

(3)

a)

For fork() the time taken by the process is 0.18s.

Processes: 474 total, 2 running, 472 sleeping, 1788 threads																						00:48:04	
Load Avg: 3.17, 3.14, 3.33 CPU usage: 14.8% user, 8.68% sys, 77.23% idle SharedLibs: 335M resident, 59M data, 28M linkedin. MemRegions: 102614 total, 1388M resident, 56M private, 639M shared.																							
PhysMem: 8029M used (2241M wired), 490M unused. W: 177 vszle, 3108M framework vszle, 10418589(0) swaptins, 10985486(0) swaptouts. Networks: packets: 82699348/94G in, 32909176/9842M out.																							
Disks: 42608670/1003G read, 13947585/723G written.																							
PID	COMMAND	TIME	#TH	#WQ	#PORT	MEM	PURD	CMRPS	PORP	PPID	STATE	BOOSTS	NCPU_ME	NCPU_OTHS	UID	FAULTS	COW	MSOSENT	MSGRECV	SYSBND	SYSMCH		
64914	com.apple.We	30.6	4214.0	29	4	146	398M	0B	146M	64914	1	sleeping	*0(1389642)	0.00000	0.00000	501	14782321	538	5836142+	1417145+	58972992+	16029697+	
64861	com.apple.We	16.1	26124.4	22	4	376	120M	0B	97M	64861	1	sleeping	*245(1623)	0.00000	1.38658	501	693489+	661	8824714+	2318923+	6712842+	11168399+	
184	coreaudioid	12.7	02:32:44	12	3	809	33M	0B	22M	184	1	sleeping	*0(1)	0.00000	0.00000	202	2449441	385	18026380+	4990032+	45985244+	38647793+	
64689	Terminal	8.6	05:22:17	10	4	438	118M	32M	20M	64689	1	sleeping	*0(2798)	0.06374	0.00000	501	3946571	4927	1806378+	236765+	13712538+	2918546+	
64747	com.apple.We	5.6	08:29:26	12	6	165	67M	728K	21M	64747	1	sleeping	*870(2071)	0.00000	0.00000	501	736190+	249	1874995+	1024926+	18561211+	6332416+	
68789	top	5.2	00:28:73	1/1	0	27	6156K	0B	560K	68789	67174	running	*0(1)	0.00000	0.00000	0	168824+	118	4191567+	205777+	688279+	3227484+	
0	kernel_task	3.9	07:46:10	205/A	0	0	514M	0B	0B	0	0	running	*0(0)	0.00000	0.00000	0	2263783	14518	34876343+	266252603+	0	0	
317	UVAssistant	2.3	03:57:51	5	4	111	12M	0B	2708K	317	1	sleeping	*0(1)	1.38658	0.00000	262	191355	198	2438951+	1943217+	2964596+	3685792+	
4467	WindowsServer	0.5	12:33:10	12	4	3519	2930M	235M	2270M	4467	1	sleeping	*0(1)	0.00000	0.07149	88	137967126+	3266860	316876448+	243765548+	581153788+	1165572172+	
65027	mysqlid	0.1	00:48:54	39	0	63	349M	0B	348M	64825	64825	sleeping	*0(1)	0.00000	0.00000	501	180092	865	35985+	17059+	2083870+	24142+	
64828	ztagent	0.1	00:26:51	9	0	29	2644K	0B	2248K	64828	1	sleeping	*0(1)	0.00000	0.00000	501	2201	116	91	33	1192718+	204	
64758	sharingd	0.1	00:22:56	4	2	257	12M	0B	8164K	64758	1	sleeping	*0(1)	0.00000	0.02298	501	182186	623	84497+	38497+	391741+	446453+	
45973	Bluetoothd	0.0	12:19:41	13	7	384	6452K	64K	2672K	45973	1	sleeping	*0(1)	0.02298	0.00000	0	238401	276	68321+	701291+	15874072+	2475643+	
269	airportd	0.0	04:33:38	12	10	312	13M	0B	6796K	269	1	sleeping	*214(164)	0.00000	0.00000	0	11453457	322	13946393+	6593264+	66879363+	20748646+	
64702	Safari	0.0	04:42:58	6	1	1479	197M	784K	64M	64702	1	sleeping	*0(6987)	0.01158	0.00000	501	970637	4393	2643959+	936528+	2523803+	8262752+	
67003	com.apple.We	0.0	00:39:51	4	1	85	274M	0B	242M	67003	1	sleeping	*0(39544)	0.00000	0.00000	501	276058	2994	105777+	92112+	234083+	573377+	
64891	Code Helper	0.0	01:31:05	17	1	77	135M+	0B	28M	64701	64701	sleeping	*0(1)	0.00000	0.00000	501	279398+	1799	58288+	25123+	1556591+	33975+	
65003	cpptool	0.0	00:49:14	24	0	44	100M	0B	99M	64701	64891	sleeping	*0(1)	0.00000	0.00000	501	589200	40722	10574	528	1443940+	6979	
64697	ComCenter	0.0	00:01:81	6	2	144+	4836K+	0B	3200K	64697	1	sleeping	*0(1)	0.00000	0.00000	501	19408+	528	2698+	2437+	33918+	12721+	
65799	storagekitd	0.0	00:10:91	7	3	74	2912K	0B	2256K	65799	1	sleeping	*0(0)	0.00000	0.00000	0	7732	181	79438+	22539	228947+	109194+	
67909	com.apple.We	0.0	00:21:05	4	1	83	151M	6144K	19M	67909	1	sleeping	*0(4550)	0.00000	0.00000	501	167168	486	34148	20291	94227	110822+	
64712	ControlCenter	0.0	00:03:06	7	4	573	32M	292K	20M	64712	1	sleeping	*0(2540)	0.00000	0.00000	501	211888	5448	444477	157663	377087+	909080	
350	locationd	0.0	14:00:77	7	4	229	6472K	128K	2180K	350	1	sleeping	*0(50046)	0.00000	0.00000	205	2445331	351	788452	440048	10685165+	3411598	
114	mds	0.0	29:33:64	5	2	615	34M	0B	27M	114	1	sleeping	*0(1)	0.00000	0.00000	0	13476470	309	2385042+	2076675+	39719866+	7475109+	
64871	Code Helper	0.0	00:26:28	22	1	177	49M	0B	19M	64701	64701	sleeping	*0(1)	0.00000	0.00000	501	220095	7170	48082	9249	324514	319443+	
58403	PerfPowerd	0.0	00:04:36	25	4	1622+	6544K	285K	2192K	58403	1	sleeping	*1(1)	0.00000	0.01302	0	79432	253	246687	126580	729854+	513450+	
64707	lockoutagent	0.0	00:05:71	5	4	72	1568K	0B	824K	64707	1	sleeping	*0(1)	0.00000	0.00000	501	3740	151	18278+	267	166802+	73887+	
189	symptomsd	0.0	06:43:72	2	1	135	5044K	40K	1804K	189	1	sleeping	*0(12654)	0.00000	0.00000	24	1398340	228	183988	112666	7385838+	495966	
65003	com.fortinet	0.0	00:05:33	4	3	47	2208K	0B	1816K	65003	1	sleeping	*0(1)	0.00000	0.00000	0	2108	155	17921+	96	131059+	71625+	
164	AirPlayPCH	0.0	00:02:13	5	2	196	3836K	0B	2052K	164	1	sleeping	*0(1)	0.00000	0.00000	0	463328	197	265162	205096	8015430+	1074458	
67828	cpptool+rv	0.0	00:01:42	12	0	28	20M	0B	70M	64701	1	sleeping	*0(1)	0.00000	0.00000	501	9958	2033	41	19	143492+	156	
161	notifdy	0.0	00:17:31	3	2	670	2096K	0B	324K	161	1	sleeping	*0(1)	0.00000	0.00383	0	139605	69	3512760+	414191+	8487567+	12352894+	
39795	powerd	0.0	03:59:05	3	2	138	2152K	0B	496K	39795	1	sleeping	*0(1)	0.00000	0.00000	0	511994	178	950870	686432	2170902+	2387992	
68388	cpptool+rv	0.0	00:02:44	12	0	27	113M	0B	113M	64701	1	sleeping	*0(1)	0.00000	0.00000	501	5841	19996	39	18	105795+	199	
67302	CAReportingS	0.0	00:07:73	2	1	53	2920K	0B	1080K	67302	1	sleeping	*1067(277)	0.00000	0.00000	0	70258	131	254687	132243	138767+	170142	
67015	Google Chrom	0.0	00:00:81	8	1	69	14M	0B	13M	64705	64705	sleeping	*0(3)	0.00000	0.00000	501	12317	2406	8832	4119	13810+	19635+	
349	thermald	0.0	00:08:54	2	1	33	652K	0B	584K	349	1	sleeping	*0(1)	0.00000	0.00000	0	22246	114	27524	16055	97465+	51232	
64734	cloud	0.0	00:19:08	5	1	178	10M	148K	4632K	64734	1	sleeping	*90(289)	0.00000	0.00000	501	77438	386	27768	9957	389622+	185016	
62224	PowerChime	0.0	00:00:43	6	1	279	5848K	0B	5124K	62224	1	sleeping	*0(1)	0.00000	0.00000	501	11014	432	2319	1284	9404+	7597	
64708	suggestd	0.0	01:31:86	3	2	253	16M	0B	12M	64708	1	sleeping	*0(128)	0.00000	0.00408	501	147005	511	15380	5936	584077	467376+	
320	rtcreportd	0.0	02:00:08	3	1	66	4288K	0B	1756K	320	1	sleeping	*0(1)	0.00000	0.00000	0	424955	221	141748	302311	1752033+	809955	
249	mdNSResponder	0.0	00:36:02	3	1	41	1220K	0B	1156K	249	1	sleeping	*0(1)	0.00000	0.00000	0	26831	135	866248+	433298+	442325+	436147+	
93	fsavedatd	0.0	15:03:40	10	1	309	4872K	0B	660K	93	1	sleeping	*0(1)	0.00000	0.00000	0	2545760	185	3258469	128449	3223929+	5471009	
60800	FortiTray	0.0	00:06:55	4	1	184	6336K	68K	3172K	60800	1	sleeping	*0(920)	0.00000	0.00000	501	34718	439	40236	12128	66504+	133644	
64820	CredentialSt	0.0	00:00:12	2	1	26	792K	0B	760K	64820	1	sleeping	*0(1)	0.00000	0.00000	501	1206	99	189	35	4186+	234	
68903	mdworker_sha	0.0	00:00:06	4	1	49	1136K	0B	68903	1	sleeping	*0(1)	0.00000	0.00000	501	6939	168	518	238	1392	700		
68786	com.apple.We	0.0	00:00:54	3	1	66	8544K	0B	2276K	68786	1	sleeping	*0(2)	0.00000	0.00000	501	7288	397	4428	2160	4469	5289	
68782	com.apple.We	0.0	00:07:90	4	1	88	159M	16M	32M	68782	1	sleeping	*0(2628)	0.00000	0.00000	501	51173	487	26934	14720	52231	65979	
68638	QuickLookUIS	0.0	00:00:12	3	1	143	2652K	0B	1576K	68638	1	sleeping	*0(66)	0.00000	0.00000	501	4031	281	855	269	2443	2245	
68637	com.apple.sp	0.0	00:06:17	3	1	265	23M	0B	20M	68637	1	sleeping	*0(62)	0.00000	0.00000	501	384615	486	12713	5633	80937	31803	
68422	servicord	0.0	00:00:18	1	0	11	2332K	0B	2192K	68422	67805	sleeping	*0(1)	0.00000	0.00000	501	9538	8575	832	415	1356	471	
67609	aslanmanager	0.0	00:00:04	2	1	18	460K	0B	444K	67609	1	sleeping	*0(1)	0.00000	0.00000	0	738	69	73	39	1432	172	
67648	QuickLookUIS	0.0	00:00:25	3	1	144	5116K	0B	2856K	67648	1	sleeping	*0(361)	0.00000	0.00000	501	5878	281	2738	886	6246	765	
67647	com.apple.sp	0.0	00:00:43	3	1	122	25M	0B	22M	67647	1	sleeping	*0(1)	0.00000	0.00000	501	5748	178	14442				