Connection-Oriented Protocols

A connection-oriented protocol such as TCP is an example. Before data can be shared, a logical connection between the two processes must be created. The connection must be maintained for the duration of the communication and then released afterwards. Before the message can be sent, a virtual circuit must be established—the caller must know the person's phone number and the phone must be answered—much like a phone call.

TCP/IP is also a connection-oriented transport that releases data in an orderly manner. Any data left in the buffer is transferred before the connection is closed with orderly release. A three-way handshake between client and server processes is used to complete the release. The OSI protocol suite's connection-oriented protocols, on the other hand, do not support orderly release. Any handshake required by the application to ensure orderly release is performed.

Telnet, rlogin, and ftp are examples of services that leverage connection-oriented transport services.

Connectionless Protocols

In contrast, connectionless protocols allow data to be transmitted without establishing a link between processes. Each unit of data, which has all of the information required to route it to its intended destination, is transported independently of other data packets and can travel over a variety of paths to reach its final destination. Some data packets may be lost or arrive out of order with other data packets during transmission.

UDP is a protocol that does not require a connection. It's called a datagram protocol since it's similar to sending a letter and not acknowledging receipt.

Broadcasting and tftp are two applications that leverage connectionless transport services. Early NFS implementations used UDP, whereas current NFS implementations favour TCP.

Connection-oriented Service v/s Connection-less Services

Connection-oriented Service	Connection-less Service
Connection-oriented service is related to the telephone system.	Connection-less service is related to the postal system.
Connection-oriented service is preferred by long and steady communication.	Connection-less Service is preferred by bursty communication.
Connection-oriented Service is necessary.	Connection-less Service is not compulsory.
Connection-oriented Service is feasible.	Connection-less Service is not feasible.
In connection-oriented Service, Congestion is not possible.	In connection-less Service, Congestion is possible.
Connection-oriented Service gives the guarantee of reliability.	Connection-less Service does not give the guarantee of reliability.
In connection-oriented Service, Packets follow the same route.	In connection-less Service, Packets do not follow the same route.
Connection-oriented Services requires a bandwidth of high range.	Connection-less Service requires a bandwidth of low range.