Every layer in the network needs a mechanism to for identifying the senders & the receivers

Therefore, some form of addressing is needed in the network to specify a specific destination

3 Error Control: It is an important design issue because physical communication circuits are not perfect. Many error detecting and error correcting codes are available. Both sending and receiving ends must agree to use these code

4 Flow Control: If there is a fast sender at one end sending data to a slow receiver at another end, then there must be flow control mechanism to control the loss of data by slow receivers

5 Multiplexing and De-multiplexing: If the data has to be transmitted on transmission media separately, it is inconvenient or expensive to setup separate connection for each pair of communicating processes. So, multiplexing is needed in the physical layer at sender end and de-multiplexing is needed at the receiver end

6 Scalability: When network gets large, new problem arises. Thus scalability is important so that network can continue to work well when it gets large

7 Routing: When there are multiple paths between source and destination, only one route must be chosen. This decision is made on the basis of several routing algorithms, which chooses optimized route to the destination

8 Confidentiality and Integrity: Network security is the most important factor. Mechanisms that provide confidentiality defend against threats like eavesdropping. Mechanisms for integrity that prevent faulty changes to messages

Network services/ Types of network services/

Connection oriented & Connection less services