NAME

scsi_pkt – SCSI packet structure

SYNOPSIS

#include <sys/scsi/scsi.h>

INTERFACE LEVEL

Solaris DDI specific (Solaris DDI).

DESCRIPTION

A **scsi_pkt** structure defines the packet which is allocated by **scsi_init_pkt**(9F). The target driver fills in some information, and passes it to **scsi_transport**(9F) for execution on the target. The HBA fills in some other information as the command is processed. When the command completes (or can be taken no further) the completion function specified in the packet is called with a pointer to the packet as its argument. From fields within the packet, the target driver can determine the success or failure of the command.

STRUCTURE MEMBERS

```
opaque_t              pkt_ha_private;                  /* private data for host adapter */
struct scsi_address   pkt_address;                     /* destination packet is for */
opaque_t              pkt_private;                     /* private data for target driver */
void                  (*pkt_comp)(struct scsi_pkt *);  /* completion routine */
long                  pkt_flags;                       /* flags */
long                  pkt_time;                        /* time allotted to complete */
                                                       /* command */
u_char                *pkt_scbp;                       /* pointer to status block */
u_char                *pkt_cdbp;                       /* pointer to command block */
long                  pkt_resid;                       /* number of bytes not transferred */
u_long                pkt_state;                       /* state of command */
u_long                pkt_statistics;                  /* statistics */
u_char                pkt_reason;                      /* reason completion called */
```

pkt_ha_private is an opaque pointer which the Host Bus Adapter uses to reference a private data structure used to transfer scsi_pkt requests.

pkt_address is initialized by **scsi_init_pkt**(9F) and serves to record the intended route and recipient of a request.

pkt_private is reserved for the use of the target driver and is not changed by the HBA driver.

pkt_comp specifies the command completion callback routine. When the host adapter driver has gone as far as it can in transporting a command to a SCSI target, and the command has either run to completion, or can go no further for some other reason, the host adapter driver will call the function pointed to by this field and pass a pointer to the packet as argument.

The callback routine itself is called from interrupt context and must not sleep nor call any function which may sleep.

pkt_flags provides additional information about how the target driver wants the command to be executed. See **pkt_flag Definitions**.

pkt_time will be set by the target driver to represent the maximum length of time in seconds that this command is allowed take to complete. **pkt_time** may be **0** if no timeout is required.

pkt_scbp points to the SCSI status completion block.

pkt_cdbp points to a kernel addressable buffer whose length was specified by a call to the proper resource allocation routine, **scsi_init_pkt**(9F).

pkt_resid contains a residual count, either the number of data bytes that have not been transferred (**scsi_transport**(9F)) or the number of data bytes for which DMA resources could not be allocated **scsi_init_pkt**(9F). In the latter case, partial DMA resources may only be allocated if **scsi_init_pkt**(9F) is called with the **PKT_DMA_PARTIAL** flag.

pkt_state has bit positions representing the five most important states that a SCSI command can go through (see **pkt_state Definitions**).

pkt_statistics maintains some transport-related statistics. (see **pkt_statistics Definitions**).

pkt_reason contains a completion code that indicates why the **pkt_comp** function was called.

The host adapter driver will update the **pkt_resid**, **pkt_reason**, **pkt_state**, and **pkt_statistics** fields.

pkt_flags Definitions

The definitions that are appropriate for the structure member **pkt_flags** are:

FLAG_NOINTR	Run command with no command completion callback; command is complete upon return from **scsi_transport**(9F).
FLAG_NODISCON	Run command without disconnects.
FLAG_NOPARITY	Run command without parity checking.
FLAG_HTAG	Run command as the head of queue tagged command.
FLAG_OTAG	Run command as an ordered queue tagged command.
FLAG_STAG	Run command as a simple queue tagged command.
FLAG_SENSING	This command is a request sense command.
FLAG_HEAD	This command should be put at the head of the queue.

pkt_reason Definitions

The definitions that are appropriate for the structure member **pkt_reason** are:

CMD_CMPLT	No transport errors–normal completion.
CMD_INCOMPLETE	Transport stopped with abnormal state.
CMD_DMA_DERR	DMA direction error.
CMD_TRAN_ERR	Unspecified transport error.
CMD_RESET	SCSI bus reset destroyed command.

CMD_ABORTED	Command transport aborted on request.
CMD_TIMEOUT	Command timed out.
CMD_DATA_OVR	Data Overrun.
CMD_CMD_OVR	Command Overrun.
CMD_STS_OVR	Status Overrun.
CMD_BADMSG	Message not Command Complete.
CMD_NOMSGOUT	Target refused to go to Message Out phase.
CMD_XID_FAIL	Extended Identify message rejected.
CMD_IDE_FAIL	Initiator Detected Error message rejected.
CMD_ABORT_FAIL	Abort message rejected.
CMD_REJECT_FAIL	Reject message rejected.
CMD_NOP_FAIL	No Operation message rejected.
CMD_PER_FAIL	Message Parity Error message rejected.
CMD_BDR_FAIL	Bus Device Reset message rejected.
CMD_ID_FAIL	Identify message rejected.
CMD_UNX_BUS_FREE	Unexpected Bus Free Phase.
CMD_TAG_REJECT	Target rejected the tag message.

pkt_state Definitions

The definitions that are appropriate for the structure member **pkt_state** are:

STATE_GOT_BUS	Bus arbitration succeeded.
STATE_GOT_TARGET	Target successfully selected.
STATE_SENT_CMD	Command successfully sent.
STATE_XFERRED_DATA	Data transfer took place.
STATE_GOT_STATUS	Status received.
STATE_ARQ_DONE	The command resulted in a check condition and the host adapter driver executed an automatic request sense cmd.

pkt_statistics Definitions

The definitions that are appropriate for the structure member **pkt_statistics** are:

STAT_DISCON	Device disconnect.
STAT_SYNC	Command did a synchronous data transfer.
STAT_PERR	SCSI parity error.
STAT_BUS_RESET	Bus reset.
STAT_DEV_RESET	Device reset.
STAT_ABORTED	Command was aborted.
STAT_TIMEOUT	Command timed out.

SEE ALSO

tran_init_pkt(9E), **scsi_init_pkt**(9F), **scsi_transport**(9F)
Writing Device Drivers