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1

socket: 2
core: 6
threads core: 2
threads total: 24

L1 cache:	64K	(private)
L2 cache:	256K	(private)
L3 cache:	12288K	(shared)

ShMem: 72kB
Main memory: 24 Gb/node

2

```
<sys/time.h>
struct timeval{
        long tv_sec;
        long tv_usec;
};
```

3

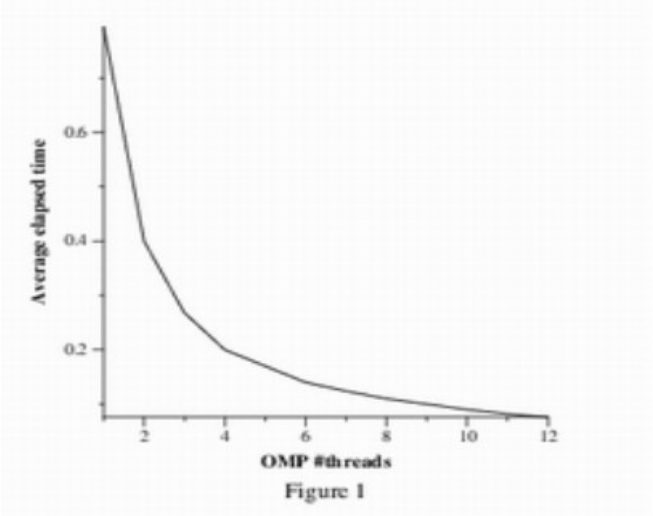

Figure 1

At beginning of the execution we don't have any thread, but during the execution, the program increase the number of threads executing at the same time, so the computation work is divided between the all threads.

4

Name	PI_COMP	REST_ MAIN	TIMING	TOTAL	OVHD
pi_omp_sum _local.c	1,991,860	8,470	21,978	30,794,980	29.87
pi_omp_ critical.c	655,433,035	37,766	100,898	253,400,501	2.81

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	PI_COMPUTATION	REST_ MAIN	TIMING	TOTAL	OVHD
pi_omp_sum_ local.c	48.56%	0.21%	0.54%	93.84%	53.17%
pi_omp_ critical.c	72.11%	0.03%	0.09%	27.88%	27.88%

6

Versió	T_1	T_∞	Parallelism
seq	25163336	24156947	2
v1	25163558	24157169	2
v2	24494445	21064576	2
v3	25170818	14548112	2
v4	25701840	13165421	20

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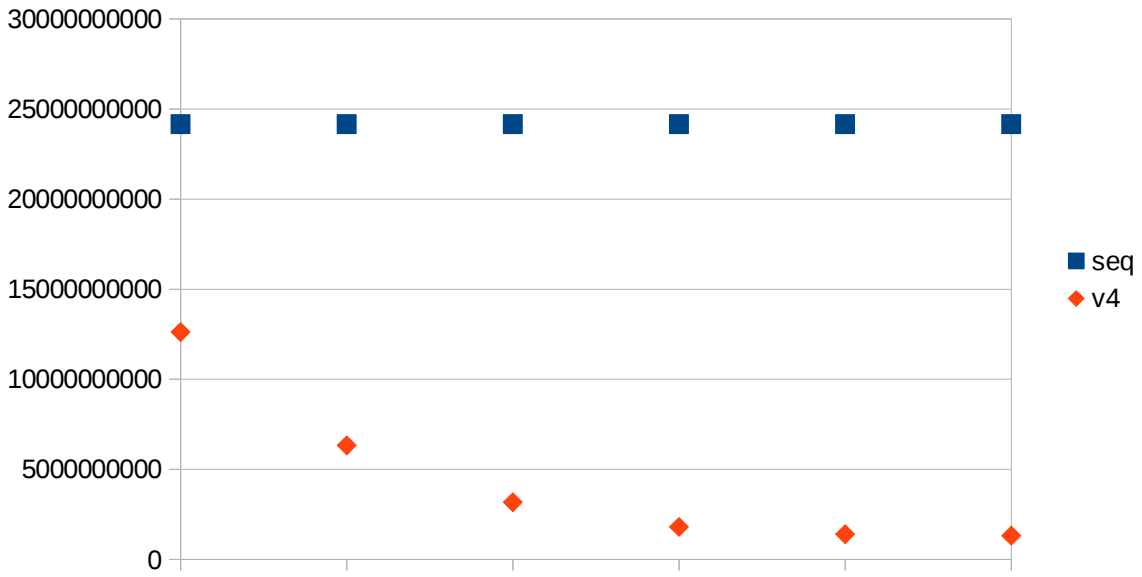
Processadors	seq	v4
2	24,170,661,015 ns	12,618,563,001 ns
4	24,170,661,015 ns	6,330,483,001 ns
8	24,170,661,015 ns	3,171,856,001 ns
16	24,170,661,015 ns	1,802,153,001 ns
32	24,170,661,015 ns	1,398,367,001 ns
64	24,170,661,015 ns	1,320,786,001 ns



The minimum number of cores that we need to execute 'seq' with the maximum speed is 1, so the execution time doesn't change with the increment of cores.
'v4' need 32 cores to execute at full speed, so with the increment of cores, the execution time decrease, until the number of cores is 32.