NAS Drive Selection Guide

Marketing Bulletin

A Comparison of Seagate NAS Drives

There are three important factors to consider when choosing the correct drive for NAS applications: the number of drives in the application, the reliability of the drive relative to the anticipated workload and the available security features. Seagate offers drives to support NAS, from small home NAS to large enterprise arrays: **Seagate® NAS HDD**, **Constellation® CS HDD** and **Constellation ES.3 HDD**.

Application	Desktop/SOHO NAS	SMB NAS	SMB/SME/Surveillance NAS
Drive Bays	1 to 5	6 to 8	9+
Choose This Seagate® Drive	NAS HDD	Constellation® CS HDD	Constellation ES.3 HDD

For information on the differences between NAS and desktop HDDs, read *NAS vs. Desktop: Evaluating HDDs for NAS Applications* (MB633).

It's important to know the number of drives that will be used in a NAS array to help ensure that the drive can handle vibration levels and still deliver the expected performance. There are three ways to measure this. First, consider how the drive dampers vibration. Features like dual-plane balance minimize drive vibrations that could be amplified in a multi-drive environment, compromising the reliability. Second, rotational vibration (RV) sensors can help minimize the impact of system vibration. When an increase in vibration is sensed, the drive disperses it across the drive chassis. By doing so, turbulence is minimized, improving performance and reliability. RV sensors are recommended for systems with more than five drives. Finally, the top cover attached (TCA) motor can deliver higher performance in enterprise environments by improving tolerance to cabinet rotational vibration as well as linear vibration.

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Drive workload also impacts performance and reliability. For example, drives that read and write data 24×7 by recording TV shows or relaying data through cloud or similar services will have different reliability metrics than drives in personal computers. Also consider the use case of the drive. Recording a TV show is a more sequential or predictable workload for the drive, as videos are recorded and then played back upon request. Random workloads may look more like an online retail shop, such as eBay, where data is randomly written to and read from the drive as people post items for sale, make purchases or browse inventory. This is unpredictable and more stressful for the drive. Finally, drive interface can impact reliability. Enterprise-class drives offer a SAS interface, which allows for better drive performance and higher data integrity due to the dual-path data flow. All of these environmental implications are taken into consideration when drives are designed and measured for their intended workloads.

Security features, such as Seagate Instant Secure Erase (ISE) and Self-Encrypting Drives (SED), can give enhanced security and performance to a NAS environment with encryption requirements. ISE enables quick drive retirement by permanently deleting the encryption key stored on the drive. SED drives leverage ISE features and give the user the ability to add additional layers of security, like password protection, for data-at-rest security.

All are important considerations when choosing the right drive for your NAS applications. By knowing the drive count and understanding intended workloads and security needs, you can choose the right drive for any NAS environment.

Seagate Drives for NAS Applications

	Seagate® NAS HDD	Seagate Constellation® CS HDD	Seagate Constellation ES.3 HDD
Ideal for	1 to 5 drive bays, 24×7, small business or home NAS, backup, media, print or Web server	6 to 8 drive bays, 24×7, small-to-medium enterprise NAS, bulk data storage, backup storage, rich media storage	9+ drive bays, 24×7, enterprise bulk data, centralized NAS, backup/restore, video editing
Capacity (TB)[1]	4, 3, 2	3, 2, 1	4, 3, 2, 1
Interface (6Gb/s)	SATA	SATA	SATA, SAS
Performance (Average Sustained Data Rate – OD)	up to 140MB/s	up to 160MB/s	175MB/s
Operating Power(W)[2]	as low as 4.8	as low as 6.1	as low as 7.6
Operating Acoustics (max, bels)	2.5	2.5	3.0
Vibration Tolerance Features	Dual-Plane Balance	RV Sensors	RV Sensors and TCA Motor
Instant Secure Erase (ISE)	N	Y	Y
Self-Encrypting Drive (SED)	N	N	Y
SED FIPS 140-2[3]	N	N	Y
Limited Warranty (years)	3	3	5

1 When referring to drive capacity, one gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes.

2 Operating power is measured in the drive's intended environment. Specs are not measured in the same environment for side-by-side comparison.

3 FIPS (Federal Information Processing Standard) 140-2 is a U.S. government standard of accreditation for IT products that meet certain criteria for data security. May not be available in all models or countries. May require TCG-compliant host or controller support.

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