Errata to the paper
"A New Queueing Model for QoS Analysis of IEEE 802.11 DCF with Finite Buffer and Load"

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The authors of [1] have become aware that several of the equations in [1] were presented with errors. In this brief note, we provide correct equations. The implementation of the model in [1] was in accordance with the correct equations, so the implementation results presented in Section V. Performance Analysis of [1] are still valid.

The third term in the equation for $\mathbf{F_{sub}}$ in [1] has the wrong value for i. The following equation replaces the equation for $\mathbf{F_{sub}}$.

$$
\mathbf{F_{sub}}[i,j] = \begin{cases} p(1-q_T), & i=j, j<L; \\ p, & i=j=L; \\ pq_T, & i=j+1, j<L; \\ 0, & \text{otherwise}, \end{cases}
$$

The second and third equations for $\mathbf{C}$ in [1] are only specified for $i=0,..,m$. The equations needs to be specified for $i=0,..,s$ and need altering to be valid for backoff stage-s. The following equations replace the equations for $\mathbf{C}$.

$$
\begin{aligned}
\mathbf{C}[1,1] &= (1-p)q; \\
\mathbf{C}[2,1] &= p(1-q); \\
\mathbf{C}[h,1+h+iL] &= (1-p+p\delta_{si})(1-q_T), \\
&\quad \text{for } h=1,..,L \text{ and } i=0,..,s; \\
\mathbf{C}[1+h,1+h+iL] &= (1-p+p\delta_{si})q_T, \\
&\quad \text{for } h=1,..,L \text{ and } i=0,..,s; \\
\mathbf{C}[i,j] &= 0, \text{ otherwise.}
\end{aligned}
$$

The first equation for $\mathbf{D}$ in [1] has incorrect ranges for h and f, and the condition in the second equation should be for i, not j. The following equations replace the equations for $\mathbf{D}$.

$$
\mathbf{D}[1+h,1+h-f] = \frac{q^f}{W_0} \sum_{j=0}^{W_0-1-f} \binom{j+f}{f}(1-q)^j,
$$

$$
\text{for} \begin{cases} h=0,..,L-1, \\ f=0,..,\min(h,W_0-1); \end{cases}
$$

$$
\mathbf{D}[i,j] = 0, \text{ otherwise, for } i \neq L+1; \text{ and}
$$

$$
\mathbf{D}[L+1,j] = 1 - \sum_{h=1}^{L} \mathbf{D}[h,j], j=1,..,L+1.
$$

The first equation for $\mathbf{H_i}$ in [1] has the wrong summation range for r and the wrong range for h. Also, the equation for the last row of $\mathbf{H_i}$ was omitted from [1]. The following equations replace the equations for $\mathbf{H_i}$, noting that the indexing of k and r have been changed for neatness and that $\binom{0}{0}=1$.

$$
\mathbf{H_i}[1+h+f,h+\delta_{0i}]
$$
$$
= \frac{1}{W_i} \sum_{k=f}^{W_i-1} \sum_{r=0}^{k-f} \binom{r+f}{f}(1-q)^r q^f,
$$
$$
\text{for} \begin{cases} i=0,..,m, \\ h=1-\delta_{0i},..,L-1, \\ f=0,..,\min(L-1-h,W_i-1); \end{cases}
$$
$$
\mathbf{H_i}[j,k] = 0, \text{ otherwise, for } i=0,..,m, j \neq L+1;
$$
$$
\mathbf{H_i}[L+1,k] = \frac{W_i+1}{2} - \sum_{j=1}^{L} \mathbf{H_i}[j,k],
$$
$$
\text{for} \begin{cases} i=0,..,m, \\ k=1,..,L+\delta_{0i}; \text{ and} \end{cases}
$$
$$
\mathbf{H_i} = \mathbf{H_m}, \text{ for } i=m+1,..,s,
$$

The equation for P_B in [1] has a missing bracket. The following equation replaces (10), the equation for P_B.

$$
\begin{aligned}
P_B = & \; P[Q=L] - ((1-p)T_s(\mathbf{v}[L+1,1] \\
& + \sum_{i=1}^{s}(\mathbf{B_i}\mathbf{v})[L,1]) + pT_c(\mathbf{B_s}\mathbf{v})[L,1])/E_s. \quad (10)
\end{aligned}
$$

REFERENCES

[1] R. P. Liu, G. J. Sutton, and I. B. Collings, "A new queueing model for QoS analysis of IEEE 802.11 DCF with finite buffer and load," *IEEE Trans. Wireless Commun.*, vol. 9, no. 8, pp. 2664–2675, Aug. 2010.