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Industry Standard Tape Alert Error Flags

Below is a list of **Industry Standard Tape Alert Error Flags**. The "tape alert" flags are designed for single tape drives and robotic libraries. Please refer to the hardware documentation for a thorough explanation of these error flags:

Flag Number	Flag	Type	Required Host Message	Cause
1	Read Warning	W	The tape drive is having problems reading data. No data has been lost, but there has been a reduction in the performance of the tape.	The drive is having severe trouble reading
2	Write Warning	W	The tape drive is having problems writing data. No data has been lost, but there has been a reduction in the capacity of the tape.	The drive is having severe trouble writing
3	Hard Error	W	The operation has stopped because an error has occurred while reading or writing data which the drive cannot correct.	The drive had a hard read or write error
4	Media	C	Your data is at risk:	Media cannot be written/read, or media performance is severely degraded
			1. Copy any data you require from this tape.	
			2. Do not use this tape again.	
			3. Restart the operation with a	

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			different tape.	
5	Read Failure	C	The tape is damaged or the drive is faulty. Call the tape drive supplier helpline.	The drive can no longer read data from the tape
6	Write Failure	C	The tape is from a faulty batch or the tape drive is faulty:	The drive can no longer write data to the tape
			1. Use a good tape to test the drive.	
			2. If the problem persists, call the tape drive supplier helpline.	
7	Media Life	W	The tape cartridge has reached the end of its calculated useful life:	The media has exceeded its specified life
			1. Copy any data you need to another tape	
			2. Discard the old tape.	
8	Not Data Grade	W	The tape cartridge is not data-grade. Any data you back up to the tape is at risk.	The drive has not been able to read the MRS stripes
			Replace the cartridge with a data-grade tape.	
9	Write Protect	C	You are trying to write to a write-protected cartridge.	Write command is attempted to a write protected tape
			Remove the write-protection or use another tape	
10	No Removal	I	You cannot eject the cartridge because the	Manual or s/w unload attempted when

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			tape drive is in use.	prevent media removal on
			Wait until the operation is complete before ejecting the cartridge	
11	Cleaning Media	I	The tape in the drive is a cleaning cartridge.	Cleaning tape loaded in drive
12	Unsupported Format	I	You have tried to load a cartridge of a type which is not supported by this drive.	Attempted loaded of unsupported tape format, e.g. DDS2 in DDS1 drive
13	Recoverable Snapped Tape	C	The operation has failed because the tape in the drive has snapped:	Tape snapped/cut in the drive where media can be ejected
			1. Discard the old tape.	
			2. Restart the operation with a different tape.	
14	Unrecoverable Snapped Tape	C	The operation has failed because the tape in the drive has snapped:	Tape snapped/cut in the drive where media cannot be ejected
			1. Do not attempt to extract the tape cartridge.	
			2. Call the tape drive supplier helpline.	
15	Memory Chip in Cartridge Failure	W	The memory in the tape cartridge has failed, which reduces performance.	Memory chip failed in cartridge
			Do not use the cartridge for further backup operations.	

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16	Forced Eject	C	The operation has failed because the tape cartridge was manually ejected while the tape drive was actively writing or reading.	Manual or forced eject while drive actively writing or reading
17	Read Only Format	W	You have loaded a cartridge of a type that is read-only in this drive.	Media loaded that is read-only format
			The cartridge will appear as write-protected.	
18	Tape Directory Corrupted on load	W	The directory on the tape cartridge has been corrupted.	Tape drive powered down with tape loaded, or permanent error prevented the tape directory being updated
			File search performance will be degraded. The tape directory can be rebuilt by reading all the data on the cartridge	
19	Nearing Media Life	I	The tape cartridge is nearing the end of its calculated life.	Media may have exceeded its specified number of passes
			It is recommended that you:	
			1. Use another tape cartridge for your next backup.	
			2. Store this tape cartridge in	

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			a safe place in case you need to restore data from it	
20	Clean Now	C	The tape drive needs cleaning:	The drive thinks it has a head clog, or needs cleaning
			1. If the operation has stopped, eject the tape and clean the drive	
			2. If the operation has not stopped, wait for it to finish and then clean the drive.	
			Check the tape drive users manual for device specific cleaning instructions.	
21	Clean Periodic	W	The tape drive is due for routine cleaning:	The drive is ready for a periodic clean
			1. Wait for the current operation to finish.	
			2. Then use a cleaning cartridge.	
			Check the tape drive users manual for device specific cleaning instructions.	
22	Expired Cleaning Media	C	The last cleaning cartridge used in the tape drive has worn out	The cleaning tape has expired
			1. Discard the worn out cleaning	

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			cartridge.	
			2. Wait for the current operation to finish.	
			3. Then use a new cleaning cartridge.	
23	Invalid Cleaning Media	C	The last cleaning cartridge used in the tape drive was an invalid type:	Invalid cleaning tape type used
			1. Do not use this cleaning cartridge in this drive.	
			2. Wait for the current operation to finish	
			3. Then use a valid cleaning cartridge.	
24	Retention Requested	W	The tape drive has requested a retention operation	The drive is having severe trouble reading or writing, which will be resolved by a retention cycle
25	Dual-Port Interface Error	W	A redundant interface port on the tape drive has failed	Failure of one interface port in a dual-port configuration, e.g. Fibrechannel
26	Cooling Fan Failure	W	A tape drive cooling fan has failed	Fan failure inside tape drive mechanism or tape drive enclosure
27	Power Supply	W	A redundant power supply has failed inside the tape drive enclosure. Check the	Redundant PSU failure inside the tape drive enclosure or rack subsystem

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			enclosure users manual for instructions on replacing the failed power supply	
28	Power Consumption	W	The tape drive power consumption is outside the specified range	Power consumption of the tape drive is outside specified range
29	Drive Maintenance	W	Preventive maintenance of the tape drive is required.	The drive requires preventative maintenance (not cleaning).
			Check the tape drive users manual for device specific preventive maintenance tasks or call the tape drive supplier helpline.	
30	Hardware A	C	The tape drive has a hardware fault:	The drive has a hardware fault that requires reset to recover.
			1. Eject the tape or magazine.	
			2. Reset the drive.	
			3. Restart the operation.	
31	Hardware B	C	The tape drive has a hardware fault:	The drive has a hardware fault which is not read/write related or requires a power cycle to recover.
			1. Turn the tape drive off and then on again.	
			2. Restart the operation.	
			3. If the problem	

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			persists, call the tape drive supplier helpline.	
			Check the tape drive users manual for device specific instructions on turning the device power on and off.	
32	Interface	W	The tape drive has a problem with the host interface:	The drive has identified an interfacing fault
			1. Check the cables and cable connections.	
			2. Restart the operation.	
33	Eject Media	C	The operation has failed:	Error recovery action
			1. Eject the tape or magazine.	
			2. Insert the tape or magazine again.	
			3. Restart the operation.	
34	Download Fail	W	The firmware download has failed because you have tried to use the incorrect firmware for this tape drive.	Firmware download failed
			Obtain the correct firmware and try again.	
35	Drive Humidity	W	Environmental conditions inside the tape drive are outside the specified humidity range	Drive humidity limits exceeded
36	Drive Temperature	W	Environmental conditions inside	Drive temperature

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			the tape drive are outside the specified temperature range.	limits exceeded
37	Drive Voltage	W	The voltage supply to the tape drive is outside the specified range.	Drive voltage limits exceeded
38	Predictive Failure	C	A hardware failure of the tape drive is predicted. Call the tape drive supplier helpline.	Predictive failure of drive hardware
39	Diagnostics Required	W	The tape drive may have a fault. Check for availability of diagnostic information and run extended diagnostics if applicable.	The drive may have had a failure which may be identified by stored diagnostic information or by running extended diagnostics (eg Send Diagnostic)
			Check the tape drive users manual for instructions on running extended diagnostic tests and retrieving diagnostic data	
40	Loader Hardware A	C	The changer mechanism is having difficulty communicating with the tape drive:	Loader mech. is having trouble communicating with the tape drive
			1. Turn the autoloader off then on.	
			2. Restart the	

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			operation.	
			3. If problem persists, call the tape drive supplier helpline.	
41	Loader Stray Tape	C	A tape has been left in the autoloader by a previous hardware fault:	Stray tape left in loader after pervious error recovery
			1. Insert an empty magazine to clear the fault.	
			2. If the fault does not clear, turn the autoloader off and then on again.	
			3. If the problem persists, call the tape drive supplier helpline.	
42	Loader Hardware B	W	There is a problem with the autoloader mechanism.	Loader mech. has a hardware fault
43	Loader Door	C	The operation has failed because the autoloader door is open:	Tape changer door open
			1. Clear any obstructions from the autoloader door.	
			2. Eject the magazine and then insert it again.	
			3. If the fault does not clear, turn the autoloader off and then on again	

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			4. If the problem persists, call the tape drive supplier helpline.	
44	Loader Hardware C	C	The autoloader has a hardware fault:	The loader mechanism has a hardware fault that is not mechanically related
			1. Turn the autoloader off and then on again.	
			2. Restart the operation.	
			3. If the problem persists, call the tape drive supplier helpline.	
			Check the autoloader users manual for device specific instructions on turning the device power on and off.	
45	Loader Magazine	C	The autoloader cannot operate without the magazine.	Loader magazine not present
			1. Insert the magazine into the autoloader	
			2. Restart the operation.	
46	Loader Predictive Failure	W	A hardware failure of the changer mechanism is predicted.	Predictive failure of loader mechanism hardware
			Call the tape drive supplier helpline.	
50	Lost Statistics	W	Media statistics have been lost	Drive or library powered down

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			at some time in the past	with tape loaded
51	Tape directory invalid at unload	W	The tape directory on the tape cartridge just unloaded has been corrupted.	Error prevented the tape directory being updated on unload.
			File search performance will be degraded. The tape directory can be rebuilt by reading all the data.	
52	Tape system area write failure	C	The tape just unloaded could not write its system area successfully:	Write errors while writing the system log on unload
			1. Copy data to another tape cartridge	
			2. Discard the old cartridge	
53	Tape system area read failure	C	The tape system area could not be read successfully at load time:	Read errors while reading the system area on load
			1. Copy data to another tape cartridge	
			2. Discard the old cartridge	
54	No start of data	C	The start of data could not be found on the tape:	Tape damaged, bulk erased, or incorrect format
			1. Check you are using the correct format tape	
			2. Discard the tape or return the tape to your supplier	

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TapeAlert is a standard for devices to report diagnostic messages to the controlling application. A "No TapeAlert Messages" response is a good thing. Here's the list of codes and definitions as it exists today.

(from the ANSI T10 Specifications):

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tapealert_codes = {
0x01: 'Having problems reading (slowing down)',
0x02: 'Having problems writing (losing capacity)',
0x03: 'Uncorrectable read/write error',
0x04: 'Media Performance Degraded, Data Is At Risk',
0x05: 'Read Failure',
0x06: 'Write Failure',
0x07: 'Media has reached the end of its useful life',
0x08: 'Cartridge not data grade',
0x09: 'Cartridge write protected',
0x0A: 'Initiator is preventing media removal',
0x0B: 'Cleaning media found instead of data media',
0x0C: 'Cartridge contains data in an unsupported format',
0x0D: 'Recoverable mechanical cartridge failure (broken tape?)',
0x0E: 'Unrecoverable mechanical cartridge failure (broken tape?)',
0x0F: 'Failure of cartridge memory chip',

0x10: 'Forced eject of media',
0x11: 'Read only media loaded',
0x12: 'Tape directory corrupted on load',
0x13: 'Media nearing end of life',
0x14: 'Tape drive needs cleaning NOW',
0x15: 'Tape drive needs to be cleaned soon',
0x16: 'Cleaning cartridge used up',
0x17: 'Invalid cleaning cartidge used',
0x18: 'Retension requested',
0x19: 'Dual port interface failed',
0x1A: 'Cooling fan in drive has failed',
0x1B: 'Power supply failure in drive',
0x1C: 'Power consumption outside specified range',
0x1D: 'Preventative maintenance needed on drive',
0x1E: 'Hardware A: Tape drive has a problem not read/write related',
0x1F: 'Hardware B: Tape drive has a problem not read/write related',

0x20: 'Problem with SCSI interface between tape drive and initiator',
0x21: 'The current operation has failed. Eject and reload media',
0x22: 'Attempt to download new firmware failed',
0x23: 'Drive humidity outside operational range',
0x24: 'Drive temperature outside operational range',
0x25: 'Drive voltage outside operational range',
0x26: 'Failure of drive predicted soon',
0x27: 'Diagnostics required',
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0x28 to 0x2E are obsolete, but some vendors still have them listed.

0x28: 'Loader Hardware A: Changer having problems communicating with tape drive',

0x29: 'Loader Stray Tape: Stray tape left in drive from prior error',

0x2A: 'Loader Hardware B: Autoloader mechanism has a fault',

0x2B: 'Loader Door: Loader door is open, please close it',

0x2F to 0x31 are reserved

0x32: 'Media statistics lost',

0x33: 'Tape directory invalid at unload (reread all to rebuild)',

0x34: 'Tape system area write failure',

0x35: 'Tape system area read failure',

0x36: 'Start of data not found',

0x37: 'Media could not be loaded/threaded',

0x38: 'Unrecoverable unload failed',

0x39: 'Automation interface failure',

0x3A: 'Firmware failure',

0x3B to 0x40 are reserved

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