

Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: MAC Performance Evaluation of Multiple BAN Coexistence Under TG6ma Channel Model

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Re: In response to call for technical contributions

Abstract: This provides preliminary MAC performance evaluation results in a case of multiple BAN coexistence under the TG6ma channel model.

Purpose: Material for discussion in P802.15.6a TG corresponding to comments in EC Meeting

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Introduction

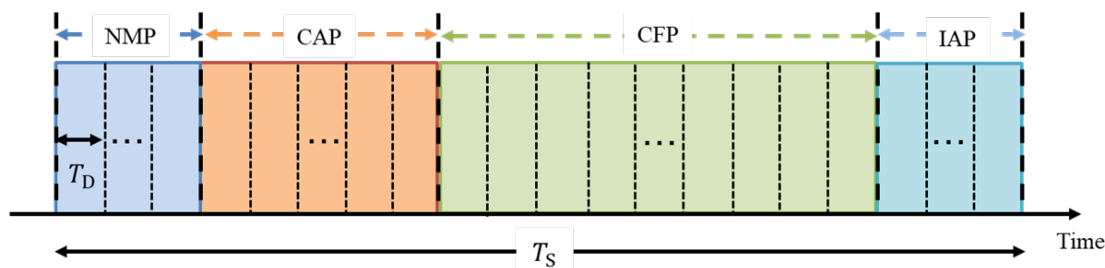
- In multiple BAN coexistence, we propose a **synchronous BAN coordination** to avoid packet collisions even between different BANs, which is **optimally managed** under multiple BAN coexistence situations
- We carry out fundamental MAC performance evaluation to demonstrate the importance of the proposed structure based on the TG6ma channel model



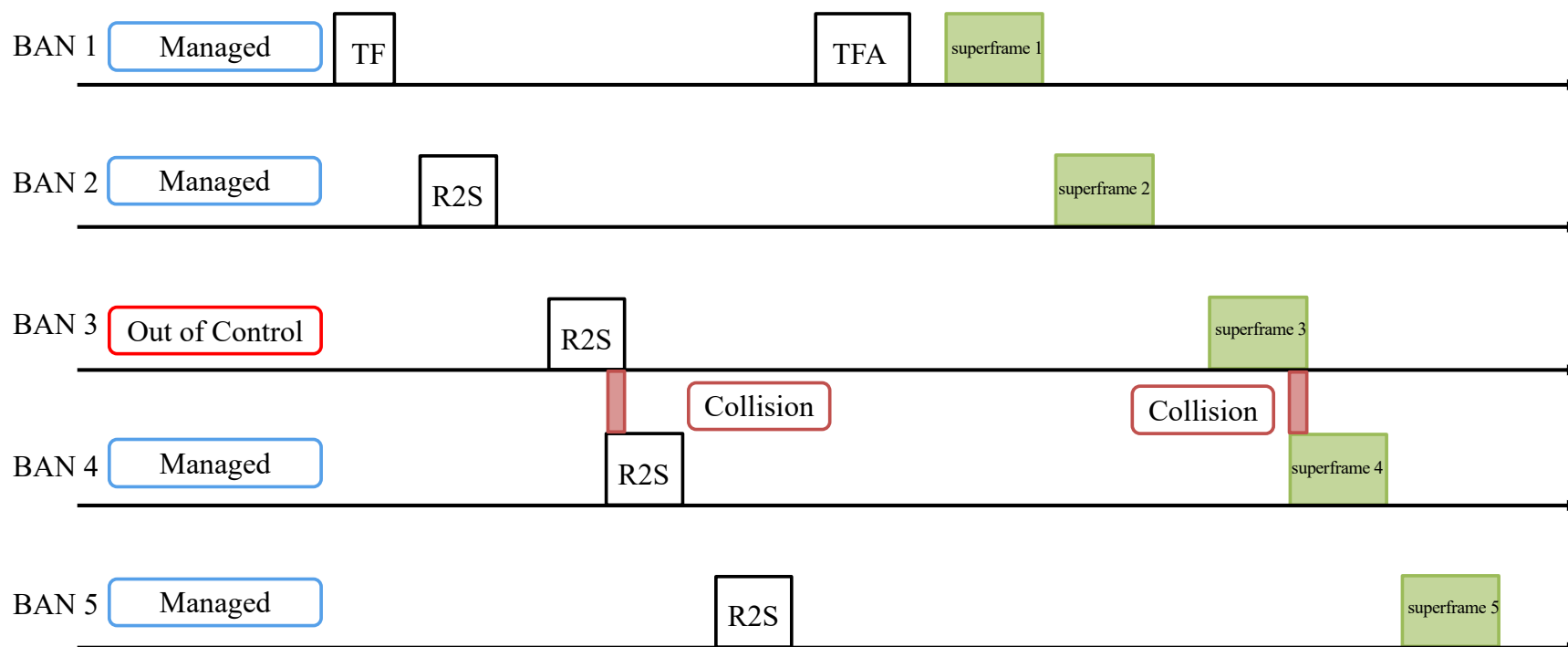
- The forward error-correcting code (**concatenated code with LDPC and RS**) is considered for the performance evaluation

MAC simulation parameters

T_S	4 ms	Number of BANs	5
T_D	40 μ s	Number of Nodes (/BAN)	5
Number of superframes	250	Maximum number of retransmission (CFP) times	5
Number of NMP slots	5	Maximum number of retransmission (CAP) times	5
Number of CFP slots	60	Maximum number of random waiting slots (CAP)	10
Number of CAP slots	30	Normal packet (CFP)	Poisson distribution
Number of IAP slots	5	Normal packet (CAP)	Poisson distribution
Gap	0 ~ 499	Packet length	2000 bit

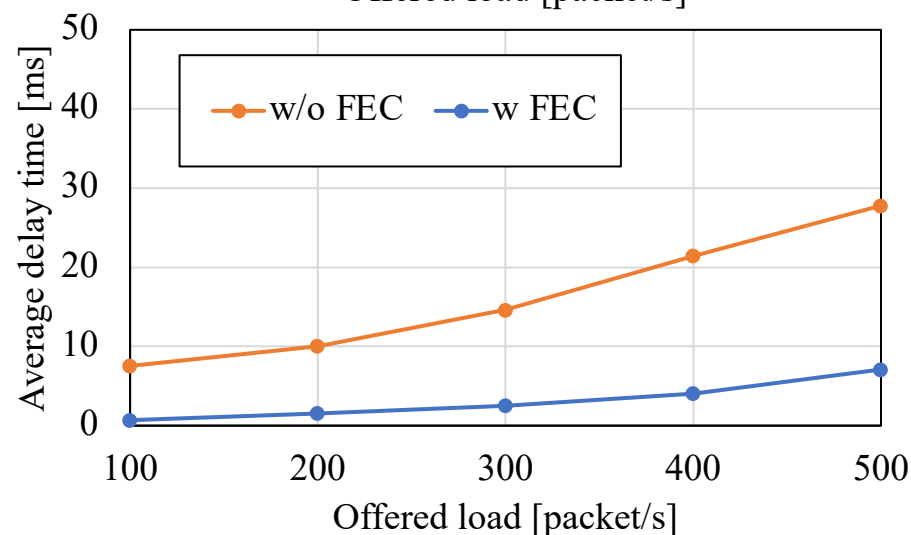
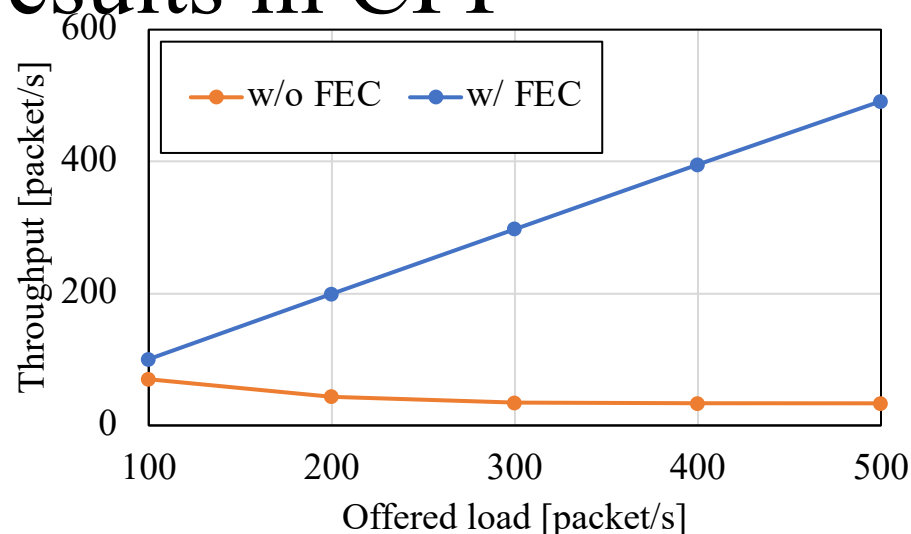
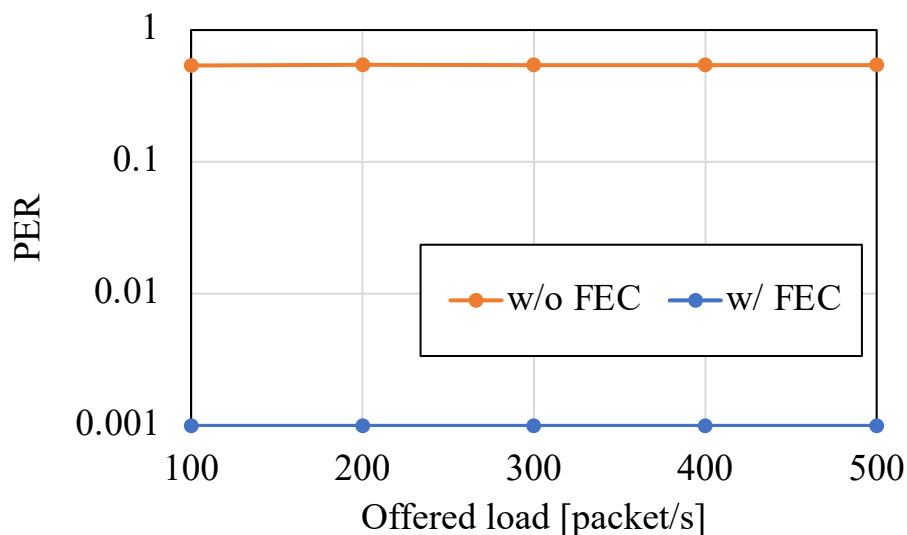


Simulation scenario with one interference BAN



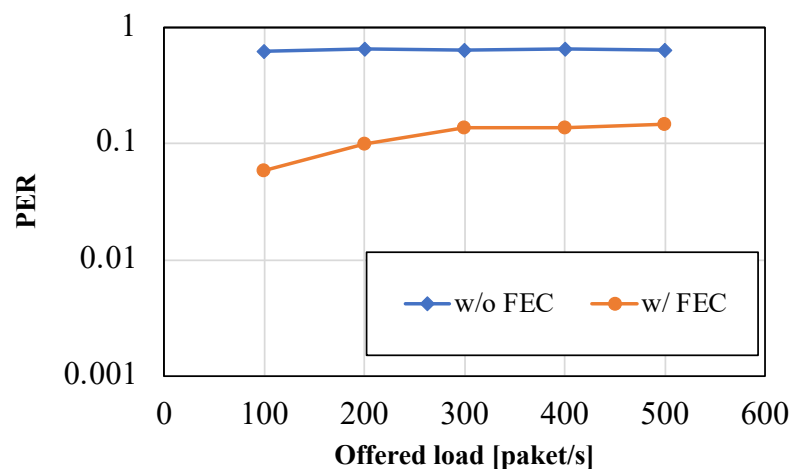
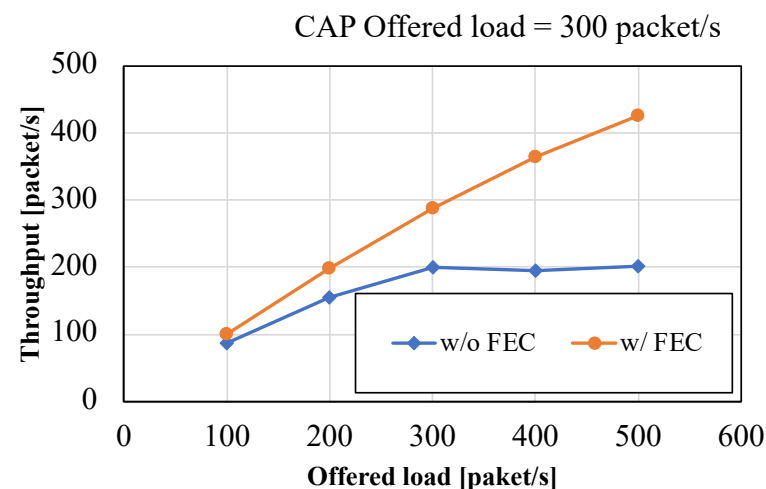
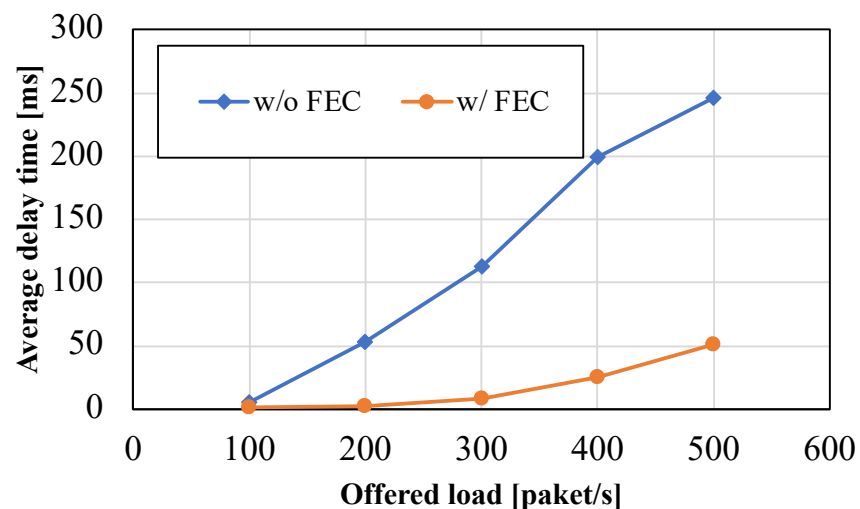
Evaluation results in CFP

- Five managed BANs
(no interference BAN existence)
- Concatenated code (LDPC+RS) applied

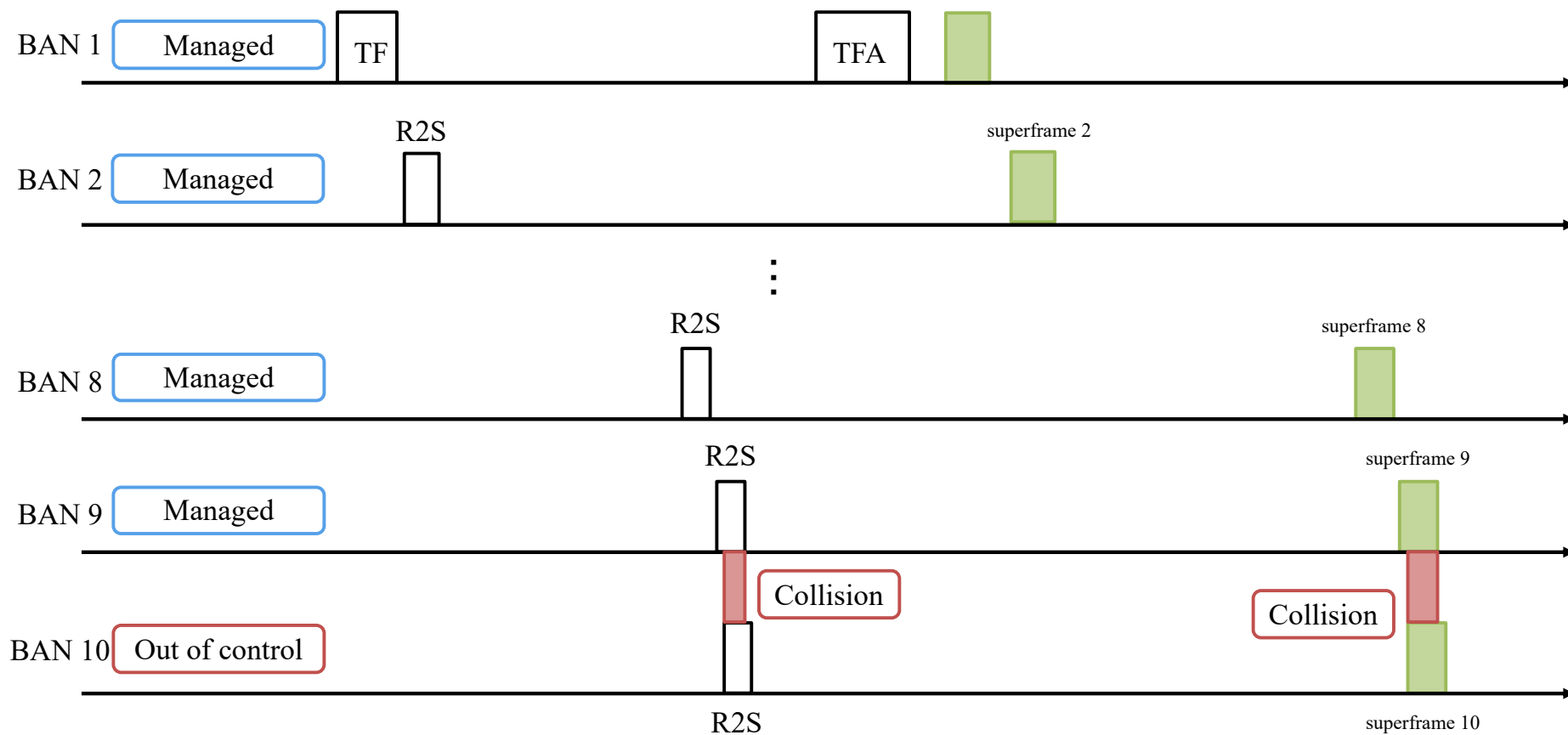


Evaluation results in CFP

- Four managed BANs and one interference BAN
- Concatenated code (LDPC+RS) applied

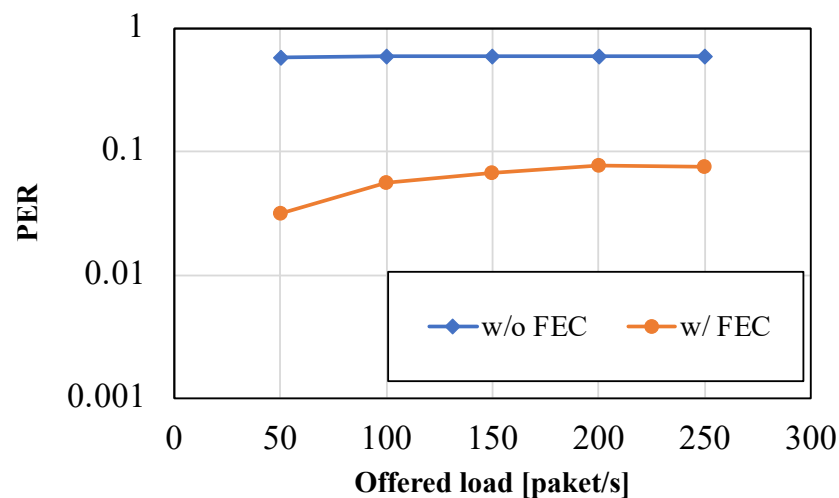
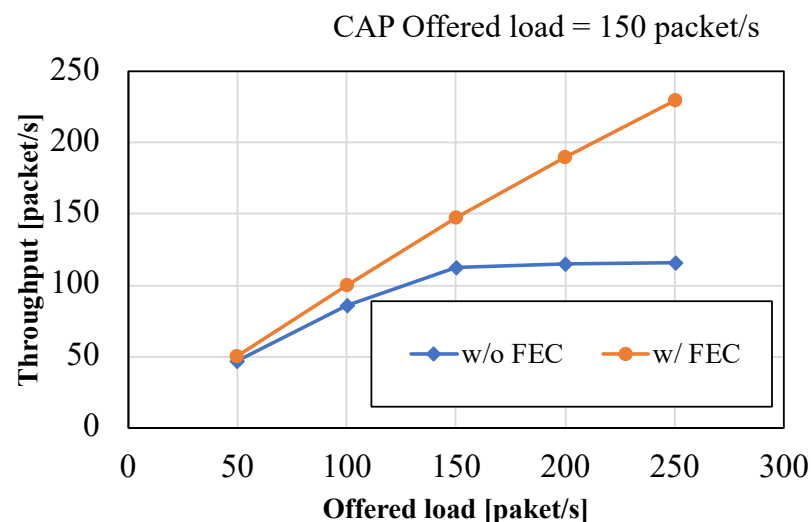
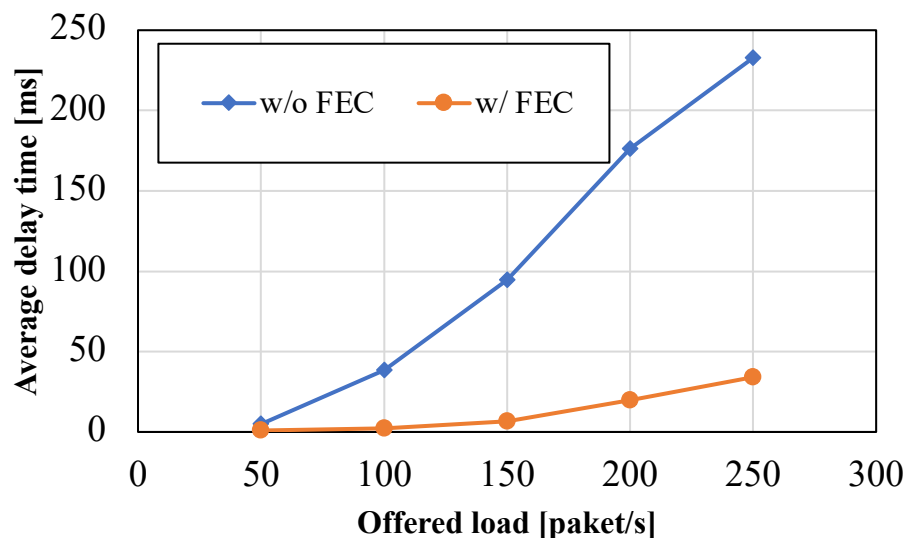


Simulation scenario with 10 BANs



Evaluation results in CFP

- Nine managed BANs and one interference BAN
- Concatenated code (LDPC+RS) applied



References

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