Ioctl Numbers
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Michael Elizabeth Chastain
<mec@shout.net>

If you are adding new ioctl's to the kernel, you should use the _IO
macros defined in <linux/ioctl.h>:

    _IO   an ioctl with no parameters
    _IOW   an ioctl with write parameters (copy_from_user)
    _IOR   an ioctl with read parameters (copy_to_user)
    _IOWR an ioctl with both write and read parameters.

'Write' and 'read' are from the user's point of view, just like the
system calls 'write' and 'read'. For example, a SET_FOO ioctl would
be _IOW, although the kernel would actually read data from user space;
a GET_FOO ioctl would be _IOR, although the kernel would actually write
data to user space.

The first argument to _IO, _IOW, _IOR, or _IOWR is an identifying letter
or number from the table below. Because of the large number of drivers,
many drivers share a partial letter with other drivers.

If you are writing a driver for a new device and need a letter, pick an
unused block with enough room for expansion: 32 to 256 ioctl commands.
You can register the block by patching this file and submitting the
patch to Linus Torvalds. Or you can e-mail me at <mec@shout.net> and
I'll register one for you.

The second argument to _IO, _IOW, _IOR, or _IOWR is a sequence number
to distinguish ioctls from each other. The third argument to _IOW,
_IOR, or _IOWR is the type of the data going into the kernel or coming
out of the kernel (e.g. 'int' or 'struct foo'). NOTE! Do NOT use
sizeof(arg) as the third argument as this results in your ioctl thinking
it passes an argument of type size_t.

Some devices use their major number as the identifier; this is OK, as
long as it is unique. Some devices are irregular and don't follow any
convention at all.

Following this convention is good because:

(1) Keeping the ioctl's globally unique helps error checking:
    if a program calls an ioctl on the wrong device, it will get an
    error rather than some unexpected behaviour.

(2) The 'strace' build procedure automatically finds ioctl numbers
    defined with _IO, _IOW, _IOR, or _IOWR.

(3) 'strace' can decode numbers back into useful names when the
    numbers are unique.

(4) People looking for ioctls can grep for them more easily when
    this convention is used to define the ioctl numbers.

(5) When following the convention, the driver code can use generic

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                           ioctl-number.txt
          code to copy the parameters between user and kernel space.

This table lists ioctls visible from user land for Linux/x86.  It contains
most drivers up to 2.6.31, but I know I am missing some.  There has been
no attempt to list non-X86 architectures or ioctls from drivers/staging/.

Code   Seq#(hex)  Include File              Comments
========================================================
0x00   00-1F      linux/fs.h                conflict!
0x00   00-1F      scsi/scsi_ioctl.h         conflict!
0x00   00-1F      linux/fb.h                conflict!
0x00   00-1F      linux/wavefront.h         conflict!
0x02   all        linux/fd.h
0x03   all        linux/hdreg.h
0x04   D2-DC      linux/umsdos_fs.h         Dead since 2.6.11, but don't reuse
these.
0x06   all        linux/lp.h
0x09   all        linux/raid/md_u.h
0x10   00-0F      drivers/char/s390/vmcp.h
0x12   all        linux/fs.h
                  linux/blkpg.h
0x1b   all        InfiniBand Subsystem      <http://www.openib.org/>
0x20   all        drivers/cdrom/cm206.h
0x22   all        scsi/sg.h
'#'    00-3F      IEEE 1394 Subsystem       Block for the entire subsystem
'$'    00-0F      linux/perf_counter.h, linux/perf_event.h
'1'    00-1F      <linux/timepps.h>         PPS kit from Ulrich Windl

<ftp://ftp.de.kernel.org/pub/linux/daemons/ntp/PPS/>
'2'    01-04      linux/i2o.h
'3'    00-0F      drivers/s390/char/raw3270.h    conflict!
'3'    00-1F      linux/suspend_ioctls.h    conflict!
                  and kernel/power/user.c
'8'    all                                  SNP8023 advanced NIC card
                                            <mailto:mcr@solidum.com>
'@'    00-0F      linux/radeonfb.h          conflict!
'@'    00-0F      drivers/video/aty/aty128fb.c    conflict!
'A'    00-1F      linux/apm_bios.h          conflict!
'A'    00-0F      linux/agpgart.h           conflict!
                  and drivers/char/agp/compat_ioctl.h
'A'    00-7F      sound/asound.h            conflict!
'B'    00-1F      linux/cciss_ioctl.h       conflict!
'B'    00-0F      include/linux/pmu.h       conflict!
'B'    C0-FF                                advanced bbus
                                            <mailto:maassen@uni-freiburg.de>
'C'    all        linux/soundcard.h         conflict!
'C'    01-2F      linux/capi.h              conflict!
'C'    F0-FF      drivers/net/wan/cosa.h    conflict!
'D'    all        arch/s390/include/asm/dasd.h
'D'    40-5F      drivers/scsi/dpt/dtpi_ioctl.h
'D'    05         drivers/scsi/pmcraid.h
'E'    all        linux/input.h             conflict!
'E'    00-0F      xen/evtchn.h              conflict!
'F'    all        linux/fb.h                conflict!
'F'    01-02      drivers/scsi/pmcraid.h    conflict!
'F'    20         drivers/video/fsl-diu-fb.h     conflict!
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'F'     20         drivers/video/intelfb/intelfb.h conflict!
'F'     20         linux/ivtvfb.h          conflict!
'F'     20         linux/matroxfb.h        conflict!
'F'     20         drivers/video/aty/atyfb_base.c  conflict!
'F'     00-0F      video/da8xx-fb.h        conflict!
'F'     80-8F      linux/arcfb.h           conflict!
'F'     DD         video/sstfb.h           conflict!
'G'     00-3F      drivers/misc/sgi-gru/grulib.h   conflict!
'G'     00-0F      linux/gigaset_dev.h     conflict!
'H'     00-7F      linux/hiddev.h          conflict!
'H'     00-0F      linux/hidraw.h          conflict!
'H'     00-0F      sound/asound.h          conflict!
'H'     20-40      sound/asound_fm.h       conflict!
'H'     80-8F      sound/sfnt_info.h       conflict!
'H'     10-8F      sound/emu10k1.h         conflict!
'H'     10-1F      sound/sb16_csp.h        conflict!
'H'     10-1F      sound/hda_hwdep.h       conflict!
'H'     40-4F      sound/hdspm.h           conflict!
'H'     40-4F      sound/hdsp.h            conflict!
'H'     90         sound/usb/usx2y/usb_stream.h
'H'     C0-F0      net/bluetooth/hci.h     conflict!
'H'     C0-DF      net/bluetooth/hidp/hidp.h       conflict!
'H'     C0-DF      net/bluetooth/cmtp/cmtp.h       conflict!
'H'     C0-DF      net/bluetooth/bnep/bnep.h       conflict!
'I'     all        linux/isdn.h            conflict!
'I'     00-0F      drivers/isdn/divert/isdn_divert.h       conflict!
'I'     40-4F      linux/mISDNif.h         conflict!
'J'     00-1F      drivers/scsi/gdth_ioctl.h
'K'     all        linux/kd.h
'L'     00-1F      linux/loop.h            conflict!
'L'     10-1F      drivers/scsi/mpt2sas/mpt2sas_ctl.h      conflict!
'L'     E0-FF      linux/ppdd.h            encrypted disk device driver

<http://linux01.gwdg.de/~alatham/ppdd.html>
'M'     all        linux/soundcard.h       conflict!
'M'     01-16      mtd/mtd-abi.h           conflict!
                   and drivers/mtd/mtdchar.c
'M'     01-03      drivers/scsi/megaraid/megaraid_sas.h
'M'     00-0F      drivers/video/fsl-diu-fb.h      conflict!
'N'     00-1F      drivers/usb/scanner.h
'O'     00-06      mtd/ubi-user.h          UBI
'P'     all        linux/soundcard.h       conflict!
'P'     60-6F      sound/sscape_ioctl.h    conflict!
'P'     00-0F      drivers/usb/class/usblp.c       conflict!
'Q'     all        linux/soundcard.h
'R'     00-1F      linux/random.h          conflict!
'R'     01         linux/rfkill.h          conflict!
'R'     01-0F      media/rds.h             conflict!
'R'     C0-DF      net/bluetooth/rfcomm.h
'S'     all        linux/cdrom.h           conflict!
'S'     80-81      scsi/scsi_ioctl.h       conflict!
'S'     82-FF      scsi/scsi.h             conflict!
'S'     00-7F      sound/asequencer.h      conflict!
'T'     all        linux/soundcard.h       conflict!
'T'     00-AF      sound/asound.h          conflict!
'T'     all        arch/x86/include/asm/ioctls.h   conflict!
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'T'     C0-DF   linux/if_tun.h              conflict!
'U'     all     sound/asound.h              conflict!
'U'     00-0F   drivers/media/video/uvc/uvcvideo.h      conflict!
'U'     00-CF   linux/uinput.h              conflict!
'U'     00-EF   linux/usbdevice_fs.h
'U'     C0-CF   drivers/bluetooth/hci_uart.h
'V'     all     linux/vt.h                  conflict!
'V'     all     linux/videodev2.h           conflict!
'V'     C0      linux/ivtvfb.h              conflict!
'V'     C0      linux/ivtv.h                conflict!
'V'     C0      media/davinci/vpfe_capture.h    conflict!
'V'     C0      media/si4713.h              conflict!
'V'     C0-CF   drivers/media/video/mxb.h       conflict!
'W'     00-1F   linux/watchdog.h            conflict!
'W'     00-1F   linux/wanrouter.h           conflict!
'W'     00-3F   sound/asound.h              conflict!
'X'     all     fs/xfs/xfs_fs.h             conflict!
                and fs/xfs/linux-2.6/xfs_ioctl32.h
                and include/linux/falloc.h
                and linux/fs.h
'X'     all     fs/ocfs2/ocfs_fs.h          conflict!
'X'     01      linux/pktcdvd.h             conflict!
'Y'     all     linux/cyclades.h
'Z'     14-15   drivers/message/fusion/mptctl.h
'['     00-07   linux/usb/tmc.h             USB Test and Measurement Devices
                                            <mailto:gregkh@suse.de>
'a'     all     linux/atm*.h, linux/sonet.h     ATM on linux

<http://lrcwww.epfl.ch/linux-atm/magic.html>
'b'     00-FF                               conflict! bit3 vme host bridge
                                            <mailto:natalia@nikhefk.nikhef.nl>
'b'     00-0F   media/bt819.h               conflict!
'c'     all     linux/cm4000_cs.h           conflict!
'c'     00-7F   linux/comstats.h            conflict!
'c'     00-7F   linux/coda.h                conflict!
'c'     00-1F   linux/chio.h                conflict!
'c'     80-9F   arch/s390/include/asm/chsc.h    conflict!
'c'     A0-AF   arch/x86/include/asm/msr.h      conflict!
'd'     00-FF   linux/char/drm/drm/h        conflict!
'd'     02-40   pcmcia/ds.h                 conflict!
'd'     10-3F   drivers/media/video/dabusb.h    conflict!
'd'     C0-CF   drivers/media/video/saa7191.h   conflict!
'd'     F0-FF   linux/digi1.h
'e'     all     linux/digi1.h               conflict!
'e'     00-1F   drivers/net/irda/irtty-sir.h    conflict!
'f'     00-1F   linux/ext2_fs.h             conflict!
'f'     00-1F   linux/ext3_fs.h             conflict!
'f'     00-0F   fs/jfs/jfs_dinode.h         conflict!
'f'     00-0F   fs/ext4/ext4.h              conflict!
'f'     00-0F   linux/fs.h                  conflict!
'f'     00-0F   fs/ocfs2/ocfs2_fs.h         conflict!
'g'     00-0F   linux/usb/gadgetfs.h
'g'     20-2F   linux/usb/g_printer.h
'h'     00-7F                               conflict! Charon filesystem
                                            <mailto:zapman@interlan.net>
'h'     00-1F   linux/hpet.h                conflict!
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'i'     00-3F    linux/i2o-dev.h              conflict!
'i'     0B-1F    linux/ipmi.h                 conflict!
'i'     80-8F    linux/i8k.h
'j'     00-3F    linux/joystick.h
'k'     00-0F    linux/spi/spidev.h           conflict!
'k'     00-05    video/kyro.h                 conflict!
'l'     00-3F    linux/tcfs_fs.h              transparent cryptographic file system
                                              <http://mikonos.dia.unisa.it/tcfs>
'l'     40-7F    linux/udf_fs_i.h             in development:
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<http://sourceforge.net/projects/linux-udf/>

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'm'     00-09    linux/mmtimer.h              conflict!
'm'     all      linux/mtio.h                 conflict!
'm'     all      linux/soundcard.h            conflict!
'm'     all      linux/synclink.h             conflict!
'm'     00-19    drivers/message/fusion/mptctl.h conflict!
'm'     00       drivers/scsi/megaraid/megaraid_ioctl.h  conflict!
'm'     00-1F    net/irda/irmod.h             conflict!
'n'     00-7F    linux/ncp_fs.h and fs/ncpfs/ioctl.c
'n'     80-8F    linux/nilfs2_fs.h            NILFS2
'n'     E0-FF    linux/matroxfb.h             matroxfb
'o'     00-1F    fs/ocfs2/ocfs2_fs.h          OCFS2
'o'     00-03    mtd/ubi-user.h               conflict! (OCFS2 and UBI overlaps)
'o'     40-41    mtd/ubi-user.h               UBI
'o'     01-A1    linux/dvb/*.h                DVB
'p'     00-0F    linux/phantom.h              conflict! (OpenHaptics needs this)
'p'     00-1F    linux/rtc.h                  conflict!
'p'     00-3F    linux/mc146818rtc.h          conflict!
'p'     40-7F    linux/nvram.h
'p'     80-9F    linux/ppdev.h                user-space parport
                                              <mailto:tim@cyberelk.net>
'p'     A1-A4    linux/pps.h                  LinuxPPS
                                              <mailto:giometti@linux.it>
'q'     00-1F    linux/serio.h
'q'     80-FF    linux/telephony.h            Internet PhoneJACK, Internet LineJACK
                 linux/ixjuser.h              <http://www.quicknet.net>
'r'     00-1F    linux/msdos_fs.h and fs/fat/dir.c
's'     all      linux/cdk.h
't'     00-7F    linux/if_ppp.h
't'     80-8F    linux/isdn_ppp.h
't'     90       linux/toshiba.h
'u'     00-1F    linux/smb_fs.h
'v'     all      linux/videodev.h             conflict!
'v'     00-1F    linux/ext2_fs.h              conflict!
'v'     00-1F    linux/fs.h                   conflict!
'v'     00-0F    linux/sonypi.h               conflict!
'v'     C0-CF    drivers/media/video/ov511.h      conflict!
'v'     C0-DF    media/pwc-ioctl.h            conflict!
'v'     C0-FF    linux/meye.h                 conflict!
'v'     C0-CF    drivers/media/video/zoran/zoran.h        conflict!
'v'     D0-DF    drivers/media/video/cpia2/cpia2dev.h     conflict!
'w'     all                                   CERN SCI driver
'y'     00-1F                                 packet based user level communications
                                              <mailto:zapman@interlan.net>
'z'     00-3F                                 CAN bus card     conflict!
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<mailto:hdstich@connectu.ulm.circular.de>
'z'     40-7F                                   CAN bus card    conflict!
                                                <mailto:oe@port.de>
'z'     10-4F   drivers/s390/crypto/zcrypt_api.h        conflict!
0x80    00-1F   linux/fb.h
0x81    00-1F   linux/videotext.h
0x88    00-3F   media/ovcamchip.h
0x89    00-06   arch/x86/include/asm/sockios.h
0x89    0B-DF   linux/sockios.h
0x89    E0-EF   linux/sockios.h                 SIOCPROTOPRIVATE range
0x89    E0-EF   linux/dn.h                      PROTOPRIVATE range
0x89    F0-FF   linux/sockios.h                 SIOCDEVPRIVATE range
0x8B    all     linux/wireless.h
0x8C    00-3F                                   WiNRADiO driver

<http://www.proximity.com.au/~brian/winradio/>
0x90    00      drivers/cdrom/sbpcd.h
0x92    00-0F   drivers/usb/mon/mon_bin.c
0x93    60-7F   linux/auto_fs.h
0x94    all     fs/btrfs/ioctl.h
0x97    00-7F   fs/ceph/ioctl.h                 Ceph file system
0x99    00-0F                                   537-Addinboard driver
                                                <mailto:buk@buks.ipn.de>
0xA0    all     linux/sdp/sdp.h                 Industrial Device Project
                                                <mailto:kenji@bitgate.com>
0xA3    80-8F   Port ACL                        in development:
                                                <mailto:tlewis@mindspring.com>
0xA3    90-9F   linux/dtlk.h
0xAB    00-1F   linux/nbd.h
0xAC    00-1F   linux/raw.h
0xAD    00      Netfilter device                in development:
                                                <mailto:rusty@rustcorp.com.au>
0xAE    all     linux/kvm.h                     Kernel-based Virtual Machine
                                                <mailto:kvm@vger.kernel.org>
0xB0    all     RATIO devices                   in development:
                                                <mailto:vgo@ratio.de>
0xB1    00-1F   PPPoX                           <mailto:mostrows@styx.uwaterloo.ca>
0xC0    00-0F   linux/usb/iowarrior.h
0xCB    00-1F   CBM serial IEC bus              in development:

<mailto:michael.klein@puffin.lb.shuttle.de>
0xCD    01      linux/reiserfs_fs.h
0xCF    02      fs/cifs/ioctl.c
0xDB    00-0F   drivers/char/mwave/mwavepub.h
0xDD    00-3F   ZFCP device driver              see drivers/s390/scsi/
                                                <mailto:aherrman@de.ibm.com>
0xF3    00-3F   drivers/usb/misc/sisusbvga/sisusb.h     sisfb (in development)
                                                <mailto:thomas@winischhofer.net>
0xF4    00-1F   video/mbxfb.h                   mbxfb
                                                <mailto:raph@8d.com>
0xFD    all     linux/dm-ioctl.h
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