

{tag} International Journal of Computer Applications  
Foundation of Computer Science (FCS), NY, USA

[Volume 167](#)

-  
[Number 13](#)

Year of Publication: 2017

Authors:

Pooja Chaudhary, Sachin Kumar

10.5120/ijca2017914544

{bibtex}2017914544.bib{/bibtex}

## **Abstract**

Internet has evolved into dynamic network where users use wired or wireless connection technologies. The dissimilarity of bandwidths, interruption and error rates in network are increased on Internet. TCP is the common denominator for several services thus by modifying TCP the need of applying solutions locally can be reduced. Now the researchers have focuses in designing an enhanced bandwidth estimation technique which are efficient to utilized bandwidth. This paper proposed modified Slow-start mechanism, called an Enhanced Adaptive Response Rate Adjustment (EARRA) bandwidth estimation technique to improve the startup performance in wireless networks and estimating the available bandwidth (ABW) of an end-to-end network path more accurately and less intrusively In this paper EARRA technique use Eligible Rate Estimation (ERE) mechanism that adaptively and repeatedly resetting ssthresh during the slow-start phase. By adjusting to network situation throughout the startup section, sender is able to grow the congestion window fast without incurring uncertainty of overloaded buffer. This technique adjust the ssthresh dynamically , readjust the slow start threshold according to the current carrying capacity of the network and determine the sending

end whether is in the slow start phase or congestion avoidance phase based on the new size of ssthresh. This allows the volumes of data packets that sent from the sending end keep changes along with the change of the ability of network capacity. The performance of proposed EARRA technique is evaluated by throughput, packet delivery ratio, latency through simulation set, which evidence better performance in comparison to different tcp variants.

## References

1. Yew, R. Ahmad R. et al., "Performance Evaluation of TCP Vegas versus different TCP Variants in Homogeneous and Heterogeneous Networks", *International Journal of Computer Science and Information Security (IJCSIS)*, Vol. 14, No. 3, March 2016.
2. Subramani B., T. Karthikeyan. "A Review on Congestion Control." *International Journal of Advanced Research in Computer and Communication Engineering* Vol. 3, Issue 1, January 2014.
3. Zeng Xiaoping, Chen Li et al., "TCP congestion control mechanism for heterogeneous network connection." *Journal of Computer Applications and Networks*, 2016, pp: 56-64
4. Attiya G., Z. Morsi et al., "Modified Fast Recovery Algorithm for Performance Enhancement of TCNewReno." *International Journal of Computer Applications* Vol. 40, No.12, February 2012.
5. Ganiyu A. Oyeyinka, Olusegun Folorunso, Aderounmu, "TCP Window Based Congestion Control Slow-Start Approach," *Communications and Network*, Vol. 3, pp.85-98, May2011
6. Chary, Leonard Kleinrock et al., "Improving Host-to-Host Congestion Control Protocols by Dynamic Bandwidth Estimation of the Network, *International Journal of Computer Applications* (0975 – 8887) Volume 104, No.1, October 2014.
7. Francis, B., Narasimhan, V., Nayak, A. and Stojmenovic, I. (2012), "Techniques for Enhancing TCP Performance in Wireless Networks", *International Conference on Distributed Computing Systems Workshops IEEE*, DOI 10.1109/ICDCSW, pp. 222-230.
8. Prasanthi. S and Sang-Hwa Chung "An Efficient Algorithm for the Performance of TCP over Multi-hop Wireless Mesh Networks" 609-735, *IEEE* 2010.
9. Babatunde O. Oyenike Mary Olanrewaju2 , Isaiah O. Adebayo3, *Transmission Control Protocol and Congestion Control : A REVIEW OF TCP VARIANTS*. *International Journal of Computer Science and Information Security (IJCSIS)*, Vol. 14, No. 3, March 2016
10. Ghulam Kassem Fozia Hameed *TCP Variants: An Overview* 2010 *Second International Conference on Computational Intelligence, Modeling and Simulation*.
11. Wu Qing-Rui, Jie Hong & Nan Ding (2014). *An Enhanced TCP Congestion Control Algorithm Based on Estimation of Bandwidth in Heterogeneous Networks*. *Journal of Communications*, 9(10), 2014 .
12. Zhenwei Zhu, Yu Qian, Zhou, and Liu Wenjia, Keren. "Dynamic Vegas: Efficient Congestion Control Mechanisms." In *International Conference on Information Technology and Computer Science*, pp. 333-340. Springer India, 2014.
13. Wang X., K. Zheng, et al., "Novel Quick Sort (QS) approach for optimization of TCP "in proceeding of Springer science business media New York, 2015
14. Luigi Fratta, fabio Martignon *Bandwidth Estimation Schemes for TCP over Wireless Networks IEEE Transactions on Mobile Computing*, VOL. 3, NO. 2, APRIL-JUNE 2004.
15. *Network Simulator: www.isi.edu/nsnam/ns/doc/ns\_doc.pdf*

**Index Terms**

Computer Science

Wireless

**Keywords**

Congestion Control, Wireless Network, TCP Variants, Slow Start, EARRA.