Hindawi Publishing Corporation
EURASIP Journal on Wireless Communications and Networking
Volume 2010, Article ID 439738, 2 pages
doi:10.1155/2010/439738

Erratum

Corrections to "Connectivity-Based Reliable Multicast MAC Protocol for IEEE 802.11 Wireless LANs"

Woo-Yong Choi

Department of Industrial and Management Systems Engineering, Dong-A University, 840 Hadan-2-dong, Saha-gu, 604-714 Busan, South Korea

Correspondence should be addressed to Woo-Yong Choi, wychoi77@dau.ac.kr

Received 14 January 2010; Accepted 24 January 2010

We have found the errors in the throughput formulae presented in our paper "Connectivity-based reliable multicast MAC protocol for IEEE 802.11 wireless LANs". We provide the corrected formulae and numerical results.

The ACK frame transmission times are included for all cases of transmission errors in (5) and (6) in [1]. However, the ACK frame transmission from a recipient occurs only when the recipient correctly receives both the preceding multicast data and RAK frames. To correct this, we need the following parameter at the beginning of [1, Section 3]

(i) $\mathbf{p_{ACK}}$: the transmission error probability of an ACK frame.

The second terms of (5) and (6) in [1] should be

$$n \cdot E[X_i]\left(\frac{1-p}{1-p_{\mathrm{ACK}}}\right)\left(\mathrm{SIFS} + T_{\mathrm{ACK}} + \frac{q \cdot L_U}{R}\right), \quad (1)$$

where $1 - p/1 - p_{\mathrm{ACK}}$ is the probability that both the multicast data and RAK frames are successfully transmitted to a recipient. Similarly, (9) in [1] should be

$$\begin{aligned} T_{\mathrm{BMMM}} &= E[Y](\mathrm{SIFS} + T_M) \\ &\quad + n \cdot E[X_i]\left(\frac{1-p}{1-p_{\mathrm{ACK}}}\right)\left(\mathrm{SIFS} + T_{\mathrm{ACK}} + \frac{q \cdot L_U}{R}\right) \\ &\quad + n(\mathrm{SIFS} + T_{\mathrm{RAK}}) + (n \cdot E[X_i] - n)(\mathrm{PIFS} + T_{\mathrm{RAK}}), \end{aligned} \quad (2)$$

where the third term is due to the fact that the AP should wait for SIFS to transmit the next RAK polling frames when the AP can successfully receive the ACK frames from the recipients, and the fourth term is due to the fact that the AP should wait for PIFS to transmit the next RAK polling frames when the AP cannot receive the ACK frames from the recipients.

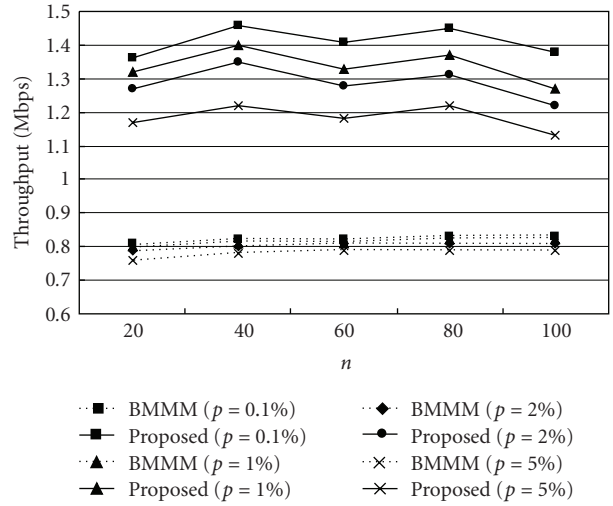

Figure 1: Throughput results with multicast and uplink user payloads of 88 bits.

Setting $\mathbf{p_{ACK}}$ to 0.2 $\mathbf{p}$ and recalculating the throughputs by the corrected formulae, Figures 1 and 2 should be as follows.

From the recalculated numerical results, we can see that compared with the BMMM protocol, our reliable multicast

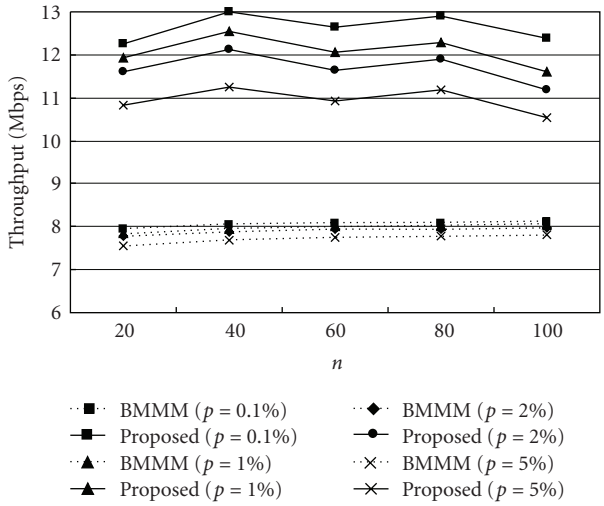

Figure 2: Throughput results with multicast and uplink user payloads of 1000 bits.

MAC protocol increases the throughput by about 62% and 49% with the user payloads of 88 bits and 1000 bits, respectively. We can see the greater performance improvement by our reliable multicast MAC protocol than that mentioned in [1].

Acknowledgment

This study was supported by research funds from Dong-A University.

References

[1] W.-Y. Choi, "Connectivity-based reliable multicast MAC protocol for IEEE 802.11 wireless LANs," *EURASIP Journal on Wireless Communications and Networking*, vol. 2009, Article ID 968408, 6 pages, 2009.