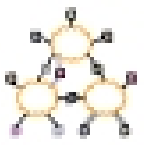
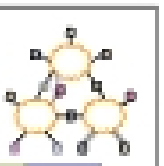
CS 268: Computer Networking

L-12 Ad Hoc Networks

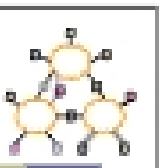


Mobile Routing



- Mobile IP
- Ad-hoc network routing
- Assigned reading
  - Performance Comparison of Multi-Hop Wireless Ad Hoc Routing Protocols
  - A High Throughput Path Metric for MultiHop Wireless Routing

Overview



- Internet routing
- Ad hoc routing
- Ad hoc routing metrics

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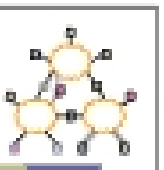
How to Handle Mobile Nodes?



- Dynamic Host Configuration (DHCP)
  - Host gets new IP address in new locations
  - Problems
    - Host does not have constant name/address → how do others contact host
    - What happens to active transport connections?
- Naming
  - Use DHCP and update name-address mapping whenever host changes address
  - Fixes contact problem but not broken transport connections

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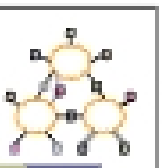
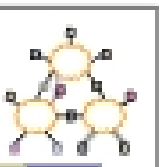
Handling Mobile Nodes (Transport)



- TCP currently uses 4 tuple to describe connection
  - <Src Addr, Src port, Dst addr, Dst port>
- Modify TCP to allow peer's address to be changed during connection
- Security issues
  - Can someone easily hijack connection?
- Difficult deployment → both ends must support mobility

Handling Mobile Node



- Link layer mobility
  - Learning bridges can handle mobility → this is how it is handled in most campus networks
  - Encapsulated PPP (PPTP) → Have mobile host act like he is connected to original LAN
    - Works for IP AND other network protocols
- Multicast
  - Solves similar problem → how to route packets to different sets of hosts at different times
  - Can't we just reuse same solutions?
    - Don't really have solution for multicast either!