MioHash: An Memory-Efficient and I/O-Optimized Hashing Index on Hybrid PMem-DARM Memories

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Experiment 1						2.
Uniform Insert Throughput (Mops/ DASH	1. 080309792	2 2. 067467027	4 3. 54139375	8 5. 265225163	16 5. 601201605	24 5. 560437909
CCEH Level	0. 6927915 0. 517253332	1. 33181725 0. 566679181	2. 43652025 0. 706762602	4. 08677525 0. 864436573	5. 44514925 1. 014259263	5. 66926275 1. 056101841
Clevel Plush	0. 14161 0. 438103	0. 272089 0. 83422125	0. 504664 1. 6048145	0. 903298 2. 4292295	1. 399661 4. 294831	1. 716833 5. 97354325
Viper MioHash	1. 916868 2. 523302	3. 51213 4. 3044485	6. 477029 7. 770145	9. 194919 11. 19255225	12. 335607 16. 8236075	13. 04946 19. 88255167
Uniform Positive Search Throughp DASH	3. 333146	2 5. 646048	9. 280315	8 13. 539036	16 17. 525591	24 18. 408078
CCEH Level	2. 145908 1. 050534	4. 352373 1. 738362	9. 02399 3. 092409	15. 176016 4. 906786	19. 615334 6. 404106	20. 702171 7. 143704
Clevel Plush	0. 990972 0. 66246525	1. 81147 1. 2985415	3. 56415 2. 479261	6. 773919 3. 4266955	12. 12053 6. 18491075	16. 35713 9. 49267075
Viper MioHash	2. 096916 3. 134054	4. 012847 6. 22590625	8. 116097 12. 229869	12. 593406 14. 0550155	25. 527122 26. 7947485	37. 48872 38. 912764
Uniform Negative Search Throughp DASH	ut Thread=1 3.33464	2 5. 642306	4 9. 312879	8 13. 537437	16 17. 621648	24 18. 535994
CCEH Level	0. 715493 1. 051344	1. 414038 1. 735256	2. 708599 3. 113679	4. 740526 4. 901411	7. 459968 6. 449082	7. 946879 7. 051144
Clevel Plush	0. 811196 0. 92998575	1. 542197 1. 8471755	3. 005827 3. 605941	5. 733635 4. 82533025	10. 279313 9. 25337825	13. 616402 13. 745963
Viper MioHash	4. 435612 3. 62707425	8. 763846 7. 2290625	17. 417176 14. 08542675	21. 866726 19. 298319	42. 342509 34. 82591625	61. 9225 47. 20718225
Uniform Delete Throughput (Mops/DASH	s) Thread=1 1.898662	2 3. 598952	4 5. 935547	8 8. 094248	16 7. 910209	24 8. 000926
CCEH Level	1. 229131 0. 937153	2. 490614 1. 531833	4. 70361 2. 772285	7. 886595 4. 398251	8. 918177 5. 593817	10. 328562 5. 666127
Clevel Plush	0. 299471 0. 39326175	0. 559957 0. 77641925	1. 03137 1. 513762	1. 956335 2. 283574725	3. 418501 4. 14544275	4. 645158 6. 05539775
Viper MioHash	1. 85327 1. 690429	3. 519253 3. 293858125	6. 853577 6. 254388	10. 342089 8. 86109575	15. 766681 15. 02798225	17. 652877 19. 60113467
Zipfian Insert Throughput (Mops/DASH		2 2. 036119	4 3. 449268	8 5. 292045	16 5. 805819	24 5. 4589
CCEH Level	0. 589479 0. 474362	1. 18045 0. 757504	2. 285433 0. 973837	4. 021246 1. 374645	5. 582147 1. 461386	5. 985942 1. 382936
Clevel Plush	0. 137404 0. 372362	0. 261074 0. 757704	0. 491295 1. 534042	0. 887227 2. 734872	1. 380396 3. 891831	1. 717355 4. 608914
Viper MioHash	1. 918128 2. 516055	3. 488715 4. 243159	6. 433229 7. 60807025	9. 637801 11. 10811225	12. 175177 17. 041096	12. 902454 20. 1762295
Zipfian Positive Search Throughp DASH		2 5. 586168	4 9. 299656	8 13. 530452	16 17. 573843	24 18. 276381
CCEH Level	2. 046681 1. 032295	5. 566166 4. 19717 1. 740166	9. 299030 8. 781548 3. 093239	15. 50462 15. 505613 4. 901955	11. 373643 19. 346186 6. 396258	20. 01743 7. 103214
Clevel Plush	0. 997262 0. 585573	1. 877826 1. 188494	3. 626865 2. 514597	4. 501533 6. 997729 4. 270248	13. 112314 7. 509008	18. 246416 9. 457597
Viper MioHash	2. 102515 3. 00255875	3. 944174 5. 9849455	8. 176301 11. 780668	12. 950664 13. 1106245	24. 569926 23. 660596	36. 804304 34. 29530725
Zipfian Negative Search Throughp DASH		2 5. 648635	4 9. 31015	8 13. 563526	16 17. 526157	24 18, 38305
CCEH Level	0. 713374 1. 05248	1. 405746 1. 740997	9. 51015 2. 7034 3. 098963	4. 67963 4. 889724	7. 465958 6. 410645	7. 823678 7. 096786
Clevel Plush	0. 812245 0. 796609	1. 534612 1. 654961	2. 948581 3. 517741	5. 728126 6. 129173	10. 174163 10. 566435	12. 411457 13. 902013
Viper MioHash	4. 47395 3. 64170925	8. 295752 7. 18883175	17. 129539 14. 346825	22. 372177 19. 3584845	42. 177021 34. 70292175	60. 593687 47. 010148
Zipfian Delete Throughput (Mops/ DASH	s) Thread=1	2	4	8	16	24
CCEH Level	1. 607616 1. 224438 0. 809582	3. 240823 2. 468547 1. 383746	5. 494735 4. 720928 2. 516669	7. 556856 7. 922391 4. 048322	7. 241076 9. 215614 5. 082029	7. 64346 10. 335044 5. 198309
Clevel	0. 295755	0. 55504	1. 008447	2. 030666	3. 581514	4. 975246
Plush Viper	0. 337059 1. 863955	0. 711316 3. 492423	1. 453221 6. 891585	2. 597762 10. 442913	3. 946841 15. 672394	4. 739526 17. 574828
Plush	0. 337059	0. 711316	1. 453221	2. 597762	3. 946841	4. 739526
Plush Viper	0.337059 1.863955 1.66992575	0. 711316 3. 492423	1. 453221 6. 891585	2. 597762 10. 442913	3. 946841 15. 672394	4. 739526 17. 574828
Plush Viper MioHash Experiment 2	0.337059 1.863955 1.66992575	0. 711316 3. 492423 3. 2749535	1. 453221 6. 891585 6. 235328	2, 597762 10, 442913 8, 60868725	3. 946841 15. 672394 14. 852254	4. 739526 17. 574828 19. 423247 24 11. 432127
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/ CCEH	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364	1. 453221 6. 891585 6. 235328 4 6. 282357	2.597762 10.442913 8.60868725 8 9.603273	3. 946841 15. 672394 14. 852254 16 10. 940991	4. 739526 17. 574828 19. 423247
Plush Viper MioHash Experiment 2 Uniform YCSB-A Throughput (Mops/ CCEH Clevel Plush	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/ CCEH Clevel Plush Viper Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776
Plush Viper MioHash Experiment 2 Uniform YCSB-A Throughput (Mops/CCFH Clevel Plush Viper MioHash Uniform YCSB-B Throughput (Mops/CCFH	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423205 1. 780937 1. 9295995 s) Thread=1 1. 553614	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 5477787 0. 62971 1. 778103 2. 622453	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948	2.597762 10.442913 8.60868725 8 9.603273 1.53451 2.619554 5.644092 9.924119 8 10.17395 3.493462 3.13946	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Viper Mioflash Viper Mioflash Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043
Plush Viper MioHash Experiment 2 Uniform YCSB-A Throughput (Mops/CCFH Clevel Plush Viper MioHash Uniform YCSB-B Throughput (Mops/CCFH Clevel Plush Viper MioHash Uniform YCSB-D Throughput (Mops/CCFH Level Plush Viper MioHash Uniform YCSB-D Throughput (Mops/CFH LEVEL) LEVEL LINGSTAN	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 2. 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969	1. 453221 6. 891585 6. 235328 4 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523	2.597762 10.442913 8.60868725 8 9.603273 1.53451 2.619554 5.644092 9.924119 8 10.17395 3.493462 3.13946 5.592824 12.136581 8 10.655705 9.841329 3.644325	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24
Plush Viper Miodiash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Miodiash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Miodiash Uniform YCSB-D Throughput (Mops/DASH CCEH	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 79295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746	2.597762 10.442913 8.60868725 8 9.603273 1.53451 2.619554 5.644092 9.924119 8 10.17395 3.493462 3.13946 5.592824 12.136581 8 10.655705 9.841329	3. 946841 15. 672394 14. 852254 16. 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16. 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16. 9. 969395 11. 607526	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Level Level Level Clevel Plush	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034886 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 2662	2.597762 10.442913 8.60868725 8 9.603273 1.53451 2.619554 5.644092 9.924119 8 10.17395 3.493462 3.13946 5.592824 12.136581 8 10.655705 9.841329 3.644325 4.137716 4.880244	3. 946841 15. 672394 14. 852254 16. 852254 17. 852254 18. 852254 19. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16. 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16. 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369
Plush Viper Miodiash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Miodiash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Miodiash Uniform YCSB-D Throughput (Mops/CCEH Level CLEW Level CCEH Level Clevel Plush Viper Miodiash Uniform YCSB-D Throughput (Mops/DASH) CCEH Level Clevel Plush Viper Miodiash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805	3. 946841 15. 672394 14. 852254 16. 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16. 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16. 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 25. 97748067 36. 5088485
Plush Viper MioHash Experiment 2 Uniform YCSB-A Throughput (Mops/CCFH Clevel Plush Viper MioHash Uniform YCSB-B Throughput (Mops/CCFH CLevel Plush Viper MioHash Uniform YCSB-D Throughput (Mops/CCFH Level Plush Viper MioHash Uniform YCSB-D Throughput (Mops/DASH CCFH Level Plush Viper MioHash Uniform YCSB-D Throughput (Mops/DASH CCFH Level Plush Viper MioHash Uniform YCSB-F Throughput (Mops/DASH Uniform YCSB-F Throughput (Mops/DASH	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 1995995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631	2. 597762 10. 442913 8. 60868725 8. 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8. 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8. 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8. 7. 28332 4. 836576 3. 537363 1. 651285	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 24023 25. 086227 24. 746811 16	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 98809 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCFH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCFH CCFH CLevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/CCFH CCFH CLevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCFH Level Plush Viper Mioflash Viper Miofla	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 622453 2. 622453 2. 622453 3. Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034856 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028	2.597762 10.442913 8.60868725 8 9.603273 1.53451 2.619554 5.644092 9.924119 8 10.17395 3.493462 3.13946 5.592824 12.136581 8 10.655705 9.841329 3.644325 4.137716 4.880244 21.772137 20.5088805 8 7.28332 4.836576 3.537363	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level CCEH Level Level Level CCEH Level CIEvel Plush	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034856 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Viper Mioflash Viper Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 6.25560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 55566535	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 145923 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 19295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556635	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925	2. 597762 2. 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCFH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCFH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Viper Miof	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 5566558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034856 7. 358267 4 7. 806189 6. 070746 1. 977221 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333	2.597762 10.442913 8.60868725 8 9.603273 1.53451 2.619554 5.644092 9.924119 8 10.17395 3.493462 3.13946 5.592824 12.136581 8 10.655705 9.841329 3.644325 4.137716 4.880244 21.772137 20.5088805 8 7.28322 4.836576 3.537363 1.651285 2.413629 10.98181 9.6083835	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 5883204	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034856 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 263503333 1. 154294	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 3. 1693333 3. 2. 629362	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Level Level Level Level Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Viper Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 6.25560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 4. 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 2635033333 1. 154294 0. 327 0. 348968	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 508805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415088333 3. 3. 4150883333 2. 629362 0. 5745 0. 6487288	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Viper Mioflash Viper Mioflash CEEH Level Clevel Plush Viper Mioflash CEEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH Tail Latency (µs)	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 19295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 6.25560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 366246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938 Positive Search 0. 9241666667	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 145923 2. 145923 2. 145923 2. 14593 6. 804652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176881667 1. 077073333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 448608 1. 959922 1. 8972135	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 83204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 098333333 1. 446333333 1. 446333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 245923 2. 245923 2. 2462 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176881667 1. 077073333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level CCEH Level CLEVel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level CLEVel Level Level CLEVel Plush	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 0. 44361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 83166667 2. 243333333 3. 057166667 9. 195833333 3. 057166667 9. 195833333 3. 057166667 9. 195833333 3. 057166667 9. 195833333 3. 057166667 9. 195833333 3. 057166667 9. 195833333 3. 3057166667 9. 195833333 3. 3057166667 9. 195833333 3. 348. 0072	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 98648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 908333333 1. 446333333	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667 1. 527166667 1. 710333333 1. 776166667 1. 527166667 1. 710333333 1. 776166667 1. 710333333 1. 776166667 1. 527166667 1. 710333333 1. 776166667 1. 710333333 1. 776166667 1. 710333333 1. 776166667 1. 710333333 1. 776166667 1. 710333333 1. 776166667 1. 710333333 1. 776166667 1. 710333333 2. 7224	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 1. 322833333 1. 833166667 4. 14666667 261. 3952	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/ CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/ DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/ DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/ DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 243333333 3. 057166667 2. 1. 833166667 2. 243333333 3. 057166667 2. 1. 835166667 2. 1. 835166667 2. 1. 835166667 2. 243333333 3. 0. 57166667 2. 1. 835166667 2. 1. 835166667 2. 1. 835166667 2. 1. 835166667 2. 1. 95833333 3. 0. 571666667 2. 1. 9158333333 3. 0. 571666667 9. 1958333333	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 43347667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556635 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 098333333 1. 446333333 1. 446333333 1. 446333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 446333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 4463333333 1. 446333333	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 4. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 145923 2. 145923 2. 145923 2. 14593 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667 1. 571666667 1. 571666667 1. 571666667 1. 710333333	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 1. 322833333 1. 83166667 4. 414666667	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/ CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/ DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/ DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/ DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash CIevel Plush Viper Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 799379 1. 7583614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 6.25560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 448608 1. 959922 1. 8972135 Insert 1. 044361667 1. 524988333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 243333333 3. 0.57166667 9. 195833333 248. 0072 41. 24025	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. \$83204 0. 328 0. \$871938 Positive Search 0. 924166667 1. 098333333 1. 446333333 2. 0745 3. 2966 2. 37875	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 145923 2. 145923 2. 145923 2. 14593 6. 804652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176881667 1. 077073333 1. 263303333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667 1. 770166667 1. 7701633333 1. 752166667 1. 7710333333 1. 751166667 1. 7710333333 1. 751166667 1. 7710333333 1. 751166667 1. 710333333 1. 752166667 1. 710333333 1. 7224 2. 37925	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 1. 322833333 1. 83136667 4. 414666667 261. 3952 4. 132	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DES) DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Experiment 5 Generality Throughput (Mops/s)	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 19295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 9. 19583333 248. 0072 41. 24025 6. 6324	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 883204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 098333333 1. 446333333 2. 0745 3. 3296 2. 37875 1. 2416	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667 1. 7710333333 1. 776166667 1. 710333333 1. 752166667 1. 710333333 1. 752166667 1. 710333333 2. 7224 2. 37925 1. 0794	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 1. 322833333 1. 831366667 4. 414666667 261. 3952 4. 132 1. 1452	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743 15. 8329955	4, 739526 17, 574828 19, 423247 24 11, 432127 3, 576111 7, 476417 4, 956198 25, 373776 24 13, 752623 5, 079593 9, 295119 5, 06256 33, 741323 24 9, 275043 12, 588382 5, 236053 9, 98809 9, 361369 25, 97748067 36, 5088485 24 7, 08651 6, 397954 4, 501145 3, 920888 6, 940909 10, 901977 20, 028024
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Clevel Clevel Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Cleve	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 9. 195833333 248. 0072 41. 24025 6. 6324 Thread=1 1. 080309792 0. 6927915	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 09833333 1. 446333333 1. 446333333 2. 0745 3. 3296 2. 37875 1. 2416	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 88452 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667 1. 77073333 1. 27244 2. 37925 1. 0794	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 508805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 4. 414666667 2. 1322833333 1. 833166667 4. 414666667 2. 1322833333 1. 833166667 4. 414666667 2. 1322833333 1. 833166667 4. 414666667 2. 1322833333 1. 833166667 4. 414666667 2. 13952 4. 132 1. 452	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 3553183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743 15. 8329955	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 98809 9. 361369 25. 97748067 36. 5088485 24 7. 08651 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977 20. 028024
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-T Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Experiment 5 Generality Throughput (Mops/s) DASH CCEH Level Clevel Clevel	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 625560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 7. 030871667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 24333333 3. 0.57166667 2. 1835166667 2. 1835166667 2. 1835166667 2. 1835166667 3. 1856667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 1856667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 18566667 3. 1856667 3. 18566667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1856667 3. 1	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 98648 4. 22807 3. 55566535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 098533333 1. 446333333 1. 446333333 1. 446333333 1. 446333333 1. 4745 2. 2745 3. 3296 2. 37875 1. 2416	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034886 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 2662 14. 772049 10. 502546 4 4. 811631 2. 745591 2. 192028 0. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 263503333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 81483333 1. 776166667 1. 571666667 1. 571666667 1. 571666667 1. 710333333 1. 776166667 1. 710333333 2. 7224 2. 37925 1. 0794	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 1. 32283333 1. 831666667 4. 414666667 261. 3952 4. 132 1. 452	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2416 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743 15. 8329955	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 079593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 320888 6. 940909 10. 901977 20. 028024
Plush Viper Mioflash Experiment 2 Uniform YCSB-A Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-B Throughput (Mops/CCEH Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-D Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Uniform YCSB-F Throughput (Mops/DASH CCEH Level Clevel Plush Viper Mioflash Experiment 4 Average Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Tail Latency (µs) DASH CCEH Level Clevel Plush Viper Mioflash Experiment 5 Generality Throughput (Mops/s) DASH CCEH Level Clevel Plush Viper Mioflash	0. 337059 1. 863955 1. 66992575 s) Thread=1 1. 941595 0. 215008 0. 423265 1. 780937 1. 9295995 s) Thread=1 1. 553614 0. 547787 0. 62971 1. 778103 2. 622453 s) Thread=1 2. 547534 1. 519133 0. 872114 0. 575072 1. 16033 3. 6.25560333 5. 043314 s) Thread=1 1. 361149 0. 732373 0. 694532 0. 237316 0. 446808 1. 959922 1. 8972135 Insert 1. 044361667 1. 524968333 1. 570881667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 420722 0. 62575 0. 442224 Insert 1. 833166667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 420722 0. 62575 0. 442224 Insert 1. 835166667 2. 420722 0. 62675 0. 442224 Insert 1. 83000792 0. 6927915 0. 517253332	0. 711316 3. 492423 3. 2749535 2 3. 613314 0. 419314 0. 419314 0. 95656 3. 28364 3. 779359 2 3. 214115 1. 032996 1. 225157 3. 250971 5. 198723 2 4. 556558 3. 087774 1. 425969 1. 102422 1. 20241 7. 433447667 5. 3270765 2 2. 770951 1. 389933 1. 239523 0. 453495 0. 89648 4. 22807 3. 5556535 Positive Search 0. 373066833 0. 386246 0. 5450395 1. 033883333 1. 583204 0. 328 0. 5871938 Positive Search 0. 924166667 1. 098333333 1. 4463333	1. 453221 6. 891585 6. 235328 4 6. 282357 0. 809303 1. 878408 5. 034586 7. 358267 4 6. 395054 1. 977721 2. 422948 4. 995168 10. 266235 4 7. 806189 6. 070746 1. 972523 2. 145923 2. 145923 2. 145923 2. 145923 2. 145923 2. 14593 6. 884652 1. 7672565 8. 227409 6. 6841395 Negative Search 0. 5000925 1. 176861667 1. 077073333 1. 263503333 1. 154294 0. 327 0. 348968 Negative Search 0. 814833333 1. 776166667 1. 776166667 1. 776166667 1. 771033333 2. 7224 2. 37925 1. 0794	2. 597762 10. 442913 8. 60868725 8 9. 603273 1. 53451 2. 619554 5. 644092 9. 924119 8 10. 17395 3. 493462 3. 13946 5. 592824 12. 136581 8 10. 655705 9. 841329 3. 644325 4. 137716 4. 880244 21. 772137 20. 5088805 8 7. 28332 4. 836576 3. 537363 1. 651285 2. 413629 10. 98181 9. 6083835 Delete 0. 718684667 0. 728425333 1. 039588333 3. 415083333 2. 629362 0. 5745 0. 6487288 Delete 1. 379166667 1. 322833333 1. 83166667 4. 414666667 261. 3952 4. 132 1. 452	3. 946841 15. 672394 14. 852254 16 10. 940991 2. 702261 5. 083122 5. 529003 18. 3813365 16 12. 110555 4. 435138 6. 263437 5. 477951 23. 401413 16 9. 969395 11. 607526 4. 716346 7. 2246 6. 240233 25. 086287 24. 746811 16 7. 353183 6. 132695 4. 236918 2. 836115 4. 704921 11. 3979743 15. 8329955	4. 739526 17. 574828 19. 423247 24 11. 432127 3. 576111 7. 476417 4. 956198 25. 373776 24 13. 752623 5. 07593 9. 295119 5. 06256 33. 741323 24 9. 275043 12. 588382 5. 236053 9. 988099 9. 361369 25. 97748067 36. 5088485 24 7. 086551 6. 397954 4. 501145 3. 920888 6. 940909 10. 901977 20. 028024

torage Traffic	Write Traffic (GB)	Read Traffic (GB)				
ASH CEH	35. 11431432 21. 9854815	33. 44651294 128. 2352502				
eve1	27. 12402272	74. 41524744				
evel ush	41. 02325344 12. 37470412	102. 6981823 7. 149165392				
per oHash	7. 8515625 6. 346679688	0. 803710938 3. 326171875				
periment 7						
ace (GB) ush-DRAM	Number of inserted items=1 0.249999746	OM 20M 0. 262560851	30M 0. 250000104	40M 0. 249999771	50M 0.249999632	60M 0.250000264
ush-PM per-DRAM	0. 249999839 0. 396240234	4. 249999495 0. 794219971	4. 250000493 1. 047981263	4. 249998931 1. 587265016	4. 25000808 2. 0145607	4. 250006269 2. 093997956
oer-PM	0. 150764466	0. 301551819	0. 452316284	0.603103638	0.753890991	0.904655457
oHash-DRAM oHash-PM	0. 066098828 0. 291180664	0. 132199512 0. 575436523	0. 183785938 0. 802583984	0. 264400391 1. 155664063	0. 264400391 1. 153710938	0. 367154297 1. 586894531
ce(GB) ish-DRAM	Number of inserted items=70 0.250000051	OM 80M 0.250000017	90M 0. 249999711	100M 0. 250000352	110M 0. 249970499	120M 0.249999636
sh-PM	4. 250008685	4. 250005096	4. 249994726	4. 250002624	4. 250003643	4. 25000454
oer-DRAM oer-PM	2. 375648499 1. 055442811	3. 173919678 1. 206207275	3. 845325471 1. 356994629	4. 030708313 1. 507781982	4. 082023621 1. 658546448	4. 193206787 1. 809333802
Hash-DRAM Hash-PM	0. 528804688 2. 282929688	0. 528803711 2. 296601563	0. 528803711 2. 296601563	0. 529323242 2. 298916016	0. 533805664 2. 333466797	0. 739245117 3. 203115234
ce (GB)	Number of inserted items=1	30M 140M	150M	160M	170M	180M
sh-DRAM sh-PM	0. 250000085 4. 249996225	0. 250000074 4. 250001735	0. 24999896 4. 249998959	0. 249999777 4. 250003048	0. 249999799 4. 249998202	0. 249999666 4. 250003074
oer-DRAM oer-PM	4. 428947449 1. 960116893	4. 85838318 2. 11088562	5. 520629883 2. 261672974	6. 344173432 2. 412437439	7. 139011384 2. 563224793	7. 690620423 2. 714005627
oHash-DRAM oHash-PM	0. 739245117 3. 203115234	1. 057611328 4. 553066406	1. 057610352 4. 601894531	1. 057610352 4. 595058594	1. 057609375 4. 595058594	1. 057608398 4. 597988281
ce (GB)	Number of inserted items=1	90M 200M	210M	220M	230M	240M
ısh-DRAM ısh-PM	0. 250000195 4. 250001257	0. 250000172 4. 250002091	0. 24999976 68. 2499742	0. 250000245 68. 24978246	0. 249999726 68. 24991443	0. 250000213 68. 24981132
per-DRAM per-PM	7. 961681366 2. 864776611	8. 058933259 3. 015563965	8. 105636598 3. 16632843	8. 168132782 3. 317115784	8. 254638672 3. 467903137	8. 382823944 3. 618667603
oHash-DRAM	1. 057608398	1. 058648438	1. 059292969	1.068192383	1. 145938477	1.476976563
oHash-PM ace (GB)	4.593105469 Number of inserted items=2	4. 591884766 50M 260M	4. 595302734 270M	4. 645605469 280M	5. 025908203 290M	6.390634766 300M
ısh-DRAM ısh-PM	0. 249999631 68. 25001036	0. 249999887 68. 25005041	0. 249999807 68. 25025806	0. 249999916 68. 24994929	0. 250000147 68. 250072	0. 250000207 68. 25005004
per-DRAM	8. 573005677	8. 845458984	9. 217933655	9. 708759309	10. 31484985	11. 03757095
oer-PM oHash-DRAM	3. 769481659 1. 974335938	3. 920246124 2. 112382813	4. 071033478 2. 115224609	4. 221820831 2. 115224609	4. 372585297 2. 115224609	4. 52337265 2. 115224609
oHash-PM	8. 364619141	8. 966396484	9. 056240234	9. 113857422	9. 167568359	9. 184169922
porimont 9	_					
	(Mops/s) Value size=16B	32B	64B	128B	256B	
SH evel	4. 761206 1. 75256215	4. 370462 1. 7737998	4. 012544 1. 7562037	3. 648672 1. 771669775	2. 531003 1. 741172375	
ish per	4. 0494265 12. 55229975	3. 61212125 12. 30331375	3. 46075975 9. 808057	3. 36415675 7. 12537625	3. 05871875 4. 50371775	
oHash	14. 092812	12. 9155135	10. 503505	7. 34719125	4. 3792125	
eriment 9 d Factor (%)	Number of inserted items=1	DM 20M	30M	40M	50M	60M
SH SH	66. 0554 59. 5719	66. 0554 59. 5737	53. 2927 47. 6062	66. 0554 59. 5728	82. 4597 69. 9493	53. 3501 47. 5765
re1	90. 8261	90. 8261	68. 1196	90. 8261	56. 7663	68. 1196
evel ish	79. 4729 59. 6046	34. 0598 7. 01231	59. 6046 10. 5185	79. 4729 14. 0246	49. 6705 17. 308	59. 6046 21. 0369
oer oHash	37. 7066 56. 0727	37. 668 56. 0856	42. 8273 61. 5157	37. 7237 56. 092	37. 1483 70. 1151	42. 9255 61. 5264
nd Factor (%)	Number of inserted items=7	OM 8OM	90M	100M	110M	120M
SH EH	57. 7984 52. 1537	66. 0554 59. 5742	74. 3123 66. 6419	82. 434 70. 1075	79. 1072 59. 5115	53. 3446 47. 6101
vel evel	79. 4729 69. 5388	90. 8261 34. 0598	51. 0897 44. 7035	56. 7663 49. 6705	62. 443 54. 6376	68. 1196 59. 6046
ush	24. 5431	28. 0492	31.5554	35. 0616	38. 5677	42.0739
oer oHash	43. 2452 49. 0834	37. 7426 56. 953	35. 0398 63. 1072	37. 1422 70. 1191	40. 3423 76. 5192	42. 8817 61. 3701
ad Factor (%)	Number of inserted items=1	30M 140M	150M	160M	170M	180M
SH EH	53. 6829 48. 4817	57. 7984 52. 1525	61.9269 55.8725	66. 0554 59. 5756	70. 1838 63. 2159	74. 3117 66. 6449
vel evel	73. 7962 64. 5717	79. 4729 69. 5388	85. 1495 74. 5058	90. 8261 34. 0598	48. 2514 42. 22	51. 0897 44. 7035
ush	45. 58	49. 0862	52. 5923	56. 0985	59. 6046	63. 1108
per oHash	43. 9789 45. 6442	43. 1678 49. 0848	40. 6975 52. 5908	37. 7694 56. 0969	35. 6577 59. 6029	35. 0449 63. 109
d Factor (%)	Number of inserted items=1	90M 200M	210M	220M	230M	240M
SH SH	78. 4342 69. 3263	82. 4434 70. 0462	84. 9072 66. 8545	79. 1159 59. 503	63. 3772 51. 8082	53. 3364 47. 5918
vel evel	53. 928 47. 187	56. 7663 49. 6705	59. 6046 52. 1541	62. 443 54. 6376	65. 2813 57. 1211	68. 1196 59. 6046
ısh	66. 617	70. 1231	4. 58497	4. 8033	5. 02164	5. 23997
oer oHash	35. 7313 66. 615	37. 1574 70. 1168	38. 7904 73. 6002	40. 3647 76. 5144	41. 7568 74. 8935	42. 9049 61. 2596
periment 10	No. 1 and Co.	ON SON	201	4011	FOW	COM
overy Time (s) read-1	Number of inserted items=100.560193	1. 089347	30M 1.614449	40M 2. 549051	50M 2. 559382	60M 3. 447411
ead-2 ead-4	0. 331689 0. 235937	0. 644957 0. 416497	0. 923353 0. 614051	1. 445274 0. 916964	1. 507391 0. 923644	1. 922619 1. 172099
ead-8	0. 159552	0. 301159	0. 420544	0. 64551	0. 640922	0.864405
ead–16 ead–24	0. 154403 0. 122917	0. 233623 0. 216846	0. 332565 0. 310919	0. 494526 0. 471374	0. 502285 0. 4684	0. 743899 0. 642067
overy Time (s)	Number of inserted items=7	OM 8OM	90M	100M		
read-1 read-2	4. 971479 2. 75402	5. 305649 2. 958968	5. 405138 2. 966657	5. 512479 3. 025063		
cead-4 cead-8	1. 704711 1. 248624	1. 787486 1. 263118	1. 785323 1. 254723	1. 811582 1. 289331		
ead-16 ead-24	0. 968667 0. 881894	1. 017342 0. 923817	1. 034704 0. 944532	1. 021178 0. 945199		
	V. 0010JT	0. JZ0011	U. JTTUJA	V. J1J177		
eriment 11						
lecting Table Throughpu f CT=4	ut (Mops/:Thread=1 2.533653	2 4. 293149	4 7. 137802	8 8. 904839	16 10. 007422	24 8. 26563
f CT=8	2. 545541	4. 268679	7. 45585	10. 502003	13. 94874	14. 238366
f CT=16 f CT=64	2. 526699 2. 529887	4. 32143 4. 301137	7. 621123 7. 665617	10. 50557 10. 878732	15. 644961 16. 60617	17. 940957 19. 671948
f CT=256 f CT=1024	2. 536601 2. 551242	4. 338474 4. 373844	7. 88022 7. 852751	11. 090656 11. 811766	16. 991854 17. 486818	20. 213206 20. 370545
2 01 1021	2. 001272	1. 0100TI	1.002101	11. 011/00	11. 100010	20. 0100±0
periment 12						
iable D-Bucket Size Throughet=32B	roughput Insert 1.85281225	Positive Search 2.94434275				
oucket=64B	2. 16642825	2. 9541595				
ucket=128B	2. 42965825 2. 54010175	2. 9828735 2. 980101				
	2. 54010175 2. 50579775	3. 006221				
ucket=256B ucket=512B						
ucket=256B ucket=512B iable P-Bucket Size Thr	roughput Insert	Positive Search 3,08697575				
ucket=256B ucket=512B <mark>iable P-Bucket Size Thr</mark> ucket=1KB ucket=2KB	roughput Insert 2. 23251575 2. 410912	3. 08697575 3. 06805275				
oucket=256B oucket=512B riable P-Bucket Size Thr oucket=1KB oucket=2KB oucket=4KB oucket=8KB	roughput Insert 2.23251575	3. 08697575				