How fast is timing

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Pg_test_timing, in nanoseconds

N2, Cascade Lake

Intel(R) Xeon(R) CPU @ 2.80GHz

```
hannuk@pgn2:~$ ./pg_test_timing.std
Testing timing overhead for 3 seconds.
Per loop time including overhead: 22.98 ns, min: 19, same: 0
Histogram of timing durations:
   < ns   % of total        count
      1     0.00000            0
      2     0.00000            0
      4     0.00000            0
      8     0.00000            0
     16     0.00000            0
     32    99.94010    130489916
     64     0.05348        69829
    128     0.00179         2343
    256     0.00084         1093
    512     0.00001           12
   1024     0.00000            3
   2048     0.00057          743
   4096     0.00235         3071
   8192     0.00074          964
  16384     0.00009          124
  32768     0.00002           21
  65536     0.00000            5
 131072     0.00000            2
```

N4, Emerald Rapids

GENUINE INTEL(R) 0000

```
hannuk@pgn4:~$ ./pg_test_timing.std
Testing timing overhead for 3 seconds.
Per loop time including overhead: 31.63 ns, min: 25, same: 0
Histogram of timing durations:
   < ns   % of total        count
      1     0.00000            0
      2     0.00000            0
      4     0.00000            0
      8     0.00000            0
     16     0.00000            0
     32    62.11815     58912396
     64    37.87372     35919155
    128     0.00198         1878
    256     0.00057          543
    512     0.00068          649
   1024     0.00039          372
   2048     0.00032          300
   4096     0.00332         3153
   8192     0.00082          776
  16384     0.00003           30
  32768     0.00001            5
  65536     0.00000            1
 131072     0.00000            1
```

Pg_test_timing, in nanoseconds

C3D, AMD Genoa

AMD EPYC 9B14

```
hannuk@pgc3d:~$ ./pg_test_timing.std
Testing timing overhead for 3 seconds.
Per loop time including overhead: 26.97 ns, min: 19, same: 0
Histogram of timing durations:
   < ns   % of total       count
      1      0.00000           0
      2      0.00000           0
      4      0.00000           0
      8      0.00000           0
     16      0.00000           0
     32     99.97746   111204803
     64      0.01705       18962
    128      0.00129        1440
    256      0.00059         659
    512      0.00009          98
   1024      0.00012         130
   2048      0.00006          66
   4096      0.00253        2812
   8192      0.00059         652
  16384      0.00021         230
  32768      0.00001           7
  65536      0.00001           9
 131072      0.00000           2
```

Pg_test_timing, in nanoseconds

C3D, AMD Genoa

AMD EPYC 9B14

```
hannuk@pgc3d:~$ ./pg_test_timing.std
Testing timing overhead for 3 seconds.
Per loop time including overhead: 26.97 ns, min: 19, same: 0
Histogram of timing durations:
   < ns   % of total        count
      1   0.00000               0
      2   0.00000               0
      4   0.00000               0
      8   0.00000               0
     16   0.00000               0
     32  99.97746       111204803
     64   0.01705           18962
    128   0.00129            1440
    256   0.00059             659
    512   0.00009              98
   1024   0.00012             130
   2048   0.00006              66
   4096   0.00253            2812
   8192   0.00059             652
  16384   0.00021             230
  32768   0.00001               7
  65536   0.00001               9
 131072   0.00000               2
```

Ampere, PostgreSQL standard timings in ns

Using `INSTR_TIME_GET_NANOSEC(t)` from `"portability/instr_time.h"`

```
hannuk@pgt2a:~/work/postgres/src/bin/pg_test_timing$ ./pg_test_timing
Testing timing overhead for 3 seconds.
Per loop time including overhead: 35.50 ns, min: 0, same: 10931822
Histogram of timing durations:
   < ns   % of total        count
      1  12.93587        10931822
      2   0.00000               0
      4   0.00000               0
      8   0.00000               0
     16   0.00000               0
     32   0.00000               0
     64  86.20622        72851021
    128   0.84655          715401
    256   0.00000               4
    512   0.00000               2
   1024   0.00000               0
   2048   0.00162            1368
   4096   0.00914            7724
   8192   0.00047             397
  16384   0.00008              68
  32768   0.00004              32
  65536   0.00001              10
```

Pg_test_timing, in ticks (and ns)

```
hannuk@pgc3d:~$ ./pg_test_timing.ticks
Testing timing overhead for 3 seconds.
Total 2600000208 ticks in 1000000057 ns, 2600000059.799996 ticks per ns
This CPU is running at 2600000059 ticks / second, will run test for
7800000177 ticks
Per loop time including overhead: 15.74 ns, min: 26 ticks (10.0 ns), same: 0
Total ticks in: 7800000260, in: 3000001128 nr
Histogram of timing durations:
 < ticks (     < ns)   % of total        count
       1 (     0.4)     0.00000              0
       2 (     0.8)     0.00000              0
       4 (     1.5)     0.00000              0
       8 (     3.1)     0.00000              0
      16 (     6.2)     0.00000              0
      32 (    12.3)    43.32257       82550962
      64 (    24.6)    56.67305      107990250
     128 (    49.2)     0.00202           3851
     256 (    98.5)     0.00014            265
     512 (   196.9)     0.00010            191
    1024 (   393.8)     0.00001             14
    2048 (   787.7)     0.00000              0
    4096 (  1575.4)     0.00014            258
    8192 (  3150.8)     0.00116           2201
   16384 (  6301.5)     0.00048            912
   32768 ( 12603.1)     0.00033            629
   65536 ( 25206.2)     0.00001             13
  131072 ( 50412.3)     0.00000              1
  262144 (100824.6)     0.00000              2
      26 (    10.0)    43.32257       82550962
      52 (    20.0)    56.67305      107990250
```

```
hannuk@pgn4:~$ ./pg_test_timing.ticks
Testing timing overhead for 3 seconds.
Total 2100000094 ticks in 1000000079 ns, 2099999928.100005 ticks per ns
This CPU is running at 2099999928 ticks / second, will run test for
6299999784 ticks
Per loop time including overhead: 17.16 ns, min: 30 ticks (14.3 ns), same: 0
Total ticks in: 6299999852, in: 3000001665 nr
Histogram of timing durations:
 < ticks (     < ns)   % of total        count
       1 (     0.5)     0.00000              0
       2 (     1.0)     0.00000              0
       4 (     1.9)     0.00000              0
       8 (     3.8)     0.00000              0
      16 (     7.6)     0.00000              0
      32 (    15.2)     0.06998         122373
      64 (    30.5)    99.92174      174721250
     128 (    61.0)     0.00360           6295
     256 (   121.9)     0.00095           1663
     512 (   243.8)     0.00070           1219
    1024 (   487.6)     0.00051            884
```

```
  262144 (124830.5)     0.00000              1
      30 (    14.3)     0.06998         122373
      32 (    15.2)     4.55864        7971153
      34 (    16.2)    34.28716       59953879
      36 (    17.1)    31.79989       55604687
      38 (    18.1)    22.82533       39911936
      40 (    19.0)     6.29554       11008266
      42 (    20.0)     0.12169         212793
      44 (    21.0)     0.01411          24678
      46 (    21.9)     0.00875          15295
```