



# SPEC CPU®2017 Integer Rate Result

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**GIGA-BYTE TECHNOLOGY CO., LTD.**

(Test Sponsor: Giga Computing Technology Co., Ltd.)

**R284-S90-AAJ1**

**(2.0 GHz, Intel Xeon 6787P)**

**SPECrate®2017\_int\_base = 1640**

**SPECrate®2017\_int\_peak = 1690**

**CPU2017 License:** 9082

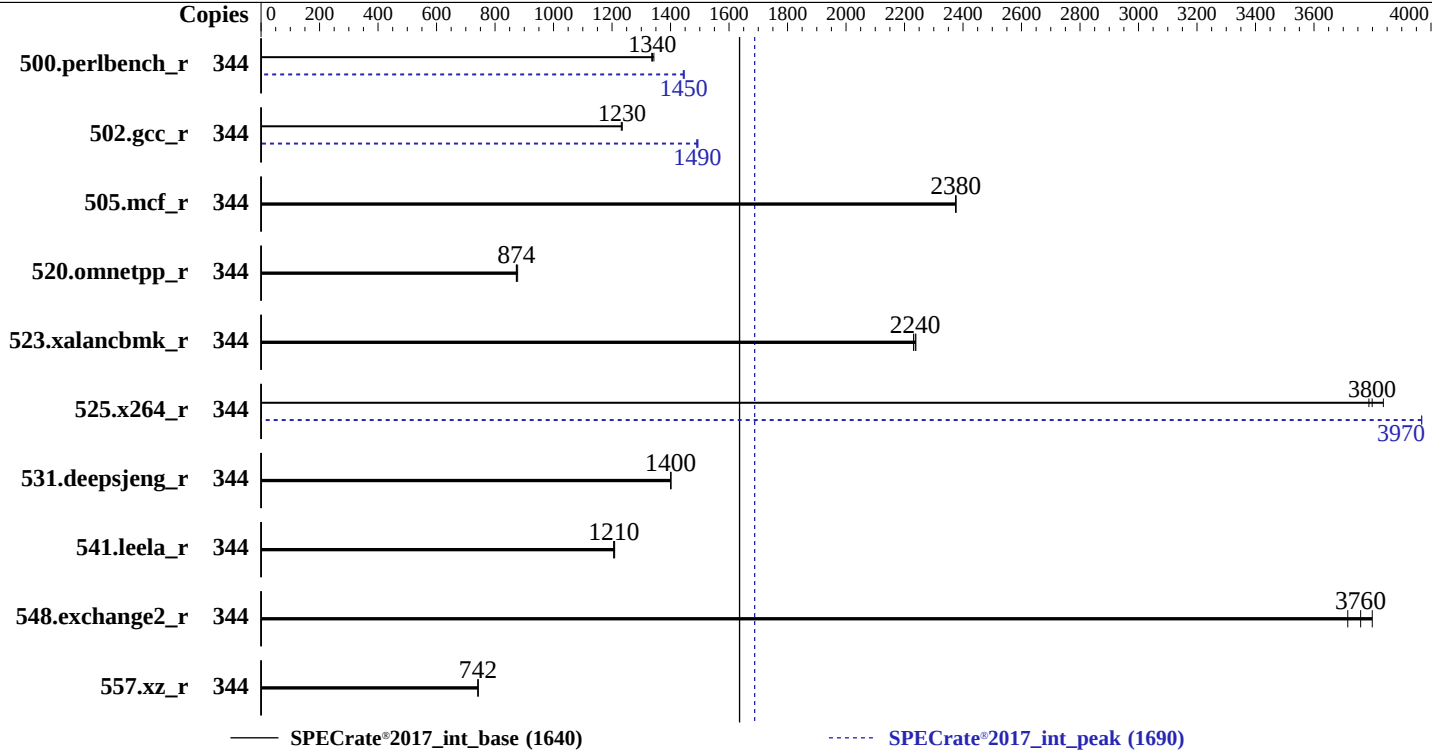
**Test Sponsor:** Giga Computing Technology Co., Ltd.

**Tested by:** Giga Computing Technology Co., Ltd.

**Test Date:** May-2025

**Hardware Availability:** Feb-2025

**Software Availability:** Jun-2024



## Hardware

CPU Name: Intel Xeon 6787P  
Max MHz: 3800  
Nominal: 2000  
Enabled: 172 cores, 2 chips, 2 threads/core  
Orderable: 1,2 chip(s)  
Cache L1: 64 KB I + 48 KB D on chip per core  
L2: 2 MB I+D on chip per core  
L3: 336 MB I+D on chip per chip  
Other: None  
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-88/56B-M, running at 8000)  
Storage: 1 x 3.84TB SSD  
Other: CPU Cooling: Air

## Software

OS: SUSE Linux Enterprise Server 15 SP6  
6.4.0-150600.21-default  
Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux;  
Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;  
Parallel: No  
Firmware: Version F25 released May-2025  
File System: xfs  
System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other: jemalloc memory allocator V5.0.1  
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.



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## Results Table

| Benchmark       | Base   |                   |                    |                   |                    |                   |                    | Peak   |                   |                    |                   |                    |                   |                    |
|-----------------|--------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
|                 | Copies | Seconds           | Ratio              | Seconds           | Ratio              | Seconds           | Ratio              | Copies | Seconds           | Ratio              | Seconds           | Ratio              | Seconds           | Ratio              |
| 500.perlbench_r | 344    | 408               | 1340               | 410               | 1340               | <b><u>409</u></b> | <b><u>1340</u></b> | 344    | <b><u>379</u></b> | <b><u>1450</u></b> | 379               | 1440               | 379               | 1450               |
| 502.gcc_r       | 344    | 395               | 1230               | <b><u>395</u></b> | <b><u>1230</u></b> | 395               | 1230               | 344    | <b><u>327</u></b> | <b><u>1490</u></b> | 326               | 1490               | 327               | 1490               |
| 505.mcf_r       | 344    | 234               | 2370               | 234               | 2380               | <b><u>234</u></b> | <b><u>2380</u></b> | 344    | 234               | 2370               | 234               | 2380               | <b><u>234</u></b> | <b><u>2380</u></b> |
| 520.omnetpp_r   | 344    | 517               | 873                | <b><u>517</u></b> | <b><u>874</u></b>  | 514               | 877                | 344    | 517               | 873                | <b><u>517</u></b> | <b><u>874</u></b>  | 514               | 877                |
| 523.xalancbmk_r | 344    | 163               | 2230               | <b><u>162</u></b> | <b><u>2240</u></b> | 162               | 2240               | 344    | 163               | 2230               | <b><u>162</u></b> | <b><u>2240</u></b> | 162               | 2240               |
| 525.x264_r      | 344    | 157               | 3840               | 159               | 3790               | <b><u>159</u></b> | <b><u>3800</u></b> | 344    | 152               | 3970               | 152               | 3970               | <b><u>152</u></b> | <b><u>3970</u></b> |
| 531.deepsjeng_r | 344    | 281               | 1400               | <b><u>281</u></b> | <b><u>1400</u></b> | 281               | 1400               | 344    | 281               | 1400               | <b><u>281</u></b> | <b><u>1400</u></b> | 281               | 1400               |
| 541.leela_r     | 344    | <b><u>472</u></b> | <b><u>1210</u></b> | 471               | 1210               | 473               | 1210               | 344    | <b><u>472</u></b> | <b><u>1210</u></b> | 471               | 1210               | 473               | 1210               |
| 548.exchange2_r | 344    | 243               | 3720               | 237               | 3800               | <b><u>240</u></b> | <b><u>3760</u></b> | 344    | 243               | 3720               | 237               | 3800               | <b><u>240</u></b> | <b><u>3760</u></b> |
| 557.xz_r        | 344    | 501               | 742                | 501               | 741                | <b><u>501</u></b> | <b><u>742</u></b>  | 344    | 501               | 742                | 501               | 741                | <b><u>501</u></b> | <b><u>742</u></b>  |

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Environment Variables Notes

Environment variables set by runcpu before the start of the run:

LD\_LIBRARY\_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"

MALLOC\_CONF = "retain:true"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM  
memory using Red Hat Enterprise Linux 8.4  
Transparent Huge Pages enabled by default  
Prior to runcpu invocation  
Filesystem page cache synced and cleared with:  
sync; echo 3> /proc/sys/vm/drop\_caches  
runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <etc>  
jemalloc, a general purpose malloc implementation  
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>



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## Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost Thu May 22 11:44:19 2025

SUT (System Under Test) info as seen by some common utilities.

### Table of contents

1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent\_hugepage
17. /sys/kernel/mm/transparent\_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
22. BIOS

1. uname -a  
Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT\_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09/lp)  
x86\_64 x86\_64 x86\_64 GNU/Linux

2. w  
11:44:19 up 11 min, 1 user, load average: 0.05, 0.87, 1.18  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root tty1 - 11:40 6.00s 1.23s 0.02s -bash

3. Username  
From environment variable \$USER: root

4. ulimit -a  
core file size (blocks, -c) unlimited  
data seg size (kbytes, -d) unlimited  
scheduling priority (-e) 0  
file size (blocks, -f) unlimited  
pending signals (-i) 4125853  
max locked memory (kbytes, -l) 8192  
max memory size (kbytes, -m) unlimited  
open files (-n) 1024  
pipe size (512 bytes, -p) 8

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## Platform Notes (Continued)

POSIX message queues (bytes, -q) 819200  
real-time priority (-r) 0  
stack size (kbytes, -s) unlimited  
cpu time (seconds, -t) unlimited  
max user processes (-u) 4125853  
virtual memory (kbytes, -v) unlimited  
file locks (-x) unlimited

-----  
5. sysinfo process ancestry  
/usr/lib/systemd/systemd --switched-root --system --deserialize=42  
login -- root  
-bash  
-bash  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=344 -c  
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=172 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base,peak -o all intrate  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=344 --configfile  
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=172 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base,peak --output\_format all --nopower  
--runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile  
\$SPEC/tmp/CPU2017.085/templogs/preenv.intrate.085.0.log --lognum 085.0 --from\_runcpu 2  
specperl \$SPEC/bin/sysinfo  
\$SPEC = /home/cpu2017

-----  
6. /proc/cpuinfo  
model name : Intel(R) Xeon(R) 6787P  
vendor\_id : GenuineIntel  
cpu family : 6  
model : 173  
stepping : 1  
microcode : 0x10003a3  
bugs : spectre\_v1 spectre\_v2 spec\_store\_bypass swapgs bhi  
cpu cores : 86  
siblings : 172  
2 physical ids (chips)  
344 processors (hardware threads)  
physical id 0: core ids 0-42,64-106  
physical id 1: core ids 0-42,64-106  
physical id 0: apicids 0-85,128-213  
physical id 1: apicids 256-341,384-469  
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for  
virtualized systems. Use the above data carefully.

### 7. lscpu

From lscpu from util-linux 2.39.3:

|                      |                                     |
|----------------------|-------------------------------------|
| Architecture:        | x86_64                              |
| CPU op-mode(s):      | 32-bit, 64-bit                      |
| Address sizes:       | 52 bits physical, 57 bits virtual   |
| Byte Order:          | Little Endian                       |
| CPU(s):              | 344                                 |
| On-line CPU(s) list: | 0-343                               |
| Vendor ID:           | GenuineIntel                        |
| BIOS Vendor ID:      | Intel(R) Corporation                |
| Model name:          | Intel(R) Xeon(R) 6787P              |
| BIOS Model name:     | Intel(R) Xeon(R) 6787P CPU @ 2.0GHz |
| BIOS CPU family:     | 179                                 |

(Continued on next page)



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## Platform Notes (Continued)

CPU family: 6  
Model: 173  
Thread(s) per core: 2  
Core(s) per socket: 86  
Socket(s): 2  
Stepping: 1  
CPU(s) scaling MHz: 23%  
CPU max MHz: 3800.0000  
CPU min MHz: 800.0000  
BogoMIPS: 4000.00  
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat  
pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx  
pdpe1gb rdtscp lm constant\_tsc art arch\_perfmon pebs bts rep\_good  
nopl xtopology nonstop\_tsc cpuid aperfmperf tsc\_known\_freq pni  
pclmulqdq dtes64 monitor ds\_cpl vmx smx est tm2 ssse3 sdbg fma cx16  
xtpr pdcm pcid dca sse4\_1 sse4\_2 x2apic movbe popcnt  
tsc\_deadline\_timer aes xsave avx f16c rdrand lahf\_lm abm  
3dnowprefetch cpuid\_fault epb cat\_l3 cat\_l2 cdp\_l3 intel\_ppin cdp\_l2  
ssbd mba ibrs ibpb stibp ibrs\_enhanced tpr\_shadow flexpriority ept  
vpid ept\_ad fsgsbase tsc\_adjust bmi1 hle avx2 smep bmi2 erms invpcid  
rtm cqm rdt\_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt  
clwb intel\_pt avx512cd sha\_ni avx512bw avx512vl xsaveopt xsavec  
xgetbv1 xsaves cqm\_llc cqm\_occup\_llc cqm\_mbm\_total cqm\_mbm\_local  
split\_lock\_detect user\_shstk avx\_vnni avx512\_bf16 wbnoinvd dtherm ida  
arat pln pts hwp hwp\_act\_window hwp\_epp hwp\_pkg\_req vnni avx512vbmi  
umip pku ospke waitpkg avx512\_vbmi2 gfni vaes vpclmulqdq avx512\_vnni  
avx512\_bitalg tme avx512\_vpopcntdq la57 rdpid bus\_lock\_detect  
cldemote movdiri movdir64b enqcmd fsrm md\_clear serialize tsxldtrk  
pconfig arch\_lbr ibt amx\_bf16 avx512\_fp16 amx\_tile amx\_int8 flush\_l1d  
arch\_capabilities  
Virtualization: VT-x  
L1d cache: 8.1 MiB (172 instances)  
L1i cache: 10.8 MiB (172 instances)  
L2 cache: 344 MiB (172 instances)  
L3 cache: 672 MiB (2 instances)  
NUMA node(s): 4  
NUMA node0 CPU(s): 0-42,172-214  
NUMA node1 CPU(s): 43-85,215-257  
NUMA node2 CPU(s): 86-128,258-300  
NUMA node3 CPU(s): 129-171,301-343  
Vulnerability Gather data sampling: Not affected  
Vulnerability Itlb multihit: Not affected  
Vulnerability L1tf: Not affected  
Vulnerability Mds: Not affected  
Vulnerability Meltdown: Not affected  
Vulnerability Mmio stale data: Not affected  
Vulnerability Reg file data sampling: Not affected  
Vulnerability Retbleed: Not affected  
Vulnerability Spec rstack overflow: Not affected  
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl  
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and \_\_user pointer sanitization  
Vulnerability Spectre v2: Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling;  
PBRSE-eIBRS Not affected; BHI BHI\_DIS\_S  
Vulnerability Srbds: Not affected  
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE        | LEVEL | SETS | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|------|----------|----------------|
| L1d  | 48K      | 8.1M     | 12   | Data        | 1     | 64   | 1        | 64             |
| L1i  | 64K      | 10.8M    | 16   | Instruction | 1     | 64   | 1        | 64             |

(Continued on next page)



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## Platform Notes (Continued)

|    |      |      |            |   |        |   |    |
|----|------|------|------------|---|--------|---|----|
| L2 | 2M   | 344M | 16 Unified | 2 | 2048   | 1 | 64 |
| L3 | 336M | 672M | 16 Unified | 3 | 344064 | 1 | 64 |

### 8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```
available: 4 nodes (0-3)
node 0 cpus: 0-42,172-214
node 0 size: 257500 MB
node 0 free: 255634 MB
node 1 cpus: 43-85,215-257
node 1 size: 258025 MB
node 1 free: 256757 MB
node 2 cpus: 86-128,258-300
node 2 size: 258025 MB
node 2 free: 257084 MB
node 3 cpus: 129-171,301-343
node 3 size: 257943 MB
node 3 free: 256994 MB
node distances:
node  0  1  2  3
 0:  10  12  21  21
 1:  12  10  21  21
 2:  21  21  10  12
 3:  21  21  12  10
```

### 9. /proc/meminfo

MemTotal: 1056250764 kB

### 10. who -r

run-level 3 May 22 11:33

### 11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)

|                |         |
|----------------|---------|
| Default Target | Status  |
| multi-user     | running |

### 12. Services, from systemctl list-unit-files

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STATE           | UNIT FILES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| enabled         | ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor appstream-sync-cache auditd bluetooth cron display-manager firewalld getty@ irqbalance issue-generator kbdsettings klog lvm2-monitor nscd nvme-fc-boot-connections nvme-fc-autoconnect postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| enabled-runtime | systemd-remount-fs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| disabled        | NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon autofs autostart-initscripts blk-availability bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed debug-shell dmraid-activation dnsmasq ebttables exchange-bmc-os-info fsidd gpm grub2-once haveged ipmi ipmievdev issue-add-ssh-keys kexec-load ksm kvm_stat lunmask man-db-create multipathd munge nfs nfs-blkmap nmb ntp-wait ntpd openvpn@ ostree-remount rpcbind rpmconfigcheck rsyncd rtkit-daemon salt-minion serial-getty@ slurmd smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd svnserv systemd-boot-check-no-failures systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2 update-system-flatpaks upower vncserver@ wpa_supplicant@ ybind |
| indirect        | pcscd saned@ systemd-userdbd wickedd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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### 13. Linux kernel boot-time arguments, from /proc/cmdline

```
BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
root=UUID=205c50d5-8622-4656-b281-2c13270d7dbe
splash=silent
resume=/dev/disk/by-uuid/66e6d88c-6f5e-41e0-a414-a0794a222fa2
mitigations=auto
quiet
security=apparmor
```

### 14. cpupower frequency-info

```
analyzing CPU 230:
  current policy: frequency should be within 800 MHz and 3.80 GHz.
                   The governor "performance" may decide which speed to use
                   within this range.
  boost state support:
    Supported: yes
    Active: yes
```

### 15. sysctl

```
kernel.numa_balancing      0
kernel.randomize_va_space  2
vm.compaction_proactiveness 20
vm.dirty_background_bytes   0
vm.dirty_background_ratio   10
vm.dirty_bytes              0
vm.dirty_expire_centisecs   3000
vm.dirty_ratio              40
vm.dirty_writeback_centisecs 500
vm.dirtytime_expire_seconds 43200
vm.extfrag_threshold        500
vm.min_unmapped_ratio       1
vm.nr_hugepages             0
vm.nr_hugepages_mempolicy   0
vm.nr_overcommit_hugepages  0
vm.swappiness                60
vm.watermark_boost_factor    15000
vm.watermark_scale_factor    10
vm.zone_reclaim_mode         0
```

### 16. /sys/kernel/mm/transparent\_hugepage

```
defrag      always defer defer+madvice [madvice] never
enabled     [always] madvice never
hpage_pmd_size 2097152
shmem_enabled always within_size advise [never] deny force
```

### 17. /sys/kernel/mm/transparent\_hugepage/khugepaged

```
alloc_sleep_millisecs 60000
defrag                 1
max_ptes_none          511
max_ptes_shared        256
max_ptes_swap          64
pages_to_scan          4096
scan_sleep_millisecs   10000
```

(Continued on next page)



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## Platform Notes (Continued)

### 18. OS release

From /etc/\*-release /etc/\*-version  
os-release SUSE Linux Enterprise Server 15 SP6

### 19. Disk information

SPEC is set to: /home/cpu2017  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/nvme0n1p3 xfs 2.5T 715G 1.8T 29% /home

### 20. /sys/devices/virtual/dmi/id

Vendor: Giga Computing  
Product: R284-S90-AAJ1-000  
Product Family: Server  
Serial: 01234567890123456789AB

### 21. dmidecode

Additional information from dmidecode 3.4 follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:  
16x Samsung M327R8GA0EB0-CLVXB 64 GB 2 rank 11200, configured at 8000

### 22. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: GIGABYTE  
BIOS Version: F25  
BIOS Date: 05/08/2025  
BIOS Revision: 5.35

## Compiler Version Notes

C | 502.gcc\_r(peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

C | 500.perlbench\_r(base, peak) 502.gcc\_r(base) 505.mcf\_r(base, peak) 525.x264\_r(base, peak)  
| 557.xz\_r(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

C | 502.gcc\_r(peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308  
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(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

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**GIGA-BYTE TECHNOLOGY CO., LTD.**

(Test Sponsor: Giga Computing Technology Co., Ltd.)

**R284-S90-AAJ1**

**(2.0 GHz, Intel Xeon 6787P)**

**SPECrate®2017\_int\_base = 1640**

**SPECrate®2017\_int\_peak = 1690**

**CPU2017 License:** 9082

**Test Sponsor:** Giga Computing Technology Co., Ltd.

**Tested by:** Giga Computing Technology Co., Ltd.

**Test Date:** May-2025

**Hardware Availability:** Feb-2025

**Software Availability:** Jun-2024

## Compiler Version Notes (Continued)

```
=====
C      | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
      | 557.xz_r(base, peak)
=====
```

```
-----
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====
```

```
=====
C++   | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
      | 541.leela_r(base, peak)
=====
```

```
-----
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====
```

```
=====
Fortran | 548.exchange2_r(base, peak)
=====
```

```
-----
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
=====
```

## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Base Portability Flags

```
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```



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## Base Optimization Flags

C benchmarks:

-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmallo

C++ benchmarks:

-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmallo

Fortran benchmarks:

-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte -auto  
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmallo

## Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Peak Portability Flags

500.perlbench\_r: -DSPEC\_LP64 -DSPEC\_LINUX\_X64  
502.gcc\_r: -D\_FILE\_OFFSET\_BITS=64  
505.mcf\_r: -DSPEC\_LP64  
520.omnetpp\_r: -DSPEC\_LP64  
523.xalancbmk\_r: -DSPEC\_LP64 -DSPEC\_LINUX  
525.x264\_r: -DSPEC\_LP64  
531.deepsjeng\_r: -DSPEC\_LP64  
541.leela\_r: -DSPEC\_LP64  
548.exchange2\_r: -DSPEC\_LP64  
557.xz\_r: -DSPEC\_LP64



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**Test Date:** May-2025

**Hardware Availability:** Feb-2025

**Software Availability:** Jun-2024

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmallo
```

```
502.gcc_r: -m32 -L/opt/intel/oneapi/compiler/2024.1/lib32 -std=gnu89
-Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc
```

505.mcf\_r: basepeak = yes

```
525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmallo
```

557.xz\_r: basepeak = yes

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

523.xalancbmk\_r: basepeak = yes

531.deepsjeng\_r: basepeak = yes

541.leela\_r: basepeak = yes

Fortran benchmarks:

548.exchange2\_r: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html>

<http://www.spec.org/cpu2017/flags/GIGABYTE-Platform-Flags-Intel-GNR-rev1.0.html>



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You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/GIGABYTE-Platform-Flags-Intel-GNR-rev1.0.xml>

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