STOP the Suffering

An in-depth look at how IT can keep Windows systems running like new, and defer upgrade of laptops and workstations.

When supporting a fleet of laptops and workstations, the task of keeping Microsoft Windows systems running like new can rapidly become a helpdesk nightmare. Historically, businesses have taken reactive approaches to remediate performance issues, often without lasting long-term relief. Fortunately, by embracing proactive solutions like Diskeeper 12, this nightmare does not have to be reality.

Suffering Slowness

We're all familiar with the problem: Windows systems running slower and slower over time. Waiting on progressively slower computers and laptops isn't just frustrating; it hampers employee productivity and monopolizes helpdesk time.

Traditionally, IT has taken a reactive approach to this issue through scheduled activities such as disk cleanup and defragmentation. Those scheduled processes may have a system performing perfectly at 3 a.m. But when the user signs in at the beginning of the workday, performance diminishes to less than optimal, and the cycle begins again. In the case of corporate laptops, many systems are shut down during scheduled activities, so disk maintenance causes disruption or doesn't get done at all.

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Security and Data Center Services and Systems
Administrator with Baltimore City Public Schools
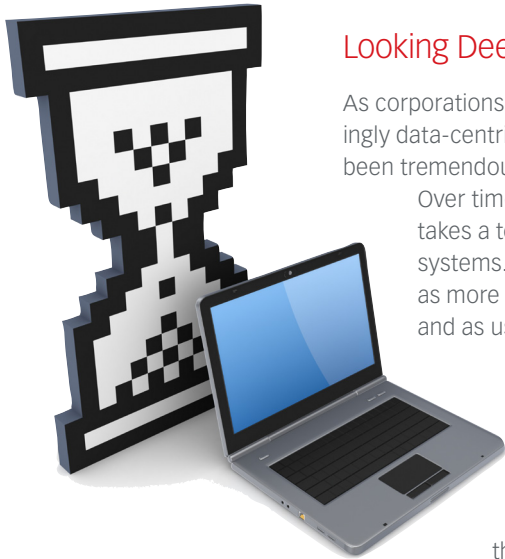
Looking Deeper

As corporations come to rely on increasingly data-centric applications, there has been tremendous growth in I/O traffic. Over time, this explosive growth takes a toll on Microsoft Windows systems. The issue compounds as more data enters the equation, and as users create, save, access and edit more and more files.

In addition to the sheer amount of I/O from today's applications, the way the Windows OS handles file writes adds to the problem. By fragmenting files into many disparate pieces upon write, Windows generates even more I/O—much of it unnecessary and unproductive—and significantly adds to the problem of bottleneck and system performance degradation over time.

Dealing with such sluggish systems is an issue Mark Lecuyer, IT manager with Manitoba Hydro, knows all too well. Manitoba Hydro is one of the largest utility companies in Canada, providing thousands of customers with electric and natural gas services. With Windows systems deployed across the entire Canadian province, running a variety of data-intensive applications (geospatial mapping software), Microsoft Office and any number of industry-specific applications, the helpdesk reached its limit of performance-related support calls. "Cutting down on the number of times we physically have to go to a computer is significant considering that we have roughly 6,000 deployments across all of Manitoba."

As such, the only way to eliminate the bottlenecks and latency issues that come with a massive amount of I/O is to change how Windows systems inherently degrade performance over time. Condusiv Technologies is leading the way in addressing this issue with its

Diskeeper 12 offering, which focuses on the prevention of excessive I/O traffic through real-time optimization rather than taking a reactive approach. As a complete solution set, Diskeeper aligns each of its internal technologies to the challenges IT professionals face every day in managing their Windows environments. By keeping Windows systems running like new, IT can focus on strategic initiatives—free from an abundance of support calls for system performance problems.

PAIN POINT: Steady Slowdown

In traditional scenarios, Microsoft Windows starts writing at the next available section of free space regardless of storage allocation needed. If the space is smaller than required, Windows splits the request into numerous I/O requests until fulfilled. While this accomplishes the task, it can take hundreds or even thousands of individual I/O requests, preventing a faster sequential or near-sequential write. This problem makes Windows systems sluggish, running slower over time.

Diskeeper's IntelliWrite technology helps Windows choose an optimal location based on each individual I/O request, eliminating an enormous amount of split I/Os for each write and subsequent read. Further, Invisi-Tasking technology enables Diskeeper to perform while the system is in active use, with zero overhead.

"There is a measurable difference in terms of I/O response time and performance when the system is handling one request versus a hundred," says Howard Butler, senior director of systems engineering with Condusiv. "The more I/O requests, the greater the backlog or queue length can become. This only compounds when a user has multiple applications running simultaneously—each needing to write or read data from the same storage device. The PC can handle only one I/O request at a time, so if it is busy doing one thing, any application requesting the same type of work is put on hold." Butler adds, "With Diskeeper, the system is no longer powering through a surplus of I/O requests to complete a task, and with InvisiTasking the disk can power-down to idle sooner, allowing even large, never-idle systems to be defragmented invisibly."

Since Windows sequentially handles I/O requests, the traditional process can hamper read requests as well. For instance, if there are a thousand write requests and then a read I/O, there is an unneeded delay before the read request can take place. When applied to an already fragmented system, Diskeeper doesn't need to wait for scheduled maintenance. It recognizes I/O-intensive fragments and instantly addresses the issue.

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— Marc Lecoyer
IT Manager with Manitoba Hydro

PAIN POINT: Slow to Start

While the exact process is unique to each machine, starting up a PC or laptop is robotic in nature with numerous files (i.e., ini, exe, driver files, etc.) accessed in a specific sequence each time.

Diskeeper's HyperBoot technology maps the utilized files, including the specific sequence, to strategically move files into a sequential order that minimizes the number of I/O requests during the boot process. While new application installations or updates can change the order, HyperBoot is dynamic, meaning it automatically remaps to match the best sequence as needed.

For the user this means faster boot times, which is especially critical for laptops. "If you take a laptop into a meeting, HyperBoot significantly reduces the time spent waiting for the system to become useful," Butler says. "Systems run at such high performance, IT can postpone upgrading laptops and workstations, significantly extending the lifespan of hardware assets."

PAIN POINT: Maintaining SSD Efficiency

When it comes to solid-state drives (SSDs), efficiency is key, especially considering the finite number of memory cell reflashes possible before noticeable deterioration of data clarity occurs. While manufacturer advances in wear leveling helps, constant file movement associated with traditional defragmentation is damaging.

Rather than allowing highly fragmented writing, rewriting and moving, HyperFast enables Microsoft Windows to focus on only the files that are causing performance problems. This approach also ensures that the small slivers of free space mapped out by the wear-leveled file system remains untouched.

PAIN POINT: Stressed Resources

With the overarching goal of optimizing I/O performance, running a solution that further consumes system resources is unacceptable.

Unlike manually launching a maintenance tool, like the Windows built-in defragmenter, Diskeeper runs 24/7. However, it does so without hampering system resources. By leveraging its InvisiTasking technology, Diskeeper uses only resources (memory, CPU, etc.) that are otherwise idle.

"InvisiTasking is aware of what is happening within the system, and takes a backseat to crucial processes. As resources free up, Diskeeper continues," says Butler. "The approach is real time; that is, before there is a need for cleanup to provide the best performance possible."

Bankable Benefits

With Diskeeper in place, companies can reduce physical I/O requests by up to 98 percent en route to improving performance. Better-performing systems with less tasked disks yield remarkably improved levels of energy efficiency. In addition, companies report dramatic 5X data throughput rate increases on workstations and laptops. When Microsoft Windows systems run like new, it's possible to extend the life span of workstations and laptops, meaning IT can postpone budget spending on new systems.

These benefits ring true for Tyrone Logan, security and data center services and systems administrator with the Baltimore City Public Schools. Having initially installed Diskeeper on a few Windows systems, Logan quickly realized its potential and documented the benefits to obtain management buy-in before undertaking a school-wide deployment.

"We gathered and presented data to upper management illustrating that not only would there be a performance increase, but Diskeeper could also give us a higher ROI on the hardware [we] already owned. This, in turn, would delay the need to expend further funds doing a hardware refresh."

Manitoba Hydro is enjoying similar results, with Diskeeper now playing an essential part of the company's setup with each new system deployment. "It keeps our people's computers running faster and in an optimized state without them having to do anything. We still have some older Windows systems out there, and they're running like new," says Lecuyer. He adds, "Diskeeper significantly reduces the number of calls we receive around PC and laptop performance, which means I can focus on more important initiatives." ■