

# Connection-oriented Services

# Introduction

**Connection-Oriented Service** is basically a technique that is typically used to transport and send data at session layer. The data streams or packets are transferred or delivered to receiver in a similar order in which they have been transferred by sender. It is actually a data transfer method among two devices or computers in a different network, that is designed and developed after telephone system. Whenever a network implements this service, it sends or transfers data or message from sender or source to receiver or destination in correct order and manner.

This connection service is generally provided by protocols of both network layer (signifies different path for various data packets that belongs to same message) as well as transport layer (use to exhibits independence among packets rather than different paths that various packets belong to same message will follow).

# Working Mechanism

There is a sequence of operations that are needed to be followed by users. These operations are given below :

## **1. Establishing Connection –**

It generally requires a session connection to be established just before any data is transported or sent with a direct physical connection among sessions.

## **2. Transferring Data or Message –**

When this session connection is established, then we transfer or send message or data.

## **3. Releasing the Connection –**

After sending or transferring data, we release connection.

# Different Ways

- There are two ways in which connection-oriented services can be done. These ways are given below :

- 1. Circuit-Switched Connection** —  
Circuit-switching networks or connections are generally known as connection-oriented networks. In this connection, a dedicated route is being established among sender and receiver, and whole data or message is sent through it. A dedicated physical route or a path or a circuit is established among all communication nodes, and after that, data stream or message is sent or transferred.
- 2. Virtual Circuit-Switched Connection** —  
Virtual Circuit-Switched Connection or Virtual Circuit Switching is also known as Connection-Oriented Switching. In this connection, a preplanned route or path is established before data or messages are transferred or sent. The message is transferred over this network in such a way that it seems to user that there is a dedicated route or path from source or sender to destination or receiver.

## **Advantages :**

- It kindly support for quality of service is an easy way.
- This connection is more reliable than connectionless service.
- Long and large messages can be divided into various smaller messages so that it can fit inside packets.
- Problems or issues that are related to duplicate data packets are made less severe.

## **Disadvantages :**

- In this connection, cost is fixed no matter how traffic is.
- It is necessary to have resource allocation before communication.
- If any route or path failures or network congestions arise, there is no alternative way available to continue communication.

# Connectionless Service

Connectionless service is used in the network system to transfer data from one end to another end without creating any connection. So it does not require establishing a connection before sending the data from the sender to the receiver. It is not a reliable network service because it does not guarantee the transfer of data packets to the receiver, and data packets can be received in any order to the receiver. Therefore we can say that the data packet does not follow a defined path. In connectionless service, the transmitted data packet is not received by the receiver due to network congestion, and the data may be lost.

For example, a sender can directly send any data to the receiver without establishing any connection because it is a connectionless service. Data sent by the sender will be in the packet or data streams containing the receiver's address. In connectionless service, the data can be travelled and received in any order. However, it does not guarantee to transfer of the packets to the right destination.



# Differences between them

S. No	Comparison Parameter	Connection-oriented Service	Connection Less Service
1.	Related System	It is designed and developed based on the telephone system.	It is service based on the postal system.
2.	Definition	It is used to create an end to end connection between the senders to the receiver before transmitting the data over the same or different network.	It is used to transfer the data packets between senders to the receiver without creating any connection.
3.	Virtual path	It creates a virtual path between the sender and the receiver.	It does not create any virtual connection or path between the sender and the receiver.
4.	Authentication	It requires authentication before transmitting the data packets to the receiver.	It does not require authentication before transferring data packets.
5.	Data Packets Path	All data packets are received in the same order as those sent by the sender.	Not all data packets are received in the same order as those sent by the sender.

6.	Bandwidth Requirement	It requires a higher bandwidth to transfer the data packets.	It requires low bandwidth to transfer the data packets.
7.	Data Reliability	It is a more reliable connection service because it guarantees data packets transfer from one end to the other end with a connection.	It is not a reliable connection service because it does not guarantee the transfer of data packets from one end to another for establishing a connection.
8.	Congestion	There is no congestion as it provides an end-to-end connection between sender and receiver during transmission of data.	There may be congestion due to not providing an end-to-end connection between the source and receiver to transmit of data packets.
9.	Examples	Transmission Control Protocol (TCP) is an example of a connection-oriented service.	User Datagram Protocol (UDP), Internet Protocol (IP), and Internet Control Message Protocol (ICMP) are examples of connectionless service.