

NAME

cc_cubic - CUBIC Congestion Control Algorithm

DESCRIPTION

The CUBIC congestion control algorithm was designed to provide increased throughput in fast and long-distance networks. The CUBIC congestion control algorithm is the default for TCP. It attempts to maintain fairness when competing with legacy NewReno TCP in lower speed scenarios where NewReno is able to operate adequately.

The congestion window is increased as a function of the time elapsed since the last congestion event. During regular operation, the window increase function follows a cubic function, with the inflection point set to be the congestion window value reached at the last congestion event. CUBIC also calculates an estimate of the congestion window that NewReno would have achieved at a given time after a congestion event. When updating the congestion window, the algorithm will choose the larger of the calculated CUBIC and estimated NewReno windows.

CUBIC also backs off less on congestion by changing the multiplicative decrease factor from 1/2 (used by standard NewReno TCP) to 4/5.

The implementation was done in a clean-room fashion, and is based on the Internet Draft and paper referenced in the *SEE ALSO* section below.

MIB Variables

There are currently no tunable MIB variables.

SEE ALSO

cc_cdg(4), cc_chd(4), cc_dctcp(4), cc_hd(4), cc_htcp(4), cc_newreno(4), cc_vegas(4), mod_cc(4), tcp(4), mod_cc(9)

Sangtae Ha, Injong Rhee, and Lisong Xu, *CUBIC for Fast Long-Distance Networks*, <https://tools.ietf.org/id/draft-rhee-tcpm-cubic-02.txt>.

Sangtae Ha, Injong Rhee, and Lisong Xu, "CUBIC: a new TCP-friendly high-speed TCP variant", *SIGOPS Oper. Syst. Rev.*, 5, 42, 64-74, July 2008.

ACKNOWLEDGEMENTS

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HISTORY

The **cc_cubic** congestion control module first appeared in FreeBSD 9.0.

This became the default congestion algorithm for FreeBSD in version FreeBSD 14.0, replacing `cc_newreno(4)`.

The module was first released in 2009 by Lawrence Stewart whilst studying at Swinburne University of Technology's Centre for Advanced Internet Architectures, Melbourne, Australia. More details are available at:

<http://caia.swin.edu.au/urp/newtcp/>

AUTHORS

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