



Linux Ubuntu 26.04 Manual Pages on command 'personality.2'

\$ man personality.2

personality(2) System Calls Manual personality(2)

NAME

personality - set the process execution domain

LIBRARY

Standard C library (libc, -lc)

SYNOPSIS

```
#include <sys/personality.h>

int personality(unsigned long persona);
```

DESCRIPTION

Linux supports different execution domains, or personalities, for each process. Among other things, execution domains tell Linux how to map signal numbers into signal actions. The execution domain system allows Linux to provide limited support for binaries compiled under other UNIX-like operating systems.

If persona is not 0xffffffff, then personality() sets the caller's execution domain to the value specified by persona. Specifying persona as 0xffffffff provides a way of retrieving the current persona without changing it.

A list of the available execution domains can be found in <sys/personality.h>. The execution domain is a 32-bit value in which the top three bytes are set aside for flags that cause the kernel to modify the behavior of certain system calls so as to emulate historical or architectural quirks. The least significant byte is a value defining the personality the kernel should assume. The flag values are as follows:

ADDR_COMPAT_LAYOUT (since Linux 2.6.9)

With this flag set, provide legacy virtual address space layout.

ADDR_NO_RANDOMIZE (since Linux 2.6.12)

With this flag set, disable address-space-layout randomization.

ADDR_LIMIT_32BIT (since Linux 2.2)

Limit the address space to 32 bits.

ADDR_LIMIT_3GB (since Linux 2.4.0)

With this flag set, use 0xc0000000 as the offset at which to search a virtual memory chunk on `mmap(2)`; otherwise use 0xffffe000. Applies to 32-bit x86 processes only.

FDPIC_FUNCPTRS (since Linux 2.6.11)

User-space function pointers to signal handlers point to descriptors. Applies only to ARM if `BINFMT_ELF_FDPIC` and SuperH.

MMAP_PAGE_ZERO (since Linux 2.4.0)

Map page 0 as read-only (to support binaries that depend on this SVr4 behavior).

READ_IMPLIES_EXEC (since Linux 2.6.8)

With this flag set, `PROT_READ` implies `PROT_EXEC` for `mmap(2)`.

SHORT_INODE (since Linux 2.4.0)

No effect.

STICKY_TIMEOUTS (since Linux 1.2.0)

With this flag set, `select(2)`, `pselect(2)`, and `ppoll(2)` do not modify the returned timeout argument when interrupted by a signal handler.

UNAME26 (since Linux 3.1)

Have `uname(2)` report a 2.6.(40+x) version number rather than a MAJOR.x version number. Added as a stopgap measure to support broken applications that could not handle the kernel version-numbering switch from Linux 2.6.x to Linux 3.x.

WHOLE_SECONDS (since Linux 1.2.0)

No effect.

The available execution domains are:

PER_BSD (since Linux 1.2.0)

BSD. (No effects.)

PER_HPUX (since Linux 2.4)

Support for 32-bit HP/UX. This support was never complete, and was dropped so that since Linux 4.0, this value has no effect.

PER_IRIX32 (since Linux 2.2)

IRIX 5 32-bit. Never fully functional; support dropped in Linux 2.6.27. Implies

STICKY_TIMEOUTS.

PER_IRIX64 (since Linux 2.2)

IRIX 6 64-bit. Implies STICKY_TIMEOUTS; otherwise no effect.

PER_IRIXN32 (since Linux 2.2)

IRIX 6 new 32-bit. Implies STICKY_TIMEOUTS; otherwise no effect.

PER_ISCR4 (since Linux 1.2.0)

Implies STICKY_TIMEOUTS; otherwise no effect.

PER_LINUX (since Linux 1.2.0)

Linux.

PER_LINUX32 (since Linux 2.2)

uname(2) returns the name of the 32-bit architecture in the machine field ("i686" instead of "x86_64", &c.).

Under ia64 (Itanium), processes with this personality don't have the O_LARGEFILE open(2) flag forced.

Under 64-bit ARM, setting this personality is forbidden if execve(2)ing a 32-bit process would also be forbidden (cf. the allow_mismatched_32bit_el0 kernel parameter and Documentation/arm64/asymmetric-32bit.rst).

PER_LINUX32_3GB (since Linux 2.4)

Same as PER_LINUX32, but implies ADDR_LIMIT_3GB.

PER_LINUX_32BIT (since Linux 2.0)

Same as PER_LINUX, but implies ADDR_LIMIT_32BIT.

PER_LINUX_FDPIC (since Linux 2.6.11)

Same as PER_LINUX, but implies FDPIC_FUNCPTRS.

PER_OSF4 (since Linux 2.4)

OSF/1 v4. No effect since Linux 6.1, which removed a.out binary support. Before, on alpha, would clear top 32 bits of iov_len in the user's buffer for compatibility with old versions of OSF/1 where iov_len was defined as. int.

PER_OSR5 (since Linux 2.4)

SCO OpenServer 5. Implies STICKY_TIMEOUTS and WHOLE_SECONDS; otherwise no effect.

PER_RISCOS (since Linux 2.3.7; macro since Linux 2.3.13)

Acorn RISC OS/Arthur (MIPS). No effect. Up to Linux 4.0, would set the emulation altroot to /usr/gnemul/riscos (cf. PER_SUNOS, below). Before then, up to Linux 2.6.3, just Arthur emulation.

PER_SCOSVR3 (since Linux 1.2.0)

SCO UNIX System V Release 3. Same as PER_OSR5, but also implies SHORT_INODE.

PER_SOLARIS (since Linux 2.4)

Solaris. Implies STICKY_TIMEOUTS; otherwise no effect.

PER_SUNOS (since Linux 2.4.0)

Sun OS. Same as PER_BSD, but implies STICKY_TIMEOUTS. Prior to Linux 2.6.26, dld library and dynamic linker searches to /usr/gnemul. Buggy, largely unmaintained, and almost entirely unused.

PER_SVR3 (since Linux 1.2.0)

AT&T UNIX System V Release 3. Implies STICKY_TIMEOUTS and SHORT_INODE; otherwise no effect.

PER_SVR4 (since Linux 1.2.0)

AT&T UNIX System V Release 4. Implies STICKY_TIMEOUTS and MMAP_PAGE_ZERO; otherwise no effect.

PER_UW7 (since Linux 2.4)

UnixWare 7. Implies STICKY_TIMEOUTS and MMAP_PAGE_ZERO; otherwise no effect.

PER_WYSEV386 (since Linux 1.2.0)

WYSE UNIX System V/386. Implies STICKY_TIMEOUTS and SHORT_INODE; otherwise no effect.

PER_XENIX (since Linux 1.2.0)

XENIX. Implies STICKY_TIMEOUTS and SHORT_INODE; otherwise no effect.

RETURN VALUE

On success, the previous persona is returned. On error, -1 is returned, and errno is set to indicate the error.

ERRORS

EINVAL The kernel was unable to change the personality.

STANDARDS

Linux.

HISTORY

Linux 1.1.20, glibc 2.3.

SEE ALSO

setarch(8)