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# Mobile Ad-hoc Networks

## MANET

- No infrastructure
- Sensor networks, military
- routing handled between peers

## Proactive

- up to date routing tables
- advertise periodically or on changes
- Constant network traffic
- Good for high traffic networks
- Bad for low traffic networks

## Reactive

- acquire route when needed
- high latency at startup
- good in low traffic networks

## DSDV - Destination Sequenced Distance Vector

- Proactive

- Use sequence numbers (prevent loops)

$\langle \text{dest, next hop, metric, seq} \rangle$

- Change detected  $\rightarrow$  notify neighbours

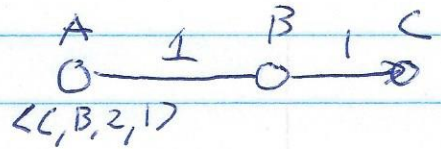
- Bundle changes, incremental

- Full updates sent to new peers

- Normal update increment  $\text{seq} + 2$

- Broken link increment  $+1$

- when node returns can flush old



## AODV - Ad-hoc ondemand Distance Vector

- reactive

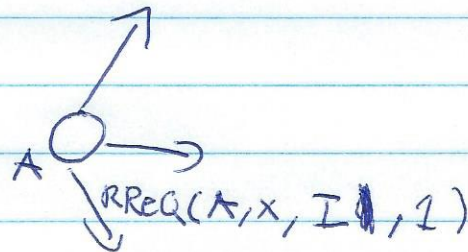
- RREQ / RREP

- source

- destination

- hop count

- seq



- Builds forward path

- Each node store forward pointer

- Multiple responses

- Use newest (seq)

- Use shortest

- Link broken

- RREP with  $\text{seq} + 1$  and  $\infty$  distance

- May hit node that already know path to destination

- Sequence numbers to prevent looping

## DSR - Dynamic Source Routing

- reactive
- RREQ / RREP includes full routing path
  - loop detection easy
- Does not require bi-directional links
  - ← Send response using other path
- can be built using RREQ  $A \xrightarrow{A} B \xrightarrow{A,B} C$   
with response piggybacked  $O \xrightarrow{\quad} O \xrightarrow{\quad} O$
- Cache is node as root of tree
  - can hold multiple paths to same destination
  - Link failure  $\Rightarrow$  RREP <sup>with</sup> ~~to~~ other path

## Promiscuous mode

- Passive acknowledgements (hear packet sent onward)
- Updating route ~~at~~ cache
  - Packet sent contains route, add route to cache
- Route shortening
  - Skip immediate nodes