Intra AS Routing : RIP

* Intra AS uses 2 : Router Information protocol and Open Shortest Path First (OSPF)
* RIP
  + Distance Vector Protocol
  + Uses Hop count as cost metric : 1 for every hop
  + Hop : No. of subnets traversed while going from src rout to dest subnet
  + **IMP** : Max cost of any path is 15
  + Routing update sent every 30 sec using RIP Response message : Max 25 dests
  + If no Advertisement/Resp from router in 180 second : Considered Dead
  + **IMP :** RIP Resp/Req mess sent over UDP : Port 520
  + **IMP :** RIP implemented as an Application layer process
  + Used in Lower Tier ISP
* OSPF
  + Used in Upper layer ISP : Same as RIP but with more features
  + Cousin of IS-IS
  + Link State Flooding of entire AS with Dijkstra's least cost algo
  + No rule on link costs : Can be 1 (default) or inversely prop to capacity
  + Broadcasts when change in LS or every 30 min
  + Features
    - Security
      * Prevent intruders : simple and MD5
    - Multiple Same Cost paths
      * RIP Only has 1
    - Support hierarchy within a single routing domain
* Border GateWay Protocol (BGP)
  + Used for Inter-AS Network
  + Roles
    - Gives subnet reachability from neighbouring AS : External (eBGP)
    - Transfer info to all the routers inside an AS : Internal (iBGP)
    - Determine good routes for subnets
  + **IMP :** Pair of router exchange info over TCP Connection
    - Conn is semi-permanent
    - PORT: 179
  + Everything in the internet is connected by a BGP
  + AS System identified by an AS Number
  + Prefix + Its attributes = ROUTE
    - Eg Attribute : AS-PATH : One AS passes info of its own neighbour AS’s
    - NEXT HOP
  + Route Selection when multiple are present
    - Route are given preference by an AS or among an AS
    - Next, route with shortest AS-Path is selected.
    - Route with closets NEXT HOP Router is selected.
      * Closest router in intra-AS
    - Finally, some BGP identifier is used
  + Routing Policy