Network segment

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A **network segment** is a portion of a [computer network](https://en.wikipedia.org/wiki/Computer_network). The nature and extent of a segment depends on the nature of the network and the device or devices used to interconnect end stations.[[1]](https://en.wikipedia.org/wiki/Network_segment#cite_note-1)

Ethernet[[edit](https://en.wikipedia.org/w/index.php?title=Network_segment&action=edit&section=1)]

According to the defining [IEEE 802.3](https://en.wikipedia.org/wiki/IEEE_802.3) standards for [Ethernet](https://en.wikipedia.org/wiki/Ethernet), a network segment is an *electrical connection* between networked devices using a [shared medium](https://en.wikipedia.org/wiki/Shared_medium).[[2]](https://en.wikipedia.org/wiki/Network_segment#cite_note-2) In the original [10BASE5](https://en.wikipedia.org/wiki/10BASE5) and [10BASE2](https://en.wikipedia.org/wiki/10BASE2) Ethernet varieties, a segment would therefore correspond to a single coax cable and all devices tapped into it. At this point in the evolution of Ethernet, multiple network segments could be connected with [repeaters](https://en.wikipedia.org/wiki/Repeater) (in accordance with the [5-4-3 rule](https://en.wikipedia.org/wiki/5-4-3_rule) for 10 Mbit Ethernet) to form a larger [collision domain](https://en.wikipedia.org/wiki/Collision_domain).

With [twisted-pair Ethernet](https://en.wikipedia.org/wiki/Twisted-pair_Ethernet), electrical segments can be joined together using repeaters or [repeater hubs](https://en.wikipedia.org/wiki/Repeater_hub) as can other varieties of Ethernet. This corresponds to the extent of an [OSI layer 1](https://en.wikipedia.org/wiki/OSI_layer_1) network and is equivalent to the collision domain.[[3]](https://en.wikipedia.org/wiki/Network_segment#cite_note-3)[[4]](https://en.wikipedia.org/wiki/Network_segment#cite_note-4) The 5-4-3 rule applies to this collision domain.

Using [switches](https://en.wikipedia.org/wiki/Network_switch) or [bridges](https://en.wikipedia.org/wiki/Network_bridge), multiple layer-1 segments can be combined to a common [layer-2](https://en.wikipedia.org/wiki/Data_link_layer) segment, i.e. all [nodes](https://en.wikipedia.org/wiki/Node_(networking)) can communicate with each other through [MAC addressing](https://en.wikipedia.org/wiki/MAC_address) or [broadcasts](https://en.wikipedia.org/wiki/Broadcasting_(networking)). A layer-2 segment is equivalent to a [broadcast domain](https://en.wikipedia.org/wiki/Broadcast_domain).

Traffic within a layer-2 segment can be separated into virtually distinct partitions by using [virtual LANs](https://en.wikipedia.org/wiki/Virtual_LAN) (VLANs). Each VLAN forms its own logical layer-2 segment.

IP[[edit](https://en.wikipedia.org/w/index.php?title=Network_segment&action=edit&section=2)]

A [layer-3](https://en.wikipedia.org/wiki/Layer-3) segment in an [IP network](https://en.wikipedia.org/wiki/IP_network) is usually called a [subnetwork](https://en.wikipedia.org/wiki/Subnetwork), formed by all nodes sharing the same network prefix as defined by their IP addresses and the network mask.[[5]](https://en.wikipedia.org/wiki/Network_segment#cite_note-5) Communication between layer-3 subnets requires a [router](https://en.wikipedia.org/wiki/Router_(computing)). Hosts on a subnet communicate directly using the layer-2 segment that connects them. Most often a subnetwork corresponds exactly with the underlying layer-2 segment but it is also possible to run multiple subnets on a single layer-2 segment.

References[[edit](https://en.wikipedia.org/w/index.php?title=Network_segment&action=edit&section=3)]

* 1. [**^**](https://en.wikipedia.org/wiki/Network_segment#cite_ref-1) [*"Network Segment Definition"*](http://www.linfo.org/network_segment.html)*. 2 October 2005. Retrieved 3 September 2010.*
  2. [**^**](https://en.wikipedia.org/wiki/Network_segment#cite_ref-2) *"1.4.318", 802.3-2008 Part 3: Carrier sense multiple access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications, IEEE, 26 December 2008, segment: The medium connection, including connectors, between Medium Dependent Interfaces (MDIs) in a CSMA/CD local area network.*
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  5. [**^**](https://en.wikipedia.org/wiki/Network_segment#cite_ref-5) [*"What is a Network Segment?"*](http://www.inetdaemon.com/tutorials/networking/lan/define_network_segment.shtml)*. Retrieved 3 September 2010.*

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