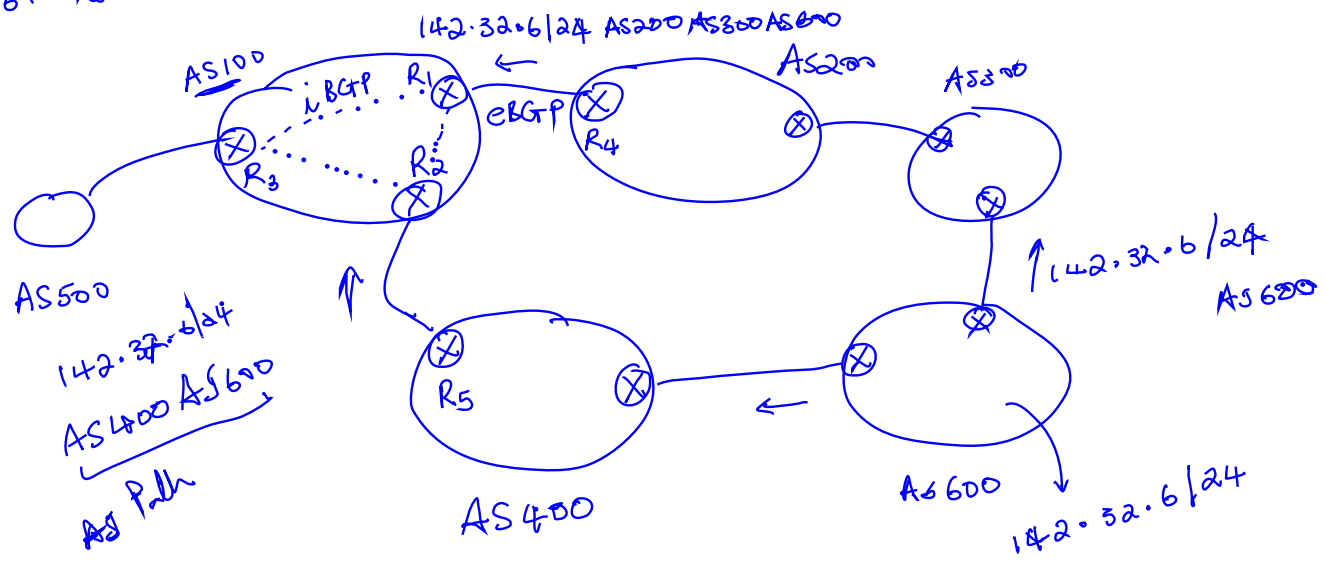
BGP

1. LOCAL_PREF → largest
2. AS_PATH → shortest
3. MED → lowest
4. eBGP learned route over iBGP learned one
5. Hot Potato routing
6. Router ID – lowest

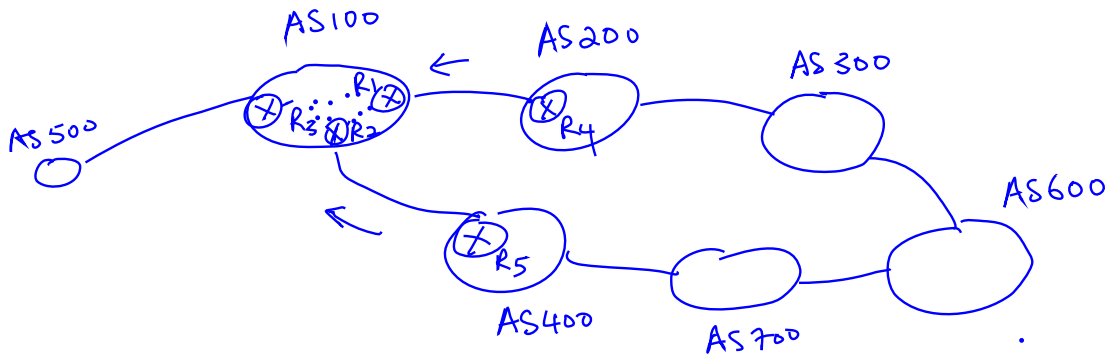


1) If want all BGP routers in AS100 to use the top route (AS200 AS300 AS600)
admin of AS100 can set LOCAL-PREF highest for it.

2) Suppose we want all BGP routers to use the lower route AS400 – AS600

(i) Use LOCAL-PREF

(ii) By default all will use the shortest AS_PATH (no need to set LOCAL-PREF highest for this path)



Suppose LOCAL-PREF and MED are same for both paths

Path 1: AS 200 – 300 – 600

Path 2: AS 400 – 700 – 600

R_1: learned Path1 over eBGP ; Path2 over iBGP

R_2: –"– Path2 –"– ; Path1 –"–

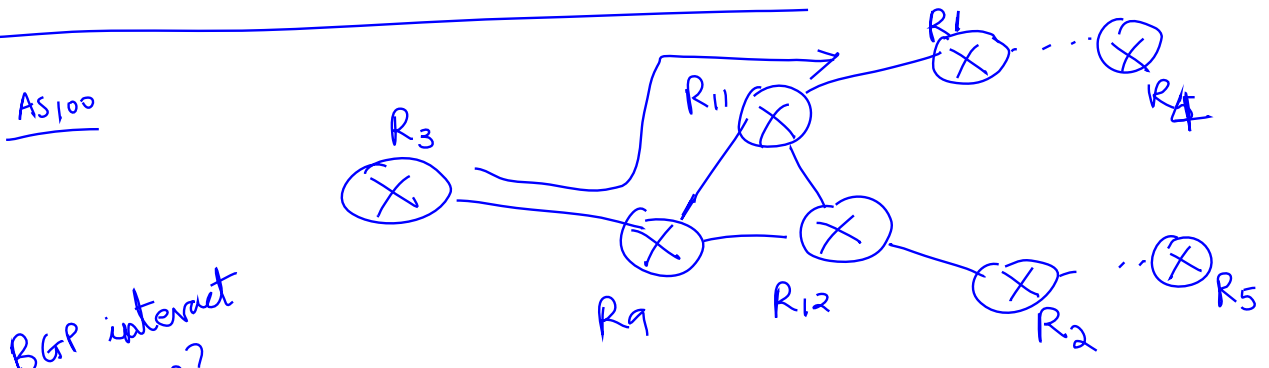
R_3: both over iBGP

R_1 uses Path 1

R_2 uses Path 2

If dist (R_3, R_1) < dist (R_3, R_2) then → IGP metric

R_3 uses path 1 (Hot potato)



BGP interact with IGP?

Solutions:

1) Encapsulation

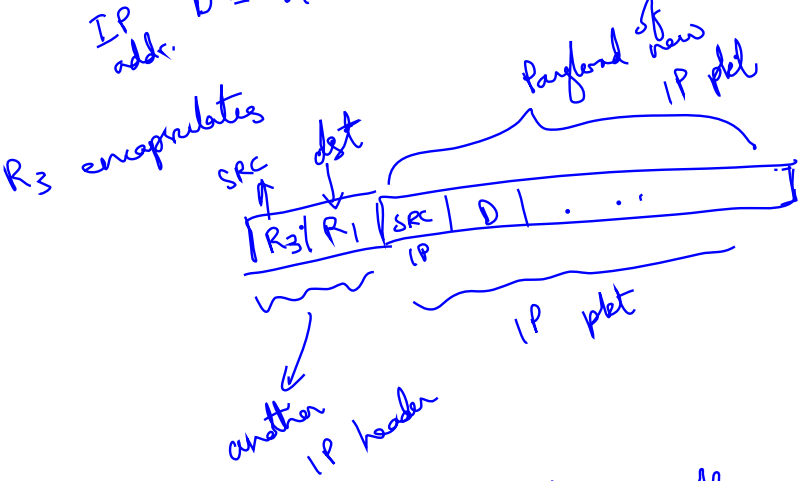
Suppose R_9, R_{11}, R_{12} have no BGP information

Ex in R_9's table (IGP)

DST	Next
R_1	R_{11}
R_2	R_{12}
R_3	R_3
R_{11}	R_{11}
R_{12}	R_{12}

142.32.6|24 → ?.?.

IP addr. D = 142.32.6.21



R_1 receives this pkt, strips off outer IP layer, finds the "internal pkt" to R_4

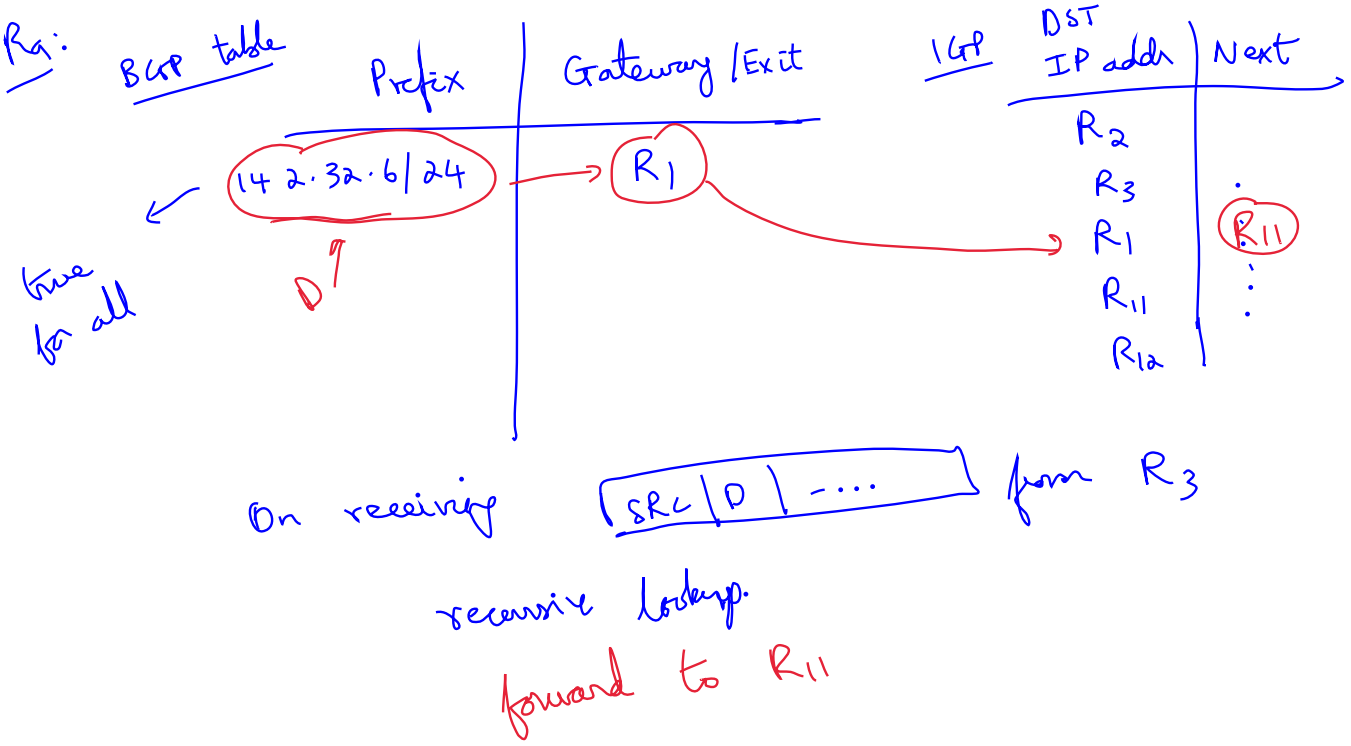
R_1's table

DST	Next
R_2	
R_3	
.	
⋮	
142.32.6|24	R_4

2) Pervasive BGP

All routers are BGP speakers in AS100

* Suppose there is a unique exit for 142.32.6/24



On receiving [SRC | D | ....] from R_3

recursive lookup.

forward to R_{11}

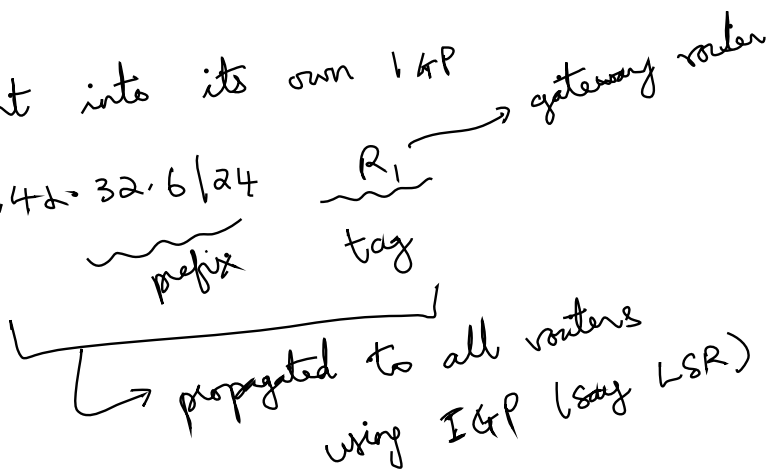
3) Tagged IGP

BGP → IGP (insert routes)

Interval Routers may not be BGP speakers

But IGP allows addition of tags

R_1 can insert into its own IGP



At R_9

IGP table

DST	Next	Tag	Cost
R_1	R_{11}		5
R_2	R_{12}		10
⋮			
142.32.6/24		R_1	
142.32.6/24		R_2	

from R_1 ←

announced by R_2 ←

$R_3 \rightarrow R_9$: [SRC | D | ...]

lookup, find matches and forwards to closest "tag"

→ Hot potato routing