Merit LILIN Application Note

HDD S.M.A.R.T. ERR message of NVR

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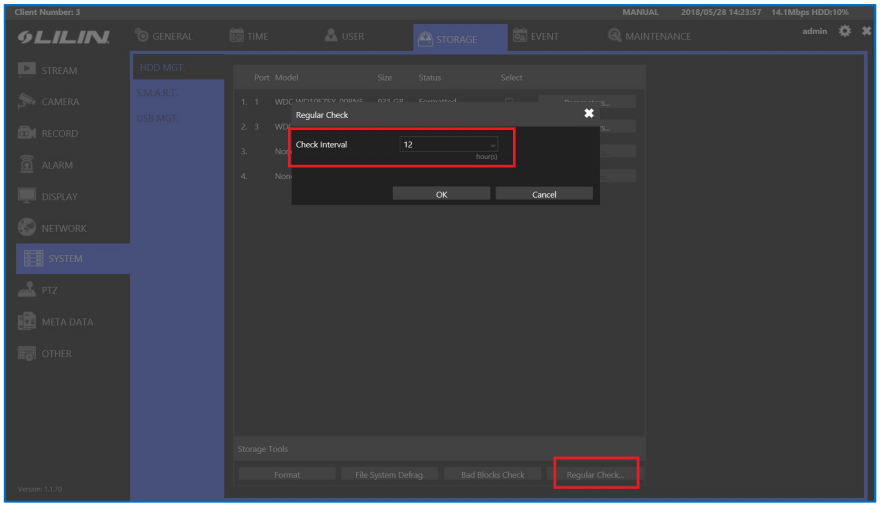
Dept: Technical Support, Taipei

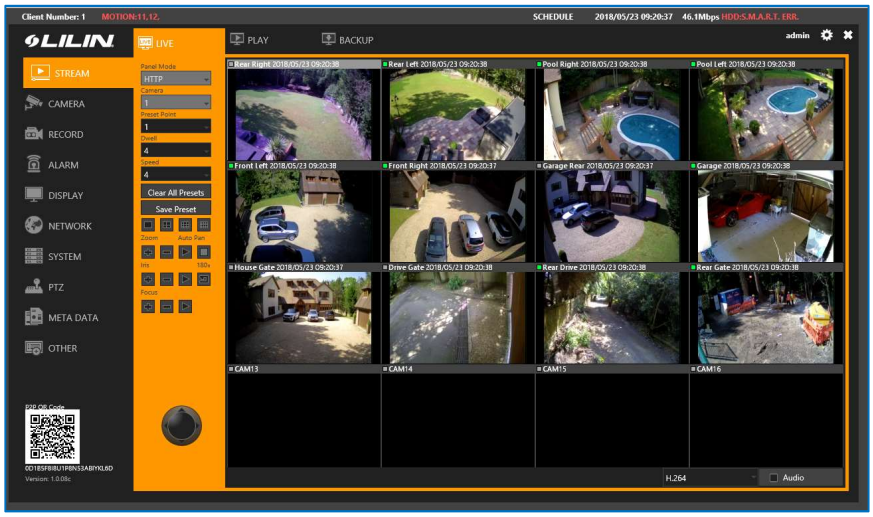
Subject: NVR S.M.A.R.T. HDD check

Device Supported: All of LILIN NVR current product range excluding the NVR1400 & NVR2400 due to the NVR supporting RAID.

Description:
NVR's provide a storage Regular Check tool in order to prevent data lost if a HDD experiences a problem. The default check interval is 12 hours, which means all of NVR HDDs will do S.M.A.R.T analysis every 12 hours.

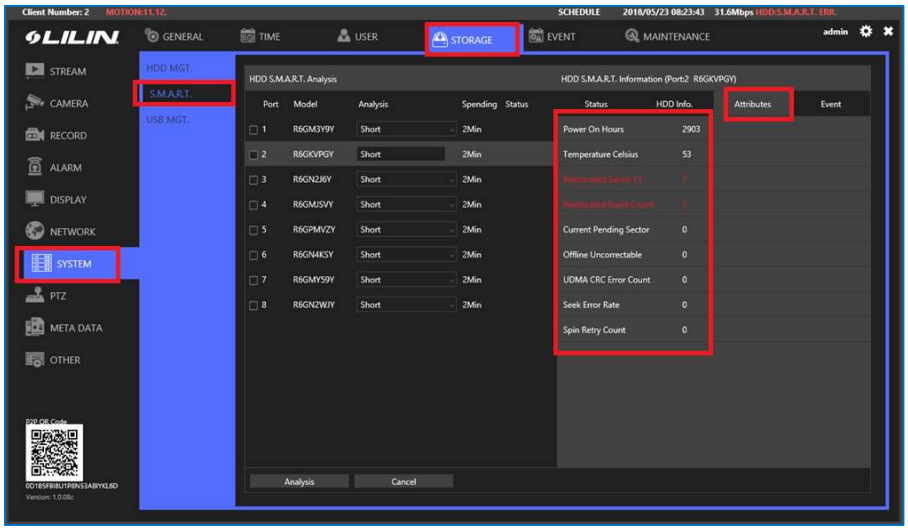


If the NVR finds any errors after regular check, HDD:S.M.A.R.T. ERR will show on right-hand side of the Live display. If this error is seen we advise you to backup any data and replace the HDD within the NVR as soon as possible; otherwise, the data could be lost.



If you get the error message as shown below, please backup data and replace HDD as soon as possible.

Step 1. Enter SYSTEM\STORAGE\S.M.A.R.T.\Attributes to check which HDD has a problem.



Step 2. Shut down the NVR.

Step 3. Remove the problem HDD.

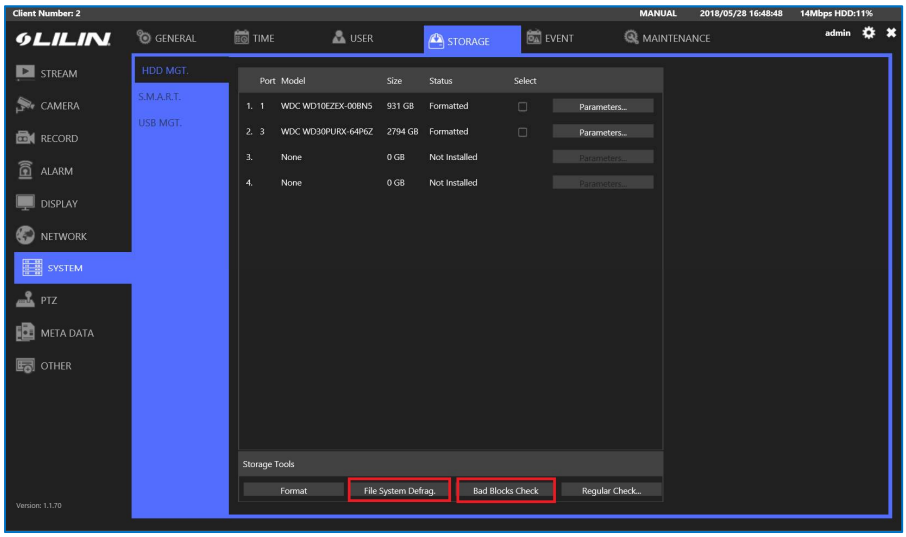
Step 4. Install a new HDD into the NVR.

Step 5. Power on the NVR.

Step 6. Format the newly installed HDD.

1. **File system inconsistency detected, please perform file system defragmentation. Port.X**

   If you see this message in the system log, it means the NVR has detected something wrong with the HDD's file system. It is recommended to enter the SYSTEM\STORAGE\HDD MGT menu and run a File System Defrag and Bad Blocks Check.



2. HDD track error Port X

This error shows if communication between the hard drive and NVR is interrupted – this could be caused by a faulty HDD, bad SATA cable or failing NVR SATA port.

First, you should replace the SATA cable to see if it could be solved.

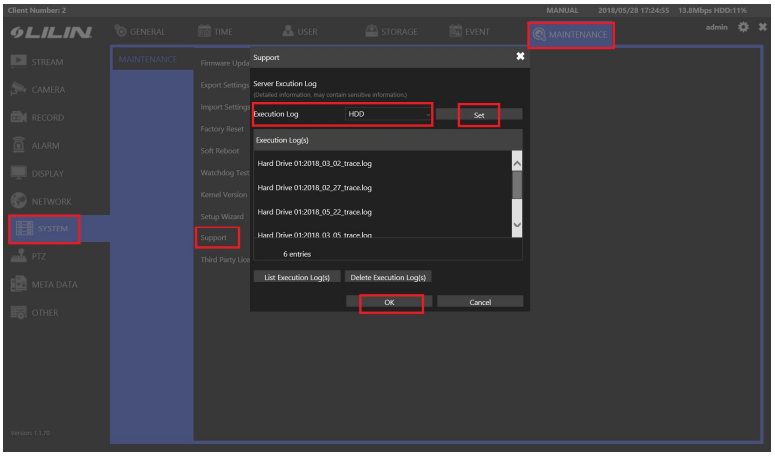
If not, replace the HDD to see if it could be solved.

If not, you may need to send the NVR to your local LILIN branch for repair.

3. Latency check

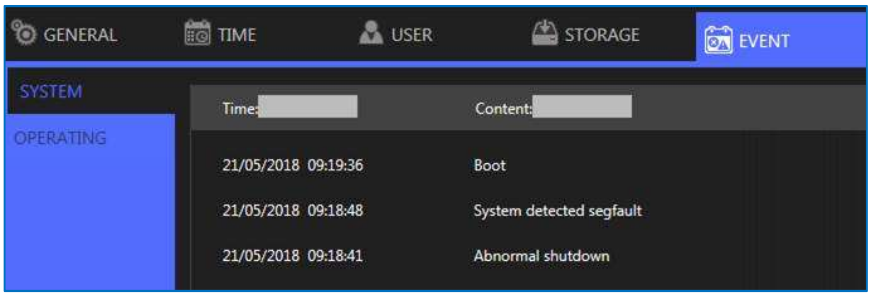
The LATENCY CHECK error usually indicated the HDD writing speed is not fast enough. This could be caused by a HDD that is about to fail or something wrong with the HDD.

First, enter to SYSTEM/MAITENANCE menu, click the Tools button from Support, choose HDD from the Executions Log, click Set & OK buttons for saving a trace log.



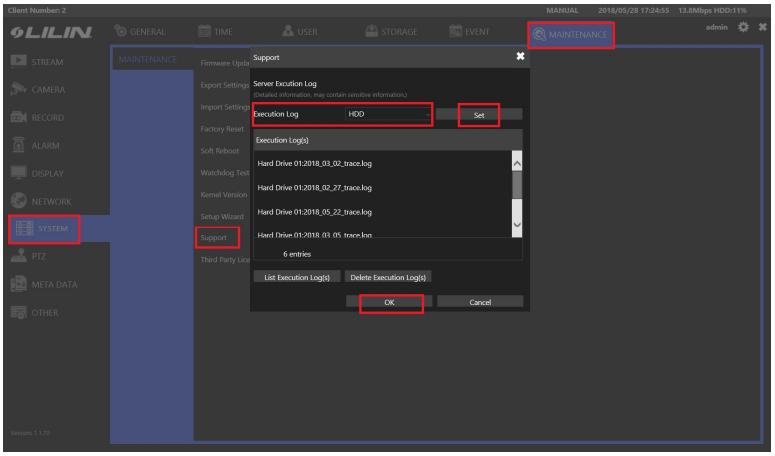
If the NVR keeps displaying this error in the log, please export and send a trace log to us for analysis.

4. Abnormal shutdown, System detected segfault and Boot



If there is an unknown problem encountered by the NVR, it will show these messages on the system event list. If you see this in the NVR log, please follow below an instruction.

First, enter to SYSTEM/MAITENANCE menu, click Tools button from Support, choose HDD from the Executions Log, click Set & OK buttons for saving a trace log.



If the NVR keeps displaying this error in the log, please export and send a trace log to us for analysis.

Appendix:

S.M.A.R.T attributes

ID	Attribute name	Ideal	!(Critical)	Description
0x05	Reallocated Sectors Count	Low	[22][23][24]	Count of reallocated sectors. The raw value represents a count of the bad sectors that have been found and remapped.[25] Thus, the higher the attribute value, the more sectors the drive has had to reallocate. This value is primarily used as a metric of the life expectancy of the drive; a drive which has had any reallocations at all is significantly more likely to fail in the immediate months
0xC4	Reallocation Event Count[45]	Low	[4]	Count of remap operations. The raw value of this attribute shows the total count of attempts to transfer data from reallocated sectors to a spare area. Both successful and unsuccessful attempts are counted.[57]
197 0xC5	Current Pending Sector Count[45]	Low	[4][40][43]	Count of "unstable" sectors (waiting to be remapped, because of unrecoverable read errors). If an unstable sector is subsequently read successfully, the sector is remapped and this value is decreased. Read errors on a sector will not remap the sector immediately (since the correct value cannot be read and so the value to remap is not known, and also it might become readable later); instead, the drive firmware remembers that the sector needs to be remapped, and will remap it the next time it's written.[58] However, some drives will not immediately remap such sectors when written; instead the drive will first attempt to write to the problem sector and if the write operation is successful then the sector will be marked good (in this case, the "Reallocation Event Count" (0xC4) will not be increased). This is a serious shortcoming, for if such a drive contains marginal sectors that consistently fail only after some time has passed following a successful write operation, then the drive will never remap these problem sectors.
198 0xC6	(Offline) Uncorrectable Sector Count[45]	Low	[4][22]	The total count of uncorrectable errors when reading/writing a sector. A rise in the value of this attribute indicates defects of the disk surface and/or problems in the mechanical subsystem.[4][43][40]
199 0xC7	UltraDMA CRC Error Count	Low		The count of errors in data transfer via the interface cable as determined by ICRC (Interface Cyclic Redundancy Check).
7 0x07	Seek Error Rate	Varies		(Vendor specific raw value.) Rate of seek errors of the magnetic heads. If there is a partial failure in the mechanical positioning system, then seek errors will arise. Such a failure may be due to numerous factors, such as damage to a servo, or thermal widening of the hard disk. The raw value has different structure for different vendors and is often not meaningful as a decimal number.
10 0x0A	Spin Retry Count	Low	[30]	Count of retry of spin start attempts. This attribute stores a total count of the spin start attempts to reach the fully operational speed (under the condition that the first attempt was unsuccessful). An increase of this attribute value is a sign of problems in the hard disk mechanical subsystem.

Internet URL: https://en.wikipedia.org/wiki/S.M.A.R.T.#cite_note-30

Contact
Contact lilin.zendesk.com for technical support.