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DATA ENCAPSULATION IN NETWORKING

* In computer networking, encapsulation is a method of designing modular communication in which logically separate functions in the network are [abstracted](https://en.wikipedia.org/wiki/Abstraction_(computer_science)) from their underlying structures by inclusion or [information hiding](https://en.wikipedia.org/wiki/Information_hiding) within higher-level objects.
* Encapsulation takes information from a higher layer and adds a header to it, treating the higher layer information as data
* The [physical layer](https://en.wikipedia.org/wiki/Physical_layer) is responsible for physical transmission of the data.Link encapsulation allows [local area networking](https://en.wikipedia.org/wiki/Local_area_network), [IP](https://en.wikipedia.org/wiki/Internet_Protocol) provides global addressing of individual computers, and [TCP](https://en.wikipedia.org/wiki/Transmission_Control_Protocol) selects the process or application
* During encapsulation, each layer builds a [protocol data unit](https://en.wikipedia.org/wiki/Protocol_data_unit) (PDU) by adding a [header](https://en.wikipedia.org/wiki/Header_(computing)) and optionally a [trailer](https://en.wikipedia.org/wiki/Trailer_(computing)), both of which contain control information to the PDU from the layer above.
* The result of encapsulation is that each lower-layer provides a service to the layer or layers above it, while at the same time each layer communicates with its corresponding layer on the receiving node.

These are known as adjacent-layer interaction and same-layer interaction, respectively.[[4]](https://en.wikipedia.org/wiki/Encapsulation_(networking)#cite_note-cisco-icnd1-4)

In discussions of encapsulation, the more abstract layer is often called the upper-layer protocol while the more specific layer is called the lower-layer protocol. Sometimes, however, the terms upper-layer protocols and lower-layer protocols are used to describe the layers above and below IP.[[3]](https://en.wikipedia.org/wiki/Encapsulation_(networking)#cite_note-tcpip-encapsulation-3)

* Encapsulation is a characteristic feature of most networking models, including both the [OSI model](https://en.wikipedia.org/wiki/OSI_model) and TCP/IP suite of protocols.
* Nevertheless, encapsulation is also used[[5]](https://en.wikipedia.org/wiki/Encapsulation_(networking)#cite_note-dnstunneling-5) for malicious purposes, such as [tunneling](https://en.wikipedia.org/wiki/Tunneling_protocol).
* The encapsulated data is called by different names when it travels down following layers.