Link-State Algorithm

Dijkstra, $c(x,y) \to$ cost from x to y

$D(v) \to$ cost of path to v

$p(v) \to$ predecessor node

$N' \to$ visited nodes

Distance-vector
Bellman-Ford $\qquad d_x(y) \to$ from x to y

$$d_x(y) = \min_v \{ c(x,v) + d_v(y) \}$$

$$D_v = [D_v(y) : y \in N] - \text{keep track of neighbors' distance vectors}$$

$\to$ poisoned reverse

ASes :
<u>Intra-AS</u>
(interior gateway protocol)

RIP - DV, # hops

30 sec. advertisement

16 hops = ∞

180 sec. $\equiv$ dead link

UDP protocol

OSPF - open source

shortest path first

- Dijkstra
- advertisement flood AS
- security, multicast

<u>Inter-AS</u>
BGP (border gateway)
- eBGP (external)
- iBGP (internal)

- semi-permanent TCP
- NEXT-HOP:
- AS-PATH $\qquad$ 11.0.0.1
$\qquad\qquad\qquad$ AS 21

AS 12 $\qquad$ AS Path = 21
$\qquad\qquad$ Next-hop = 11.0.0.1
$\qquad\qquad$ Subnet: IP
- policies

OPEN $\to$ TCP con.
UPDATE $\to$ new paths
KEEPALIVE $\to$ ACK open
NOTIFICATION
$\qquad \to$ close errors