Metrics (networking)

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*For other uses, see*[*Metric (disambiguation)*](https://en.wikipedia.org/wiki/Metric_(disambiguation))*.*

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|  | It has been suggested that this article be [merged](https://en.wikipedia.org/wiki/Wikipedia:Merging) with [*Administrative distance*](https://en.wikipedia.org/wiki/Administrative_distance). ([Discuss](https://en.wikipedia.org/wiki/Talk:Metrics_(networking)))*Proposed since July 2020.* |

**Router metrics** are [metrics](https://en.wikipedia.org/wiki/Metric_(mathematics)) used by a [router](https://en.wikipedia.org/wiki/Router_(computing)) to make routing decisions. A *metric* is typically one of many fields in a [routing table](https://en.wikipedia.org/wiki/Routing_table). Router metrics help the router choose the best route among multiple feasible routes to a destination. The route will go in the direction of the gateway with the lowest metric.

A router metric is typically based on information such as [path length](https://en.wikipedia.org/wiki/Path_length), [bandwidth](https://en.wikipedia.org/wiki/Bandwidth_(computing)), [load](https://en.wikipedia.org/wiki/Load_(computing)), [hop count](https://en.wikipedia.org/wiki/Hop_count), path cost, [delay](https://en.wikipedia.org/wiki/Network_delay), [maximum transmission unit](https://en.wikipedia.org/wiki/Maximum_transmission_unit) (MTU), [reliability](https://en.wikipedia.org/wiki/Reliability_(computer_networking)) and communications cost.



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

A metric can include:

* measuring link utilization (using SNMP)
* number of hops ([hop count](https://en.wikipedia.org/wiki/Hop_count))
* speed of the path
* packet loss (router congestion/conditions)
* [latency](https://en.wikipedia.org/wiki/Lag) (delay)
* path reliability
* path [bandwidth](https://en.wikipedia.org/wiki/Bandwidth_(computing))
* throughput [SNMP - query routers]
* [load](https://en.wikipedia.org/wiki/Load_(computing))
* [MTU](https://en.wikipedia.org/wiki/Maximum_transmission_unit)
* administrator configured value

In [EIGRP](https://en.wikipedia.org/wiki/EIGRP), metrics is represented by an integer from 0 to 4,294,967,295 (The size of a 32-bit integer). In [Microsoft Windows XP](https://en.wikipedia.org/wiki/Microsoft_Windows_XP) routing it ranges from 1 to 9999.

A metric can be considered as:[[1]](https://en.wikipedia.org/wiki/Metrics_(networking)#cite_note-1)

* additive - the total cost of a path is the sum of the costs of individual links along the path,
* concave - the total cost of a path is the minimum of the costs of individual links along the path,
* multiplicative - the total cost of a path is the product of the costs of individual links along the path.

Service level metrics[[edit](https://en.wikipedia.org/w/index.php?title=Metrics_(networking)&action=edit&section=2)]

Router metrics are metrics used by a router to make routing decisions. It is typically one of many fields in a routing table.

Router metrics can contain any number of values that help the router determine the best route among multiple routes to a destination. A router metric typically based on information like path length, bandwidth, load, hop count, path cost, delay, Maximum Transmission Unit (MTU), reliability and communications cost.

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

* 1. [**^**](https://en.wikipedia.org/wiki/Metrics_(networking)#cite_ref-1) [S. D. Rao, C. S. R. Murthy: “Distributed dynamic QoS-aware routing in WDM optical networks”, Computer Networks, Volume 48, Issue 4, 15 July 2005, Pages 585-604](https://doi.org/10.1016/j.comnet.2004.11.003)

External links[[edit](https://en.wikipedia.org/w/index.php?title=Metrics_(networking)&action=edit&section=4)]

* [Survey of routing metrics](http://rainer.baumann.info/public/tik262.pdf)

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