## The TCP/IP Model

5—Application:

* Provides network services to application processes (email, file transfer, etc.)
* Interacts with operating system and interfaces with system (FTP, Telnet, SMTP)
* Handles general network access, flow control, error recovery, and file transfer
* Agreement procedures for error recovery and controls data integrity
* Responsible for meaningful exchange of data
* Ensures data is readable by receiver
* Format of data/data structures
* Negotiates data transfer syntax for application layer
* Provides encryption, text compression, and reformatting
* Support of connections between sessions, administrative tasks, and security
* Control structure for communication between applications
* Establishes, manages, and terminates connections between applications
* Data expeditions, class of service, exception reporting
* Inter-host communication

4—Transport:

* Responsible for reliable, transparent transfer of data between end points
* End-to-end error recovery and flow control
* Packet handling, repackaging of messages, dividing messages into smaller packets, and error handling
* Concerned with transportation issues between hosts
* Establishing, maintaining, and terminating virtual circuits
* Fault detection and recovery
* Deals with segments

3—Network:

* Responsible for addressing and control functions (routing)
* Establishing, maintaining, and terminating connections (packet switching, routing, data congestion, reassembly of data, translation of logical addresses to physical addresses)
* Provides connectivity and path selection between two end systems
* Domain of routing
* Deals with packets

2—Data Link:

* Responsible for error-free transmission and establishing logical connections between stations
* Packaging raw bits of data from physical into blocks of data (frames)
* Sending frames with necessary synchronization, error control, and flow control
* Physical addressing, network topology, and media access (interface to cable)
* Reliable transfer of data, error notification, and flow control

1—Physical:

* Responsible for the transmission of unstructured bit streams over physical media
* Defines the mechanical, electrical, and procedural characteristics required to establish, maintain, and deactivate physical links of end systems
* Describes the media
* Wires, connectors, voltages, data rates, and binary transmission

## Comparing the TCP/IP Model to the OSI Model

Here is the breakdown of how the two models relate:

|  |  |
| --- | --- |
| TCP/IP Layer | OSI Layer |
| Application | Application  Presentation  Session |
| Transport | Transport |
| Network | Network |
| Data Link | Data Link |
| Physical | Physical |

Both models basically do the same thing: explain how a network moves data. However, each one describes the process a little differently. The OSI model includes two more layers close to the top: the presentation and session layers. They are associated with the following functions:

6—Presentation:

* Responsible for meaningful exchange of data
* Ensures data is readable by receiver
* Format of data/data structures
* Negotiates data transfer syntax for application layer
* Provides encryption, text compression, and reformatting

5—Session:

* Support of connections between sessions, administrative tasks, and security
* Control structure for communication between applications
* Establishes, manages, and terminates connections between applications
* Data expeditions, class of service, and exception reporting
* Inter-host communication