Differences between OSI model and TCP/IP model

The OSI (Open Systems Interconnection) reference model and the TCP/IP (Transmission Control Protocol/Internet Protocol) model are two fundamental frameworks that help in understanding and conceptualizing the architecture of computer networks. While they share similarities, they also have distinct differences:

* OSI was developed by the International Organization for Standardization (ISO) as a universal framework, while TCP/IP emerged from the practical needs of the ARPANET.
* The OSI model consists of 7 distinct layers, each responsible for a specific aspect of network communication. These layers are: Physical, Data Link, Network, Transport, Session, Presentation, and Application while TCP/IP consists of 4 layers namely; network access, internet, transport and application
* In OSI the minimum size of the OSI header is 5 bytes while I TCP/IP model, the minimum header size is 20 bytes.
* The OSI model is a theoretical framework and its comprehensive structure makes it a valuable educational tool for grasping the complexities of network protocols and interactions, whereas the TCP/IP model was developed to address real-world networking needs, making it more practically/operationally relevant.
* OSI uses the network layer to define routing standards and protocols whereas TCP/IP uses the internet layer.
* Furthermore, in the OSI model, the transport layer is only connection-oriented while in TCP/IP model is both connection-oriented and connectionless.
* In the OSI model, the data link layer and physical are separate layers that have specific functions while in TCP/IP model physical and data link are both combined as a single host-to-network layer.
* The OSI model is vertically approached while the TCP/IP model is horizontally approached.
* Additionally, the OSI model is often seen as more comprehensive, with the inclusion of the Session and Presentation layers, which focus on managing communication sessions and data translation, respectively. The TCP/IP model combines these functions into the Application layer, simplifying the architecture.