

Protocols

Layer	Protocol	Description
Application	HTTP	Provides a way for users to interact with web resources. Transmits messages between client and server using hypertext.
	HTTPS	As HTTP but in addition uses an encryption protocol to ensure communications are secure.
	IMAP	Used by e-mail software to retrieve e-mail messages from a mail server. Allows the manipulation of messages on the server – deleting messages, storing them in folders etc... Stores email messages on an ISP's server but allows user to manipulate messages as though on a local device. Local devices access the ISP server to access the messages. IMAP works with desktop clients and webmail clients. Allows simultaneous logins from different devices to one account.
	SMTP	Enables users to send (and receive) email messages. Allows e-mail messages to be sent between servers, meaning messages can be sent to someone using a different mail server. Initiates sessions between user and mail server. Server then forwards messages. Uses a process called 'store and forward' to store messages and forward as necessary. The server decides which server to send the message to and the inbox provider then downloads the message and places it in the recipient's inbox. Often used in conjunction with IMAP.
	FTP	Allows secure transfer of files between client and server. Files are uploaded to and downloaded from the server using FTP.
Transport	TCP	Connects network devices to the Internet. It defines how applications can create channels of communication across a network. It manages how a message is assembled into smaller packets before transmission and reassembles packets in the correct order at destination.
	UDP	Does the same job as TCP, but is simpler. Data is not checked as thoroughly and there is no ability for UDP to ask for data packets to be sent again. This makes it quicker, so UDP is used to systems such as VOIP (e.g. Skype) or online games. Establishes low latency and loss-tolerating connections between applications. Enables the transfer of data before an agreement is provided by the receiving party. This speeds up transfers. Can start transferring data before agreement is received from receiving party.
Internet	IP	Relays data across network boundaries. It defines how to address and route each packet to make sure it reaches the right destination.
Link (network)	Ethernet (family)	Allows connection of device to a wired LAN. Data streams using Ethernet are broken into frames (like packets) which contain source and destination and error checking data.
	Wi-fi (family)	Trademark. Allows connection of device to a WLAN. Specify the radio wavelengths that communications occur on and how data is broken into frames (like packets).