

magic-number.txt

This file is a registry of magic numbers which are in use. When you add a magic number to a structure, you should also add it to this file, since it is best if the magic numbers used by various structures are unique.

It is a *\*very\** good idea to protect kernel data structures with magic numbers. This allows you to check at run time whether (a) a structure has been clobbered, or (b) you've passed the wrong structure to a routine. This last is especially useful --- particularly when you are passing pointers to structures via a void \* pointer. The tty code, for example, does this frequently to pass driver-specific and line discipline-specific structures back and forth.

The way to use magic numbers is to declare them at the beginning of the structure, like so:

```
struct tty_ldisc {
    int      magic;
    ...
};
```

Please follow this discipline when you are adding future enhancements to the kernel! It has saved me countless hours of debugging, especially in the screwy cases where an array has been overrun and structures following the array have been overwritten. Using this discipline, these cases get detected quickly and safely.

Theodore Ts'o  
31 Mar 94

The magic table is current to Linux 2.1.55.

Michael Chastain  
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22 Sep 1997

Now it should be up to date with Linux 2.1.112. Because we are in feature freeze time it is very unlikely that something will change before 2.2.x. The entries are sorted by number field.

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29 Jul 1998

Updated the magic table to Linux 2.5.45. Right over the feature freeze, but it is possible that some new magic numbers will sneak into the kernel before 2.6.x yet.

Petr Baudis  
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03 Nov 2002

Updated the magic table to Linux 2.5.74.

Fabian Frederick  
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09 Jul 2003

Magic Name	Number	Structure	File
PG_MAGIC	'P'	pg_{read,write}_hdr	include/linux/pg.h
CMAGIC	0x0111	user	include/linux/a.out.h
MKISS_DRIVER_MAGIC	0x04bf	mkiss_channel	drivers/net/mkiss.h
RISCOM8_MAGIC	0x0907	riscom_port	drivers/char/riscom8.h
SPECIALIX_MAGIC	0x0907	specialix_port	drivers/char/specialix_io8.h
HDLC_MAGIC	0x239e	n_hdlc	drivers/char/n_hdlc.c
APM_BIOS_MAGIC	0x4101	apm_user	arch/i386/kernel/apm.c
CYCLADES_MAGIC	0x4359	cyclades_port	include/linux/cyclades.h
DB_MAGIC	0x4442	fc_info	drivers/net/iph5526_novram.c
DL_MAGIC	0x444d	fc_info	drivers/net/iph5526_novram.c
FASYNC_MAGIC	0x4601	fasync_struct	include/linux/fs.h
FF_MAGIC	0x4646	fc_info	drivers/net/iph5526_novram.c
ISICOM_MAGIC	0x4d54	isi_port	include/linux/isicom.h
PTY_MAGIC	0x5001		drivers/char/pty.c
PPP_MAGIC	0x5002	ppp	include/linux/if_pppvar.h
SERIAL_MAGIC	0x5301	async_struct	include/linux/serial.h
SSTATE_MAGIC	0x5302	serial_state	include/linux/serial.h
SLIP_MAGIC	0x5302	slip	drivers/net/slip.h
STRIP_MAGIC	0x5303	strip	drivers/net/strip.c
X25_ASY_MAGIC	0x5303	x25_asy	drivers/net/x25_asy.h
SIXPACK_MAGIC	0x5304	sixpack	drivers/net/hamradio/6pack.h
AX25_MAGIC	0x5316	ax_disp	drivers/net/mkiss.h
ESP_MAGIC	0x53ee	esp_struct	drivers/char/esp.h
TTY_MAGIC	0x5401	tty_struct	include/linux/tty.h
MGSL_MAGIC	0x5401	mgs_l_info	drivers/char/synclink.c
TTY_DRIVER_MAGIC	0x5402	tty_driver	include/linux/tty_driver.h
MGSLPC_MAGIC	0x5402	mgs_lpc_info	
drivers/char/pcmcia/synclink_cs.c			
TTY_LDISC_MAGIC	0x5403	tty_ldisc	include/linux/tty_ldisc.h
USB_SERIAL_MAGIC	0x6702	usb_serial	
drivers/usb/serial/usb-serial.h			
FULL_DUPLEX_MAGIC	0x6969		drivers/net/tulip/de2104x.c
USB_BLUETOOTH_MAGIC	0x6d02	usb_bluetooth	drivers/usb/class/bluettty.c
RFCOMM_TTY_MAGIC	0x6d02		net/bluetooth/rfcomm/tty.c
USB_SERIAL_PORT_MAGIC	0x7301	usb_serial_port	
drivers/usb/serial/usb-serial.h			
CG_MAGIC	0x00090255	ufs_cylinder_group	include/linux/ufs_fs.h
A2232_MAGIC	0x000a2232	gs_port	drivers/char/ser_a2232.h
RPORT_MAGIC	0x00525001	r_port	drivers/char/rocket_int.h
LSEMAGIC	0x05091998	lse	drivers/fc4/fc.c
GDTIOCTL_MAGIC	0x06030f07	gdth_iowr_str	drivers/scsi/gdth_ioctl.h
RIEBL_MAGIC	0x09051990		drivers/net/atarilance.c
RIO_MAGIC	0x12345678	gs_port	drivers/char/rio/rio_linux.c
SX_MAGIC	0x12345678	gs_port	drivers/char/sx.h
NBD_REQUEST_MAGIC	0x12560953	nbd_request	include/linux/nbd.h
RED_MAGIC2	0x170fc2a5	(any)	mm/slab.c
BAYCOM_MAGIC	0x19730510	baycom_state	drivers/net/baycom_epp.c
ISDN_X25IFACE_MAGIC	0x1e75a2b9	isdn_x25iface_proto_data	drivers/isdn/isdn_x25iface.h
ECP_MAGIC	0x21504345	cdkecpsig	include/linux/cdk.h

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LSOMAGIC	0x27091997	lso	drivers/fc4/fc.c
LSMAGIC	0x2a3b4d2a	ls	drivers/fc4/fc.c
WANPIPE_MAGIC	0x414C4453	sdla_{dump,exec}	include/linux/wanpipe.h
CS_CARD_MAGIC	0x43525553	cs_card	sound/oss/cs46xx.c
LABELCL_MAGIC	0x4857434c	labelcl_info_s	
include/asm/ia64/sn/labelcl.h			
ISDN_ASYNC_MAGIC	0x49344C01	modem_info	include/linux/isdn.h
CTC_ASYNC_MAGIC	0x49344C01	ctc_tty_info	drivers/s390/net/ctctty.c
ISDN_NET_MAGIC	0x49344C02	isdn_net_local_s	
drivers/isdn/i4l/isdn_net_lib.h			
SAVEKMSG_MAGIC2	0x4B4D5347	savekmsg	arch/*/amiga/config.c
STLI_BOARDMAGIC	0x4bc6c825	stlibrd	include/linux/istallion.h
CS_STATE_MAGIC	0x4c4f4749	cs_state	sound/oss/cs46xx.c
SLAB_C_MAGIC	0x4f17a36d	kmem_cache	mm/slab.c
COW_MAGIC	0x4f4f4f4d	cow_header_v1	arch/um/drivers/ubd_user.c
I810_CARD_MAGIC	0x5072696E	i810_card	sound/oss/i810_audio.c
TRIDENT_CARD_MAGIC	0x5072696E	trident_card	sound/oss/trident.c
ROUTER_MAGIC	0x524d4157	wan_device	include/linux/wanrouter.h
SCC_MAGIC	0x52696368	gs_port	drivers/char/scc.h
SAVEKMSG_MAGIC1	0x53415645	savekmsg	arch/*/amiga/config.c
GDA_MAGIC	0x58464552	gda	
arch/mips/include/asm/sn/gda.h			
RED_MAGIC1	0x5a2cf071	(any)	mm/slab.c
STL_PORTMAGIC	0x5a7182c9	stlport	include/linux/stallion.h
EEPROM_MAGIC_VALUE	0x5ab478d2	lanai_dev	drivers/atm/lanai.c
HDLCDRV_MAGIC	0x5ac6e778	hdlcdrv_state	include/linux/hdlcdrv.h
EPCA_MAGIC	0x5c6df104	channel	include/linux/epca.h
PCXX_MAGIC	0x5c6df104	channel	drivers/char/pcxx.h
KV_MAGIC	0x5f4b565f	kernel_vars_s	
arch/mips/include/asm/sn/klkernvars.h			
I810_STATE_MAGIC	0x63657373	i810_state	sound/oss/i810_audio.c
TRIDENT_STATE_MAGIC	0x63657373	trient_state	sound/oss/trident.c
M3_CARD_MAGIC	0x646e6f50	m3_card	sound/oss/maestro3.c
FW_HEADER_MAGIC	0x65726F66	fw_header	drivers/atm/fore200e.h
SLOT_MAGIC	0x67267321	slot	drivers/hotplug/cpqphp.h
SLOT_MAGIC	0x67267322	slot	drivers/hotplug/acpiphp.h
LO_MAGIC	0x68797548	nbd_device	include/linux/nbd.h
OPROFILE_MAGIC	0x6f70726f	super_block	
drivers/oprofile/oprofilefs.h			
M3_STATE_MAGIC	0x734d724d	m3_state	sound/oss/maestro3.c
STL_PANELMAGIC	0x7ef621a1	stlpanel	include/linux/stallion.h
VMALLOC_MAGIC	0x87654320	snd_alloc_track	sound/core/memory.c
KMALLOC_MAGIC	0x87654321	snd_alloc_track	sound/core/memory.c
PWC_MAGIC	0x89DC10AB	pwc_device	drivers/usb/media/pwc.h
NBD_REPLY_MAGIC	0x96744668	nbd_reply	include/linux/nbd.h
STL_BOARDMAGIC	0xa2267f52	stlbrd	include/linux/stallion.h
ENI155_MAGIC	0xa54b872d	midway_eprom	drivers/atm/eni.h
SCI_MAGIC	0xbabeface	gs_port	drivers/char/sh-sci.h
CODA_MAGIC	0xC0DAC0DA	coda_file_info	include/linux/coda_fs_i.h
DPMEM_MAGIC	0xc0ffee11	gdt_pci_sram	drivers/scsi/gdth.h
STLI_PORTMAGIC	0xe671c7a1	stliport	include/linux/istallion.h
YAM_MAGIC	0xF10A7654	yam_port	drivers/net/hamradio/yam.c
CCB_MAGIC	0xf2691ad2	ccb	drivers/scsi/ncr53c8xx.c
QUEUE_MAGIC_FREE	0xf7e1c9a3	queue_entry	drivers/scsi/arm/queue.c
QUEUE_MAGIC_USED	0xf7e1cc33	queue_entry	drivers/scsi/arm/queue.c
HTB_CMAGIC	0xFEFAFEF1	htb_class	net/sched/sch_htb.c

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NMI_MAGIC                      0x48414d4d455201 nmi_s
arch/mips/include/asm/sn/nmi.h
```

Note that there are also defined special per-driver magic numbers in sound memory management. See include/sound/sndmagic.h for complete list of them. Many OSS sound drivers have their magic numbers constructed from the soundcard PCI ID - these are not listed here as well.

IrDA subsystem also uses large number of own magic numbers, see include/net/irda/irda.h for a complete list of them.

HFS is another larger user of magic numbers - you can find them in fs/hfs/hfs.h.