

Documentation for /proc/sys/kernel/\*      kernel version 2.2.10  
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For general info and legal blurb, please look in README.

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This file contains documentation for the sysctl files in  
 /proc/sys/kernel/ and is valid for Linux kernel version 2.2.

The files in this directory can be used to tune and monitor  
 miscellaneous and general things in the operation of the Linux  
 kernel. Since some of the files can be used to screw up your  
 system, it is advisable to read both documentation and source  
 before actually making adjustments.

Currently, these files might (depending on your configuration)  
 show up in /proc/sys/kernel:

- acct
- acpi\_video\_flags
- auto\_msgmni
- bootloader\_type                    [ X86 only ]
- bootloader\_version                [ X86 only ]
- callhome                            [ S390 only ]
- cap\_last\_cap
- core\_pattern
- core\_pipe\_limit
- core\_uses\_pid
- ctrl-alt-del
- dmesg\_restrict
- domainname
- hostname
- hotplug
- hung\_task\_panic
- hung\_task\_check\_count
- hung\_task\_timeout\_secs
- hung\_task\_warnings
- kexec\_load\_disabled
- kptr\_restrict
- kstack\_depth\_to\_print              [ X86 only ]
- l2cr                                [ PPC only ]
- modprobe                            ==> Documentation/debugging-modules.txt
- modules\_disabled
- msg\_next\_id                         [ sysv ipc ]
- msgmax
- msgmnb
- msgmni
- nmi\_watchdog
- osrelease
- ostype
- overflowgid
- overflowuid
- panic
- panic\_on\_oops
- panic\_on\_stackoverflow
- panic\_on\_unrecovered\_nmi
- panic\_on\_warn

```

- pid_max
- powersave-nap          [ PPC only ]
- printk
- printk_delay
- printk_ratelimit
- printk_ratelimit_burst
- randomize_va_space
- real-root-dev          ==> Documentation/initrd.txt
- reboot-cmd             [ SPARC only ]
- rtsig-max
- rtsig-nr
- sem
- sem_next_id            [ sysv ipc ]
- sg-big-buff            [ generic SCSI device (sg) ]
- shm_next_id            [ sysv ipc ]
- shm_rmid_forced
- shmall
- shmmax                 [ sysv ipc ]
- shmmni
- softlockup_all_cpu_backtrace
- soft_watchdog
- stop-a                 [ SPARC only ]
- sysrq                  ==> Documentation/sysrq.txt
- sysctl_writes_strict
- tainted
- threads-max
- unknown_nmi_panic
- watchdog
- watchdog_thresh
- version

```

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```

acct:

highwater lowwater frequency

If BSD-style process accounting is enabled these values control its behaviour. If free space on filesystem where the log lives goes below <lowwater>% accounting suspends. If free space gets above <highwater>% accounting resumes. <Frequency> determines how often do we check the amount of free space (value is in seconds). Default:

```
4 2 30
```

That is, suspend accounting if there left <= 2% free; resume it if we got >=4%; consider information about amount of free space valid for 30 seconds.

```
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```

acpi\_video\_flags:

flags

See Doc\*/kernel/power/video.txt, it allows mode of video boot to be set during run time.

```
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```

auto\_msgmni:

This variable has no effect and may be removed in future kernel releases. Reading it always returns 0.  
 Up to Linux 3.17, it enabled/disabled automatic recomputing of msgmni upon memory add/remove or upon ipc namespace creation/removal. Echoing "1" into this file enabled msgmni automatic recomputing. Echoing "0" turned it off. auto\_msgmni default value was 1.

=====  
 bootloader\_type:

x86 bootloader identification

This gives the bootloader type number as indicated by the bootloader, shifted left by 4, and OR'd with the low four bits of the bootloader version. The reason for this encoding is that this used to match the type\_of\_loader field in the kernel header; the encoding is kept for backwards compatibility. That is, if the full bootloader type number is 0x15 and the full version number is 0x234, this file will contain the value 340 = 0x154.

See the type\_of\_loader and ext\_loader\_type fields in Documentation/x86/boot.txt for additional information.

=====  
 bootloader\_version:

x86 bootloader version

The complete bootloader version number. In the example above, this file will contain the value 564 = 0x234.

See the type\_of\_loader and ext\_loader\_ver fields in Documentation/x86/boot.txt for additional information.

=====  
 callhome:

Controls the kernel's callhome behavior in case of a kernel panic.

The s390 hardware allows an operating system to send a notification to a service organization (callhome) in case of an operating system panic.

When the value in this file is 0 (which is the default behavior) nothing happens in case of a kernel panic. If this value is set to "1" the complete kernel oops message is send to the IBM customer service organization in case the mainframe the Linux operating system is running on has a service contract with IBM.

=====  
 cap\_last\_cap

Highest valid capability of the running kernel. Exports CAP\_LAST\_CAP from the kernel.

=====

core\_pattern:

core\_pattern is used to specify a core dumpfile pattern name.

- . max length 128 characters; default value is "core"
- . core\_pattern is used as a pattern template for the output filename; certain string patterns (beginning with '%') are substituted with their actual values.
- . backward compatibility with core\_uses\_pid:
  - If core\_pattern does not include "%p" (default does not) and core\_uses\_pid is set, then .PID will be appended to the filename.
- . corename format specifiers:
  - %<NUL> '%' is dropped
  - %% output one '%'
  - %p pid
  - %P global pid (init PID namespace)
  - %i tid
  - %I global tid (init PID namespace)
  - %u uid (in initial user namespace)
  - %g gid (in initial user namespace)
  - %d dump mode, matches PR\_SET\_DUMPABLE and /proc/sys/fs/suid\_dumpable
  - %s signal number
  - %t UNIX time of dump
  - %h hostname
  - %e executable filename (may be shortened)
  - %E executable path
  - %<OTHER> both are dropped
- . If the first character of the pattern is a '|', the kernel will treat the rest of the pattern as a command to run. The core dump will be written to the standard input of that program instead of to a file.

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core\_pipe\_limit:

This sysctl is only applicable when core\_pattern is configured to pipe core files to a user space helper (when the first character of core\_pattern is a '|', see above). When collecting cores via a pipe to an application, it is occasionally useful for the collecting application to gather data about the crashing process from its /proc/pid directory. In order to do this safely, the kernel must wait for the collecting process to exit, so as not to remove the crashing processes proc files prematurely. This in turn creates the possibility that a misbehaving userspace collecting process can block the reaping of a crashed process simply by never exiting. This sysctl defends against that. It defines how many concurrent crashing processes may be piped to user space applications in parallel. If this value is exceeded, then those crashing processes above that value are noted via the kernel log and their cores are skipped. 0 is a special value, indicating that unlimited processes may be captured in parallel, but that no waiting will take place (i.e. the collecting process is not guaranteed access to /proc/<crashing pid>/). This value defaults to 0.

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core\_uses\_pid:

The default coredump filename is "core". By setting `core_uses_pid` to 1, the coredump filename becomes `core.PID`. If `core_pattern` does not include "%p" (default does not) and `core_uses_pid` is set, then `.PID` will be appended to the filename.

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`ctrl-alt-del:`

When the value in this file is 0, `ctrl-alt-del` is trapped and sent to the `init(1)` program to handle a graceful restart. When, however, the value is > 0, Linux's reaction to a Vulcan Nerve Pinch (`tm`) will be an immediate reboot, without even syncing its dirty buffers.

Note: when a program (like `dosemu`) has the keyboard in 'raw' mode, the `ctrl-alt-del` is intercepted by the program before it ever reaches the kernel tty layer, and it's up to the program to decide what to do with it.

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`dmesg_restrict:`

This toggle indicates whether unprivileged users are prevented from using `dmesg(8)` to view messages from the kernel's log buffer. When `dmesg_restrict` is set to (0) there are no restrictions. When `dmesg_restrict` is set set to (1), users must have `CAP_SYSLOG` to use `dmesg(8)`.

The kernel config option `CONFIG_SECURITY_DMESG_RESTRICT` sets the default value of `dmesg_restrict`.

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`domainname & hostname:`

These files can be used to set the NIS/YP `domainname` and the `hostname` of your box in exactly the same way as the commands `domainname` and `hostname`, i.e.:

```
# echo "darkstar" > /proc/sys/kernel/hostname
# echo "mydomain" > /proc/sys/kernel/domainname
has the same effect as
# hostname "darkstar"
# domainname "mydomain"
```

Note, however, that the classic `darkstar.frop.org` has the `hostname` "darkstar" and DNS (Internet Domain Name Server) `domainname` "frop.org", not to be confused with the NIS (Network Information Service) or YP (Yellow Pages) `domainname`. These two domain names are in general different. For a detailed discussion see the `hostname(1)` man page.

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`hotplug:`

Path for the hotplug policy agent.

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