Many of the Transport Layer services are similar to the Network Layer Services than why can't we have just one of these layers? What is the need of two different layers?

The Transport Layer of the OSI model controls how reliable data transfer is by implementing error control, segmentation, and flow control (Microsoft, 2014). This is an important distinction over what the Network Layer does. Specifically, the Network Layer is responsible for routing packets of data to the correct address. In other words, the Network Layer determines where to send data, whereas the Transport Layer determines when the data ought to be transferred in order to reduce network congestion and ensure reliable data (Microsoft, 2014).

Here are some of the ways that the Transport Layer adds to the Network Layer’s Services:

* Error Control: When there are lost packets due to network congestion or errors, it is the Transport Layer which acknowledges (or not) the data received and has the ability to send repeat requests to the sender to reattempt data transmission.
* Segmentation: The Network Layer does not ensure that data packets are sent in a specific order. Instead, it is the Transport Layer that gives a numerical order to data segments so that the receiver can pass the data in the correct order to applications.
* Flow Control: When Network traffic is high, it is the Transport layer which can buffer data and prevent congestion from causing drops in data.

With the above mentioned responsibilities of the Transport Layer, we can see how it is this layer that is integrally involved with ensuring a network’s Quality of Service.

References

Micorsoft (2014). Article ID: 103884: “The OSI Model’s Seven Layers Defined and Functions Explained.” Retrieved from <http://support.microsoft.com/kb/103884>