EIGRP | RIP | LLDP | DHCP

Elements
Neigh Discovery (hellos)
Reliable Transport Protocol (RTP)
Diffusing Update Algorithm (DUAL)
Protocol-independent Modules

Tables
Neighbor table
Topology table
Routing table

Packets
Hello - neighbors and keepalive
Update - reliable
Query - query specific route info
Reply
ACK

(hellos and ACK Not acknowledged)
(Reply ACKs Queries)
(if not ACK, 16 retry ->neig removed)

Neighbor discovery and exchange
1. A sends Hello
2. B sends Hello + Update
3. A ACKs Update
4. A sends its Update
5. B ACKs

Timers don't need to agree.
5/15 (BW>, p2p) 60/180 (BW<)
AS and K values have to agree.
primary subnet on IF must be used

Advertisement lists:
- **AD** (advertised distance)
  cost from neighbor to net
- **FD** (feasible distance)
  cost from this router to net
- **FS** (feasible successor)
  backup route

Metric: default: *BW* & sum of *Delays*
Load-Balancing: variance used to balance over unequal-metric-paths

DUAL
Check AD and FD
Lowest metric = *successor* path
if a route **AD < FD of Successor**,route loopfree, called ***Feasible Successor***
Feasible Successor can be used immediately if Successor dies.

When path available for a route, state is Passive
If Successor dies and no Feasible Successor remains, route -> Active
Router send Queries on all IFs and waits for Replies (>3 min, *StuckInActive*)
Router waits for all replies, no Successor installed until it gets them
Query scope limited to routers that summarize and stub routers.

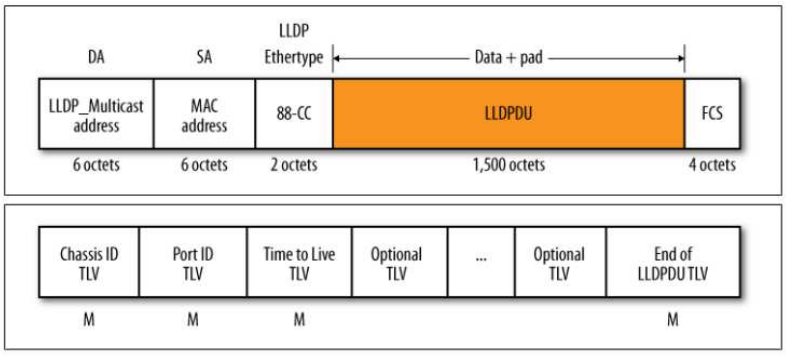
RIPv1	RIPv2	RIPng
bcast - UDP 520	mcast .9 - UDP 520	mcast .9 - UDP 521
classful	classless	classless
NO auth	auth	no auth (relies on IPv6)
NO route-tag	route tag	route tag
25	25 (24 if auth)	?

All:
- 15 hops max
- split-horizon, poison-reverse, count to infinity, holddown
- 30 sec send all (+triggered updates)

RIPv1 Packet:
- Command (Request or Response)
- Version
- IP Address (no mask)
- Metric

RIPv2 Packet adds:
- Route Tag
- Subnet Mask
- Next Hop
- Auth (first entry in Packet if used)

LLDP (standards based CDP)



- sent every 30 sec.
- LLDP-MED - LLDP with Media Endpoint Discovery

DHCP - UDP 67-68

1. Client-> **DHCP Discover**
2. Server -> **DHCP Offers**
   IP, Mask, GW, Opt., Lease..
3. Client chooses -> **DHCP REQ**
4. Server acks -> **DHCP ACK**

all packets broadcast

LACP
- a Partner and Actor
- systems id. by SystemID (48b MAC +16b prio)
- Active or Passive
- fast (1 sec) or slow (30 sec)
- "minimum-links" knob
- hashing on Mac (L2) or MAC+IP+Port (L3)
- control messages always on lowest-no.-link