Logical block size

2025

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StarWind is a pioneer in virtualization and a company that participated in the development of this technology from its earliest days. Now the company is among the leading vendors of software and hardware hyper-converged solutions. The company’s core product is the years-proven StarWind Virtual SAN, which allows SMB and ROBO to benefit from cost-efficient hyperconverged IT infrastructure. Having earned a reputation of reliability, StarWind created a hardware product line and is actively tapping into hyperconverged and storage appliances market. In 2016, Gartner named StarWind “Cool Vendor for Compute Platforms” following the success and popularity of StarWind HyperConverged Appliance. StarWind partners with world-known companies: Microsoft, VMware, Veeam, Intel, Dell, Mellanox, Citrix, Western Digital, etc.

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Introduction

Logical block size (sector size) of StarWind device should be selected depending on technical properties of underlying hard disk drive(s). The logical block size should basically be equal or more than the physical block size of the drive. Information about the physical block size of the drive can be found in technical specifications of the current hard disk drive model.

Explanation

512 Logical ↦ 512 Physical

Most of the older hard disk drives with lesser capacity presented on the market are using 512 physical block size. Choosing 512 logical block size, in that case, grants direct correspondence with underlying storage providing the best performance and storage utilization.

4096 Logical ↦ 4096 Physical

For newer hard disk drives working in the 4K native mode, there is no emulation layer in place, and the disk media directly exposes its 4096 bytes physical sector size to the system firmware and operating system. That way, the externally visible logical sectors organization of the 4K native drives is directly mapped to their internal physical sectors organization. Choosing 4096 logical block size, in that case, provides direct correspondence with underlying storage giving the best performance and storage utilization.

4096 Logical ↦ 512 Physical

Using 4096 logical block size on 512 may slightly reduce the overall performance since in that case all the data are generally processed in 512-byte segments, however, most of operating systems are using 4096 block size.

512 Logical ↦ 4096 Physical

Most 4K drives present a logical sector size of 512 bytes, even though the physical sector size is 4096 bytes. This is done through juggling data in the drive's firmware, and it can result in performance problems or errors if the logical block size is not properly aligned. 4K drives that do not support 512 logical sector size will not work in that

configuration.

Important Notices

1. According to "Support statement for 512e and 4K Native drives for VMware vSphere and VSAN"VMWare does not support 4096 logical block size so choosing 512 logical block size is a must. You have to pay attention to you hard disk drive specifications planning a VMWare-based environment with StarWind Virtual SAN.
2. For any other environment, 4096 logical block size is recommended.

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Contacts

US Headquarters	EMEA and APAC
+1 617 829 44 95	+44 2037 691 857 (United Kingdom)
+1 617 507 58 45	+49 800 100 68 26 (Germany)
+1 866 790 26 46	+34 629 03 07 17 (Spain and Portugal)
	+33 788 60 30 06 (France)

Customer Support Portal: https://www.starwind.com/support

Support Forum: https://www.starwind.com/forums

Sales: sales@starwind.com

General Information: info@starwind.com

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StarWind Software, Inc. 100 Cummings Center Suite 224-C Beverly MA 01915, USA
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