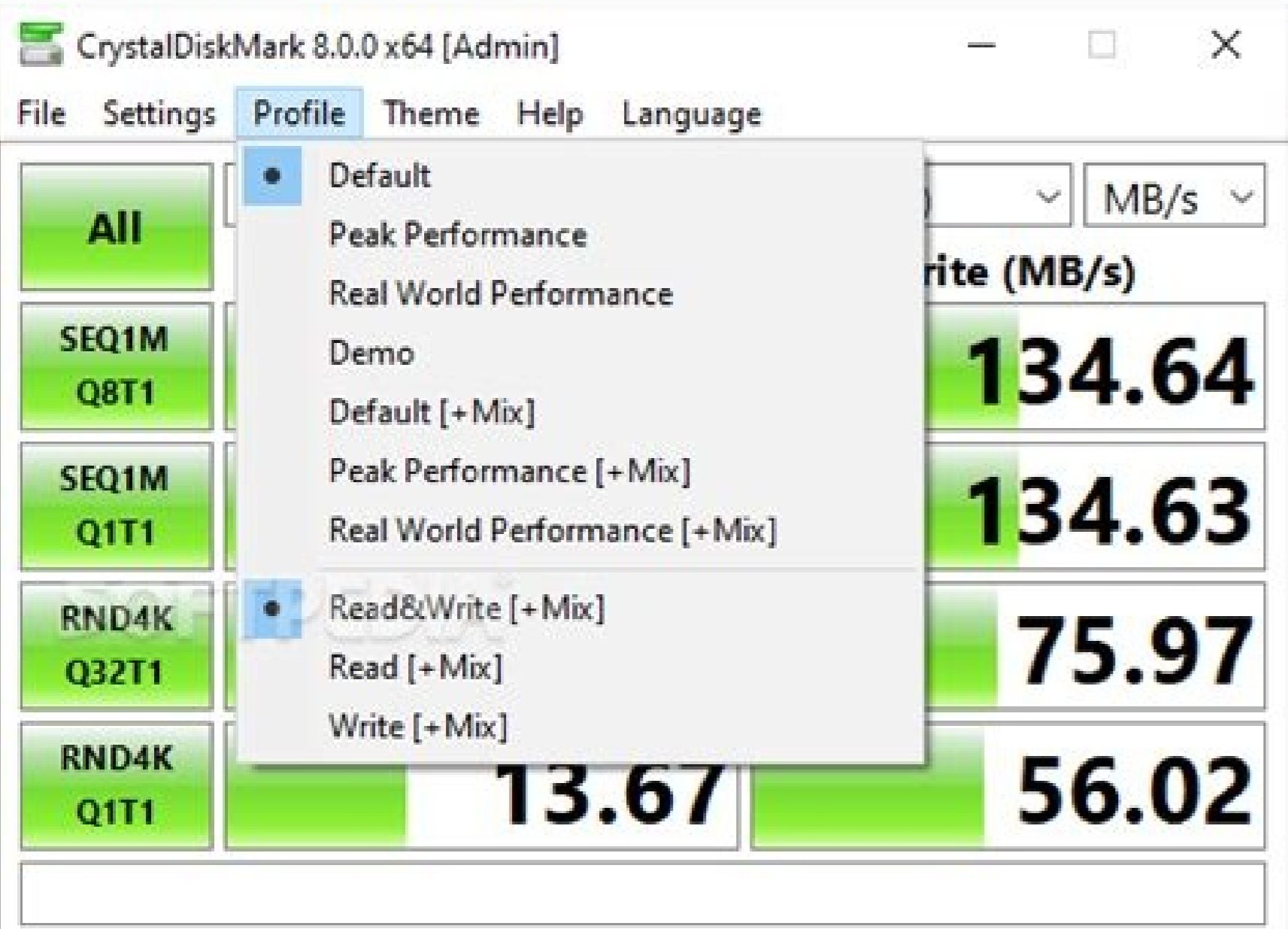
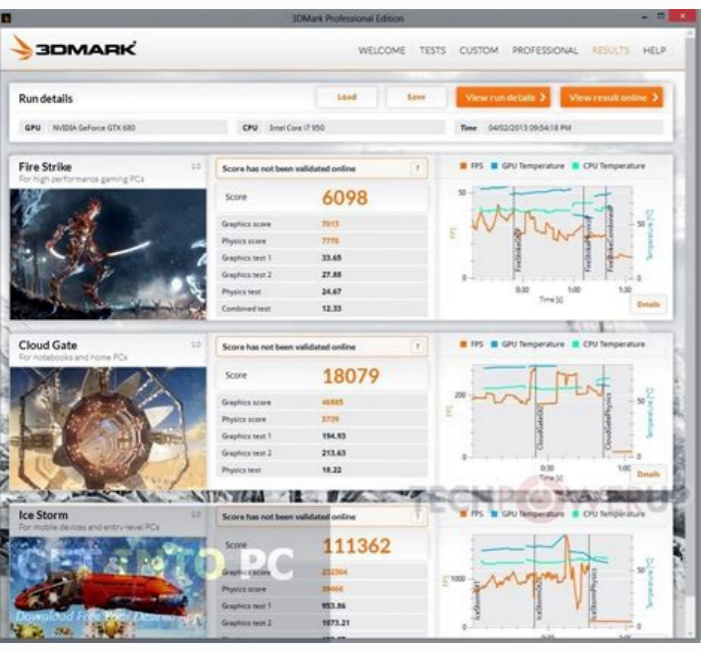
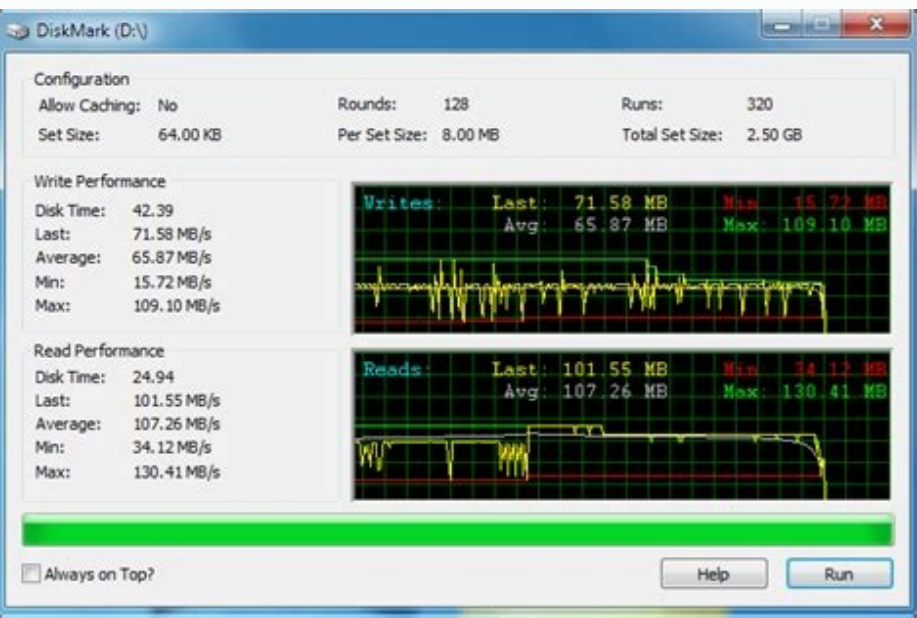
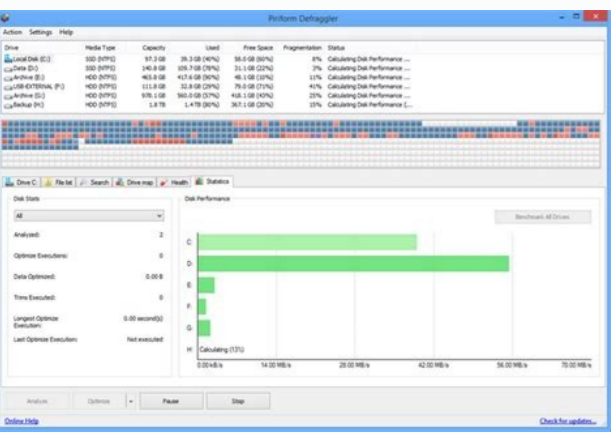


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Which is the fastest Consumer SSD in the market? The Read and Write data by the manufacturer are not an accurate benchmark because they are not real world read/write usage. The only way to benchmark them is to test the effective speed. What is an effective speed? 5 Free SSD Optimizer To Boost Speed, Performance And Increase Lifespan! is a measure of how well a Solid-state drives performs under typical consumer workloads, and the only way to measure this is to gather as many real world data from users, this is why UserBenchmark Website is the best site to know the real speed of SSD, HDD, USB, RAM, CPU and GPU. Warning - Please do not repeat the read/write tests unnecessarily. Repeating read/write tests may shorten the lifespan of your storage device. If you're looking to upgrade your HDD to SSD, I highly recommend the following SSD for speed. How to test hard drive speed? Flash drive speed test, how do I check my hard drive speed Windows 10? Use the tools below. Samsung 850 Evo | Fastest SATA SSD [M.2 PCIe SSD] | Fastest PCIe SSD [Samsung 850 Pro/Crucial M550/SanDisk SSD] | Own by Western Digital | Mushkin Reactor 1 01 - CrystalDiskMark | WindowsCrystalDiskMark is a small HDD benchmark utility for your hard drive that enables you to rapidly measure sequential and random read/write speeds. It measures sequential reads/writes speed, measures random 512KB, 4KB, 4KB (Queue Depth=32) reads/writes speed, select test data (Random, 0Fill, 1Fill), 1 02 - ATTO Disk Benchmark | WindowsAs the industry's leading provider of high-performance storage & network connectivity products, ATTO has created a widely-accepted Disk Benchmark freeware software to help measure storage system performance. As one of the top tools utilized in the industry, Disk Benchmark identifies performance in hard drives, solid state drives, RAID arrays as well as the host connection to attached storage. Top drive manufacturers, like Hitachi, build and test every drive using the ATTO Disk Benchmark. Specifications: Transfer sizes from 512B to 64MB Transfer lengths from 64KB to 32GB Support for overlapped I/O Supports a variety of queue depths/O comparisons with various test patterns Timed mode allows continuous testing Non-destructive performance measurement on formatted drives Hard drive performance test 1 03 - AS SSD Benchmark | WindowsWith AS SSD Benchmark you can determine your SSD drive's performance by conducting several specific tests. Test the sequential or random read/write performance without using the cache. AS SSD Benchmark reads/writes a 1 GByte file as well as randomly chosen 4K blocks. Additionally, it performs the tests using 1 or 64 threads and it determines the SSD's access time. Continue Reading 9 Free Tools To Optimize RAM Memory For Windows And macOSTwo extra benchmark tests examine the drive's behaviour when (1) copying a few big files, a lot of small files and a mixture of file sizes by using cached copy functions of your OS as well as (2) reading/writing data depending on the data's compressibility. Works great on Microsoft Windows 10. 1 04 - Blackmagic Disk Speed Test | macOSDisk Speed Test is an easy to use tool to quickly measure and certify your disk performance for working with high quality video! Simply click the start button and Disk Speed Test will write test your disk using large blocks of data, and then displays the result. Disk Speed Test writes and reads from your disk so you can evaluate both performance and readability over time. 1 05 - AmorphousDiskMark | macOSAmorphousDiskMark measures storage read/write performance in MB/s and IOPS. AmorphousDiskMark is designed to measure the megabytes per second and the Input/Output operations per second and display the results in its main window. The app features four types of tests, each featuring a different kind of data block. Sequential 128 KiB block read/write tests with Queue Depth=1, 2, 4, 8, 16, 32, 64, 128, 256, 512, or 1024 Random sequence 4 KiB block read/write tests with Queue Depth=1, 2, 4, 8, 16, 32, 64, 128, 256, 512, or 1024 Sequential 1 MiB block read/write tests Random sequence 4 KiB block read/write IOPS scores in tooltip Test data: random or zero Test size: 50 MiB, 100 MiB, 500 MiB, 1 GiB, 2 GiB, 4 GiB, 8 GiB, 16 GiB, or 32 GiB Test interval: 0 seconds, ..., 10 minutes 1 06 - iDiskMark | Windows | macOS | LinuxSimple Java utility to help benchmark disk IO. Benchmark is done by creating and reading data files to a user directory that can be configured. When doing a combined read and write operation the disk cache is not cleared automatically so the app must be restarted to avoid the cache from affecting read IO performance. Features Disk IO read/write performance Java cross platform solution Saves previous run information Single or multi file option Sequential or random option Detects drive model info Adjustable block size 1 07 - Parkdale | Windows | macOS | Linux | AndroidGet the read and write speed from your hard disks, cdrom devices and network servers in Kilobyte, Megabyte or even Gigabyte per Second. Single click speed test using the filesystem. This test shows you the sequential read & write access speed and the random access speed using 4KB blocks and 32 concurrent threads. You can select multiple drives, these will be tested one after the other and the results will be written to a log file. So you can easily compare multiple drives. 1 08 - PerformanceTest's Advanced Disk Test | Trial | WindowsThis Advanced Disk Test, which is part of PerformanceTest, measures the data transfer speed when reading or writing data to one or more disks. The speed that data can be transferred between memory and a hard disk drive is one of a system's most important performance capacity. There are quite a few factors which have a bearing on this speed and the Advanced Disk Drive Test allows the user to vary most of these factors and compare the results. The test supports any drive that can be mounted under Windows, including IDE drives, SCSI, RAID, USB key drives, SATA, networked shared drives and external drives. Users have the ability to test multiple drives at the same time using multiple threads, and specify the size of the test file used. Larger files mean that the system cache has less of an effect on the test results, which use caching (see below). The size of the data block used for each read or write request. Larger blocks mean less requests and can lead to an improvement in performance. The choice of four access methods - C/C++ API, cached / uncached and raw disk access. Sequential or random access (seeking plus reading and writing) Synchronous and Asynchronous access The split between reading and writing Sometimes you want to mount a disk image to see what's inside, install software, or even play a game, but you don't always want to burn a CD or DVD to do it. That's where disk image tools come in handy. Photo by Yoppy. Whatever tool you use to mount and manipulate drive images, we want to hear all about it. Hit up the comments to cast your vote, and if you want, include details explaining what makes your favorite tool so great and if your favorite tool excels at a particular task—for example, running game disc images. Five nominations take place in the comments, where you post your favorite tool for the job. We get hundreds of comments, so to make your nomination clear, please include it at the top of your comment like so: VOTE: Disk Image Tool. Please don't include your vote in a reply to another comment. Instead, make your vote and reply separate comments. If you don't follow this format, we may not count your vote. To prevent tampering with the results, votes from first-time commenters may not be counted. After you've made your nomination, let us know what makes it stand out from the competition. About the Hive Five: The Hive Five feature series asks readers to answer the most frequently asked question we get: "Which tool is the best?" Once a week we'll put out a call for contenders looking for the best solution to a certain problem, then YOU tell us your favorite tools to get the job done. Every weekend, we'll report back with the top five recommendations and give you a chance to vote on which is best. For an example, check out last week's Five Best Invitation Services. With the internet at our disposal, invitations are no longer as strictly a signed, sealed, and... Read more Hard drives have run pretty well over the years. When I think about the number of laptops and PCs I've owned and used over the past 25 years, I can only think of one failure. In that case, all of the data was easily recoverable. There was another incident - a very early small form factor external drive from Western Digital. I loved it and stored all my files on it. It was great for backup and when I moved from one device to another. Unfortunately, it was knocked off a desk and it wouldn't start. The good folks at Western Digital kindly agreed to let their forensic specialists try to recover my data but it was not to be. The point is that hard drives have largely stood the reliability test of time. Where they tend to differentiate themselves, therefore, is in terms of performance and especially speed. Accordingly, there are a number of hard drive benchmarking tools out there to help you test your drives. These can be useful when debugging device performance, in drive selection, and in many other ways. It is important to pick components with matching performance categories. The last thing you want is a drive that can't keep up with the bandwidth, latency, and communication pace of the rest of the hardware. Hard Drive Benchmarking Tools Selection Tips Although it might seem simple to test the performance of a hard drive there are a number of factors to consider. MB v Mb: There is often some confusion between megabits (Mb) and Megabytes (MB). An Mb is 1,000,000 bits. An MB is 1,000,000 bytes. Watch out then for MBps (Megabits per second) and MBps (Megabytes per second). The former specifies internet connection speeds. MBps specifies how much of a file is downloaded/uploaded per second. In some scenarios one or other may have more weight when it comes to product selection. Raw speed: Some hard drives are designed to be faster than others. Some are as slow as 1200 MBps and 150 MBps. From there they grade up to between 3000 MBps and 375 MBps to 6000 MBps and 750 MBps for SATA. SAS drives are faster, capable of 600MBps and even 1500MBps transfer speeds in some cases. But they are more expensive and typically contain less storage capacity. Make sure that you don't confuse your metrics and that you are comparing apples to apples. If you miss the subtle difference between mbps and MBps, you could end up thinking a drive was faster when in fact it is much slower, or vice versa. RPM: RPM or revolutions per minute is another common metric. This is simply how fast the disk spins. Consumer-level SATA typically operates at 5400 rpm and can go as high as 7200 rpm. SAS generally operates between 7200 rpm and 15,000 rpm. Test design: Some tests are designed for a very specific purpose or by a vendor. They may be weighted around how a drive performs with a certain application such as SAP, or on a type of workload. Alternatively, they can be designed by a vendor to emphasize the value of its own products. Such tests are set up to show a drive in its best light, hitting the sweet spot for that particular drive. Make sure, then, that the test you are using matches the workloads, applications, and use cases you use in your environment. Test on the ground, Lab tests are good. They have value. But run the test in your own production environment, too. That gives you a real-world result on whether a device fits your needs or not. Top Hard Drive Benchmark Tools and Vendors Many different hard drive benchmarking tools are available to measure transfer rate and transfer speed under different scenarios. Here are some of the top ones. Atto Atto offers disk benchmarks for Windows and Mac. Its Disk Benchmark for Windows, for example, measures storage system performance. It identifies performance in hard drives, solid state drives, RAID arrays as well as the host connection to attached storage. Drive manufacturers are included in its customer base. Key Differentiators ATTO Disk Benchmark for Windows can be used to test any OEM RAID controller, storage controller, host adapter, hard drive or SSD drive, and notice that ATTO products consistently provide the highest level of performance to your storage. Custom transfer size. Support for overlapped I/O. Supports various queue depths. I/O comparisons with various test patterns. Timed mode allows continuous testing. Custom transfer sizes. A separate Disk Benchmark for macOS is available. Crystal Disk Mark Crystal Disk Mark tests the reading and writing speeds of hard drives. It includes a variety of tests that allow users to check performance under different scenarios. As some drives do better on reading or writing data, it can test both aspects. Users decide the number of files, the size (in megabytes) of the test, and the drive. Key Differentiators Reading and writing capabilities are tested sequentially in blocks of 512 kilobytes. Can test in blocks as small as 4 kilobytes. If multiple tests are done, Crystal Disk Mark calculates the average reading/writing velocity between all the tests. Detects possible bottlenecks. Measures sequential and random performance (peak/real world/demo). Support for multiple languages. Partition Wizard MiniTool Partition Wizard Server is far more than a disk benchmarking tool. But it does that function well. In addition to testing, it makes it easier for users to reformat disk space and ensure system integrity. Its disk/partition copy function allows users to clone the whole drive rapidly. To extend a RAID array, the extend partition feature helps enlarge hard drive space flexibly. For data safety, its power-off protection mode makes it possible to revert the operations being performed when power outage occurs. Key Differentiators Benchmarking tools help keep servers running well. MiniTool Partition Wizard Server can extend C drive on Windows Server and ensure data safety. Can change cluster size and create NTFS partitions larger than 16 TB. Can copy an entire disk for hard drive replacement. Improved FAT32 partition data recovery & BitLocker partition clone. Support for Windows Server 2019/2016/2012/2008 (R2)/2003 (R2). Also works for Windows 10/8.1/8/7/Vista/XP. MiniTool Partition Wizard Server is for server users to reconfigure hard drive on one computer. For Enterprise users, MiniTool Partition Wizard Enterprise that works for 99 computers in one company. MiniTool Partition Wizard Technician allows usage on 299 computers anywhere. AS SSD Although the AS SSD test is squarely aimed at solid state devices (SSDs), it is included as many users now have SSDs somewhere in their environment. Testing HDDs alone may not be enough. This free utility conducts multiple tests to reveal any problems with any SSDs operating. It can be stored on a USB for on the move testing. Key Differentiators Compatible with Windows 7 and above. Find out the speed of all installed SSDs. Reveals underlying performance or other issues. Three separate tests to provide evidence on a driver's general behavior while it copies, reads, and writes data. Determines the access time of an SSD, along with its speed and performance capabilities. Measures the speed at which an SSD reads and writes 1 GB of data. A 4K test determines the read and write speed at 4K blocks. Results are displayed in IOPS or MB per second. HD Tune HD Tune Pro by EFD Software is a hard disk and SSD utility with many different functions. As well as being used to measure a drive's performance, it can also scan for errors, and check health status using Self-Monitoring, Analysis and Reporting Technology (SMART). This is a monitoring system included in hard drives and SSDs to detect and report indicators of drive reliability. Key Differentiators Provides a write benchmark. Can securely erase all data. Includes a folder usage view feature. Includes a disk monitor and file benchmark. Offers command line parameters. Overtemperature is shown as a warning. UserBenchmark UserBenchmark boasts that it can speed test a PC in less than a minute. It is a small open source collective of scientists and engineers that computes and analyzes millions of benchmarks. Its website includes huge numbers of tests of SSDs, HDDs, CPUs, RAM, and more. Key Differentiators No affiliation to major CPU or disk manufacturers. Ability to compare the results of a great many tests of HDDs to get a wider view of overall results. Has a freeware PC speed test tool that gives individual results and compares them to other users with the same components. Drive tests include: read, write, sustained write, and mixed IO. RAM tests include: single/multi core bandwidth and latency. Reports are generated and presented on userbenchmark.com. Iometer Originally developed by Intel, Iometer was donated to the Open Source Development Lab (OSDL). It is an I/O subsystem measurement and characterization tool for single and clustered systems. It is maintained by an international group of individuals who are continuously improving, porting, and extending the product. It is particularly good at benchmarking IOPS. Key Differentiators Supports Windows, Linux, and Mac. It is used as a benchmark and troubleshooting tool that can be configured to replicate application behavior. Measures the performance of disk and network controllers. Can measure the bandwidth and latency capabilities of buses. Monitors network throughput to attached drives. System-level hard drive performance and network performance metrics are included. Can generate synthetic I/O loads. Roadkill Roadkill performs disk speed tests and provides details about how fast they transfer data. This includes data transfer rate for linear reads, random read transfer rate, and the seek time of the drive. An overall score is given as a comparison with various brands of drives. Its drive testing and other applications are provided free of charge. Key Differentiators Information about the drive such as firmware revision, model, size, file system and more is displayed. Roadkill also hosts applications provided free of charge for personal or business use. Runs read tests only. Displays a score ranging from 512 bytes to 1MB blocks. Read next: Is 3-2-1 Backup Still Relevant in the Era of the Cloud?

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