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2019-20 Revision

EBU5211: Ad Hoc Networks

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Cellular Network Example: GSM

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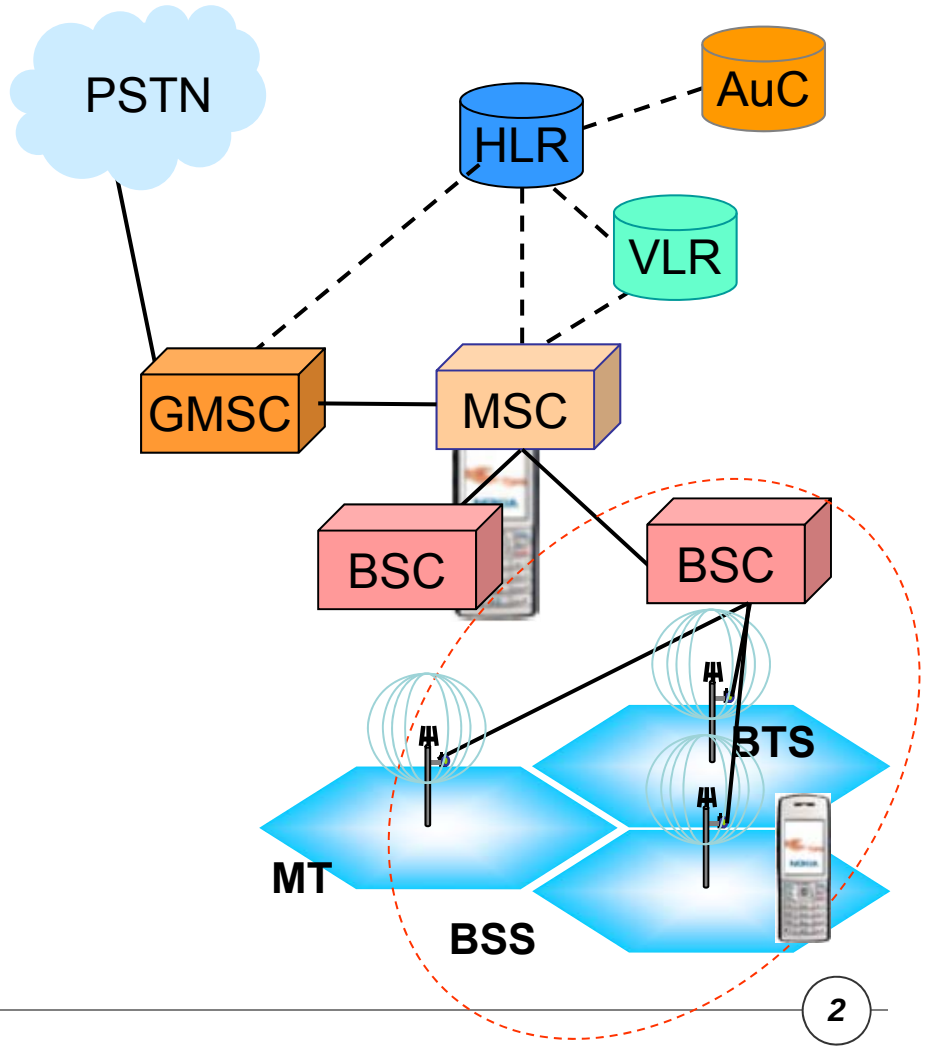
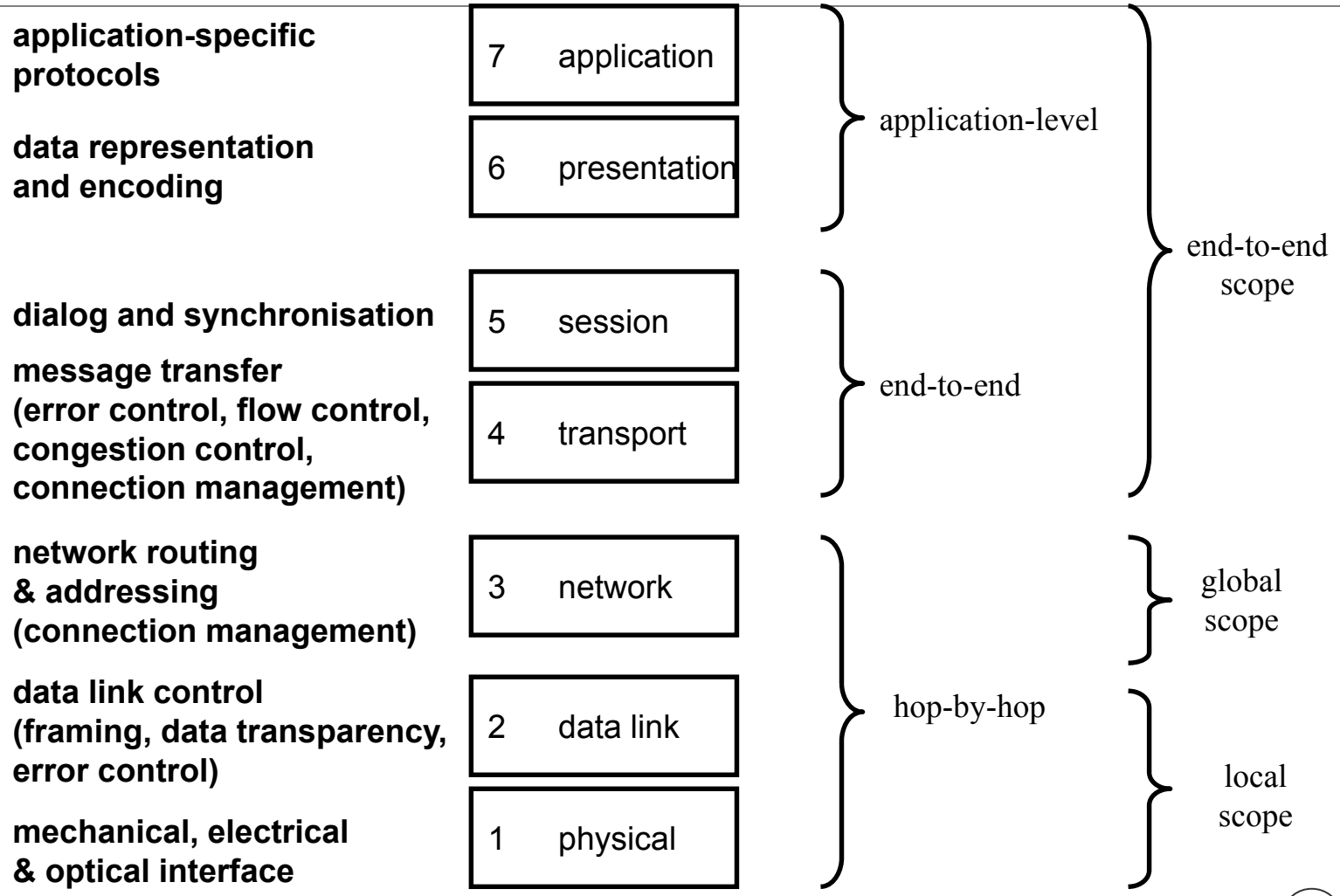
- User Authentication?
- Outgoing call?
- Incoming call?
- Roaming?
- Frequency Reuse?
- Uplink and Downlink Interference?
- Hard handover v.s Soft handover?



OSI Protocol Reference Model



Classful IP Address Structure

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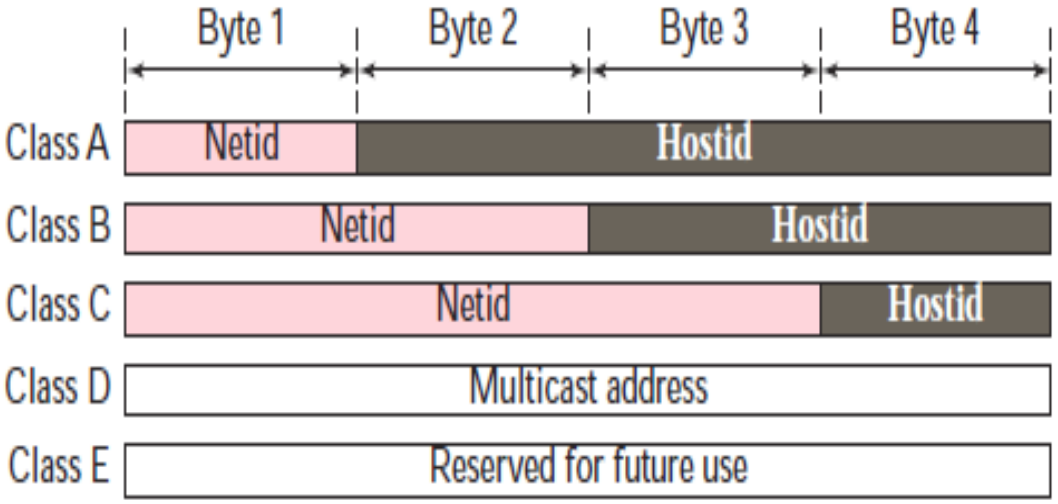
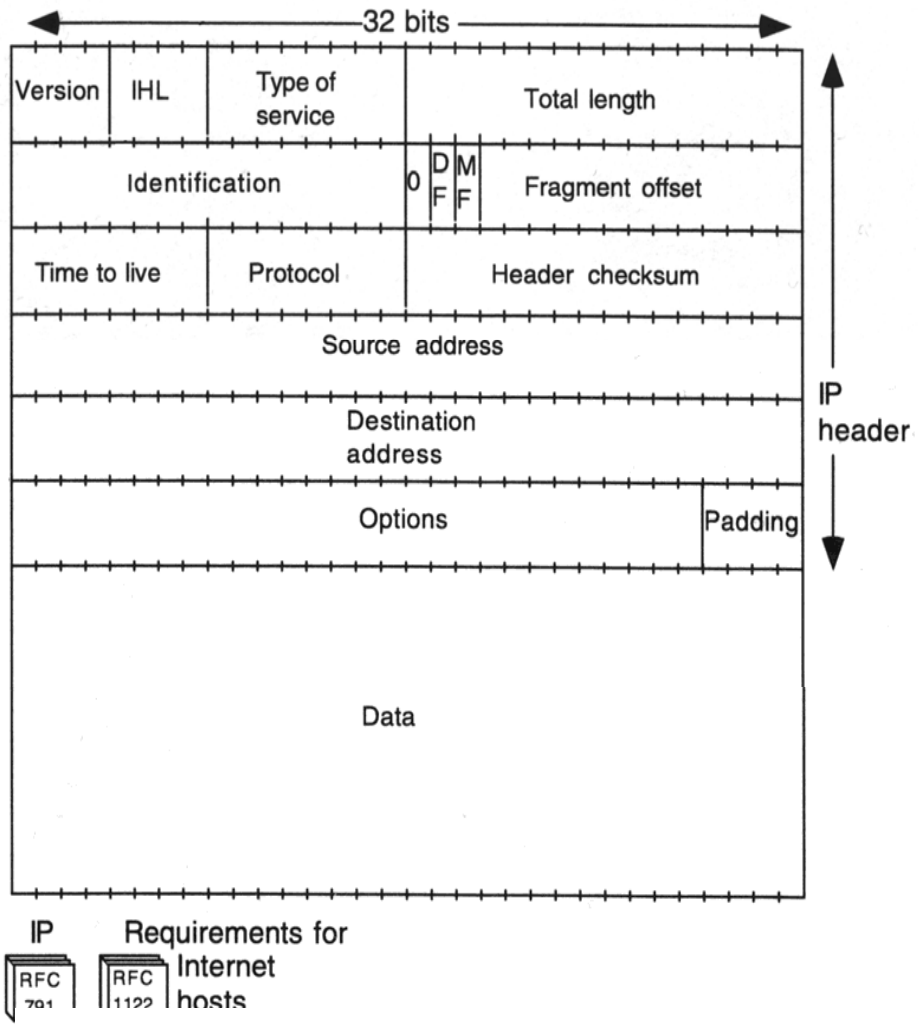


- Range of each class? Ho about all "1" and all "0" address?
- How subnet works? What is subnet mask?
- What are ARP and RARP?

IP Datagram Structure



- Length of IP header?
- Meaning of each field?
- How fragmentation works?
- Source Routing v.s. Next hop Routing?
- Static routing v.s. Dynamic routing?

DV Algorithms and RIP

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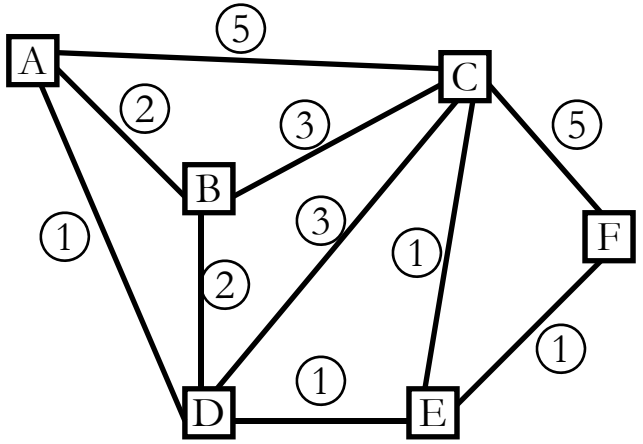
- How DV algorithm works? Input? Output?
- How dose RIP works?
- How routing table is updated in RIP?
- What is Split Horizon Update? Poison Reverse? Hold-Down Timer?
- What are the issues with RIP?



Dijkstra's Algorithm and OSPF

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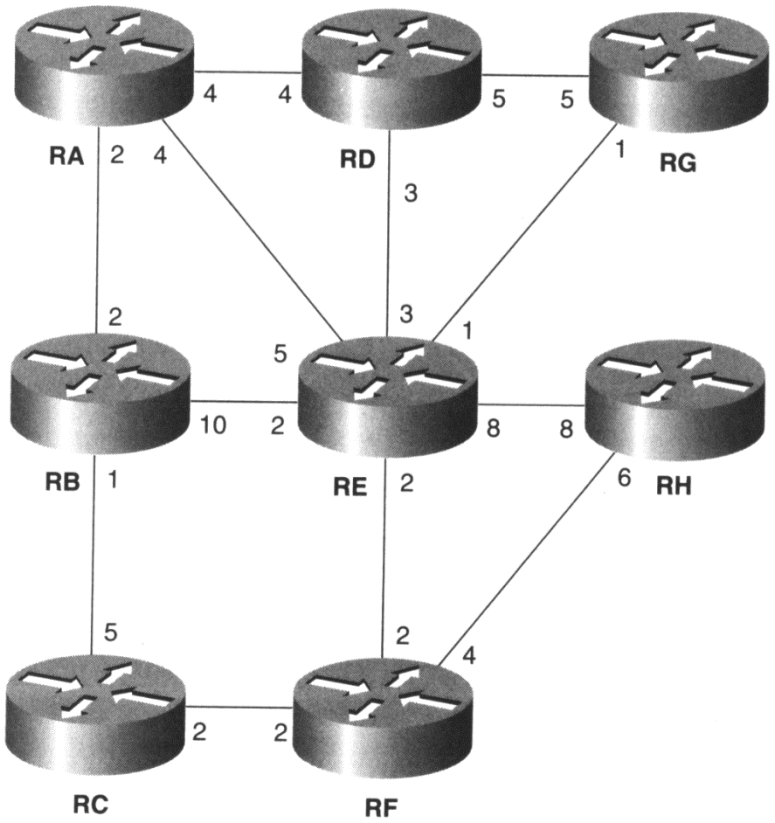
- How dose Dijkstra's Algorithm works?
- Function of Hello message?
- How OSPF works?
- How Link State Advertisement updates?
- Difference RIP and OSPF?



MANET Routing Protocol

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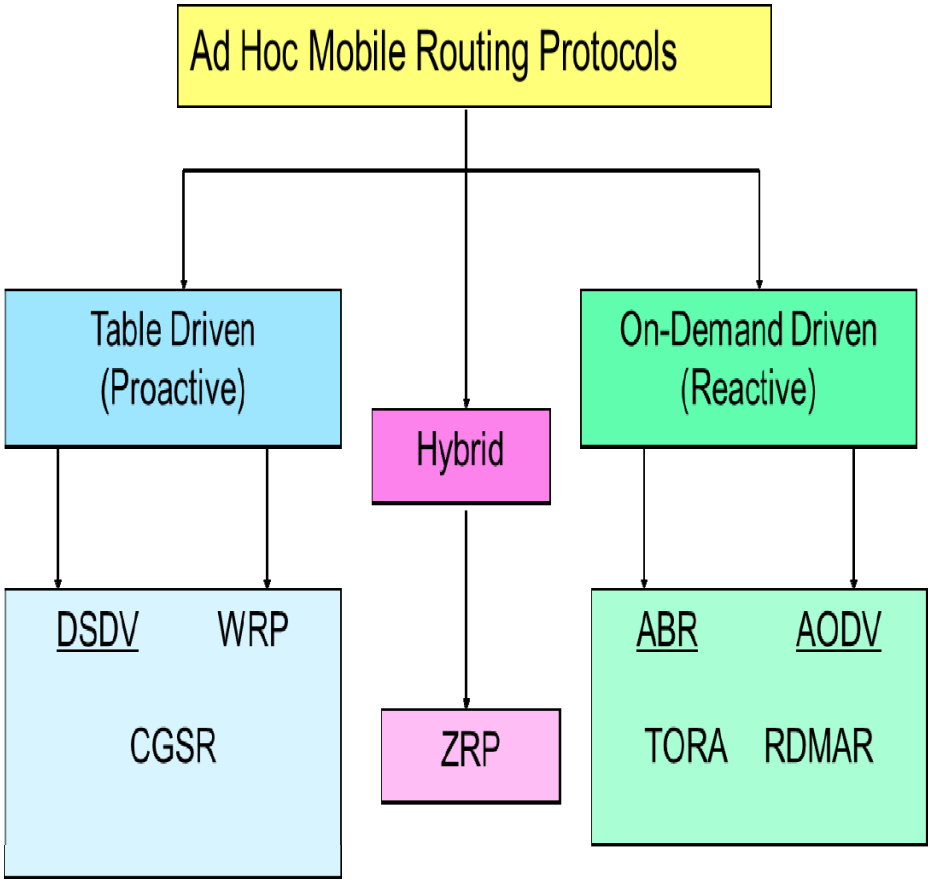

- Design challenges of MANET routing protocols?
- Table Driven v.s. On-Demand?
- What is usage of Associativity Ticks in ABR?
- What is the route discovery process in ABR?
- How does ABR deal with link breaks?
- How dose AODV establish the route and deal with link breaks?

Multicasting in Wired Networks

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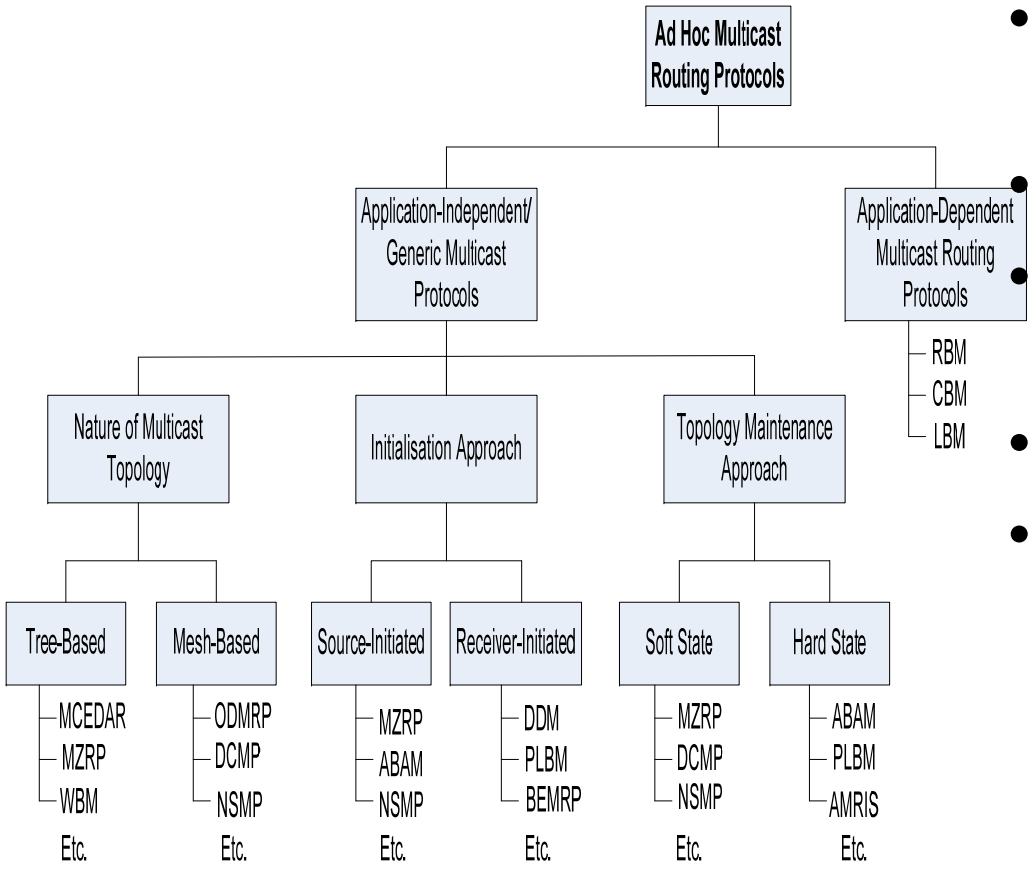
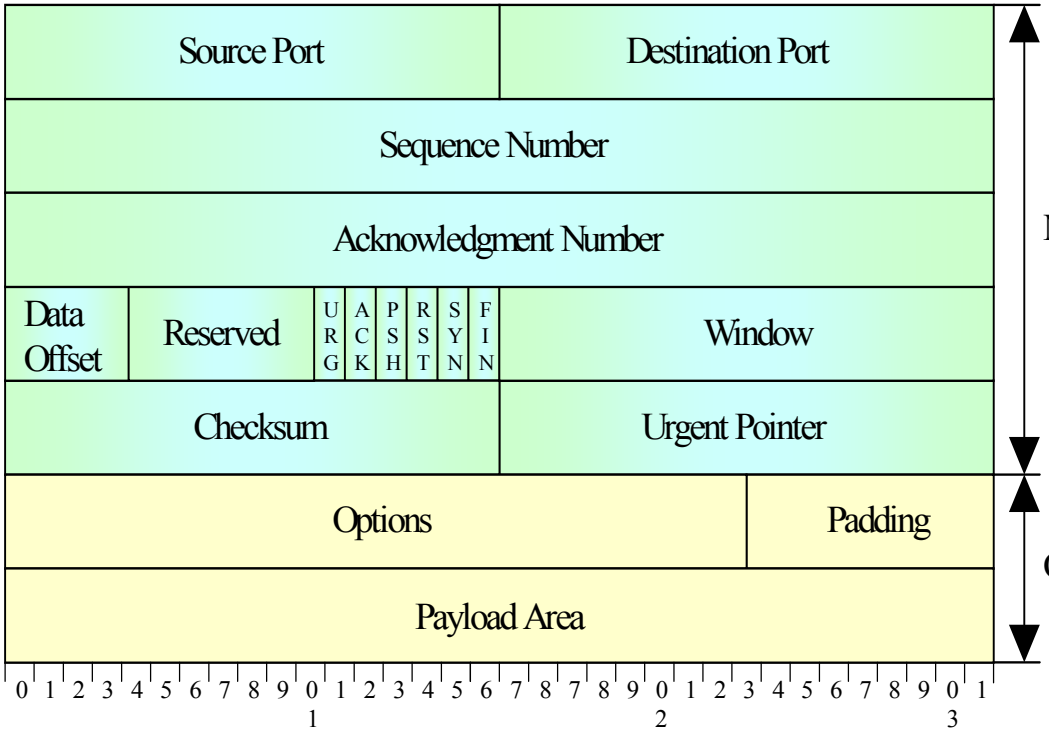
- In multicast routing, each involved router needs to construct a shortest path tree for each group
- Multicast Group (Class D) :
  - single IP address 224.0.0.0 to 239.255.255.255
  - ➢ Any sender can send to any group but receivers are the members of multicast group.
  - ➢ All routers have to support multicast routing.

MANET Multicast Routing



- Source based v.s. Core based?
- ABAM Multicast Set-up?
- How dose ODMRP Operate?
- How dose LBM Operate?
- In ABAM, how is tree established? tree reconfigured? tree deleted? membership managed?

Wired TCP



- Socket Address?
- 3-way Handshake?
- Flow Control?
- Congestion Control?
- RTT and RTO?
- Silly Window Syndrome?
- UDP v.s. TCP?

MANET TCP-F

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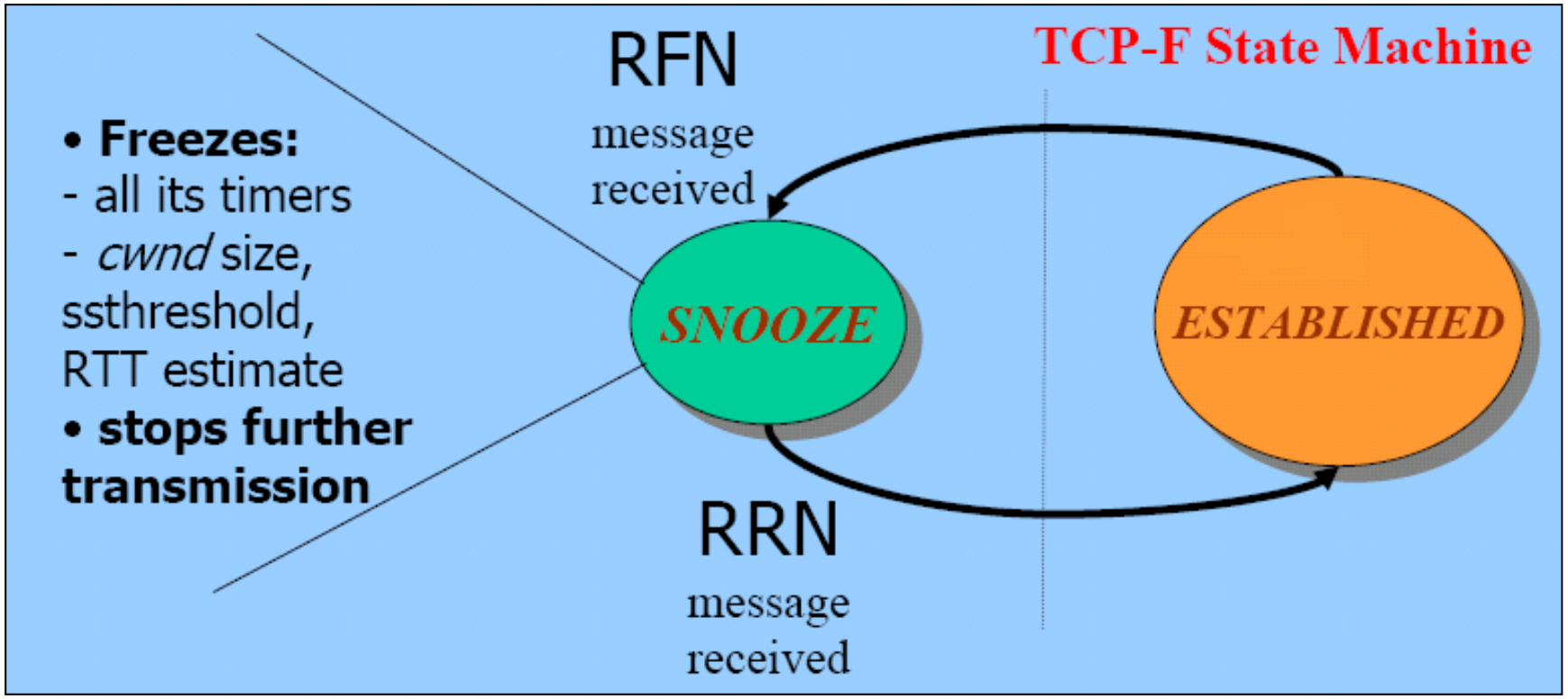

- What is new in TCP-F compared to TCP?
- How TCP-F works?
- Drawbacks of TCP-F?

MANET TCP BuS

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How dose the following four TCP-BuS enhanced improvement over TCP-F ?

- Explicit Notifications: It is used to differentiate between network congestion and route failure.
- Reliable Transmission of Control Messages
- Buffering with Selective Fast Retransmission
- Extension of Timeout Values.