TCP OVER AD HOC WIRELESS NETWORK:....cntd

TCP with Explicit Link Failure Notification (TCP-ELFN)

- Handle explicit link failure notification
- Use TCP probe packets for detecting the route reestablishment.
- The ELFN is originated by the node detecting a path break upon detection of a link failure to the TCP sender.

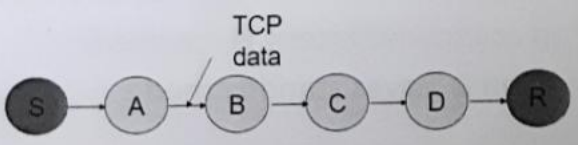
TCP ELFN Explicit Link Failure Notification (ELFN) contd..

The objective :

- To provide the TCP sender with information about link and route failures
- TCP sender can avoid responding to the failures as if congestion occurred

DSR's route failure message is modified

- A payload similar to the "host unreachable" ICMP message
- The sender and receiver's addresses and ports and seq number



- Advantages:
- improves the TCP performance by decoupling the path break information from the congestion information by the use of ELFN.
- Less dependent on the routing protocol and requires only link failure notification
- Disadvantages
- When the network is partitioned, the path failure may last longer
- The congestion window after a new route is obtained may not reflect the achievable transmission rate acceptable to the network and TCP receiver

- Sender reaction

When a TCP sender receives an ELFN,

- It disables its retransmission timers and enters a "standby" mode

While on standby,

- A packet is sent at periodic intervals to probe the network to see if a route has been established

If an acknowledgment is received,

- Then it leaves standby mode

TCP OVER AD HOC WIRELESS NETWORK: ....cntd

Feedback-based TCP (TCP Feedback – TCP-F)

- Requires the support of a reliable link layer and a routing protocol that can provide feedback to the TCP sender about the path breaks.
- The routing protocol is expected to repair the broken path within a reasonable time period.

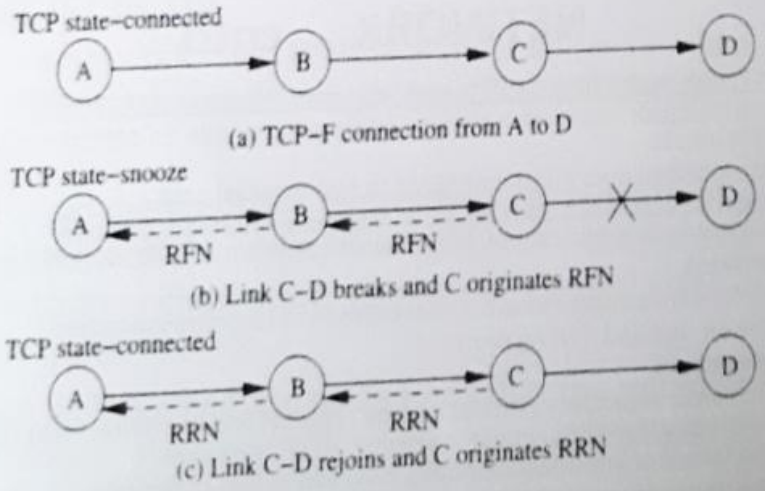


Figure 9.6. Operation of TCP-F.

Contd..

- Advantages:
- Simple, permits the TCP congestion control mechanism to respond to congestion
- Disadvantages:
- If a route to the sender is not available at the failure point (FP), then additional control packets may need to be generated for routing the route failure notification (RFN) packet.
- Requires modification to the existing TCP.
- The congestion window after a new route is obtained may not reflect the achievable transmission rate acceptable to the network and the TCP-F receiver.