Libpll sequential benchmarks

January 10, 2017

• node : node index (post order traversal)

ullet depth : node depth from the virtual root

• lsize : recursive number of children under the left child node

• rsize : recursive number of children under the right child node

• psize: number of unique (not repeating) sites on the current node

• lsize: number of unique (not repeating) sites on the left child node

• rsize: number of unique (not repeating) sites on the right child node

ullet repeats: runtime for 500 update partials on the node

 \bullet TCLV opt : runtime for 500 update partials on the node with left and right TCLV

1 dataset 404 play

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node0	24	5	6	17ms	$17 \mathrm{ms}$	12ms	12ms
node1	21	5	7	16ms	16ms	12ms	12ms
node2	28	5	21	18ms	20ms	18ms	20ms
node3	65	28	8	$32 \mathrm{ms}$	$35 \mathrm{ms}$	22ms	22ms
node4	98	65	7	45ms	$47 \mathrm{ms}$	$36 \mathrm{ms}$	47ms
node5	17	6	5	14ms	14ms	12ms	12ms
node6	18	5	17	14ms	16ms	16ms	16ms
node7	23	5	18	16ms	18ms	17ms	18ms
node8	13	5	5	12ms	$13 \mathrm{ms}$	12ms	11ms
node9	11	5	5	12ms	12ms	12ms	11ms
node10	20	5	11	$15 \mathrm{ms}$	17ms	14ms	$17 \mathrm{ms}$
node11	38	13	20	22ms	22ms	21ms	22ms
node12	51	5	38	$27 \mathrm{ms}$	29ms	$25 \mathrm{ms}$	29ms
node13	83	23	51	$40 \mathrm{ms}$	48ms	$37 \mathrm{ms}$	48ms
node14	194	98	83	$83 \mathrm{ms}$	83ms	$79 \mathrm{ms}$	$83 \mathrm{ms}$
node15	246	24	194	$103 \mathrm{ms}$	111ms	$95 \mathrm{ms}$	111ms
node16	267	6	246	111ms	112ms	$107 \mathrm{ms}$	112ms
node17	273	6	267	114ms	114ms	115ms	114ms
node18	273	5	273	$113 \mathrm{ms}$	113ms	117ms	113ms
node19	22	5	5	16ms	16ms	12ms	12ms

node psrsize Isrsize respeats bclv bclv 2 hybrid node20 23 5 5 16ms 16ms 12ms 12ms node21 25 5 5 17ms 17ms 12ms 12ms node22 120 23 25 54ms 54ms 28ms 28ms node23 272 22 120 114ms 120ms 67ms 67ms node24 341 5 272 140ms 140ms 118ms 140ms node26 63 5 22 32ms 13ms 19ms 19ms node26 63 5 22 32ms 33ms 19ms 19ms node28 17 6 5 14ms 14ms 12ms 12ms node30 24 5 6 17ms 17ms 16ms node31 35 24 5 21ms 23ms 19ms	1		1 .			1 1	1 1 0	1 1 . 1
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node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node60	23	5	5	$16 \mathrm{ms}$	16ms	12ms	12ms
node61	69	14	23	$34 \mathrm{ms}$	34ms	$23 \mathrm{ms}$	$23 \mathrm{ms}$
node62	9	5	5	11ms	11ms	11ms	11ms
node63	35	5	9	21ms	21ms	13ms	13ms
node64	87	5	35	41ms	$42 \mathrm{ms}$	24ms	24ms
node65	212	69	87	$90 \mathrm{ms}$	91ms	71ms	71ms
node66	228	5	212	$95 \mathrm{ms}$	$96 \mathrm{ms}$	$93 \mathrm{ms}$	$96 \mathrm{ms}$
node67	29	9	5	$19 \mathrm{ms}$	$19 \mathrm{ms}$	13ms	$13 \mathrm{ms}$
node68	19	5	5	$15 \mathrm{ms}$	$15 \mathrm{ms}$	12ms	12ms
node69	106	29	19	48ms	$49 \mathrm{ms}$	28ms	28ms
node70	15	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	12ms
node71	146	106	15	64ms	$69 \mathrm{ms}$	$56 \mathrm{ms}$	$69 \mathrm{ms}$
node72	434	228	146	179ms	180ms	157ms	179ms
node73	449	5	434	184ms	181ms	181ms	181ms
node74	522	57	449	212ms	229ms	209ms	$230 \mathrm{ms}$
node75	555	5	522	223ms	221ms	216ms	221ms
node76	638	5	555	$257 \mathrm{ms}$	$253 \mathrm{ms}$	236ms	$253 \mathrm{ms}$
node77	24	5	5	17ms	$17 \mathrm{ms}$	12ms	12ms
node78	23	5	5	16ms	$17 \mathrm{ms}$	12ms	12ms
node79	60	5	23	31ms	$32 \mathrm{ms}$	20ms	19ms

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node80	212	24	60	$90 \mathrm{ms}$	98ms	44ms	44ms
node81	17	6	5	14ms	14ms	12ms	12ms
node82	33	5	17	$20 \mathrm{ms}$	$22 \mathrm{ms}$	16ms	22ms
node83	24	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	12ms
node84	17	5	5	14ms	14ms	12ms	12ms
node85	27	17	5	18ms	$20 \mathrm{ms}$	16ms	$20 \mathrm{ms}$
node86	40	5	27	$23 \mathrm{ms}$	$25 \mathrm{ms}$	$20 \mathrm{ms}$	$25 \mathrm{ms}$
node87	56	40	5	$29 \mathrm{ms}$	$31 \mathrm{ms}$	$25 \mathrm{ms}$	$31 \mathrm{ms}$
node88	20	5	5	$15 \mathrm{ms}$	$15 \mathrm{ms}$	12ms	12ms
node89	82	56	20	$39 \mathrm{ms}$	$46 \mathrm{ms}$	$37 \mathrm{ms}$	$46 \mathrm{ms}$
node90	8	5	5	11ms	11ms	11ms	11ms
node91	18	5	5	14ms	14ms	11ms	11ms
node92	37	8	18	22ms	$24 \mathrm{ms}$	18ms	18ms
node93	13	5	5	12ms	12ms	11ms	11ms
node94	16	5	5	14ms	14ms	12ms	12ms
node95	9	5	5	11ms	11ms	12ms	11ms
node96	38	16	9	22ms	$22 \mathrm{ms}$	18ms	18ms
node97	54	5	38	28ms	$30 \mathrm{ms}$	$25 \mathrm{ms}$	$30 \mathrm{ms}$
node98	73	5	54	$36 \mathrm{ms}$	$37 \mathrm{ms}$	31ms	$37 \mathrm{ms}$
node99	96	13	73	$45 \mathrm{ms}$	49ms	41ms	$49 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node100	145	37	96	64ms	$77 \mathrm{ms}$	$60 \mathrm{ms}$	$77 \mathrm{ms}$
node101	220	82	145	$93 \mathrm{ms}$	94ms	$97 \mathrm{ms}$	$93 \mathrm{ms}$
node102	331	24	220	138ms	143ms	$106 \mathrm{ms}$	$143 \mathrm{ms}$
node103	19	5	5	$15 \mathrm{ms}$	$15 \mathrm{ms}$	12ms	12ms
node104	17	5	5	14ms	14ms	12ms	$12 \mathrm{ms}$
node105	22	5	5	16ms	16ms	12ms	$12 \mathrm{ms}$
node106	14	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	11ms	11ms
node107	33	5	14	21ms	22ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node108	46	5	33	$25 \mathrm{ms}$	$27 \mathrm{ms}$	$23 \mathrm{ms}$	$27 \mathrm{ms}$
node109	12	5	5	12ms	12ms	12ms	11ms
node110	15	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	$12 \mathrm{ms}$
node111	46	15	5	$25 \mathrm{ms}$	$27 \mathrm{ms}$	$16 \mathrm{ms}$	$16 \mathrm{ms}$
node112	62	12	46	31ms	$36 \mathrm{ms}$	$30 \mathrm{ms}$	$36 \mathrm{ms}$
node113	108	46	62	$49 \mathrm{ms}$	$50 \mathrm{ms}$	$50 \mathrm{ms}$	$49 \mathrm{ms}$
node114	146	5	108	$64 \mathrm{ms}$	$65 \mathrm{ms}$	$52 \mathrm{ms}$	$65 \mathrm{ms}$
node115	149	5	146	$65 \mathrm{ms}$	$66 \mathrm{ms}$	67ms	$66 \mathrm{ms}$
node116	189	5	149	81ms	81ms	69ms	81ms
node117	20	5	5	$15 \mathrm{ms}$	$15 \mathrm{ms}$	12ms	12ms
node118	256	189	20	$107 \mathrm{ms}$	113ms	91ms	$113 \mathrm{ms}$
node119	336	22	256	$139 \mathrm{ms}$	145ms	119ms	$145 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node120	344	5	336	$142 \mathrm{ms}$	141ms	142ms	141ms
node121	372	17	344	$155 \mathrm{ms}$	$157 \mathrm{ms}$	151ms	163ms
node122	15	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	12ms
node123	20	5	15	$15 \mathrm{ms}$	17ms	$15 \mathrm{ms}$	$17 \mathrm{ms}$
node124	18	5	5	$15 \mathrm{ms}$	$15 \mathrm{ms}$	12ms	12ms
node125	49	20	18	$26 \mathrm{ms}$	$26 \mathrm{ms}$	$23 \mathrm{ms}$	23ms
node126	66	5	49	$33 \mathrm{ms}$	$35 \mathrm{ms}$	29ms	$35 \mathrm{ms}$
node127	480	372	66	$197 \mathrm{ms}$	216ms	185ms	216ms
node128	535	19	480	215ms	219ms	206ms	219ms
node129	948	331	535	$384 \mathrm{ms}$	388ms	$355 \mathrm{ms}$	$386 \mathrm{ms}$
node130	1004	33	948	$396 \mathrm{ms}$	404ms	$397 \mathrm{ms}$	404ms
node131	1041	5	1004	412ms	407ms	410ms	$407 \mathrm{ms}$
node132	1379	212	1041	$549 \mathrm{ms}$	615ms	$509 \mathrm{ms}$	$616 \mathrm{ms}$
node133	24	5	5	$17 \mathrm{ms}$	17ms	12ms	12ms
node134	50	5	24	$27 \mathrm{ms}$	28ms	19ms	$19 \mathrm{ms}$
node135	70	5	50	$35 \mathrm{ms}$	$36 \mathrm{ms}$	$29 \mathrm{ms}$	$36 \mathrm{ms}$
node136	16	5	5	14ms	14ms	12ms	12ms
node137	13	5	5	$12 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	11ms
node138	39	16	13	22ms	$23 \mathrm{ms}$	$19 \mathrm{ms}$	$19 \mathrm{ms}$
node139	56	39	5	29ms	$31 \mathrm{ms}$	$25 \mathrm{ms}$	$31 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node140	159	70	56	$69 \mathrm{ms}$	$69 \mathrm{ms}$	$58 \mathrm{ms}$	58ms
node141	24	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	12ms
node142	250	159	24	104ms	112ms	$82 \mathrm{ms}$	112ms
node143	1768	1379	250	709ms	$780 \mathrm{ms}$	$659 \mathrm{ms}$	780ms
node144	1774	5	1768	694ms	$685 \mathrm{ms}$	$708 \mathrm{ms}$	685ms
node145	1863	5	1774	729ms	721ms	714ms	721ms
node146	2448	638	1863	$968 \mathrm{ms}$	1188ms	$1026 \mathrm{ms}$	1189ms
node147	21	8	5	$16 \mathrm{ms}$	$16 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node148	43	21	6	24ms	$26 \mathrm{ms}$	$18 \mathrm{ms}$	18ms
node149	82	43	5	$39 \mathrm{ms}$	41ms	$27 \mathrm{ms}$	41ms
node150	2574	2448	82	1013ms	$1026 \mathrm{ms}$	$1030 \mathrm{ms}$	1024ms
node151	21	5	5	16ms	$16 \mathrm{ms}$	12ms	12ms
node152	62	21	5	31ms	$33 \mathrm{ms}$	18ms	18ms
node153	125	5	62	$56 \mathrm{ms}$	$57 \mathrm{ms}$	$35 \mathrm{ms}$	$35 \mathrm{ms}$
node154	226	5	125	$95 \mathrm{ms}$	$95 \mathrm{ms}$	61ms	95ms
node155	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	12ms
node156	14	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	$12 \mathrm{ms}$	12ms
node157	58	25	14	$30 \mathrm{ms}$	$30 \mathrm{ms}$	$23 \mathrm{ms}$	23ms
node158	26	6	5	18ms	18ms	$12 \mathrm{ms}$	12ms
node159	25	11	5	$17 \mathrm{ms}$	$19 \mathrm{ms}$	14ms	14ms

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node160	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	12ms
node161	24	5	5	17ms	17ms	12ms	12ms
node162	24	5	5	17ms	17ms	12ms	12ms
node163	40	5	24	$23 \mathrm{ms}$	$25 \mathrm{ms}$	$19 \mathrm{ms}$	$25 \mathrm{ms}$
node164	101	40	5	$47 \mathrm{ms}$	48ms	$26 \mathrm{ms}$	$26 \mathrm{ms}$
node165	189	6	101	81ms	82ms	$52 \mathrm{ms}$	$82 \mathrm{ms}$
node166	23	5	5	16ms	16ms	12ms	12ms
node167	64	23	5	$33 \mathrm{ms}$	34ms	19ms	19ms
node168	364	189	64	$150 \mathrm{ms}$	171ms	110ms	171ms
node169	399	364	5	$163 \mathrm{ms}$	162ms	$155 \mathrm{ms}$	$162 \mathrm{ms}$
node170	431	5	399	174ms	174ms	168ms	174ms
node171	524	24	431	212ms	218ms	191ms	218ms
node172	560	5	524	$225 \mathrm{ms}$	223ms	217ms	$223 \mathrm{ms}$
node173	675	25	560	272ms	276ms	242ms	$276 \mathrm{ms}$
node174	729	25	675	290ms	296ms	290ms	$296 \mathrm{ms}$
node175	740	5	729	298ms	293ms	298ms	$293 \mathrm{ms}$
node176	25	5	5	$17 \mathrm{ms}$	17ms	12ms	$12 \mathrm{ms}$
node177	68	25	5	34ms	$35 \mathrm{ms}$	$20 \mathrm{ms}$	$20 \mathrm{ms}$
node178	24	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	$12 \mathrm{ms}$
node179	54	24	5	$28 \mathrm{ms}$	$30 \mathrm{ms}$	$19 \mathrm{ms}$	$19 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node180	236	68	54	$99 \mathrm{ms}$	100ms	$58 \mathrm{ms}$	$59 \mathrm{ms}$
node181	1009	740	236	$407 \mathrm{ms}$	483ms	$397 \mathrm{ms}$	$483 \mathrm{ms}$
node182	1021	1009	5	402ms	$399 \mathrm{ms}$	$408 \mathrm{ms}$	$399 \mathrm{ms}$
node183	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node184	82	25	5	$39 \mathrm{ms}$	41ms	$21 \mathrm{ms}$	21ms
node185	1197	1021	82	480ms	497ms	$450 \mathrm{ms}$	$498 \mathrm{ms}$
node186	1240	26	1197	490ms	492ms	$494 \mathrm{ms}$	$492 \mathrm{ms}$
node187	1279	5	1240	$507 \mathrm{ms}$	498ms	$501 \mathrm{ms}$	$498 \mathrm{ms}$
node188	1295	1279	5	$509 \mathrm{ms}$	$503 \mathrm{ms}$	$514 \mathrm{ms}$	$503 \mathrm{ms}$
node189	1334	8	1295	$529 \mathrm{ms}$	520ms	$524 \mathrm{ms}$	$520 \mathrm{ms}$
node190	1389	5	1334	547ms	539ms	$537 \mathrm{ms}$	$539 \mathrm{ms}$
node191	27	5	8	18ms	18ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node192	22	5	5	16ms	16ms	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node193	27	5	9	18ms	18ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node194	58	6	27	$30 \mathrm{ms}$	$32 \mathrm{ms}$	$21 \mathrm{ms}$	$21 \mathrm{ms}$
node195	104	6	58	48ms	49ms	$33 \mathrm{ms}$	$49 \mathrm{ms}$
node196	23	5	6	16ms	16ms	12ms	12ms
node197	39	5	23	$23 \mathrm{ms}$	24ms	19ms	24ms
node198	59	7	39	$30 \mathrm{ms}$	$33 \mathrm{ms}$	$26 \mathrm{ms}$	$33 \mathrm{ms}$
node199	88	59	5	42ms	$43 \mathrm{ms}$	$33 \mathrm{ms}$	$43 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node200	25	5	6	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	12ms
node201	65	25	5	$33 \mathrm{ms}$	34ms	20ms	20ms
node202	250	88	65	104ms	105ms	$70 \mathrm{ms}$	$70 \mathrm{ms}$
node203	29	11	6	$19 \mathrm{ms}$	19ms	14ms	14ms
node204	65	6	29	$33 \mathrm{ms}$	34ms	$22 \mathrm{ms}$	$22 \mathrm{ms}$
node205	386	250	65	160ms	180ms	$134 \mathrm{ms}$	180ms
node206	417	5	386	170ms	169ms	$162 \mathrm{ms}$	$169 \mathrm{ms}$
node207	538	104	417	218ms	$253 \mathrm{ms}$	214ms	$253 \mathrm{ms}$
node208	584	22	538	$235 \mathrm{ms}$	239ms	$229 \mathrm{ms}$	239ms
node209	645	27	584	$258 \mathrm{ms}$	265ms	$251 \mathrm{ms}$	$265 \mathrm{ms}$
node210	28	5	9	18ms	18ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node211	34	12	6	21ms	23ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node212	182	28	34	$78 \mathrm{ms}$	$79 \mathrm{ms}$	$35 \mathrm{ms}$	$35 \mathrm{ms}$
node213	29	10	5	$19 \mathrm{ms}$	20ms	$14 \mathrm{ms}$	14ms
node214	59	6	29	$30 \mathrm{ms}$	$32 \mathrm{ms}$	$22 \mathrm{ms}$	$22 \mathrm{ms}$
node215	93	59	6	$43 \mathrm{ms}$	$45 \mathrm{ms}$	$33 \mathrm{ms}$	$45 \mathrm{ms}$
node216	151	7	93	$66 \mathrm{ms}$	68ms	$49 \mathrm{ms}$	$68 \mathrm{ms}$
node217	169	5	151	$73 \mathrm{ms}$	74ms	$71 \mathrm{ms}$	$74 \mathrm{ms}$
node218	23	5	5	16ms	$16 \mathrm{ms}$	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node219	46	6	23	26ms	$27 \mathrm{ms}$	$20 \mathrm{ms}$	$19 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node220	29	8	6	$19 \mathrm{ms}$	$19 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node221	90	5	29	$42 \mathrm{ms}$	$44 \mathrm{ms}$	$22 \mathrm{ms}$	$22 \mathrm{ms}$
node222	245	46	90	$103 \mathrm{ms}$	$104 \mathrm{ms}$	$64 \mathrm{ms}$	64ms
node223	17	5	5	14ms	$14 \mathrm{ms}$	$12 \mathrm{ms}$	12ms
node224	56	5	17	$29 \mathrm{ms}$	$31 \mathrm{ms}$	$17 \mathrm{ms}$	17ms
node225	28	5	8	18ms	18ms	$13 \mathrm{ms}$	13ms
node226	97	28	12	$45 \mathrm{ms}$	$49 \mathrm{ms}$	24ms	24ms
node227	297	56	97	$125 \mathrm{ms}$	$126 \mathrm{ms}$	$71 \mathrm{ms}$	72ms
node228	328	5	297	$135 \mathrm{ms}$	$135 \mathrm{ms}$	127ms	$135 \mathrm{ms}$
node229	663	245	328	$267 \mathrm{ms}$	270ms	238ms	239ms
node230	686	5	663	273ms	271ms	271ms	271ms
node231	877	169	686	$351 \mathrm{ms}$	$408 \mathrm{ms}$	$348 \mathrm{ms}$	$408 \mathrm{ms}$
node232	882	5	877	$349 \mathrm{ms}$	$345 \mathrm{ms}$	$355 \mathrm{ms}$	$346 \mathrm{ms}$
node233	1258	182	882	507ms	$560 \mathrm{ms}$	436ms	$560 \mathrm{ms}$
node234	1267	5	1258	501ms	$494 \mathrm{ms}$	$505 \mathrm{ms}$	494ms
node235	1744	645	1267	691ms	696ms	$765 \mathrm{ms}$	$695 \mathrm{ms}$
node236	7429	1389	1744	2883ms	2931ms	1412ms	1377ms
node237	7429	5	7429	2979ms	2887ms	$3061 \mathrm{ms}$	$2860 \mathrm{ms}$
node238	7429	58	7429	2900ms	2888ms	$3073 \mathrm{ms}$	2865ms
node239	7429	226	7429	2928ms	2983ms	$3154 \mathrm{ms}$	2949ms

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node240	7429	5	7429	2897ms	$2866 \mathrm{ms}$	$3043 \mathrm{ms}$	2843ms
node241	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node242	37	5	25	$22 \mathrm{ms}$	$23 \mathrm{ms}$	$19 \mathrm{ms}$	$23 \mathrm{ms}$
node243	17	5	5	14ms	14ms	11ms	11ms
node244	71	37	17	$35 \mathrm{ms}$	41ms	$29 \mathrm{ms}$	41ms
node245	139	5	71	62ms	62ms	$39 \mathrm{ms}$	62ms
node246	7429	7429	139	2928ms	2949ms	3119ms	2914ms
node247	7429	2574	7429	2929ms	3907ms	4102ms	$3858 \mathrm{ms}$
node248	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	12ms
node249	83	25	5	$40 \mathrm{ms}$	41ms	$20 \mathrm{ms}$	$20 \mathrm{ms}$
node250	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	12ms
node251	264	83	25	109ms	117ms	$54 \mathrm{ms}$	$54 \mathrm{ms}$
node252	7429	7429	264	2891ms	2971ms	$3159 \mathrm{ms}$	2947ms
node253	7429	25	7429	2909ms	2901ms	$3132 \mathrm{ms}$	2870ms
node254	24	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	12ms
node255	41	8	12	$23 \mathrm{ms}$	24ms	$16 \mathrm{ms}$	$16 \mathrm{ms}$
node256	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node257	26	9	5	$17 \mathrm{ms}$	18ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node258	45	26	6	$25 \mathrm{ms}$	$27 \mathrm{ms}$	$20 \mathrm{ms}$	$27 \mathrm{ms}$
node259	75	45	5	$37 \mathrm{ms}$	$38 \mathrm{ms}$	$28 \mathrm{ms}$	$38 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node260	14	7	6	$13 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node261	23	5	14	16ms	$18 \mathrm{ms}$	15ms	18ms
node262	14	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	12ms
node263	18	5	5	$15 \mathrm{ms}$	$15 \mathrm{ms}$	12ms	12ms
node264	36	14	18	21ms	$21 \mathrm{ms}$	20ms	20ms
node265	47	36	5	$26 \mathrm{ms}$	$27 \mathrm{ms}$	24ms	27ms
node266	66	23	47	$33 \mathrm{ms}$	$41 \mathrm{ms}$	$35 \mathrm{ms}$	41ms
node267	25	5	8	$17 \mathrm{ms}$	$17 \mathrm{ms}$	13ms	13ms
node268	92	66	25	$43 \mathrm{ms}$	$52 \mathrm{ms}$	44ms	52ms
node269	12	5	5	12ms	$12 \mathrm{ms}$	11ms	11ms
node270	20	5	12	$16 \mathrm{ms}$	$17 \mathrm{ms}$	15ms	17ms
node271	29	20	5	$19 \mathrm{ms}$	$21 \mathrm{ms}$	18ms	20ms
node272	32	5	29	20ms	21ms	21ms	21ms
node273	15	5	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	11ms
node274	50	32	15	27ms	$32 \mathrm{ms}$	26ms	32ms
node275	20	6	8	$15 \mathrm{ms}$	$15 \mathrm{ms}$	13ms	13ms
node276	14	6	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	12ms
node277	19	6	14	$15 \mathrm{ms}$	$17 \mathrm{ms}$	$15 \mathrm{ms}$	$17 \mathrm{ms}$
node278	33	19	9	21ms	$23 \mathrm{ms}$	19ms	23ms
node279	57	20	33	$30 \mathrm{ms}$	$30 \mathrm{ms}$	28ms	$30 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node280	98	50	57	$46 \mathrm{ms}$	$46 \mathrm{ms}$	$49 \mathrm{ms}$	$46 \mathrm{ms}$
node281	107	6	98	$49 \mathrm{ms}$	$50 \mathrm{ms}$	$48 \mathrm{ms}$	$51 \mathrm{ms}$
node282	178	92	107	$77 \mathrm{ms}$	$77 \mathrm{ms}$	$85 \mathrm{ms}$	$77 \mathrm{ms}$
node283	190	178	6	81ms	$82 \mathrm{ms}$	$80 \mathrm{ms}$	$82 \mathrm{ms}$
node284	196	5	190	$83 \mathrm{ms}$	84ms	84ms	84ms
node285	200	5	196	$85 \mathrm{ms}$	$85 \mathrm{ms}$	87ms	$85 \mathrm{ms}$
node286	293	75	200	122ms	148ms	117ms	148ms
node287	436	5	293	177ms	$176 \mathrm{ms}$	$131 \mathrm{ms}$	$176 \mathrm{ms}$
node288	559	5	436	226ms	$223 \mathrm{ms}$	184ms	$223 \mathrm{ms}$
node289	666	25	559	$267 \mathrm{ms}$	273ms	$242 \mathrm{ms}$	273ms
node290	1098	41	666	434ms	444ms	297ms	443ms
node291	1383	8	1098	$550 \mathrm{ms}$	$539 \mathrm{ms}$	$451 \mathrm{ms}$	$539 \mathrm{ms}$
node292	1565	24	1383	$617 \mathrm{ms}$	$616 \mathrm{ms}$	$570 \mathrm{ms}$	$616 \mathrm{ms}$
node293	7429	7429	1565	2927ms	$3487 \mathrm{ms}$	$3682 \mathrm{ms}$	$3455 \mathrm{ms}$
node294	7429	796	7429	2925ms	$3179 \mathrm{ms}$	$3369 \mathrm{ms}$	$3150 \mathrm{ms}$
node295	37	8	10	$22 \mathrm{ms}$	$22 \mathrm{ms}$	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node296	26	5	7	$17 \mathrm{ms}$	18ms	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node297	24	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node298	41	5	24	$23 \mathrm{ms}$	$25 \mathrm{ms}$	$19 \mathrm{ms}$	$25 \mathrm{ms}$
node299	24	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$12 \mathrm{ms}$	$12 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node300	58	24	5	$30 \mathrm{ms}$	$31 \mathrm{ms}$	$19 \mathrm{ms}$	$19 \mathrm{ms}$
node301	174	41	58	$76 \mathrm{ms}$	$75 \mathrm{ms}$	$49 \mathrm{ms}$	48ms
node302	305	26	174	127ms	$134 \mathrm{ms}$	89ms	134ms
node303	21	5	6	$16 \mathrm{ms}$	$16 \mathrm{ms}$	12ms	12ms
node304	38	5	21	22ms	$24 \mathrm{ms}$	18ms	$24 \mathrm{ms}$
node305	16	6	5	14ms	14ms	12ms	12ms
node306	24	5	16	$17 \mathrm{ms}$	$18 \mathrm{ms}$	$16 \mathrm{ms}$	18ms
node307	34	5	24	21ms	$22 \mathrm{ms}$	$19 \mathrm{ms}$	22ms
node308	47	5	34	$26 \mathrm{ms}$	$27 \mathrm{ms}$	$23 \mathrm{ms}$	$27 \mathrm{ms}$
node309	13	5	5	12ms	$13 \mathrm{ms}$	11ms	11ms
node310	19	5	13	$15 \mathrm{ms}$	$17 \mathrm{ms}$	$15 \mathrm{ms}$	$17 \mathrm{ms}$
node311	27	7	7	18ms	$18 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node312	31	5	27	$19 \mathrm{ms}$	$21 \mathrm{ms}$	$20 \mathrm{ms}$	21ms
node313	73	5	31	$36 \mathrm{ms}$	$37 \mathrm{ms}$	22ms	$23 \mathrm{ms}$
node314	97	73	5	$45 \mathrm{ms}$	$46 \mathrm{ms}$	38ms	$46 \mathrm{ms}$
node315	151	6	97	$66 \mathrm{ms}$	$67 \mathrm{ms}$	49ms	67ms
node316	171	7	151	$74 \mathrm{ms}$	$75 \mathrm{ms}$	$70 \mathrm{ms}$	$75 \mathrm{ms}$
node317	236	19	171	$100 \mathrm{ms}$	$105 \mathrm{ms}$	84ms	105ms
node318	309	47	236	128ms	144ms	120ms	144ms
node319	18	5	5	15ms	$15 \mathrm{ms}$	12ms	12ms

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node320	30	5	18	19ms	21ms	17ms	21ms
node321	51	6	30	$27 \mathrm{ms}$	29ms	22ms	29ms
node322	65	51	5	$33 \mathrm{ms}$	34ms	$30 \mathrm{ms}$	34ms
node323	424	309	65	173ms	195ms	157ms	$195 \mathrm{ms}$
node324	464	5	424	187ms	186ms	180ms	$187 \mathrm{ms}$
node325	14	5	6	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	12ms
node326	25	5	14	$17 \mathrm{ms}$	$19 \mathrm{ms}$	$15 \mathrm{ms}$	$19 \mathrm{ms}$
node327	536	464	25	217ms	223ms	202ms	222ms
node328	569	6	536	228ms	227ms	222ms	$227 \mathrm{ms}$
node329	739	38	569	297ms	$306 \mathrm{ms}$	252ms	$306 \mathrm{ms}$
node330	23	5	5	16ms	16ms	12ms	12ms
node331	25	5	5	$17 \mathrm{ms}$	17ms	12ms	$12 \mathrm{ms}$
node332	24	5	6	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	$12 \mathrm{ms}$
node333	46	24	5	26ms	27ms	19ms	$27 \mathrm{ms}$
node334	72	5	46	$35 \mathrm{ms}$	$37 \mathrm{ms}$	28ms	$37 \mathrm{ms}$
node335	98	72	6	46ms	47ms	$39 \mathrm{ms}$	$47 \mathrm{ms}$
node336	212	25	98	89ms	98ms	58ms	$58 \mathrm{ms}$
node337	30	5	9	19ms	$19 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node338	76	30	5	$37 \mathrm{ms}$	$38 \mathrm{ms}$	$22 \mathrm{ms}$	$22 \mathrm{ms}$
node339	25	5	5	17ms	17ms	12ms	12ms

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$_{ m node}$	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node340	68	6	25	$34 \mathrm{ms}$	$36 \mathrm{ms}$	$20 \mathrm{ms}$	21ms
node341	26	6	5	18ms	18ms	12ms	12ms
node342	140	68	26	62ms	71ms	$45 \mathrm{ms}$	$46 \mathrm{ms}$
node343	244	76	140	$103 \mathrm{ms}$	103ms	94ms	103ms
node344	267	5	244	112ms	111ms	106ms	111ms
node345	22	5	6	16ms	16ms	12ms	12ms
node346	48	22	5	$26 \mathrm{ms}$	28ms	19ms	19ms
node347	65	48	6	$33 \mathrm{ms}$	$35 \mathrm{ms}$	29ms	$34 \mathrm{ms}$
node348	101	65	7	$46 \mathrm{ms}$	48ms	$36 \mathrm{ms}$	48ms
node349	416	267	101	170ms	205ms	154ms	205ms
node350	455	5	416	184ms	183ms	174ms	183ms
node351	701	212	455	282ms	$357 \mathrm{ms}$	273ms	357ms
node352	19	7	5	15ms	15ms	12ms	12ms
node353	35	5	19	21ms	23ms	17ms	23ms
node354	7	5	5	10ms	10ms	11ms	10ms
node355	25	6	7	$17 \mathrm{ms}$	17ms	13ms	$13 \mathrm{ms}$
node356	42	5	25	24ms	$25 \mathrm{ms}$	$20 \mathrm{ms}$	25ms
node357	47	5	42	26ms	$27 \mathrm{ms}$	$26 \mathrm{ms}$	27ms
node358	83	47	5	$40 \mathrm{ms}$	41ms	$29 \mathrm{ms}$	41ms
node359	15	6	5	$13 \mathrm{ms}$	$13 \mathrm{ms}$	12ms	12ms

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node360	122	83	15	$55 \mathrm{ms}$	$60 \mathrm{ms}$	$46 \mathrm{ms}$	$60 \mathrm{ms}$
node361	21	5	5	16ms	16ms	12ms	12ms
node362	51	21	6	$27 \mathrm{ms}$	29ms	19ms	19ms
node363	75	6	51	$36 \mathrm{ms}$	$38 \mathrm{ms}$	$30 \mathrm{ms}$	$38 \mathrm{ms}$
node364	101	75	5	$47 \mathrm{ms}$	48ms	$39 \mathrm{ms}$	48ms
node365	283	122	101	117ms	118ms	$97 \mathrm{ms}$	$97 \mathrm{ms}$
node366	373	35	283	$153 \mathrm{ms}$	164ms	$135 \mathrm{ms}$	$164 \mathrm{ms}$
node367	420	373	5	171ms	170ms	$157 \mathrm{ms}$	170ms
node368	473	5	420	194ms	190ms	$176 \mathrm{ms}$	190ms
node369	1117	701	473	442ms	$447 \mathrm{ms}$	$472 \mathrm{ms}$	$446 \mathrm{ms}$
node370	1195	23	1117	475ms	474ms	$462 \mathrm{ms}$	$474 \mathrm{ms}$
node371	9	5	5	11ms	11ms	11ms	11ms
node372	23	9	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node373	17	5	5	14ms	14ms	$12 \mathrm{ms}$	$12 \mathrm{ms}$
node374	41	5	17	$23 \mathrm{ms}$	$25 \mathrm{ms}$	$17 \mathrm{ms}$	$17 \mathrm{ms}$
node375	81	41	5	$39 \mathrm{ms}$	$40 \mathrm{ms}$	$26 \mathrm{ms}$	$40 \mathrm{ms}$
node376	25	5	5	$17 \mathrm{ms}$	17ms	12ms	$12 \mathrm{ms}$
node377	182	81	25	78ms	86ms	$51 \mathrm{ms}$	$51 \mathrm{ms}$
node378	271	23	182	114ms	120ms	$90 \mathrm{ms}$	120ms
node379	25	5	5	17ms	17ms	12ms	12ms

node	psrsize	lsrsize	rsrsize	repeats	bclv	bclv 2	hybrid
node380	69	6	25	$34 \mathrm{ms}$	$36 \mathrm{ms}$	$20 \mathrm{ms}$	20ms
node381	91	5	69	$43 \mathrm{ms}$	44ms	$37 \mathrm{ms}$	44ms
node382	466	271	91	190ms	221ms	$154 \mathrm{ms}$	220ms
node383	1553	1195	466	612ms	778ms	$664 \mathrm{ms}$	778ms
node384	1556	1553	6	613ms	604ms	$624 \mathrm{ms}$	604ms
node385	2211	739	1556	$867 \mathrm{ms}$	1135ms	920ms	1135ms
node386	2336	5	2211	916ms	901ms	887ms	901ms
node387	2372	5	2336	924ms	913ms	934ms	912ms
node388	2639	305	2372	1054ms	1137ms	1091ms	1138ms
node389	25	5	5	$17 \mathrm{ms}$	$17 \mathrm{ms}$	12ms	12ms
node390	2764	2639	25	1078ms	1071ms	$1069 \mathrm{ms}$	1072ms
node391	2963	37	2764	1169ms	1153ms	1148ms	1153ms
node392	3006	5	2963	1177ms	1157ms	1200ms	1157ms
node393	7429	7429	3006	2936ms	$4076 \mathrm{ms}$	$4252 \mathrm{ms}$	4035ms
node394	7429	927	7429	2934ms	3227ms	$3437 \mathrm{ms}$	3220ms
node395	7429	7429	6	2902ms	2848ms	$3055 \mathrm{ms}$	2847ms
node396	17	5	5	14ms	14ms	12ms	12ms
node397	25	5	17	17ms	$19 \mathrm{ms}$	16ms	19ms
node398	7429	7429	25	2987ms	2883ms	$3077 \mathrm{ms}$	2881ms
node399	7429	7429	5	2893ms	2847ms	$3053 \mathrm{ms}$	2846ms

bclv 2 3064ms psrsize 7429 repeats 2930ms hybrid node bclv lsrsize rsrsize node400 6 7429 2863ms 2862ms node401 7429 7429 2901ms 2843ms 5 $2846 \mathrm{ms}$ $3252 \mathrm{ms}$