make a handoff is taken by the application. Location management is not specified by the scheme.

XI) **TCP Redirection (TCP-R)** is a connection migration scheme that maintains active TCP connections during handoff pairs. Whenever MH gets a new IP address, TCP-R updates the address at CN and the already existent connection continues with the new address. TCP-R does not implement connection timeout to support long disconnection. Transport layer at both the ends needs modification for this support, yet it gives application transparency. Like Migrate, TCP-R proposes to use DNS as location manager. Combined with a handoff management scheme, this scheme might be deployed as a complete mobility scheme.[21]

XII) **Mobile SCTP (mSCTP)** supports IP diversity and soft handoff. The handoff is similar to the one of SIGMA. mSCTP can maintain application transparency but it does not support location management.[7&8]

4.3 Advantages to transport layer mobility include inherent route optimization (triangle routes never occur), no dependence
on the concept of a home network or additional infrastructure beyond DHCP and DNS, the possibility of smooth handovers if the mobile node has multiple interfaces, and the ability to pause transmissions in expectation of a mobility-induced temporary disconnection. Since most common applications use TCP, a mobility support extension to TCP has most of the benefit of inheritability that Mobile IP does. [21]

4.4 Problem with a transport layer approach is:

1) The dependence on other layers for location management. For example, if dynamic DNS is employed, it may take quite some time to globally converge to a host's current address, by which time it may be ready for new location to move. [10]
2) Another problem is that if binding update is to be implemented by individual transport protocol, then each one requires an authentication scheme to prevent spoofing. Ensuring the security of each individual authentication scheme could be tedious and error-prone if they are significantly different between transport protocols.

5. At What Layer Does Mobility Belong?

Traditionally the responsibilities for communication have been split amongst various layers in network model but these responsibilities seem to be ill-defined in current scenario of wireless communication [10]. A modification or an added feature in lower layer may cause problem in higher layer. Mobility is one such feature which was not incorporated in the classical protocol stack. If a link layer hands over between two heterogeneous networks, a network layer protocol will likely need to acquire a new address. Similarly when mobility is implemented at the network layer, through Mobile IP, then transport layer protocols deal with problems (new congestion control mechanisms, Security policies etc. In current scenario when heterogeneous network environment exists and the mobile host demands support for multiple interfaces and switching between heterogeneous networks, support for an efficient supportive feature in protocol stack is need of the hour.

6. Conclusion

A significant point is single layer approach to mobility doesn't seems to be adequate specially in the era where concept like Internet of things is being introduced which will connect physical infrastructure get connected over the network adding new dimension to the field of information and communication paradigms[13]. Thus, multilayer cooperation for mobility can be an effective solution. Link layer support is mandatory in any case, but can do very little to either preserve higher layer connections or provide location management when movement is across administrative domains. The common network layer solution is Mobile IP, which while effective, has several limitations in practice. Most of Mobile IP's problems can be tackled by a higher transport or session layer approach. The transport layer approaches to mobility are likely the strongest, despite requiring modifications to well-established protocols like TCP. By deploying mobility-enabled TCP implementations, applications that use TCP may transparently gain mobility support just as they do with Mobile IP, with less potential problems. Although the question of what layer mobility should properly be provided at is largely an open question and many cross layer mobility management techniques [22] are being devised to meet the expectations of end user.

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