int{K} t>, uVEB32 = VanEmdeBoas32<>, 32uVEBL = VanEmdeBoasLocked<32>, uVEB32L = VanEmdeBoas32Locked<>, uVEB32LT = VanEmdeBoas32LockedTop<>, uVEB32LFG = VanEmdeBoas32LockedFineGrained<>, uVEB32LL = VanEmdeBoas32Lockless.

 $\{K\}$ std::set = std::set<uint $\{K\}$ t>, $\{K\}$ uVEB = VanEmdeBoas< $\{K\}$ >, $\{K\}$ VEB = VanEmdeBoas< $\{K\}$,

is used for VanEmdeBoas and VanEmdeBoasLocked (not VanEmdeBoas32 and its parallel variants) Random distributions: uniform, cluster = random placed clusters with 1000 succeeding elements, normal

No #defines => sf::contention free shared mutex is used often; also bytell hash map by Malte Skarupke

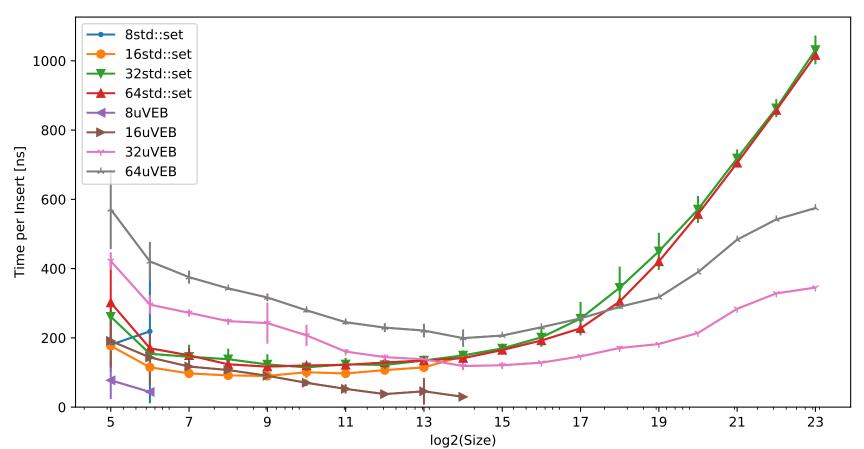
= normal distribution with mean $\sim 0/2^31$ for signed/unsigned and std $(2^31)/10$, incProb = linear

increasing probability where the smallest value has probability 0, decProb = linear decreasing probability where the largest value has probability 0

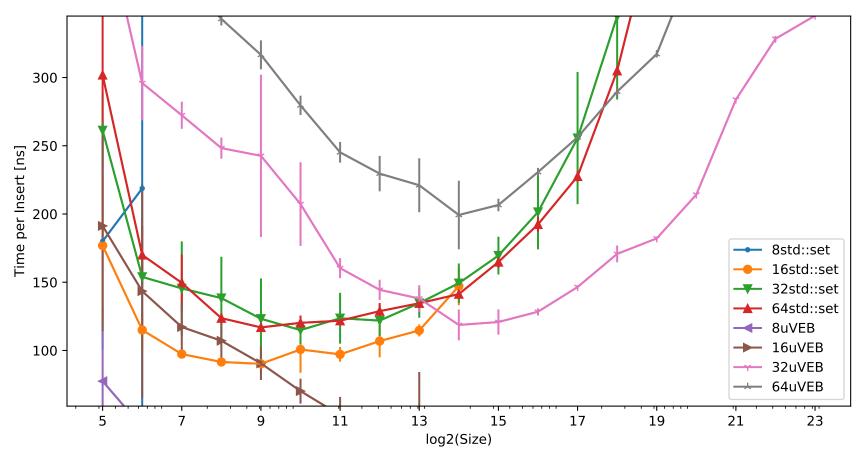
There are ten iterations for each data point.

Hardware: i7-7700HQ, 16GB DDR4 Windows Laptop

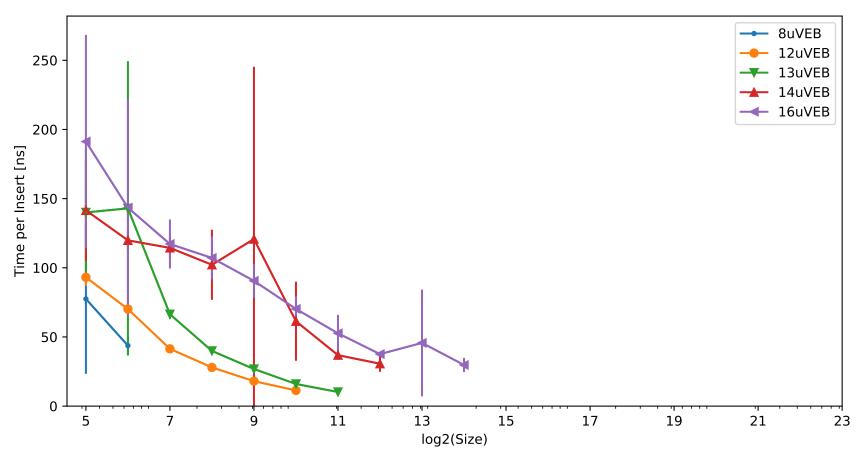
Time to Insert 'Size' Elements (uniform distribution)



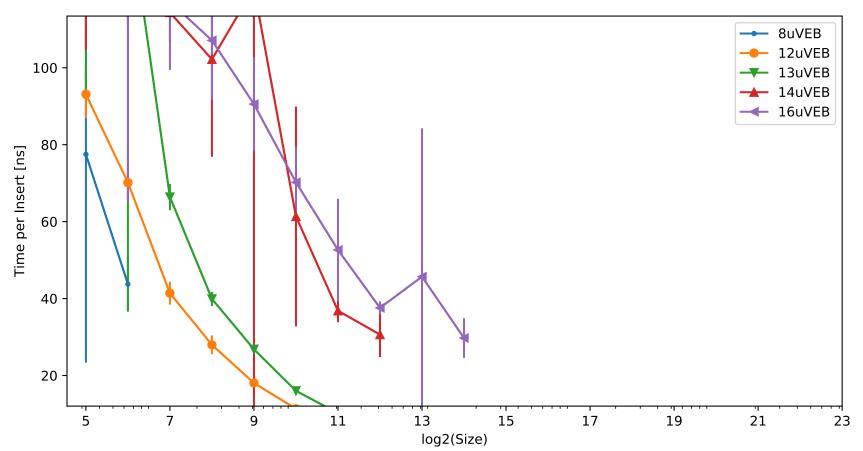
Time to Insert 'Size' Elements (Zoomed in; uniform distribution)



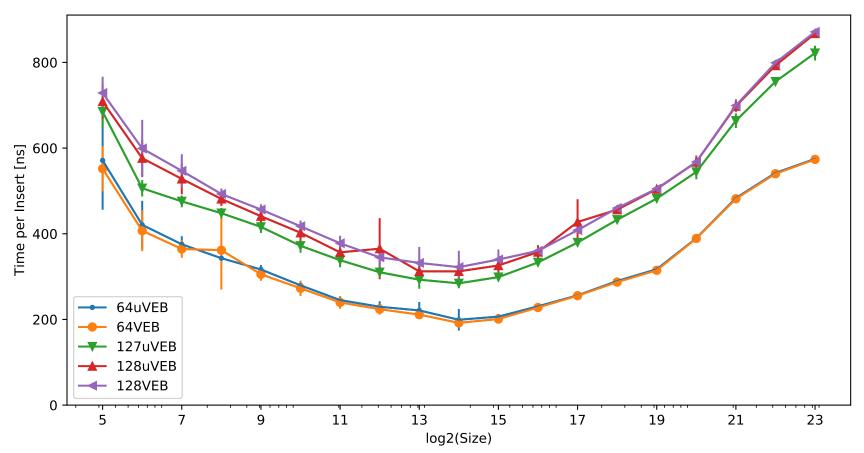
Time to Insert 'Size' Elements (uniform distribution)



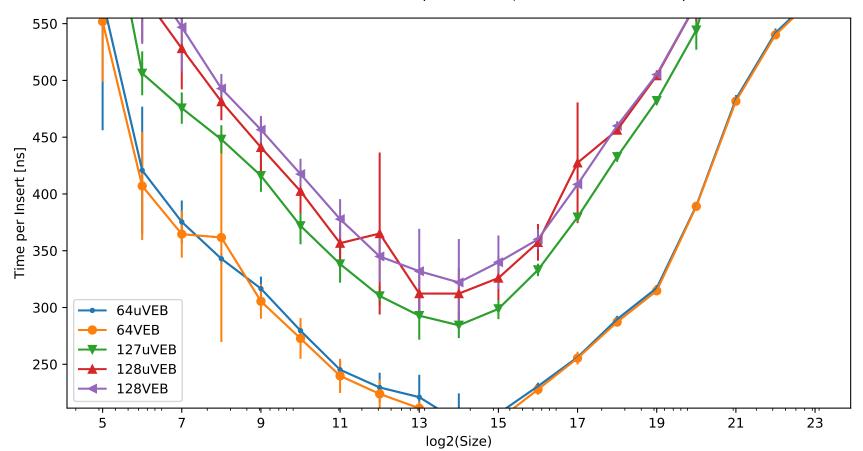
Time to Insert 'Size' Elements (Zoomed in; uniform distribution)



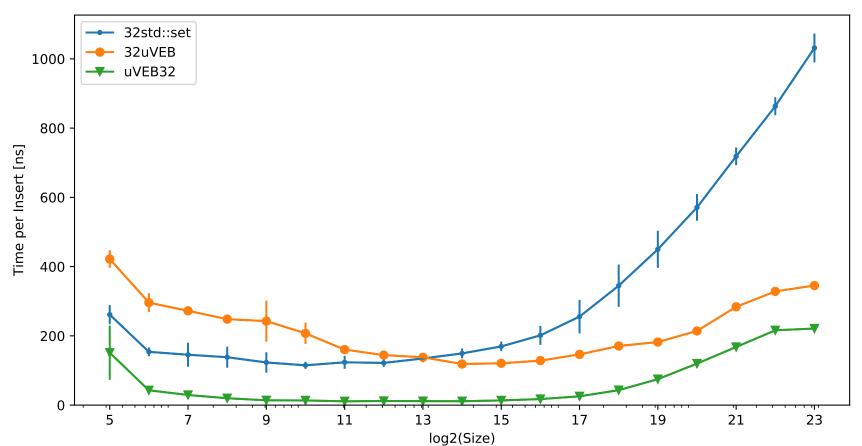
Time to Insert 'Size' Elements (uniform distribution)



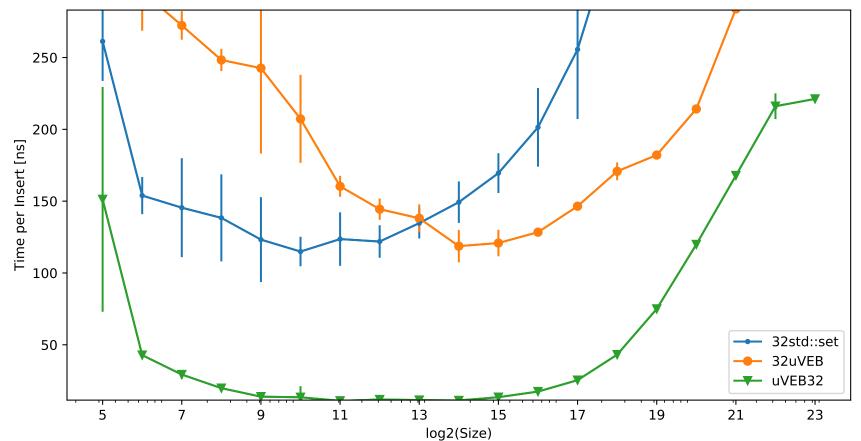
Time to Insert 'Size' Elements (Zoomed in; uniform distribution)



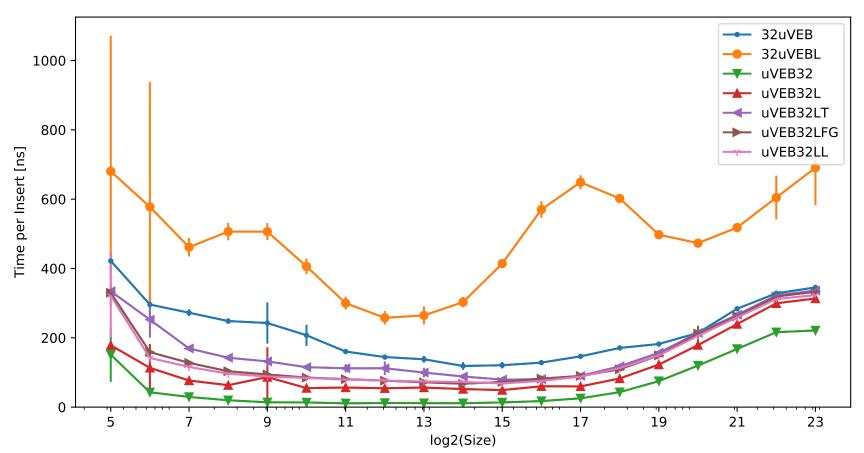
Time to Insert 'Size' Elements (uniform distribution)



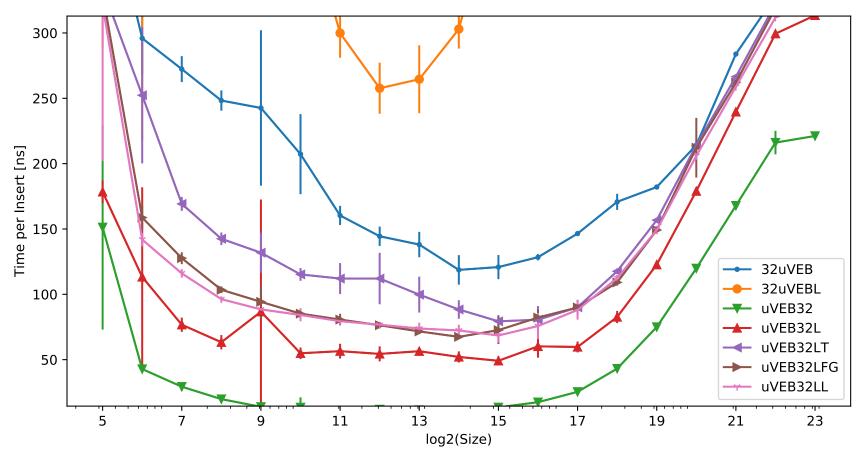
Time to Insert 'Size' Elements (Zoomed in; uniform distribution)



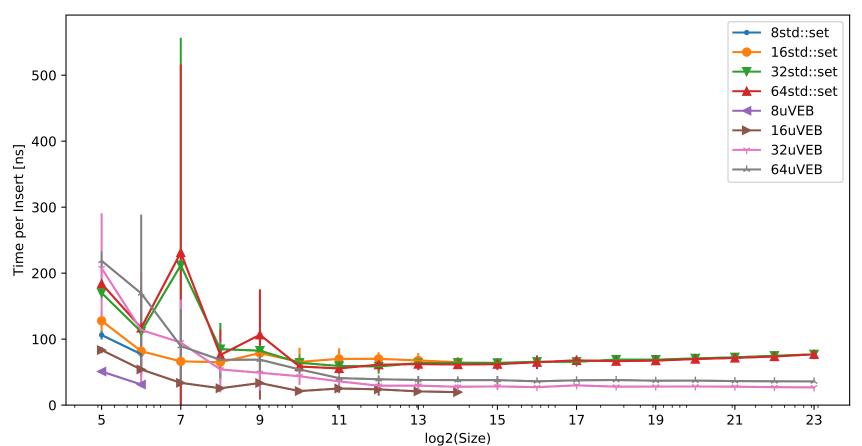
Time to Insert 'Size' Elements (uniform distribution)



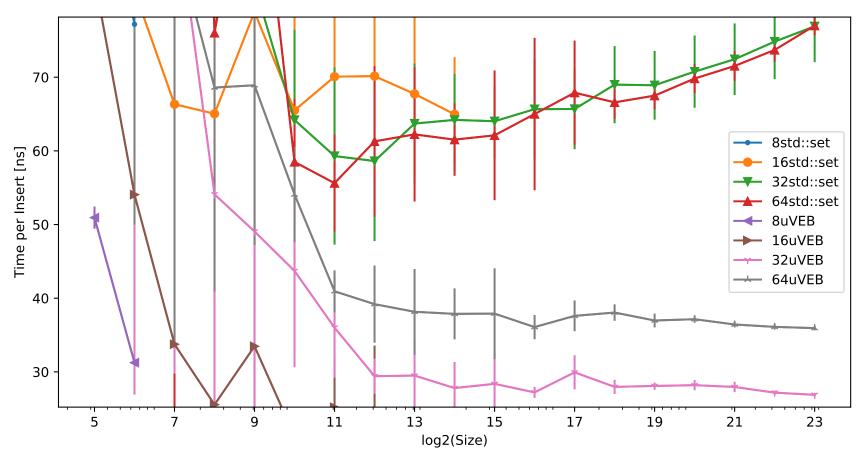
Time to Insert 'Size' Elements (Zoomed in; uniform distribution)



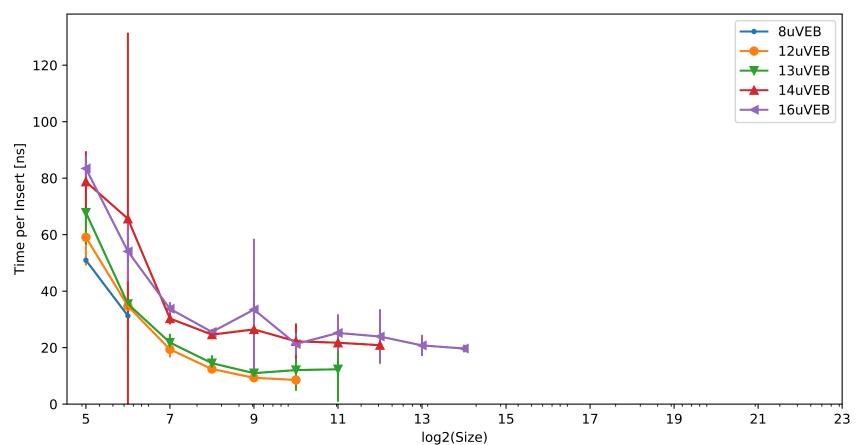
Time to Insert 'Size' Elements (cluster distribution)



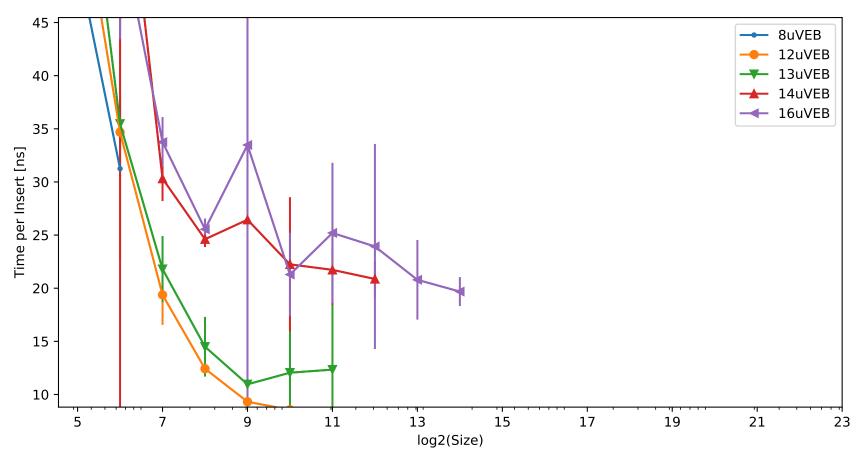
Time to Insert 'Size' Elements (Zoomed in; cluster distribution)



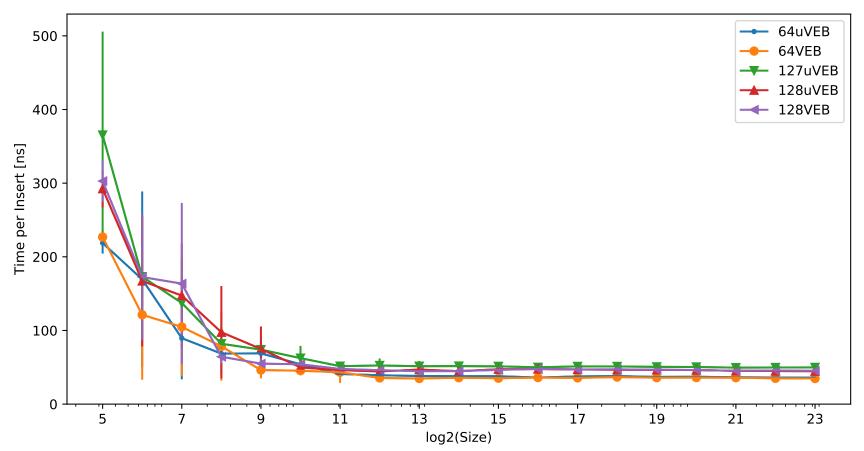
Time to Insert 'Size' Elements (cluster distribution)



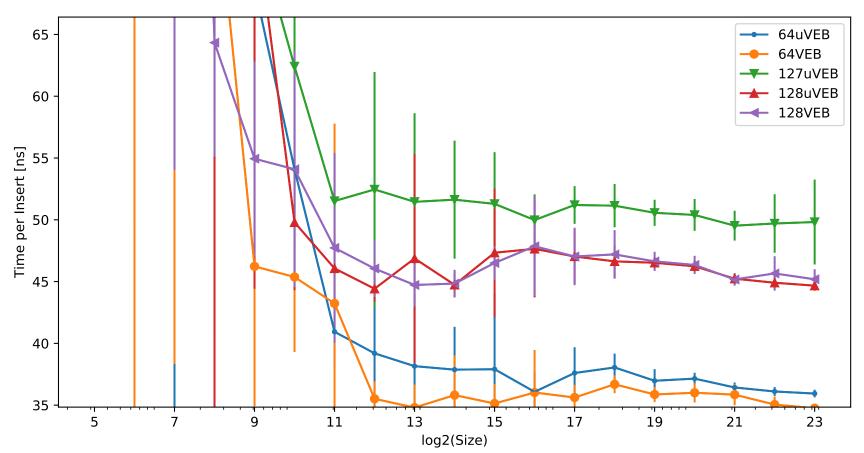
Time to Insert 'Size' Elements (Zoomed in; cluster distribution)



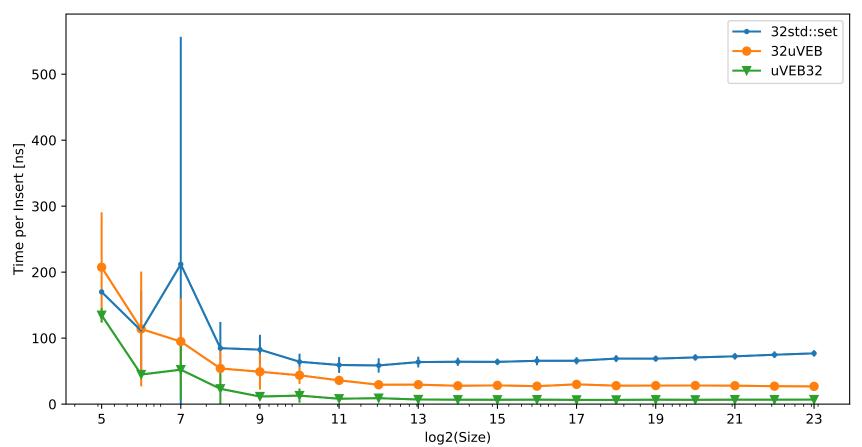
Time to Insert 'Size' Elements (cluster distribution)



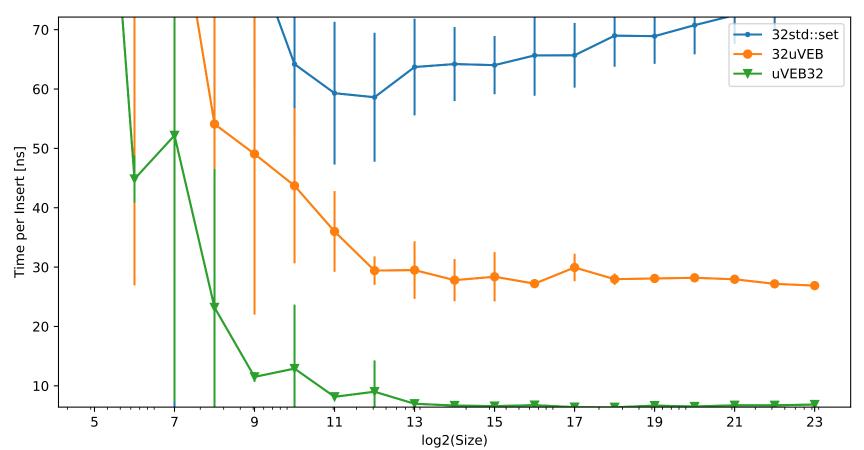
Time to Insert 'Size' Elements (Zoomed in; cluster distribution)



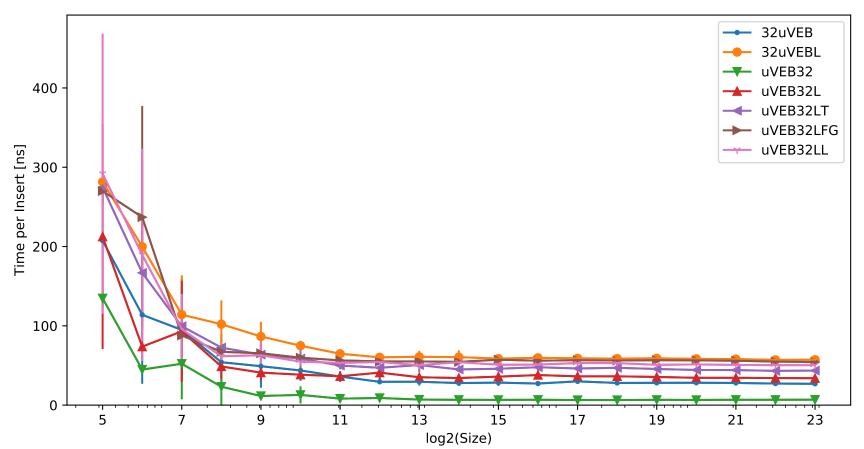
Time to Insert 'Size' Elements (cluster distribution)



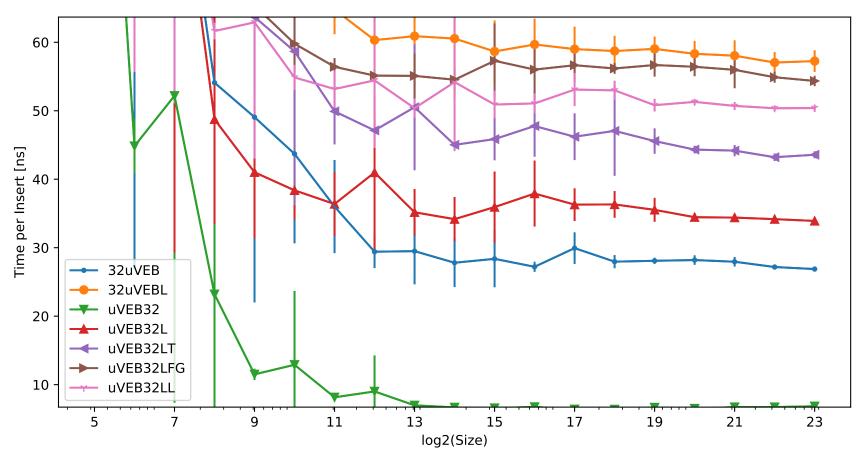
Time to Insert 'Size' Elements (Zoomed in; cluster distribution)



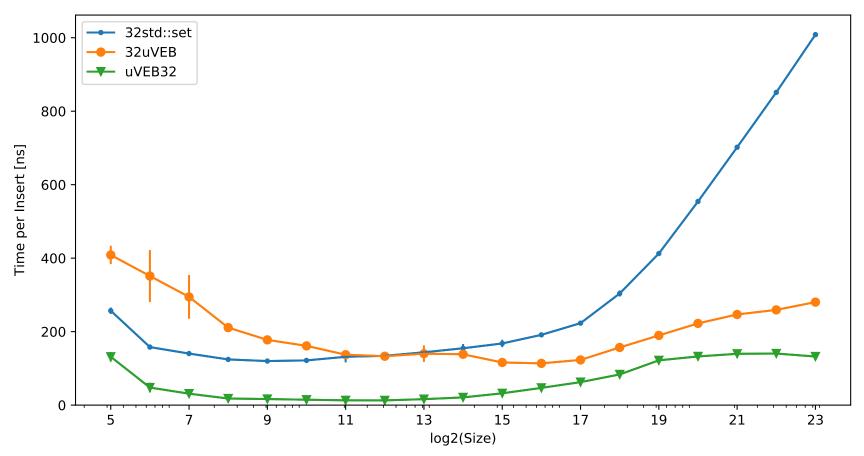
Time to Insert 'Size' Elements (cluster distribution)



Time to Insert 'Size' Elements (Zoomed in; cluster distribution)

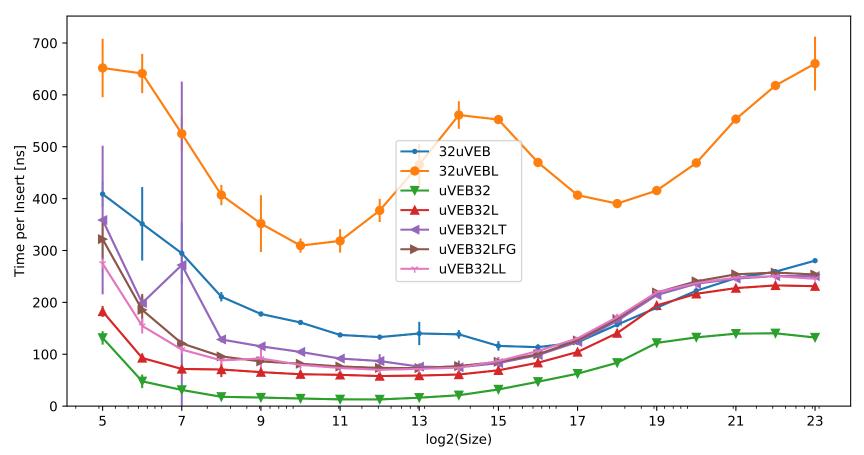


Time to Insert 'Size' Elements (normal distribution)

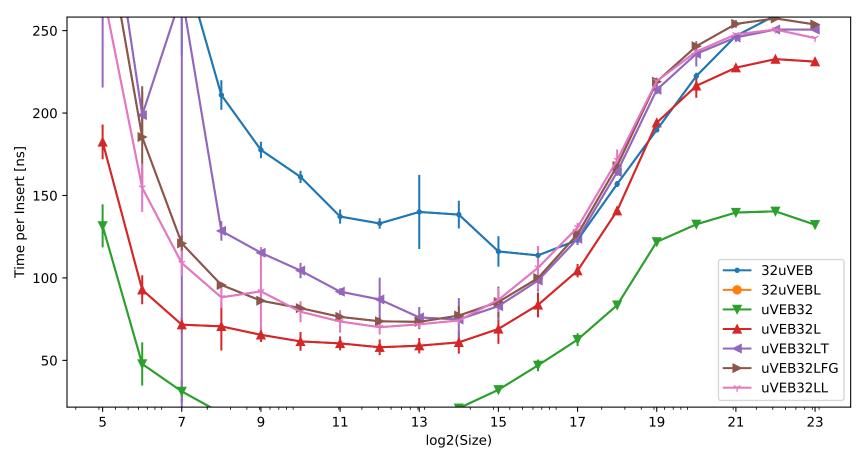


Time to Insert 'Size' Elements (Zoomed in; normal distribution) 250 -200 Time per Insert [ns] 150 -100 32std::set 50 32uVEB **▼** uVEB32 23 5 11 13 15 17 19 21 log2(Size)

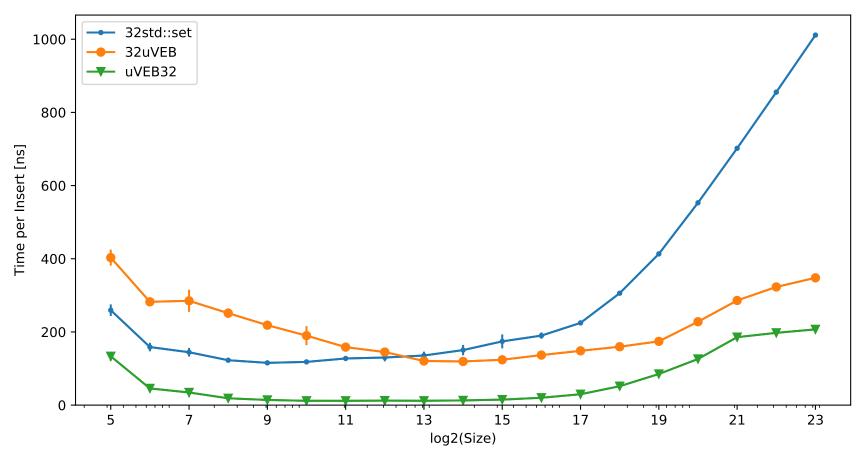
Time to Insert 'Size' Elements (normal distribution)



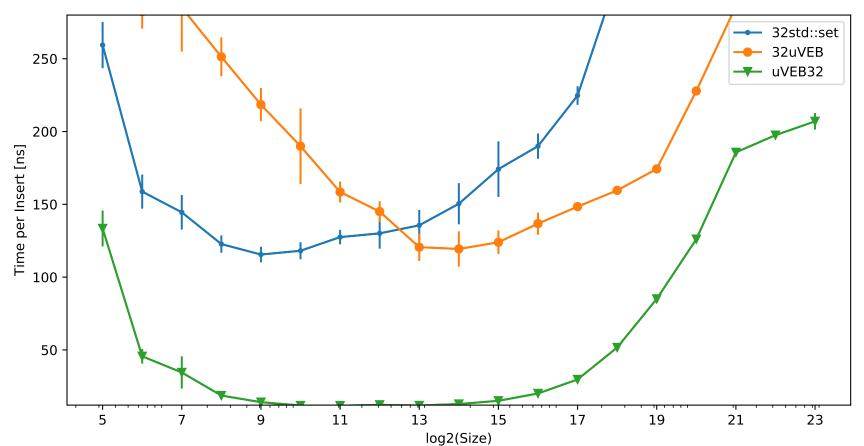
Time to Insert 'Size' Elements (Zoomed in; normal distribution)



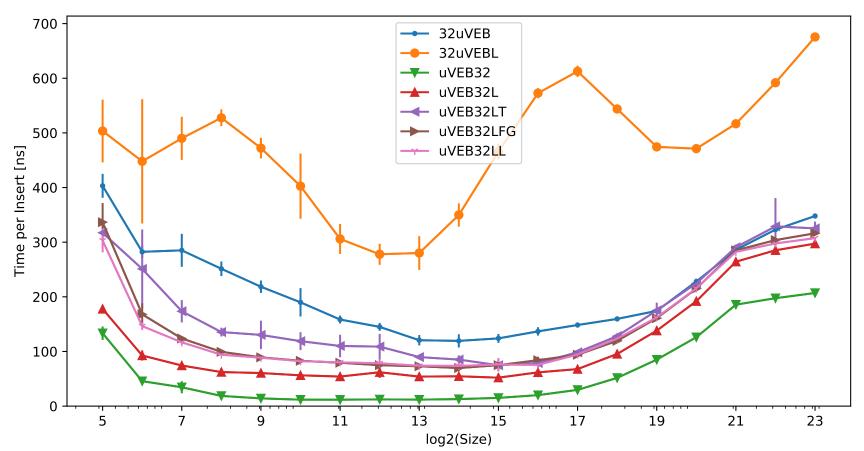
Time to Insert 'Size' Elements (incProb distribution)



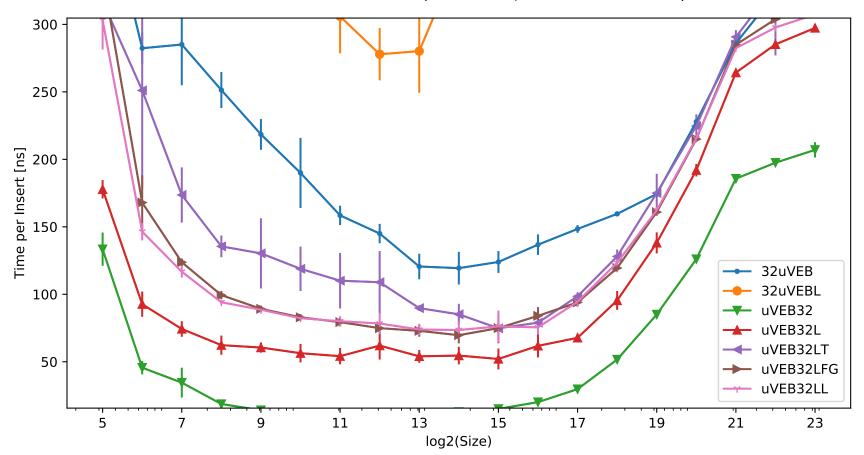
Time to Insert 'Size' Elements (Zoomed in; incProb distribution)



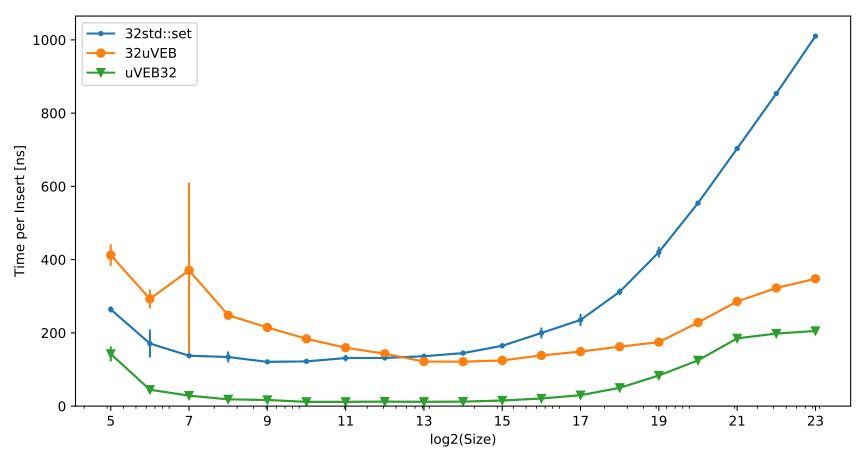
Time to Insert 'Size' Elements (incProb distribution)



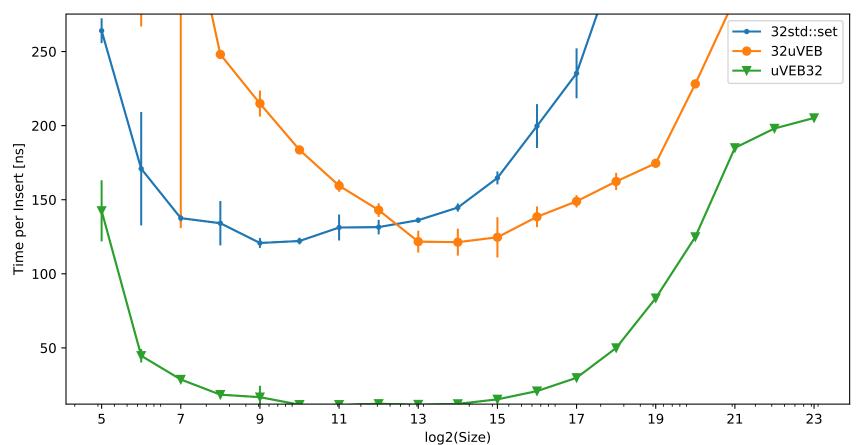
Time to Insert 'Size' Elements (Zoomed in; incProb distribution)



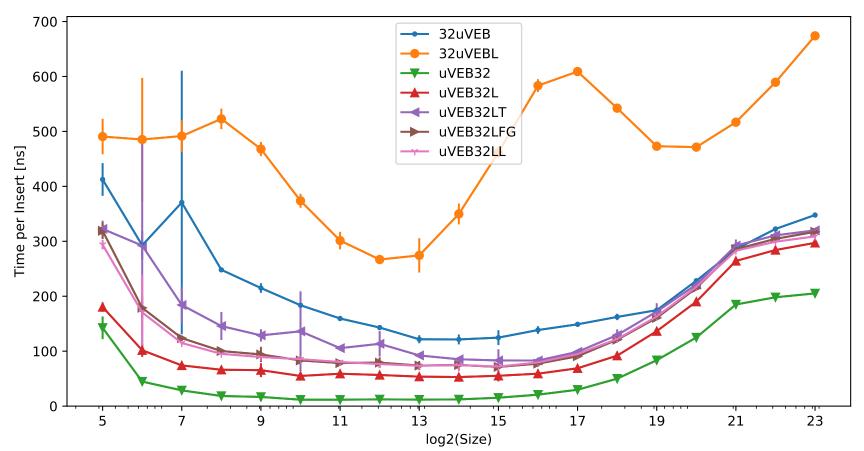
Time to Insert 'Size' Elements (decProb distribution)



Time to Insert 'Size' Elements (Zoomed in; decProb distribution)



Time to Insert 'Size' Elements (decProb distribution)



Time to Insert 'Size' Elements (Zoomed in; decProb distribution)

