Rocky Enterprise Linux 9.2 Manual Pages on command 'getauxval.3'

$ man getauxval.3

GETAUXVAL(3) Linux Programmer's Manual GETAUXVAL(3)

NAME

getauxval - retrieve a value from the auxiliary vector

SYNOPSIS

#include <sys/auxv.h>

unsigned long getauxval(unsigned long type);

DESCRIPTION

The getauxval() function retrieves values from the auxiliary vector, a mechanism that the kernel's ELF binary loader uses to pass certain in? formation to user space when a program is executed.

Each entry in the auxiliary vector consists of a pair of values: a type that identifies what this entry represents, and a value for that type.

Given the argument type, getauxval() returns the corresponding value.

The value returned for each type is given in the following list. Not all type values are present on all architectures.

AT_BASE

The base address of the program interpreter (usually, the dy? namic linker).

AT_BASE_PLATFORM

A pointer to a string (PowerPC and MIPS only). On PowerPC, this identifies the real platform; may differ from AT_PLATFORM. On MIPS, this identifies the ISA level (since Linux 5.7).

AT_CLKTCK

The frequency with which times(2) counts. This value can also be obtained via sysconf(_SC_CLK_TCK).

AT_DCACHEBSIZE

The data cache block size.

AT_EGID

The effective group ID of the thread.

AT_ENTRY

The entry address of the executable.

AT_EUID

The effective user ID of the thread.

AT_EXECFD

File descriptor of program.

AT_EXECFN

A pointer to a string containing the pathname used to execute the program.

AT_FLAGS

Flags (unused).

AT_FPUCW

Used FPU control word (SuperH architecture only). This gives some information about the FPU initialization performed by the kernel.

AT_GID The real group ID of the thread.

AT_HWCAP

An architecture and ABI dependent bit-mask whose settings indi? cate detailed processor capabilities. The contents of the bit mask are hardware dependent (for example, see the kernel source file arch/x86/include/asm/cpufeature.h for details relating to the Intel x86 architecture; the value returned is the first

32-bit word of the array described there). A human-readable version of the same information is available via /proc/cpuinfo.

AT_HWCAP2 (since glibc 2.18)

Further machine-dependent hints about processor capabilities.

AT_ICACHEBSIZE

The instruction cache block size.

AT_L1D_CACHEGEOMETRY

Geometry of the L1 data cache, encoded with the cache line size in bytes in the bottom 16 bits and the cache associativity in the next 16 bits. The associativity is such that if N is the 16-bit value, the cache is N-way set associative.

AT_L1D_CACHESIZE

The L1 data cache size.

AT_L1I_CACHEGEOMETRY

Geometry of the L1 instruction cache, encoded as for AT_L1D_CACHEGEOMETRY.

AT_L1I_CACHESIZE

The L1 instruction cache size.

AT_L2_CACHEGEOMETRY

Geometry of the L2 cache, encoded as for AT_L1D_CACHEGEOMETRY.

AT_L2_CACHESIZE

The L2 cache size.

AT_L3_CACHEGEOMETRY

Geometry of the L3 cache, encoded as for AT_L1D_CACHEGEOMETRY.

AT_L3_CACHESIZE

The L3 cache size.

AT_PAGESZ

The system page size (the same value returned by sysconf(_SC_PA? GESIZE)).

AT_PHDR

The address of the program headers of the executable.

AT_PHENT

The size of program header entry.

AT_PHNUM

The number of program headers.

AT_PLATFORM

A pointer to a string that identifies the hardware platform that the program is running on. The dynamic linker uses this in the interpretation of rpath values.

AT_RANDOM

The address of sixteen bytes containing a random value.

AT_SECURE

Has a nonzero value if this executable should be treated se? curely. Most commonly, a nonzero value indicates that the process is executing a set-user-ID or set-group-ID binary (so that its real and effective UIDs or GIDs differ from one an? other), or that it gained capabilities by executing a binary file that has capabilities (see capabilities(7)). Alterna? tively, a nonzero value may be triggered by a Linux Security Module. When this value is nonzero, the dynamic linker disables the use of certain environment variables (see ld-linux.so(8)) and glibc changes other aspects of its behavior. (See also se? cure_getenv(3).)

AT_SYSINFO

The entry point to the system call function in the vDSO. Not present/needed on all architectures (e.g., absent on x86-64).

AT_SYSINFO_EHDR

The address of a page containing the virtual Dynamic Shared Ob? ject (vDSO) that the kernel creates in order to provide fast im? plementations of certain system calls.

AT_UCACHEBSIZE

The unified cache block size.

AT_UID The real user ID of the thread.

RETURN VALUE

On success, getauxval() returns the value corresponding to type. If type is not found, 0 is returned.

ERRORS

ENOENT (since glibc 2.19)

No entry corresponding to type could be found in the auxiliary vector.

VERSIONS

The getauxval() function was added to glibc in version 2.16.

ATTRIBUTES

For an explanation of the terms used in this section, see at? tributes(7).

??????????????????????????????????????

?Interface ? Attribute ? Value ?

??????????????????????????????????????

?getauxval() ? Thread safety ? MT-Safe ?

??????????????????????????????????????

CONFORMING TO

This function is a nonstandard glibc extension.

NOTES

The primary consumer of the information in the auxiliary vector is the dynamic linker, ld-linux.so(8). The auxiliary vector is a convenient and efficient shortcut that allows the kernel to communicate a certain set of standard information that the dynamic linker usually or always needs. In some cases, the same information could be obtained by system calls, but using the auxiliary vector is cheaper.

The auxiliary vector resides just above the argument list and environ? ment in the process address space. The auxiliary vector supplied to a program can be viewed by setting the LD_SHOW_AUXV environment variable when running a program:

```
$ LD_SHOW_AUXV=1 sleep 1
```

The auxiliary vector of any process can (subject to file permissions) be obtained via /proc/[pid]/auxv; see proc(5) for more information.

BUGS

Before the addition of the ENOENT error in glibc 2.19, there was no way to unambiguously distinguish the case where type could not be found

from the case where the value corresponding to type was zero.

SEE ALSO

secure_getenv(3), vdso(7), ld-linux.so(8)

COLOPHON

This page is part of release 5.10 of the Linux man-pages project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at https://www.kernel.org/doc/man-pages/.