SUPPORT DOCUMENT

IronWolf™ Health Management

Introduction

IronWolf Health Management (IHM) is an embedded software designed on the tenets of prevention, intervention and recovery. It aims to manage the health of the drive through the useful life, and provide ease of data recovery should a catastrophic event damage the drive and render it nonfunctional.

To provide this functionality, IHM analyzes several parameters related to drive health and uses proprietary algorithms to determine their impact to drive health. With this output and info on additional operating conditions, such as temperature, humidity, etc., IHM recommends preventive actions to users to avoid any drive damage. It may also recommend specific interventions when the drive health is likely to have been impacted.

Finally, it provides seamless linkage within the UI to Seagate® Rescue and Recovery plans, ensuring users have complete peace of mind in using their IronWolf™ drive in their NAS box.

Coverage

The following Seagate IronWolf and IronWolf Pro drives are IHM enabled as of February 2017. Refer to Seagate IHM or Synology web pages for the most current list of supported capacities.

IronWolf model numbers

- ST4000VN008
- ST6000VN0041
- ST7000VN002
- ST8000VN0022
- ST8000VN0004
- ST10000VN0004[1]

IronWolf Pro model numbers

- ST4000NE0025
- ST6000NE0021
- ST8000NE0021
- ST8000NE0004
- ST10000NE0004[1]

Exclusions

The following drives are not IHM enabled:

- All non-Seagate drives
- All 3.5-inch Enterprise Capacity drives, Desktop, BarraCuda®, BarraCuda Pro, Surveillance, SkyHawk™, FireCuda™ drives
- All legacy NAS HDDs

1 10TB IronWolf and IronWolf Pro with supported Synology NAS models will be enabled by C1Q17.

IRONWOLF NAS

SUPPORT DOCUMENT - IRONWOLF HEALTH MANAGEMENT

Synology Systems with DiskStation Manager (DSM) 6.1

Series	Supported Synology NAS Model[1]
x17 Series	RS217, RS3617xs, RS18017xs+, RX1217(RP), RX1217sas
x16 Series	DS116, DS216se, DS216j, DS216, DS216play, DS216+, DS216+II, DS416j, DS416, DS416play, DS716+, DS716+II, DS916+, RS816, RS2416+/RS2416RP+, RS18016xs+, NVR216, RX1216sas
x15 Series	DS115j, DS115, DS215j, DS215+, DS415play, DS415+, DS715, DS1515, DS1515+, DS1815+, DS2015xs, DS2415+, DS3615xs, DX1215, RS815, RS815+/RS815RP+, RX415
x14 Series	DS114, DS214se, DS214, DS214play, DS214+, DS414j, DS414, RS214, RS814, RS814+/RS814RP+, RS2414+/RS2414RP+, RS3614xs/RS3614RPxs, RS3614xs+, RX1214(RP)
x13 Series	DS213j, DS213air, DS213, DS213+, DS413j, DS713+, DS1513+, DS1813+, DS2413+, DX513, RS3413xs+, RS10613xs+, RX1213sas
x12 Series	DS112j, DS112, DS112+, DS212j, DS212, DS212+, DS412+, DS712+, DS1512+, DS1812+, DS3612xs, RS212, RS812, RS812+/RS812RP+, RS2212+/RS2212RP+, RS3412xs/RS3412RPxs
x11 Series	DS111, DS211j, DS211, DS211+,DS411, DS411+, DS411+II, DS1511+, DS2411+, DS3611xs, RS411, RS2211+/RS2211RP+, RS3411xs/RS3411RPxs, DX1211

1 10TB IronWolf and IronWolf Pro with supported Synology NAS models will be enabled by C1Q17.

Expected Out-of-Box Behavior

Right out of the box, the NAS system is likely unpopulated. If so, once the user inserts a drive in the NAS bay, DSM 6.1 will automatically detect that both NAS box and drive are supported with IHM, and will display one of the following messages to the user:

> This drive is a Seagate IronWolf drive. Please purchase your preferred Seagate Rescue Data Recovery Plan **here**.

In the option above, the user has inserted an IronWolf drive and will be guided to the Seagate Data Rescue and Recovery Plans.

This Seagate IronWolf Pro drive comes with a 2-year complimentary Rescue Data Recovery Service. Please register **here**.

In this option, the user has inserted an IronWolf Pro drive and will be guided to the Seagate Product Registration page. Post-registration, they will be notified that their IronWolf Pro drive is eligible for a complimentary 2-year Data Recovery Plan. They will also be presented options to extend this coverage for an additional one to three years.

IHM Output Codes

IHM can be scheduled to run on a regular basis through the DSM 6.1 User Interface. It can also be run manually at any point the user desires. It is recommended that the frequency be set at ≥12 hrs. Each time IHM is run, one of the following output codes may appear:

Category	Code	Synology UI Message (Warning)
Normal	000	Normal
Prevention	100	Abnormally high operating temperature has been detected. Make sure that the rear ventilation ports are not blocked, and try to lower the ambient temperature. If the temperature is still high, go to Control Panel > Hardware & Power > Fan Speed Mode to change the fan operation to a higher speed. If this issue persists, contact Synology Support Team.
	101	Connection issues on your _DISKSTATION_ and hard drive interface have been detected. Make sure the hard drive is properly installed in the chassis or drive tray, and that the tray properly installed in your _DISKSTATION_. If this issue persists, contact Synology Support Team.
	102	Excessive physical shock to the hard drive has been detected. Make sure your hard drive and _DISKSTATION_ are placed on a stable surface. If this issue persists, contact Synology Support Team.
	105	Excessive vibration has been detected. Make sure your _DISKSTATION_ is placed on a stable surface. If this issue persists, contact Synology Support Team.
	106	Excessive host resets have been detected. Make sure the hard drive is properly installed in the chassis or drive tray. Performing a power cycle is recommended. If this issue persists, contact Synology Support Team.
Intervention	≥200	To check the health status of the hard drive, it is recommended to run the S.M.A.R.T. extended test on the drive. If this issue persists, contact the drive reseller or manufacturer.

IHM vs S.M.A.R.T.

IronWolf Health Management complements other health test related features within the NAS operating system, such as Self-Monitoring, Analysis and Reporting Technology, or S.M.A.R.T.

S.M.A.R.T.	IronWolf Health Management
Monitors 20 drive parameters	Monitors in excess of 200 drive parameters that may influence drive health
Reports Pass or Fail status	Notifies user of possible prevention and intervention actions ahead of a Fail event, thereby reducing the probability of catastrophic failure and associated data loss
Reports end impact to drive through monitoring of 20 drive parameters with fixed thresholds	Reports end impact to drive, but also communicates failure mode through output code (for interpretation by STX Customer Care only)
Has no memory of past trends of threshold excursions	Maintains moving window of parametric data for trend analysis and assesses impact of external stresses over the drive life

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