NAME

Intro, intro – introduction to DDI/DKI functions

DESCRIPTION

Section 9F describes the kernel functions available for use by device drivers.

In this section, the information for each driver function is organized under the following headings:

- **NAME** summarizes the function's purpose.
- **SYNOPSIS** shows the syntax of the function's entry point in the source code. **#include** directives are shown for required headers.
- **INTERFACE LEVEL** describes any architecture dependencies.
- **ARGUMENTS** describes any arguments required to invoke the function.
- **DESCRIPTION** describes general information about the function.
- **RETURN VALUES** describes the return values and messages that can result from invoking the function.
- **CONTEXT** indicates from which driver context (user, kernel, interrupt, or high-level interrupt) the function can be called.

  A driver function has *user context* if it was directly invoked because of a user thread. The **read**(9E) entry point of the driver, invoked by a **read**(2) system call, has user context.

  A driver function has *kernel context* if was invoked by some other part of the kernel. In a block device driver, the **strategy**(9E) entry point may be called by the page daemon to write pages to the device. The page daemon has no relation to the current user thread, so in this case **strategy**(9E) has kernel context.

  Interrupt context is kernel context, but also has an interrupt level associated with it. Driver interrupt routines have interrupt context.

  High-level interrupt context is a more restricted form of interrupt context. If **ddi_intr_hilevel**(9F) indicates that an interrupt is high-level, driver interrupt routines added for that interrupt with **ddi_add_intr**(9F) run in high-level interrupt context. These interrupt routines are only allowed to call **ddi_trigger_softintr**(9F)**, mutex_enter**(9F) and **mutex_exit**(9F). Furthermore, **mutex_enter**(9F) and **mutex_exit**(9F) may only be called on mutexes initialized with the **ddi_iblock_cookie** returned by **ddi_get_iblock_cookie**(9F).
- **SEE ALSO** indicates functions that are related by usage and sources, and which can be referred to for further information.
- **EXAMPLES** shows how the function can be used in driver code.

Every driver MUST include **<sys/ddi.h>** and **<sys/sunddi.h>**, in that order, and as the last files the driver includes.

STREAMS Kernel Function Summary

The following table summarizes the STREAMS functions described in this section.

Routine	Type
adjmsg	DDI/DKI
allocb	DDI/DKI
backq	DDI/DKI
bcanput	DDI/DKI
bcanputnext	DDI/DKI
bufcall	DDI/DKI
canput	DDI/DKI
canputnext	DDI/DKI
clrbuf	DDI/DKI
copyb	DDI/DKI
copymsg	DDI/DKI
datamsg	DDI/DKI
dupb	DDI/DKI
dupmsg	DDI/DKI
enableok	DDI/DKI
esballoc	DDI/DKI
esbbcall	DDI/DKI
flushband	DDI/DKI
flushq	DDI/DKI
freeb	DDI/DKI
freemsg	DDI/DKI
freezestr	DDI/DKI
getq	DDI/DKI
insq	DDI/DKI
linkb	DDI/DKI
msgdsize	DDI/DKI
msgpullup	DDI/DKI
mt-streams	Solaris DDI
noenable	DDI/DKI
OTHERQ	DDI/DKI
pullupmsg	DDI/DKI
put	DDI/DKI
putbq	DDI/DKI
putctl	DDI/DKI
putctl1	DDI/DKI
putnext	DDI/DKI
putnextctl	DDI/DKI
putq	DDI/DKI
qbufcall	Solaris DDI
qenable	DDI/DKI
qprocson	DDI/DKI

qprocsoff	DDI/DKI
qreply	DDI/DKI
qsize	DDI/DKI
qtimeout	Solaris DDI
qunbufcall	Solaris DDI
quntimeout	Solaris DDI
qwait	Solaris DDI
qwait_sig	Solaris DDI
qwriter	Solaris DDI
RD	DDI/DKI
rmvb	DDI/DKI
rmvq	DDI/DKI
SAMESTR	DDI/DKI
strlog	DDI/DKI
strqget	DDI/DKI
strqset	DDI/DKI
testb	DDI/DKI
unbufcall	DDI/DKI
unfreezestr	DDI/DKI
unlinkb	DDI/DKI
WR	DDI/DKI

The following table summarizes the functions not specific to STREAMS.

Routine	Type
ASSERT	DDI/DKI
anocancel	Solaris DDI
aphysio	Solaris DDI
bcmp	DDI/DKI
bcopy	DDI/DKI
biodone	DDI/DKI
bioerror	Solaris DDI
bioreset	Solaris DDI
biowait	DDI/DKI
bp_mapin	DDI/DKI
bp_mapout	DDI/DKI
btop	DDI/DKI
btopr	DDI/DKI
bzero	DDI/DKI
cmn_err	DDI/DKI
copyin	DDI/DKI
copyout	DDI/DKI
cv_broadcast	Solaris DDI
cv_destroy	Solaris DDI
cv_init	Solaris DDI
cv_signal	Solaris DDI
cv_timedwait	Solaris DDI
cv_wait	Solaris DDI
cv_wait_sig	Solaris DDI
ddi_add_intr	Solaris DDI
ddi_add_softintr	Solaris DDI
ddi_btop	Solaris DDI
ddi_btopr	Solaris DDI
ddi_copyin	Solaris DDI
ddi_copyout	Solaris DDI
ddi_create_minor_node	Solaris DDI
ddi_dev_is_sid	Solaris DDI
ddi_dev_nintrs	Solaris DDI
ddi_dev_nregs	Solaris DDI
ddi_dev_regsize	Solaris DDI
ddi_device_copy	Solaris DDI
ddi_device_zero	Solaris DDI
ddi_dma_addr_bind_handle	Solaris DDI
ddi_dma_addr_setup	Solaris DDI
ddi_dma_alloc_handle	Solaris DDI
ddi_dma_buf_bind_handle	Solaris DDI
ddi_dma_buf_setup	Solaris DDI

ddi_dma_burstsizes	Solaris DDI
ddi_dma_coff	Solaris SPARC DDI
ddi_dma_curwin	Solaris SPARC DDI
ddi_dma_devalign	Solaris DDI
ddi_dma_free	Solaris DDI
ddi_dma_free_handle	Solaris DDI
ddi_dma_getwin	Solaris DDI
ddi_dma_htoc	Solaris SPARC DDI
ddi_dma_mem_alloc	Solaris DDI
ddi_dma_mem_free	Solaris DDI
ddi_dma_movwin	Solaris SPARC DDI
ddi_dma_nextcookie	Solaris DDI
ddi_dma_nextseg	Solaris DDI
ddi_dma_nextwin	Solaris DDI
ddi_dma_numwin	Solaris DDI
ddi_dma_segtocookie	Solaris DDI
ddi_dma_set_sbus64	Solaris DDI
ddi_dma_setup	Solaris DDI
ddi_dma_sync	Solaris DDI
ddi_dma_unbind_handle	Solaris DDI
ddi_dmae	Solaris x86 DDI
ddi_dmae_1stparty	Solaris x86 DDI
ddi_dmae_alloc	Solaris x86 DDI
ddi_dmae_disable	Solaris x86 DDI
ddi_dmae_enable	Solaris x86 DDI
ddi_dmae_getattr	Solaris x86 DDI
ddi_dmae_getcnt	Solaris x86 DDI
ddi_dmae_getlim	Solaris x86 DDI
ddi_dmae_prog	Solaris x86 DDI
ddi_dmae_release	Solaris x86 DDI
ddi_dmae_stop	Solaris x86 DDI
ddi_enter_critical	Solaris DDI
ddi_exit_critical	Solaris DDI
ddi_ffs	Solaris DDI
ddi_fls	Solaris DDI
ddi_get_cred	Solaris DDI
ddi_get_driver_private	Solaris DDI
ddi_get_iblock_cookie	Solaris DDI
ddi_get_instance	Solaris DDI
ddi_get_name	Solaris DDI
ddi_get_parent	Solaris DDI
ddi_get_soft_iblock_cookie	Solaris DDI
ddi_get_soft_state	Solaris DDI
ddi_getb	Solaris DDI
ddi_getl	Solaris DDI

ddi_getll	Solaris DDI
ddi_getlongprop	Solaris DDI
ddi_getlongprop_buf	Solaris DDI
ddi_getprop	Solaris DDI
ddi_getproplen	Solaris DDI
ddi_getw	Solaris DDI
ddi_intr_hilevel	Solaris DDI
ddi_io_getb	Solaris DDI
ddi_io_getl	Solaris DDI
ddi_io_getw	Solaris DDI
ddi_io_putb	Solaris DDI
ddi_io_putl	Solaris DDI
ddi_io_putw	Solaris DDI
ddi_io_rep_getb	Solaris DDI
ddi_io_rep_getl	Solaris DDI
ddi_io_rep_getw	Solaris DDI
ddi_io_rep_putb	Solaris DDI
ddi_io_rep_putl	Solaris DDI
ddi_io_rep_putw	Solaris DDI
ddi_iomin	Solaris DDI
ddi_iopb_alloc	Solaris DDI
ddi_iopb_free	Solaris DDI
ddi_map_regs	Solaris DDI
ddi_mapdev	Solaris DDI
ddi_mapdev_intercept	Solaris DDI
ddi_mapdev_nointercept	Solaris DDI
ddi_mapdev_set_device_acc_attr	Solaris DDI
ddi_mem_alloc	Solaris DDI
ddi_mem_free	Solaris DDI
ddi_mem_getb	Solaris DDI
ddi_mem_getl	Solaris DDI
ddi_mem_getll	Solaris DDI
ddi_mem_getw	Solaris DDI
ddi_mem_putb	Solaris DDI
ddi_mem_putl	Solaris DDI
ddi_mem_putll	Solaris DDI
ddi_mem_putw	Solaris DDI
ddi_mem_rep_getb	Solaris DDI
ddi_mem_rep_getl	Solaris DDI
ddi_mem_rep_getll	Solaris DDI
ddi_mem_rep_getw	Solaris DDI
ddi_mem_rep_putb	Solaris DDI
ddi_mem_rep_putl	Solaris DDI
ddi_mem_rep_putll	Solaris DDI
ddi_mem_rep_putw	Solaris DDI

ddi_peekc	Solaris DDI
ddi_peekd	Solaris DDI
ddi_peekl	Solaris DDI
ddi_peeks	Solaris DDI
ddi_pokec	Solaris DDI
ddi_poked	Solaris DDI
ddi_pokel	Solaris DDI
ddi_pokes	Solaris DDI
ddi_prop_create	Solaris DDI
ddi_prop_exists	Solaris DDI
ddi_prop_free	Solaris DDI
ddi_prop_get_int	Solaris DDI
ddi_prop_lookup	Solaris DDI
ddi_prop_lookup_byte_array	Solaris DDI
ddi_prop_lookup_int_array	Solaris DDI
ddi_prop_lookup_string	Solaris DDI
ddi_prop_lookup_string_array	Solaris DDI
ddi_prop_modify	Solaris DDI
ddi_prop_op	Solaris DDI
ddi_prop_remove	Solaris DDI
ddi_prop_remove_all	Solaris DDI
ddi_prop_undefine	Solaris DDI
ddi_prop_update	Solaris DDI
ddi_prop_update_byte_array	Solaris DDI
ddi_prop_update_int	Solaris DDI
ddi_prop_update_int_array	Solaris DDI
ddi_prop_update_string	Solaris DDI
ddi_prop_update_string_array	Solaris DDI
ddi_ptob	Solaris DDI
ddi_putb	Solaris DDI
ddi_putl	Solaris DDI
ddi_putll	Solaris DDI
ddi_putw	Solaris DDI
ddi_regs_map_free	Solaris DDI
ddi_regs_map_setup	Solaris DDI
ddi_remove_intr	Solaris DDI
ddi_remove_minor_node	Solaris DDI
ddi_remove_softintr	Solaris DDI
ddi_rep_getb	Solaris DDI
ddi_rep_getl	Solaris DDI
ddi_rep_getll	Solaris DDI
ddi_rep_getw	Solaris DDI
ddi_rep_putb	Solaris DDI
ddi_rep_putl	Solaris DDI
ddi_rep_putll	Solaris DDI

ddi_rep_putw	Solaris DDI
ddi_report_dev	Solaris DDI
ddi_root_node	Solaris DDI
ddi_segmap	Solaris DDI
ddi_segmap_setup	Solaris DDI
ddi_set_driver_private	Solaris DDI
ddi_slaveonly	Solaris DDI
ddi_soft_state	Solaris DDI
ddi_soft_state_fini	Solaris DDI
ddi_soft_state_free	Solaris DDI
ddi_soft_state_init	Solaris DDI
ddi_soft_state_zalloc	Solaris DDI
ddi_trigger_softintr	Solaris DDI
ddi_unmap_regs	Solaris DDI
delay	DDI/DKI
disksort	Solaris DDI
drv_getparm	DDI/DKI
drv_hztousec	DDI/DKI
drv_priv	DDI/DKI
drv_usectohz	DDI/DKI
drv_usecwait	DDI/DKI
free_pktiopb	Solaris DDI
freerbuf	DDI/DKI
get_pktiopb	Solaris DDI
geterror	DDI/DKI
getmajor	DDI/DKI
getminor	DDI/DKI
getrbuf	DDI/DKI
hat_getkpfnum	DKI only
inb	Solaris x86 DDI
inl	Solaris x86 DDI
inw	Solaris x86 DDI
kmem_alloc	DDI/DKI
kmem_free	DDI/DKI
kmem_zalloc	DDI/DKI
kstat_create	Solaris DDI
kstat_delete	Solaris DDI
kstat_install	Solaris DDI
kstat_named_init	Solaris DDI
kstat_queue	Solaris DDI
kstat_runq_back_to_waitq	Solaris DDI
kstat_runq_enter	Solaris DDI
kstat_runq_exit	Solaris DDI
kstat_waitq_enter	Solaris DDI
kstat_waitq_exit	Solaris DDI

kstat_waitq_to_runq	Solaris DDI
makecom_g0	Solaris DDI
makecom_g0_s	Solaris DDI
makecom_g1	Solaris DDI
makecom_g5	Solaris DDI
makedevice	DDI/DKI
max	DDI/DKI
min	DDI/DKI
minphys	Solaris DDI
mod_info	Solaris DDI
mod_install	Solaris DDI
mod_remove	Solaris DDI
mutex_destroy	Solaris DDI
mutex_enter	Solaris DDI
mutex_exit	Solaris DDI
mutex_init	Solaris DDI
mutex_owned	Solaris DDI
mutex_tryenter	Solaris DDI
nochpoll	Solaris DDI
nodev	DDI/DKI
nulldev	DDI/DKI
numtos	Solaris DDI
outb	Solaris x86 DDI
outl	Solaris x86 DDI
outw	Solaris x86 DDI
pci_config_getb	Solaris DDI
pci_config_getl	Solaris DDI
pci_config_getw	Solaris DDI
pci_config_putb	Solaris DDI
pci_config_putl	Solaris DDI
pci_config_putw	Solaris DDI
pci_config_setup	Solaris DDI
pci_config_teardown	Solaris DDI
physio	Solaris DDI
pollwakeup	DDI/DKI
proc_ref	Solaris DDI
proc_signal	Solaris DDI
proc_unref	Solaris DDI
ptob	DDI/DKI
repinsb	Solaris x86 DDI
repinsd	Solaris x86 DDI
repinsw	Solaris x86 DDI
repoutsb	Solaris x86 DDI
repoutsd	Solaris x86 DDI
repoutsw	Solaris x86 DDI

rmalloc	DDI/DKI
rmalloc_wait	DDI/DKI
rmallocmap	DDI/DKI
rmallocmap_wait	DDI/DKI
rmfree	DDI/DKI
rmfreemap	DDI/DKI
rw_destroy	Solaris DDI
rw_downgrade	Solaris DDI
rw_enter	Solaris DDI
rw_exit	Solaris DDI
rw_init	Solaris DDI
rw_read_locked	Solaris DDI
rw_tryenter	Solaris DDI
rw_tryupgrade	Solaris DDI
scsi_abort	Solaris DDI
scsi_alloc_consistent_buf	Solaris DDI
scsi_cname	Solaris DDI
scsi_destroy_pkt	Solaris DDI
scsi_dmafree	Solaris DDI
scsi_dmaget	Solaris DDI
scsi_dname	Solaris DDI
scsi_errmsg	Solaris DDI
scsi_free_consistent_buf	Solaris DDI
scsi_hba_attach	Solaris DDI
scsi_hba_attach_setup	Solaris DDI
scsi_hba_detach	Solaris DDI
scsi_hba_fini	Solaris DDI
scsi_hba_init	Solaris DDI
scsi_hba_lookup_capstr	Solaris DDI
scsi_hba_pkt_alloc	Solaris DDI
scsi_hba_pkt_free	Solaris DDI
scsi_hba_probe	Solaris DDI
scsi_hba_tran_alloc	Solaris DDI
scsi_hba_tran_free	Solaris DDI
scsi_ifgetcap	Solaris DDI
scsi_ifsetcap	Solaris DDI
scsi_init_pkt	Solaris DDI
scsi_log	Solaris DDI
scsi_mname	Solaris DDI
scsi_pktalloc	Solaris DDI
scsi_pktfree	Solaris DDI
scsi_poll	Solaris DDI
scsi_probe	Solaris DDI
scsi_resalloc	Solaris DDI
scsi_reset	Solaris DDI

scsi_reset_notify	Solaris DDI
scsi_resfree	Solaris DDI
scsi_rname	Solaris DDI
scsi_slave	Solaris DDI
scsi_sname	Solaris DDI
scsi_sync_pkt	Solaris DDI
scsi_transport	Solaris DDI
scsi_unprobe	Solaris DDI
scsi_unslave	Solaris DDI
sema_destroy	Solaris DDI
sema_init	Solaris DDI
sema_p	Solaris DDI
sema_p_sig	Solaris DDI
sema_tryp	Solaris DDI
sema_v	Solaris DDI
sprintf	Solaris DDI
stoi	Solaris DDI
strchr	Solaris DDI
strcmp	Solaris DDI
strcpy	Solaris DDI
strlen	Solaris DDI
strncmp	Solaris DDI
strncpy	Solaris DDI
swab	DDI/DKI
timeout	DDI/DKI
uiomove	DDI/DKI
untimeout	DDI/DKI
ureadc	DDI/DKI
uwritec	DDI/DKI
va_arg	Solaris DDI
va_end	Solaris DDI
va_start	Solaris DDI
vcmn_err	DDI/DKI
vsprintf	Solaris DDI

Name	**Description**
adjmsg(9F)	trim bytes from a message
allocb(9F)	allocate a message block
anocancel(9F)	prevent cancellation of asynchronous I/O request
aphysio(9F)	perform asynchronous physical I/O
ASSERT(9F)	expression verification

assert(9F)	See **ASSERT**(9F)
backq(9F)	get pointer to the queue behind the current queue
bcanput(9F)	test for flow control in specified priority band
bcanputnext(9F)	See **canputnext**(9F)
bcmp(9F)	compare two byte arrays
bcopy(9F)	copy data between address locations in the kernel
biodone(9F)	release buffer after buffer I/O transfer and notify blocked threads
bioerror(9F)	indicate error in buffer header
bioreset(9F)	reuse a private buffer header after I/O is complete
biowait(9F)	suspend processes pending completion of block I/O
bp_mapin(9F)	allocate virtual address space
bp_mapout(9F)	deallocate virtual address space
btop(9F)	convert size in bytes to size in pages (round down)
btopr(9F)	convert size in bytes to size in pages (round up)
bufcall(9F)	call a function when a buffer becomes available
bzero(9F)	clear memory for a given number of bytes
canput(9F)	test for room in a message queue
canputnext(9F)	test for room in next module's message queue
clrbuf(9F)	erase the contents of a buffer
cmn_err(9F)	display an error message or panic the system
condvar(9F)	condition variable routines
copyb(9F)	copy a message block
copyin(9F)	copy data from a user program to a driver buffer
copymsg(9F)	copy a message
copyout(9F)	copy data from a driver to a user program
cv_broadcast(9F)	See **condvar**(9F)
cv_destroy(9F)	See **condvar**(9F)

cv_init(9F)	See **condvar**(9F)
cv_signal(9F)	See **condvar**(9F)
cv_timedwait(9F)	See **condvar**(9F)
cv_timedwait_sig(9F)	See **condvar**(9F)
cv_wait(9F)	See **condvar**(9F)
cv_wait_sig(9F)	See **condvar**(9F)
datamsg(9F)	test whether a message is a data message
ddi_add_intr(9F)	hardware interrupt handling routines
ddi_add_softintr(9F)	software interrupt handling routines
ddi_btop(9F)	page size conversions
ddi_btopr(9F)	See **ddi_btop**(9F)
ddi_copyin(9F)	copy data to a driver buffer
ddi_copyout(9F)	copy data from a driver
ddi_create_minor_node(9F)	create a minor node for this device
ddi_device_copy(9F)	copy data from one device register to another device register
ddi_device_zero(9F)	zero fill the device
ddi_dev_is_sid(9F)	tell whether a device is self-identifying
ddi_dev_nintrs(9F)	return the number of interrupt specifications a device has
ddi_dev_nregs(9F)	return the number of register sets a device has
ddi_dev_regsize(9F)	return the size of a device's register
ddi_dma_addr_bind_handle(9F)	binds an address to a DMA handle
ddi_dma_addr_setup(9F)	easier DMA setup for use with virtual addresses
ddi_dma_alloc_handle(9F)	allocate DMA handle
ddi_dma_buf_bind_handle(9F)	binds a system buffer to a DMA handle
ddi_dma_buf_setup(9F)	easier DMA setup for use with buffer structures
ddi_dma_burstsizes(9F)	find out the allowed burst sizes for a DMA mapping
ddi_dma_coff(9F)	convert a DMA cookie to an offset within a DMA handle
ddi_dma_curwin(9F)	report current DMA window offset and size
ddi_dma_devalign(9F)	find DMA mapping alignment and minimum transfer size

ddi_dmae(9F)	system DMA engine functions
ddi_dmae_1stparty(9F)	See **ddi_dmae**(9F)
ddi_dmae_alloc(9F)	See **ddi_dmae**(9F)
ddi_dmae_disable(9F)	See **ddi_dmae**(9F)
ddi_dmae_enable(9F)	See **ddi_dmae**(9F)
ddi_dmae_getattr(9F)	See **ddi_dmae**(9F)
ddi_dmae_getcnt(9F)	See **ddi_dmae**(9F)
ddi_dmae_getlim(9F)	See **ddi_dmae**(9F)
ddi_dmae_prog(9F)	See **ddi_dmae**(9F)
ddi_dmae_release(9F)	See **ddi_dmae**(9F)
ddi_dmae_stop(9F)	See **ddi_dmae**(9F)
ddi_dma_free(9F)	release system DMA resources
ddi_dma_free_handle(9F)	free DMA handle
ddi_dma_getwin(9F)	activate a new DMA window
ddi_dma_htoc(9F)	convert a DMA handle to a DMA address cookie
ddi_dma_mem_alloc(9F)	allocate memory for DMA transfer
ddi_dma_mem_free(9F)	free previously allocated memory
ddi_dma_movwin(9F)	shift current DMA window
ddi_dma_nextcookie(9F)	retrieve subsequent DMA cookie
ddi_dma_nextseg(9F)	get next DMA segment
ddi_dma_nextwin(9F)	get next DMA window
ddi_dma_numwin(9F)	retrieve number of DMA windows
ddi_dma_segtocookie(9F)	convert a DMA segment to a DMA address cookie
ddi_dma_set_sbus64(9F)	allow 64 bit transfers on SBus
ddi_dma_setup(9F)	setup DMA resources
ddi_dma_sync(9F)	synchronize CPU and I/O views of memory
ddi_dma_unbind_handle(9F)	unbinds the address in a DMA handle
ddi_enter_critical(9F)	enter and exit a critical region of control
ddi_exit_critical(9F)	See **ddi_enter_critical**(9F)
ddi_ffs(9F)	find first (last) bit set in a long integer
ddi_fls(9F)	See **ddi_ffs**(9F)
ddi_getb(9F)	read data from the mapped memory address, device register or allocated DMA memory address

ddi_get_cred(9F)	returns a pointer to the credential structure of the caller
ddi_get_driver_private(9F)	get or set the address of the device's private data area
ddi_get_iblock_cookie(9F)	See **ddi_add_intr**(9F)
ddi_get_instance(9F)	get device instance number
ddi_getl(9F)	See **ddi_getb**(9F)
ddi_getll(9F)	See **ddi_getb**(9F)
ddi_getlongprop(9F)	See **ddi_prop_op**(9F)
ddi_getlongprop_buf(9F)	See **ddi_prop_op**(9F)
ddi_get_name(9F)	return the devinfo node name
ddi_get_parent(9F)	find the parent of a device information structure
ddi_getprop(9F)	See **ddi_prop_op**(9F)
ddi_getproplen(9F)	See **ddi_prop_op**(9F)
ddi_get_soft_iblock_cookie(9F)	See **ddi_add_softintr**(9F)
ddi_get_soft_state(9F)	See **ddi_soft_state**(9F)
ddi_getw(9F)	See **ddi_getb**(9F)
ddi_intr_hilevel(9F)	indicate interrupt handler type
ddi_io_getb(9F)	read data from the mapped device register in I/O space
ddi_io_getl(9F)	See **ddi_io_getb**(9F)
ddi_io_getw(9F)	See **ddi_io_getb**(9F)
ddi_iomin(9F)	find minimum alignment and transfer size for DMA
ddi_iopb_alloc(9F)	allocate and free non-sequentially accessed memory
ddi_iopb_free(9F)	See **ddi_iopb_alloc**(9F)
ddi_io_putb(9F)	write data to the mapped device register in I/O space
ddi_io_putl(9F)	See **ddi_io_putb**(9F)
ddi_io_putw(9F)	See **ddi_io_putb**(9F)
ddi_io_rep_getb(9F)	read multiple data from the mapped device register in I/O space
ddi_io_rep_getl(9F)	See **ddi_io_rep_getb**(9F)
ddi_io_rep_getw(9F)	See **ddi_io_rep_getb**(9F)
ddi_io_rep_putb(9F)	write multiple data to the mapped device

	register in I/O space
ddi_io_rep_putl(9F)	See **ddi_io_rep_putb**(9F)
ddi_io_rep_putw(9F)	See **ddi_io_rep_putb**(9F)
ddi_mapdev(9F)	create driver-controlled mapping of device
ddi_mapdev_intercept(9F)	control driver notification of user accesses
ddi_mapdev_nointercept(9F)	See **ddi_mapdev_intercept**(9F)
ddi_mapdev_set_device_acc_attr(9F)	Set the device attributes for the mapping
ddi_map_regs(9F)	map or unmap registers
ddi_mem_alloc(9F)	allocate and free sequentially accessed memory
ddi_mem_free(9F)	See **ddi_mem_alloc**(9F)
ddi_mem_getb(9F)	read data from mapped device in the memory space or allocated DMA memory
ddi_mem_getl(9F)	See **ddi_mem_getb**(9F)
ddi_mem_getll(9F)	See **ddi_mem_getb**(9F)
ddi_mem_getw(9F)	See **ddi_mem_getb**(9F)
ddi_mem_putb(9F)	write data to mapped device in the memory space or allocated DMA memory
ddi_mem_putl(9F)	See **ddi_mem_putb**(9F)
ddi_mem_putll(9F)	See **ddi_mem_putb**(9F)
ddi_mem_putw(9F)	See **ddi_mem_putb**(9F)
ddi_mem_rep_getb(9F)	read multiple data from mapped device in the memory space or allocated DMA memory
ddi_mem_rep_getl(9F)	See **ddi_mem_rep_getb**(9F)
ddi_mem_rep_getll(9F)	See **ddi_mem_rep_getb**(9F)
ddi_mem_rep_getw(9F)	See **ddi_mem_rep_getb**(9F)
ddi_mem_rep_putb(9F)	write multiple data to mapped device in the memory space or allocated DMA memory
ddi_mem_rep_putl(9F)	See **ddi_mem_rep_putb**(9F)
ddi_mem_rep_putll(9F)	See **ddi_mem_rep_putb**(9F)
ddi_mem_rep_putw(9F)	See **ddi_mem_rep_putb**(9F)
ddi_peek(9F)	read a value from a location
ddi_peekc(9F)	See **ddi_peek**(9F)
ddi_peekd(9F)	See **ddi_peek**(9F)
ddi_peekl(9F)	See **ddi_peek**(9F)

ddi_peeks(9F)	See **ddi_peek**(9F)
ddi_poke(9F)	write a value to a location
ddi_pokec(9F)	See **ddi_poke**(9F)
ddi_poked(9F)	See **ddi_poke**(9F)
ddi_pokel(9F)	See **ddi_poke**(9F)
ddi_pokes(9F)	See **ddi_poke**(9F)
ddi_prop_create(9F)	create, remove, or modify properties for leaf device drivers
ddi_prop_exists(9F)	check for the existence of a property
ddi_prop_free(9F)	See **ddi_prop_lookup**(9F)
ddi_prop_get_int(9F)	lookup integer property
ddi_prop_lookup(9F)	look up property information
ddi_prop_lookup_byte_array(9F)	See **ddi_prop_lookup**(9F)
ddi_prop_lookup_int_array(9F)	See **ddi_prop_lookup**(9F)
ddi_prop_lookup_string(9F)	See **ddi_prop_lookup**(9F)
ddi_prop_lookup_string_array(9F)	See **ddi_prop_lookup**(9F)
ddi_prop_modify(9F)	See **ddi_prop_create**(9F)
ddi_prop_op(9F)	get property information for leaf device drivers
ddi_prop_remove(9F)	See **ddi_prop_create**(9F)
ddi_prop_remove_all(9F)	See **ddi_prop_create**(9F)
ddi_prop_undefine(9F)	See **ddi_prop_create**(9F)
ddi_prop_update(9F)	update properties
ddi_prop_update_byte_array(9F)	See **ddi_prop_update**(9F)
ddi_prop_update_int(9F)	See **ddi_prop_update**(9F)
ddi_prop_update_int_array(9F)	See **ddi_prop_update**(9F)
ddi_prop_update_string(9F)	See **ddi_prop_update**(9F)
ddi_prop_update_string_array(9F)	See **ddi_prop_update**(9F)
ddi_ptob(9F)	See **ddi_btop**(9F)
ddi_putb(9F)	write data to the mapped memory address, device register or allocated DMA memory address
ddi_putl(9F)	See **ddi_putb**(9F)
ddi_putll(9F)	See **ddi_putb**(9F)
ddi_putw(9F)	See **ddi_putb**(9F)
ddi_regs_map_free(9F)	free a previously mapped register address

	space
ddi_regs_map_setup(9F)	set up a mapping for a register address space
ddi_remove_intr(9F)	See **ddi_add_intr**(9F)
ddi_remove_minor_node(9F)	remove a minor node for this dev_info
ddi_remove_softintr(9F)	See **ddi_add_softintr**(9F)
ddi_rep_getb(9F)	read data from the mapped memory address, device register or allocated DMA memory address
ddi_rep_getl(9F)	See **ddi_rep_getb**(9F)
ddi_rep_getll(9F)	See **ddi_rep_getb**(9F)
ddi_rep_getw(9F)	See **ddi_rep_getb**(9F)
ddi_report_dev(9F)	announce a device
ddi_rep_putb(9F)	write data to the mapped memory address, device register or allocated DMA memory address
ddi_rep_putl(9F)	See **ddi_rep_putb**(9F)
ddi_rep_putll(9F)	See **ddi_rep_putb**(9F)
ddi_rep_putw(9F)	See **ddi_rep_putb**(9F)
ddi_root_node(9F)	get the root of the dev_info tree
ddi_segmap(9F)	Set up a user mapping using seg_dev
ddi_segmap_setup(9F)	See **ddi_segmap**(9F)
ddi_set_driver_private(9F)	See **ddi_get_driver_private**(9F)
ddi_slaveonly(9F)	tell if a device is installed in a slave access only location
ddi_soft_state(9F)	driver soft state utility routines
ddi_soft_state_fini(9F)	See **ddi_soft_state**(9F)
ddi_soft_state_free(9F)	See **ddi_soft_state**(9F)
ddi_soft_state_init(9F)	See **ddi_soft_state**(9F)
ddi_soft_state_zalloc(9F)	See **ddi_soft_state**(9F)
ddi_trigger_softintr(9F)	See **ddi_add_softintr**(9F)
ddi_unmap_regs(9F)	See **ddi_map_regs**(9F)
delay(9F)	delay execution for a specified number of clock ticks
disksort(9F)	single direction elevator seek sort for buffers
drv_getparm(9F)	retrieve kernel state information
drv_hztousec(9F)	convert clock ticks to microseconds

drv_priv(9F)	determine driver privilege
drv_usectohz(9F)	convert microseconds to clock ticks
drv_usecwait(9F)	busy-wait for specified interval
dupb(9F)	duplicate a message block descriptor
dupmsg(9F)	duplicate a message
enableok(9F)	reschedule a queue for service
esballoc(9F)	allocate a message block using a caller-supplied buffer
esbbcall(9F)	call function when buffer is available
flushband(9F)	flush messages for a specified priority band
flushq(9F)	remove messages from a queue
freeb(9F)	free a message block
freemsg(9F)	free all message blocks in a message
free_pktiopb(9F)	See **get_pktiopb**(9F)
freerbuf(9F)	free a raw buffer header
freezestr(9F)	freeze, thaw the state of a stream
geterror(9F)	return I/O error
getmajor(9F)	get major device number
getminor(9F)	get minor device number
get_pktiopb(9F)	allocate/free a SCSI packet in the iopb map
getq(9F)	get the next message from a queue
getrbuf(9F)	get a raw buffer header
hat_getkpfnum(9F)	get page frame number for kernel address
inb(9F)	read from an I/O port
inl(9F)	See **inb**(9F)
insq(9F)	insert a message into a queue
inw(9F)	See **inb**(9F)
kmem_alloc(9F)	allocate kernel memory
kmem_free(9F)	See **kmem_alloc**(9F)
kmem_zalloc(9F)	See **kmem_alloc**(9F)
kstat_create(9F)	create and initialize a new kstat
kstat_delete(9F)	remove a kstat from the system
kstat_install(9F)	add a fully initialized kstat to the system
kstat_named_init(9F)	initialize a named kstat
kstat_queue(9F)	update I/O kstat statistics

kstat_runq_back_to_waitq(9F)	See **kstat_queue**(9F)
kstat_runq_enter(9F)	See **kstat_queue**(9F)
kstat_runq_exit(9F)	See **kstat_queue**(9F)
kstat_waitq_enter(9F)	See **kstat_queue**(9F)
kstat_waitq_exit(9F)	See **kstat_queue**(9F)
kstat_waitq_to_runq(9F)	See **kstat_queue**(9F)
linkb(9F)	concatenate two message blocks
makecom(9F)	make a packet for SCSI commands
makecom_g0(9F)	See **makecom**(9F)
makecom_g0_s(9F)	See **makecom**(9F)
makecom_g1(9F)	See **makecom**(9F)
makecom_g5(9F)	See **makecom**(9F)
makedevice(9F)	make device number from major and minor numbers
max(9F)	return the larger of two integers
min(9F)	return the lesser of two integers
minphys(9F)	See **physio**(9F)
mod_info(9F)	See **mod_install**(9F)
mod_install(9F)	add, remove or query a loadable module
mod_remove(9F)	See **mod_install**(9F)
msgdsize(9F)	return the number of bytes in a message
msgpullup(9F)	concatenate bytes in a message
mt-streams(9F)	STREAMS multithreading
mutex(9F)	mutual exclusion lock routines
mutex_destroy(9F)	See **mutex**(9F)
mutex_enter(9F)	See **mutex**(9F)
mutex_exit(9F)	See **mutex**(9F)
mutex_init(9F)	See **mutex**(9F)
mutex_owned(9F)	See **mutex**(9F)
mutex_tryenter(9F)	See **mutex**(9F)
nochpoll(9F)	error return function for non-pollable devices
nodev(9F)	error return function
noenable(9F)	prevent a queue from being scheduled
nulldev(9F)	zero return function
numtos(9F)	See **stoi**(9F)

OTHERQ(9F)	get pointer to queue's partner queue
otherq(9F)	See **OTHERQ**(9F)
outb(9F)	write to an I/O port
outl(9F)	See **outb**(9F)
outw(9F)	See **outb**(9F)
pci_config_getb(9F)	read or write single datum of various sizes to the PCI Local Bus Configuration space
pci_config_getl(9F)	See **pci_config_getb**(9F)
pci_config_getll(9F)	See **pci_config_getb**(9F)
pci_config_getw(9F)	See **pci_config_getb**(9F)
pci_config_putb(9F)	See **pci_config_getb**(9F)
pci_config_putl(9F)	See **pci_config_getb**(9F)
pci_config_putll(9F)	See **pci_config_getb**(9F)
pci_config_putw(9F)	See **pci_config_getb**(9F)
pci_config_setup(9F)	setup or tear down the resources for enabling accesses to the PCI Local Bus Configuration space
pci_config_teardown(9F)	See **pci_config_setup**(9F)
physio(9F)	perform physical I/O
pollwakeup(9F)	inform a process that an event has occurred
proc_ref(9F)	See **proc_signal**(9F)
proc_signal(9F)	send a signal to a process
proc_unref(9F)	See **proc_signal**(9F)
ptob(9F)	convert size in pages to size in bytes
pullupmsg(9F)	concatenate bytes in a message
put(9F)	call a STREAMS put procedure
putbq(9F)	place a message at the head of a queue
putctl(9F)	send a control message to a queue
putctl1(9F)	send a control message with a one-byte parameter to a queue
putnext(9F)	send a message to the next queue
putnextctl(9F)	send a control message to a queue
putnextctl1(9F)	send a control message with a one-byte parameter to a queue
putq(9F)	put a message on a queue
qbufcall(9F)	call a function when a buffer becomes

	available
qenable(9F)	enable a queue
qprocsoff(9F)	See **qprocson**(9F)
qprocson(9F)	enable, disable put and service routines
qreply(9F)	send a message on a stream in the reverse direction
qsize(9F)	find the number of messages on a queue
qtimeout(9F)	execute a function after a specified length of time
qunbufcall(9F)	cancel a pending qbufcall request
quntimeout(9F)	cancel previous qtimeout function call
qwait(9F)	STREAMS wait routines
qwait_sig(9F)	See **qwait**(9F)
qwriter(9F)	asynchronous STREAMS perimeter upgrade
RD(9F)	get pointer to the read queue
rd(9F)	See **RD**(9F)
repinsb(9F)	See **inb**(9F)
repinsd(9F)	See **inb**(9F)
repinsw(9F)	See **inb**(9F)
repoutsb(9F)	See **outb**(9F)
repoutsd(9F)	See **outb**(9F)
repoutsw(9F)	See **outb**(9F)
rmalloc(9F)	allocate space from a resource map
rmallocmap(9F)	allocate and free resource maps
rmallocmap_wait(9F)	See **rmallocmap**(9F)
rmalloc_wait(9F)	allocate space from a resource map, wait if necessary
rmfree(9F)	free space back into a resource map
rmfreemap(9F)	See **rmallocmap**(9F)
rmvb(9F)	remove a message block from a message
rmvq(9F)	remove a message from a queue
rw_destroy(9F)	See **rwlock**(9F)
rw_downgrade(9F)	See **rwlock**(9F)
rw_enter(9F)	See **rwlock**(9F)
rw_exit(9F)	See **rwlock**(9F)
rw_init(9F)	See **rwlock**(9F)

rwlock(9F)	readers/writer lock functions
rw_read_locked(9F)	See **rwlock**(9F)
rw_tryenter(9F)	See **rwlock**(9F)
rw_tryupgrade(9F)	See **rwlock**(9F)
samestr(9F)	See **SAMESTR**(9F)
SAMESTR(9F)	test if next queue is in the same stream
scsi_abort(9F)	abort a SCSI command
scsi_alloc_consistent_buf(9F)	allocate an I/O buffer for SCSI DMA
scsi_cname(9F)	decode a SCSI name
scsi_destroy_pkt(9F)	free an allocated SCSI packet and its DMA resource
scsi_dmafree(9F)	See **scsi_dmaget**(9F)
scsi_dmaget(9F)	SCSI dma utility routines
scsi_dname(9F)	See **scsi_cname**(9F)
scsi_errmsg(9F)	display a SCSI request sense message
scsi_free_consistent_buf(9F)	free a previously allocated SCSI DMA I/O buffer
scsi_hba_attach_setup(9F)	SCSI HBA attach and detach routines
scsi_hba_attach(9F)	See **scsi_hba_attach_setup**(9F)
scsi_hba_detach(9F)	See **scsi_hba_attach**(9F)
scsi_hba_fini(9F)	See **scsi_hba_init**(9F)
scsi_hba_init(9F)	SCSI Host Bus Adapter system initialization and completion routines
scsi_hba_lookup_capstr(9F)	return index matching capability string
scsi_hba_pkt_alloc(9F)	allocate and free a scsi_pkt structure
scsi_hba_pkt_free(9F)	See **scsi_hba_pkt_alloc**(9F)
scsi_hba_probe(9F)	default SCSI HBA probe function
scsi_hba_tran_alloc(9F)	allocate and free transport structures
scsi_hba_tran_free(9F)	See **scsi_hba_tran_alloc**(9F)
scsi_ifgetcap(9F)	get/set SCSI transport capability
scsi_ifsetcap(9F)	See **scsi_ifgetcap**(9F)
scsi_init_pkt(9F)	prepare a complete SCSI packet
scsi_log(9F)	display a SCSI-device-related message
scsi_mname(9F)	See **scsi_cname**(9F)
scsi_pktalloc(9F)	SCSI packet utility routines
scsi_pktfree(9F)	See **scsi_pktalloc**(9F)

scsi_poll(9F)	run a polled SCSI command on behalf of a target driver
scsi_probe(9F)	utility for probing a scsi device
scsi_resalloc(9F)	See **scsi_pktalloc**(9F)
scsi_reset(9F)	reset a SCSI bus or target
scsi_reset_notify(9F)	notify target driver of bus resets
scsi_resfree(9F)	See **scsi_pktalloc**(9F)
scsi_rname(9F)	See **scsi_cname**(9F)
scsi_slave(9F)	utility for SCSI target drivers to establish the presence of a target
scsi_sname(9F)	See **scsi_cname**(9F)
scsi_sync_pkt(9F)	synchronize CPU and I/O views of memory
scsi_transport(9F)	request by a SCSI target driver to start a command
scsi_unprobe(9F)	free resources allocated during initial probing
scsi_unslave(9F)	See **scsi_unprobe**(9F)
sema_destroy(9F)	See **semaphore**(9F)
sema_init(9F)	See **semaphore**(9F)
sema_p(9F)	See **semaphore**(9F)
semaphore(9F)	semaphore functions
sema_p_sig(9F)	See **semaphore**(9F)
sema_tryp(9F)	See **semaphore**(9F)
sema_v(9F)	See **semaphore**(9F)
sprintf(9F)	format characters in memory
stoi(9F)	convert between an integer and a decimal string
strchr(9F)	find a character in a string
strcmp(9F)	compare two null terminated strings.
strcpy(9F)	copy a string from one location to another.
strlen(9F)	determine the number of non-null bytes in a string
strlog(9F)	submit messages to the log driver
strncmp(9F)	See **strcmp**(9F)
strncpy(9F)	See **strcpy**(9F)
strqget(9F)	get information about a queue or band of the queue

strqset(9F)	change information about a queue or band of the queue
swab(9F)	swap bytes in 16-bit halfwords
testb(9F)	check for an available buffer
timeout(9F)	execute a function after a specified length of time
uiomove(9F)	copy kernel data using uio structure
unbufcall(9F)	cancel a pending bufcall request
unfreezestr(9F)	See **freezestr**(9F)
unlinkb(9F)	remove a message block from the head of a message
untimeout(9F)	cancel previous timeout function call
ureadc(9F)	add character to a uio structure
uwritec(9F)	remove a character from a uio structure
va_arg(9F)	handle variable argument list
va_end(9F)	See **va_arg**(9F)
va_start(9F)	See **va_arg**(9F)
vcmn_err(9F)	See **cmn_err**(9F)
vsprintf(9F)	format characters in memory
WR(9F)	get pointer to the write queue for this module or driver
wr(9F)	See **WR**(9F)