

**To:** X3T10 (SCSI) committee  
**cc:**  
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**Subject:** Message Handling Chart for SIP

The message system has long been a source of "incompatibility" between various SCSI devices because of different interpretations of how various messages should be handled when they are sent by the initiator during certain phases. This uncertainty is because there is not enough guidance in the SCSI Standard in these matters. The standard is good about defining what should be done with a message when the target implements that message, but it is not clear about the action if the target doesn't implement the message or if the message is implemented during some phases but not during others. I am proposing that the following chart be included in SIP (probably an informative annex, unless support for a stronger requirement is voiced by the X3T10 committee) to provide this guidance.

The first column of the table lists the possible SCSI messages. The title at the top of each of the other columns represents a phase. The abbreviations are described in table 1. If a target detects ATN active during that phase, it goes to MESSAGE OUT phase a gets a message from the initiator. The response for each message is noted in the box for that message. A description of these actions is in Table 2.

An example of interpreting the table: If target is in the command phase and the message received from the initiator is 04 (Disconnect), the response is 3,1. This means do response 3 (send a MESSAGE REJECT message to the initiator) and do response 1 (continue to the next phase).

Table 1 - Abbreviations Used

<u>PHASE</u>	<u>ABBREVIATION</u>
SELECTION	Sel
IDENTIFY (AFTER SELECTION)	Id
MSG OUT	Mout
COMMAND	Cmd
MSG IN (NOT CPLT OR DISC)	M-in
RESELECT (AFTER IDENTIFY)	Resel
MSG IN (DISCONNECT)	Disc
DATA IN/OUT	Data
STATUS	Stat
MSG IN (COMMAND COMPLETE)	Cplt

Table 2 - DESCRIPTION OF RESPONSES

- 1) Continue: The target goes on to the next phase as if the message exchange hadn't occurred.
- 2) Normal Bus Free: The target goes to bus free phase with no error condition noted.
- 3) Send Message Reject: The target goes to message in phase and transmits a MESSAGE REJECT (07) message. Initiator must assume that the requested message out function is not performed by the target.
- 4) Unexpected Bus Free: The target goes to bus free and may create sense bytes describing the error condition.
- 5) Retry Message Phase: The previous message phase is tried again (one time).
- 6) Send Restore Pointers, Retry Phase.
- 7) Go to Status (send Check Condition or Command Terminated), send COMMAND COMPLETE message, and create sense bytes for the condition.
- 8) Continue with no disconnect for that I/O process.
- 9) Re-send message in (Disconnect or Command Complete).
- A) If M-in is Save Data Pointer, do response 8. Otherwise, do response 1.

Message \ Phase	Sel	ID	Mout	Cmd	M-in	Resel	Disc	Data	Stat	Cplt
ABORT (06)	2	2	2	2	2	2	2	2	2	2
ABORT TAG (0D)	4	4	2	2	2	2	2	2	2	2
BUS DEVICE RESET (0C)	2	2	2	2	2	2	2	2	2	2
BUS DEV RST OTHER PORTS (14)	4	1	1	1	1	1	9,1	1	1	9,1
CLEAR QUEUE (0E)	2	2	2	2	2	2	2	2	2	2
CONTINUE I/O PROCESS (12)	4	1	1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
DISCONNECT (04)	4	3,1	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
INITIATOR DETECTED ERR (05)	4	5	7	6	5	5	5	7	6	5
INITIATE RECOVERY (0F)	4	3,1	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
IDENTIFY (Invalid)	3,7	4	4	4	4	4	4	4	4	4
IDENTIFY (Valid)	1	1	1	1	1	1	9,1	1	1	9,1
MESSAGE PARITY ERROR (09)	4	4	4	4	5	5	5	4	4	5
MESSAGE REJECT (07)	4	3,1	3,1	3,1	A	3,1	8	3,1	3,1	9,1
NO OP (08)	4	1	1	1	1	1	9,1	1	1	9,1
QUEUE - SIMPLE (20)	4	1	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
QUEUE - ORDERED (22)	4	1	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
QUEUE - HEAD (21)	4	1	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
RELEASE RECOVERY (10)	4	2	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
SYNCHRONOUS TRANSFER REQ	4	1	1	1	1	1	9,1	1	1	9,1
TARGET TRANS DIS (13)	4	1	1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1
TERMINATE I/O PROCESS (11)	4	3,1	3,1	7	7	7	7	7	3,1	3,9,1
WIDE TRANSFER REQUEST	4	1	1	1	1	1	9,1	1	1	9,1
Invalid or reserved messages	4	3,1	3,1	3,1	3,1	3,1	3,9,1	3,1	3,1	3,9,1

NOTES:

- \* The responses for all messages assume that the drive will implement this message. When the message isn't implemented, the responses will be as stated in the "invalid or reserved messages" row.
- \* When a parity error is detected on a byte received in a Message Out phase, the target will perform one retry of the Message Out transfer. If the retry is not successful, the target will perform an unexpected Bus Free.