

Subject: SBC-2, new READ LONG (16) and WRITE LONG (16) commands

The following proposes 16-byte READ LONG and WRITE LONG commands so that this functionality may be used on SCSI block devices having more than 4M blocks. [Revision 1 of this proposal changes the new 16-byte commands to be service actions to conserve opcodes and deletes the RELADR bit.](#) This proposal is based on sbc2r10.

5.2.15 READ LONG (10) command

The READ LONG (10) command (see table 41) requests that the device server transfer data from [one addressed logical block](#) to the application client. The data passed during the READ LONG (10) command is vendor-specific, but shall include the data bytes and the ECC bytes recorded on the medium. The most recent data written, or to be written, in the addressed logical block shall be returned. READ LONG (10) is independent of the Read-Write Error Recovery mode page but does allow retries.

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|-----------------------|---|---|---|---|---|--------|--------|
| 0 | OPERATION CODE (3Eh) | | | | | | | |
| 1 | Reserved | | | | | | CORRCT | RELADR |
| 2 | (MSB) _____ | | | | | | | |
| 5 | LOGICAL BLOCK ADDRESS | | | | | | | (LSB) |
| 6 | Reserved | | | | | | | |
| 7 | (MSB) _____ | | | | | | | |
| 8 | BYTE TRANSFER LENGTH | | | | | | | (LSB) |
| 9 | CONTROL | | | | | | | |

See 4.2.1.9 for reservation requirements for this command. See the LOCK UNLOCK CACHE (10) command (see 5.2.3) for a definition of the RELADDR bit and the LOGICAL BLOCK ADDRESS field.

Any other bytes that can be corrected by ECC should be included (e.g., data synchronization mark within the area covered by ECC). It is not required for the ECC bytes to be at the end of the data bytes; however, they should be in the same order as they are on the media.

A correct (CORRECT) bit of zero requests that a logical block be read without any correction made by the device server. A CORRECT bit of 0 should result with GOOD status unless data is not transferred for some reason other than that the data is non-correctable. In this case the appropriate status and/or sense data shall be set. A CORRECT bit of one requests that the data be corrected by ECC before being transferred to the application client.

The BYTE TRANSFER LENGTH field species the number of bytes of data that should be transferred. If a non-zero BYTE TRANSFER LENGTH does not match the available data length, the device server shall terminate the command with CHECK CONDITION status and the sense key shall be set to ILLEGAL REQUEST with the additional sense code set to INVALID FIELD IN CDB. The VALID and ILI bits (see SPC-3) shall be set to one and the INFORMATION field shall be set to the difference (residue) of the requested length minus the actual length in bytes. Negative values shall be indicated by two's complement notation.

A BYTE TRANSFER LENGTH of zero indicates that no bytes shall be transferred and shall not be considered an error.

The BYTE TRANSFER LENGTH field is constrained by the MAXIMUM TRANSFER LENGTH field in the Block Limits VPD page (see 6.1.4.2).

2) Add the following clause after 5.2.15 READ LONG (10) command:

5.2.x READ LONG (16) command

The READ LONG (16) command (see table x) requests that the device server transfer data to the application client.

Table <x> — READ LONG (16) command

| Byte\Bit | <u>7</u> | <u>6</u> | <u>5</u> | <u>4</u> | <u>3</u> | <u>2</u> | <u>1</u> | <u>0</u> |
|-----------|------------------------------|----------|----------|-----------------------------|----------|----------|----------------|--------------|
| <u>0</u> | <u>OPERATION CODE (9Eh)</u> | | | | | | | |
| <u>1</u> | <u>Reserved</u> | | | <u>SERVICE ACTION (11h)</u> | | | | |
| <u>2</u> | <u>(MSB)</u> | | | | | | | |
| <u>9</u> | <u>LOGICAL BLOCK ADDRESS</u> | | | | | | | <u>(LSB)</u> |
| <u>10</u> | <u>Reserved</u> | | | | | | | |
| <u>11</u> | <u>Reserved</u> | | | | | | | |
| <u>12</u> | <u>(MSB)</u> | | | | | | | |
| <u>13</u> | <u>BYTE TRANSFER LENGTH</u> | | | | | | | <u>(LSB)</u> |
| <u>14</u> | <u>Reserved</u> | | | | | | <u>CORRECT</u> | |
| <u>15</u> | <u>CONTROL</u> | | | | | | | |

See 4.2.1.9 for reservation requirements for this command. See the READ LONG (10) command (see 5.2.15) for a complete description of the fields in this command.

3) Change clause 15.2.37 WRITE LONG command to be as follows:

5.2.37 WRITE LONG (10) command

The WRITE LONG (10) command (see table 72) requests that the device server write the data [for one logical block](#) transferred by the application client to the medium. The data passed during the WRITE LONG (10) command is implementation specific, but shall include the data bytes and the ECC bytes.

Table 72 — WRITE LONG (10) command

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|----------------------|-----------------------|---|---|---|---|---|--------|
| 0 | OPERATION CODE (3Fh) | | | | | | | |
| 1 | Reserved | | | | | | | RELADR |
| 2 | (MSB) | LOGICAL BLOCK ADDRESS | | | | | | |
| 5 | | | | | | | | (LSB) |
| 6 | Reserved | | | | | | | |
| 7 | (MSB) | BYTE TRANSFER LENGTH | | | | | | |
| 8 | | | | | | | | (LSB) |
| 9 | CONTROL | | | | | | | |

See 4.2.1.9 for reservation requirements for this command. See the LOCK UNLOCK CACHE (10) command (see 5.2.3) for a definition of the REALDR bit and the LOGICAL BLOCK ADDRESS field.

NOTE 22 - Any other bytes that can be corrected by ECC should be included (e.g., a data synchronization mark within the area covered by ECC). The READ LONG (10) command may be issued before issuing a WRITE LONG (10) command. The WRITE LONG (10) data should be the same length and in the same order as the data returned by the READ LONG (10) command.

The BYTE TRANSFER LENGTH field should specify the number of bytes of data that the device server would return for the READ LONG (10) command. If a non-zero BYTE TRANSFER LENGTH does not exactly match the data length the device server would return for the READ LONG (10) command, then the device server shall terminate the command with CHECK CONDITION status and the sense key shall be set to ILLEGAL REQUEST with the additional sense code set to INVALID FIELD IN CDB. The ILI and VALID bits shall be set to one and the INFORMATION field shall be set to the difference (residue) of the requested length minus the actual length in bytes. Negative values shall be indicated by two's complement notation. A TRANSFER LENGTH of zero indicates that no bytes shall be transferred and shall not be considered an error. The TRANSFER LENGTH field is constrained by the MAXIMUM TRANSFER LENGTH field in the Block Limits VPD page (see 6.1.4.2).

4) Add the following clause after 5.2.37 WRITE LONG (10) command:

5.2.y WRITE LONG (16) command

[The WRITE LONG \(16\) command \(see table y\) requests that the device server write the data transferred by](#)

[the application client to the medium.](#)

Table <y> — WRITE LONG (16) command

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|-----------------------|---|---|----------------------|---|---|---|-------|
| 0 | OPERATION CODE (9Fh) | | | | | | | |
| 1 | Reserved | | | SERVICE ACTION (11h) | | | | |
| 2 | (MSB) | | | | | | | |
| 9 | LOGICAL BLOCK ADDRESS | | | | | | | (LSB) |
| 10 | Reserved | | | | | | | |
| 11 | Reserved | | | | | | | |
| 12 | (MSB) | | | | | | | |
| 13 | BYTE TRANSFER LENGTH | | | | | | | (LSB) |
| 14 | Reserved | | | | | | | |
| 15 | CONTROL | | | | | | | |

[See 4.2.1.9 for reservation requirements for this command. See the WRITE LONG \(10\) command \(see 5.2.15\) for a complete description of the fields in this command.](#)

5) Search for all references to READ LONG and WRITE LONG and change them to READ LONG (10) and WRITE LONG (10).

6) Include other references for READ LONG (16) and WRITE LONG (16) as required.