Revised CUBIC as Proposed Standard

TCPM, IETF 113
March 2022

Lisong Xu, Sangtae Ha, Injong Rhee, Vidhi Goel, Lars Eggert

Recap - CUBIC updates

Updated definition of K to use $cwnd_{start}$

Upper and lower bound for CUBIC window

Instead of time, increase W_{est} based on segments acknowledged

Set $\alpha_{aimd} = 1$ after $W_{est} >= W_{max}$

Address spurious losses

Introduce α_{cubic} to replace α_{aimd}

Recap - CUBIC updates

Use $FlightSize$ instead of $cwnd$ after a congestion event; recommend RFC 7661

Updates [RFC 5681] to allow CUBIC's more aggressive sending behavior

Recommend Hystart++ for slow-start to avoid overshoot

Reduce $cwnd$ in response to ECE until it reaches $1\ MSS$ and then use retransmit timer with exponential backoff

Differences from the original CUBIC research paper and more

Changes since last meeting

Spurious congestion events is subdivided into:

   Spurious timeout - recommend RFC4015

   Spurious loss detected by ACKs - conditional "*undo*"

Clarify the meaning of application-limited

RFC7661 is safe even when $cwnd$ grows beyond receive window

RFC8312bis as PS

All GitHub issues are addressed

Second WGLC is complete

Support for publication as PS on mailing list

Separate draft that describes CUBIC evaluation or improvements.