Snooping TCP

In this article, we will discuss the overview of Snooping TCP, and its working, and then will discuss the advantages and disadvantages of Snooping TCP. Let's discuss it one by one.

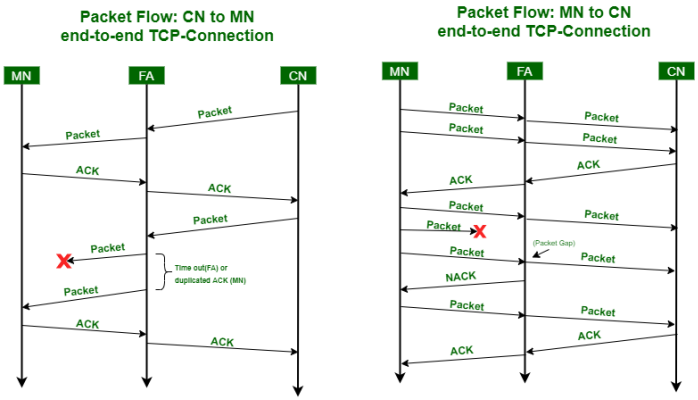
Overview :

Snooping TCP is one of the classical TCP improvement approaches. This approach is designed to solve the end-to-end semantics loss in I-TCP. The basic concept is to buffer packets close to the mobile node and retransmit them locally if a packet is lost.

Working of Snooping TCP :

Here, we will discuss the working of TCP as follows.

- Until it receives an acknowledgement from the mobile node, the foreign agent buffers the packet.
- A foreign agent snoops the packet flow and acknowledgement in both directions.
- If the foreign agent does not receive an acknowledgement from the mobile node, or if it receives duplicate acknowledgements, it believes that the packet or acknowledgement has been lost. The packet is immediately retransmitted by the foreign agent from its buffer.
- In addition, the foreign agent maintains its own timer for retransmission of buffered packets in case it is lost on the wireless link.
- While data transfer from the mobile node to the correspondent node, if the foreign agent detects a missing packet, it returns NACK-Negative Acknowledgment to the mobile node. It can now retransmit missing packet immediately. Reordering of packets is done automatically at the correspondent node by TCP.
- In the concept of snooping TCP, the Time-out of the correspondent node still works and triggers retransmission, If the foreign agent now crashes. The foreign agent may discard duplicates of packets already retransmitted locally and acknowledged by the mobile node. This avoids unnecessary traffic on the wireless link.
- To maintain transparency foreign agent does not acknowledge the packet to the fixed node, but the mobile node acknowledges the packets(END-TO-END Semantics is maintained).



Advantages :

Here, we will discuss the advantages as follows.

1. **The end-to-end TCP semantic is preserved –**
   The packet is not acknowledged by the FA. And if the foreign agent (FA) or base station (BS) fails, the solution reverts to standard TCP.

2. **No Modifications at Fixed Host –**
   The fixed computer TCP does not need any changes. The majority of the changes are made at the foreign agent (FA).

3. **No packet loss during handovers –**
   In the case of a handover, if any data is not passed to the new foreign agent, there will be a time-out at the fixed host and activating retransmission of the packet, via mobile IP, to a new COA.

Disadvantages :

Here, we will discuss the disadvantages as follows.

1. **The behavior of the wireless link –**
   Snooping TCP does not isolate the behavior of the wireless link or I-TCP. Transmission errors can spread to the correspondent nodes (CH).

2. **A mobile node needs additional mechanisms –**
   The use of NACK between the foreign agent and the mobile node requires the mobile node to have additional mechanisms. For arbitrary mobile nodes, this method is no longer transparent.

3. **Encryption at end-to-end –**
   If such encryption schemes are used end-to-end between the correspondent node and mobile node, snooping and buffering data can be considered worthless. Snooping TCP may be used if encryption is used above the transport layer (e.g. SSL/TLS).

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