Networking models

# OSI and TCP/IP

The OSI model is a reference model that network engineers use to allow them to separate the processes that take place during network transmission. It also illustrates how the layers communicate with one another. The TCP/IP model is an implementation of the OSI model.

The OSI model has seven layers and the TCP/IP model has four layers. You can see how they relate to each other by looking at the diagram below:

Presentation

Application

Session

Transport

Network

Data link

Physical

Application

OSI

TCP/IP

Transport

Internet

Link



# Which layer?

Below are descriptions for each of the seven layers in the OSI model. State which layer is being described in the right-hand column.

|  |  |
| --- | --- |
| **Description** | **Layer** |
| Breaks the data into segments and adds a header that contains the source and destination ports. | Transport |
| Deals with the parts of an application that connect to a network. It is the closest layer to the end user of the network, and talks directly to the application. | Application |
| Deals with how the bits of data are transmitted through a network. This could be through light pulses, electrical signals, or radio waves. | Physical |
| Deals with ensuring that data is transmitted, error-free, from one node to another on a network. | Data link |
| Provides the necessary means for establishing a connection, organising, and synchronising data exchange. | Session |
| Deals with outputting the data in the correct format. It might also decrypt and encrypt data where required. | Presentation |
| Creates an IP packet that includes the source and destination IP addresses. | Network |

# Which protocol?

Below is a list of five networking protocols. Select TWO that are **not** part of the application layer.

1. FTP
2. HTTPS
3. Ethernet
4. TCP
5. IMAP

|  |  |
| --- | --- |
| **Answer:** | C, D |

# MAC addresses

Which layer deals with MAC addresses?

|  |  |
| --- | --- |
| **Answer:** | The data link layer |

# Explorer task

Without looking at the previous questions, write from memory what happens at each of the TCP/IP layers listed below:

* The link layer
* The transport layer

|  |
| --- |
| The link layer deals with the physical transfer of packets. Depending on how the device is connected to a network (Ethernet, Wi-Fi, etc.), the appropriate link layer protocol will be selected.  The transport layer uses two main protocols — TCP and UDP. The data from the application layer is broken down into segments. Each segment is given a header that contains a sequence number so that the protocol can keep track of the packets. |