

TRANSPORT LAYER

Introduction

The transport layer is the core of the OSI model. Protocols at this layer oversee the delivery of data from an application program on one device to an application program on another device. They act as a liaison between the upper-layer protocols (session, presentation, and application) and the services provided by the lower layers.

Duties of the transport layer:

The services provided are similar to those of the data link layer. The data link layer, however, is designed to provide its services within a single network, while the transport layer provides these services across an internetwork made of many networks. While the transport layer controls all three of the lower layers.

The services provided by transport layer protocols can be divided into five broad categories: end-to-end delivery, addressing, reliable delivery, flow control, and multiplexing.

Quality of Service

The transport protocol improves the QoS (Quality of Service) provided by the network layer. Following are the QoS parameters:

Connection establishment delay:

The connection establishment delay is the amount of time elapsing between a transport connection being requested and the confirmation being received by the user of the transport service. It includes the processing delay in the remote transport entity. As with all parameters measuring a delay, the shorter the delay, the better the service.

Connection establishment failure probability:

The connection establishment failure probability is the chance of a connection not being established within the maximum establishment delay time, for example, due to network congestion, lack of table space somewhere, or other internal problems.

Throughput:

The throughput parameter measures the number of bytes of user data transferred per second, measured over some time interval. The throughput is measured separately for each direction.

Transit delay:

The transit delay measures the time between a message being sent by the transport user on the source machine and its being received by the transport user on the destination machine. As with throughput, each direction is handled separately.

The Residual error ratio :

Measures the number of lost or garbled messages as a fraction of the

total sent. In theory, the residual error rate should be zero, since it is the job of the transport layer to hide all network layer errors. In practice it may have some (small) finite value.

The Protection parameter provides a way for the transport user to specify interest in having the transport layer provide protection against unauthorized third parties (wiretappers) reading or modifying the transmitted data.

The Priority parameter provides a way for a transport user to indicate that some of its

connections are more important than other ones, and in the event of congestion, to make sure that the high-priority connections get serviced before the low-priority ones.

Finally, the Resilience parameter gives the probability of the transport layer itself spontaneously terminating a connection due to internal problems or congestion.