

# V-locity<sup>®</sup>

## I/O Reduction Software

### Overview

V-locity<sup>®</sup> (version 6) is I/O reduction software that guarantees to solve the toughest application performance problems on virtual servers or your money back for 90-days, no questions asked.

[Download](#) a free trial to prove it.

Virtual environments suffer from two big I/O inefficiencies that unnecessarily tax workloads with a surplus of tiny randomized writes and reads that steal bandwidth from VM (virtual machine) to storage. This “death by a thousand cuts” scenario results in sluggish system performance regardless of the storage media being used—whether SSD (solid-state drive) or HDD (hard disk drive).



### Solve I/O Inefficiencies that Tax Performance

The first I/O tax is small, fractured I/O, generated by the Windows OS due to free space allocation inefficiencies at the logical disk layer in the file system—not the physical media. Since the Windows OS lacks file size intelligence when writing a file, it simply looks for the next available allocation at the logical disk instead of managing free space properly and choosing the BEST available allocation. The result is a single file that is broken down and fractured into multiple pieces at multiple logical disk addresses. The reason this is bad for performance is because every address at the logical disk layer (i.e., every piece of the file) requires its own dedicated I/O operation to process as either a read or write. This typically means twice as many I/O operations are needed to process any given workload.

Not only does this Windows I/O tax mean systems have to work harder and take longer to process any given workload with a high percentage of small, fractured I/O, it also further exacerbates the second I/O tax in a virtual environment—the “I/O blender” effect. Disparate VMs on the same host send down otherwise sequential I/O traffic to the hypervisor where those I/O streams are “blended,” resulting in a severely random I/O pattern that is sent out to storage, further penalizing storage performance. It is bad enough for systems that are taxed with the I/O overhead of small, fractured I/O, but even worse when all those I/O streams are mixed together and randomized, resulting in the perfect trifecta for poor storage performance: small, fractured, random I/O characteristics.

Whereas organizations typically mask the problem of these I/O inefficiencies by overbuying expensive hardware and over-provisioning for performance with more flash or spindles, these I/O inefficiencies can be easily cured by V-locity for 50-300% faster application performance on existing systems. Not only does this approach protect the CapEx investment made into the existing hardware infrastructure, it solves performance bottlenecks without any disruption and ensures organizations get the most out of any future storage system investment with SSD or HDD.

V-locity is the only way to optimize I/O performance by solving these aforementioned I/O taxes in a virtual environment with a two-part approach, consisting of two very different patented engines to optimize reads and writes:

## V-locity: Automated Read and Write I/O Optimization

**IntelliWrite®: V-locity's Write I/O Optimization Technology**  
IntelliWrite prevents small, fractured I/O and sequentializes I/O streams by understanding when the Windows OS is about to break a file into pieces.

IntelliWrite provides Windows with file size intelligence to help it choose the best available allocation at the logical disk layer instead of the next available allocation that would result in multiple, fractured I/O to process the file as a write or subsequent read. By providing file size intelligence to Windows, the OS is capable of making much smarter decisions when writing files, so files are written (and read) in a clean, contiguous, sequential state. This ensures more payload with every I/O operation and prevents I/O fracturing so systems can reclaim degraded throughput and process more data in less time. With fewer I/O being mixed and randomized at the hypervisor for every GB of data, IntelliWrite additionally helps to combat the ill-effects of the "I/O blender" effect.

**IntelliMemory®: V-locity's Read I/O Optimization Engine**  
IntelliMemory is a server-side DRAM read caching engine that leverages idle, available DRAM to target I/O that penalizes storage performance the most—small, random I/O. IntelliMemory's behavioral analytics engine makes the best use of DRAM for caching by collecting usage data and I/O characteristics across a wide range of data points. By servicing I/O at the top of the technology stack from the fastest storage media possible, organizations reduce latency and further reduce the amount of I/O to storage, complementing the I/O reduction from IntelliWrite.

Administrators who are concerned with allocating precious DRAM for caching purposes need not be concerned. IntelliMemory is a dynamic cache that leverages available DRAM and throttles according to the need of the application so there is never an issue of resource contention or memory starvation. Whereas organizations typically serve 50% of reads from a mere 4GB of available DRAM per VM, the amount cached will depend on the amount of unused memory V-locity can use.

V-locity is transparent, "set-and-forget" software that operates with near zero overhead, utilizing only idle, available resources. V-locity is a very lightweight file system driver and performs all optimizations at the OS level, which means V-locity is both hypervisor and storage agnostic. V-locity is

compatible with any system that is compatible with Windows and improves the efficiency of all VMware ESX/ESXi, Hyper-V, and Xen platforms.

## Target Applications

V-locity is most commonly used to address an organization's most I/O intensive applications as its effectiveness scales with workload intensity. This typically means applications running on top of SQL/Oracle/SAP, ERP, EMR (electronic medical records), OLTP, Business Intelligence, CRM, Exchange, SharePoint, file servers, and backup. Whether it's a client facing application whereby users are complaining about sluggish performance or a back office batch job that is taking too long to complete, V-locity improves business efficiency without disruption.

V-locity is proven to dramatically improve SQL, Oracle, Exchange, VDI, backup, EHR/EMR (like MEDITECH), CRM (Salesforce), web servers, Business Intelligence (BI) applications, file servers, and more.

## V-locity's "Time Saved" Dashboard

V-locity demonstrates the value provided to any one VM or group of VMs by displaying the "time saved" from I/O reduction over any period of time. See what percentage of write traffic is eliminated from displacing many small writes with fewer contiguous writes. See the percentage of read traffic cached in idle DRAM instead of being served from storage.

V-locity displays the number of read and write I/Os eliminated to storage and shows the actual "time saved" benefit on all systems, so the value is easily quantifiable and never in question.



Median results from a typical system with at least 4GB of available DRAM

## V-locity Management Console: Seamless Deployment and Management

V-locity comes bundled with the V-locity Management Console (VMC), enabling seamless deployment and centralized management of V-locity.

- Fast, non-disruptive deployment of V-locity even in the most complex environments
- Support for various license models (perpetual, enterprise site licenses, or subscription-based)
- Easy license and asset management across a wide range of environments and locations
- Ongoing performance validation

VMC leverages I/O performance monitoring to give administrators visibility into key I/O metrics to explain workload behavior across different applications—greatly reducing the burden of troubleshooting and tuning for performance.

### Configuration Management

V-locity provides central command and control to install, configure, and manage V-locity products for mid-size to large-scale deployments. Administrators can choose presets or configure read and write I/O optimization and create admin-defined exclusions if necessary. Admins can also configure reporting and alerts by recent activity or workload, schedule ad-hoc reporting by VM or groups of VMs, and receive email alerts by VM or groups of VMs.

### Performance Management

V-locity reports on I/O performance from VM to storage and back and provides “time saved” benefits to validate ROI. With this level of visibility, V-locity enables administrators to quickly validate application performance; identify and solve I/O performance problems; ensure that applications, VMs, servers, and storage are running at peak performance; proactively manage application SLAs with email alerts set to customized performance thresholds; and access reports on an ongoing basis to measure the value of V-locity.

## A TOOLKIT OF

## Performance Acceleration Technologies

V-locity contains a toolkit of technologies to accelerate your applications from VM or physical server to storage:

### IntelliWrite<sup>®</sup>

A write I/O optimization technology that automatically prevents split I/Os from being generated when a file is typically broken into pieces before write.

### IntelliMemory<sup>®</sup>

A read I/O optimization technology that intelligently caches active data from read requests using available server memory.

### Benefit Analyzer

An embedded performance benchmarking tool that provides before-and-after performance comparisons,

enabling IT to measure workloads and performance to quantify V-locity benefits in their real-world environment before purchase commitment.

### InvisiTasking<sup>®</sup>

An intelligent monitoring technology that allows all the V-locity “background” operations within the server to run with zero resource impact on current production.

### CogniSAN<sup>®</sup> and V-Aware<sup>®</sup>

These technologies are extensions to InvisiTasking that ensure optimizations occur using only available resources. As a result, V-locity avoids creating additional I/O that might interfere with workloads on the storage media being executed by other systems. This is Ideal for SANs or hypervisor-managed storage, where multiple VMs have the VDDs on the same physical disk or drive.

## V-locity Benefits

- Guarantees to solve the toughest application performance problems
- Latency and throughput dramatically improved
- True “set and forget” management
- Compatible with all SAN/NAS systems
- Easily deploy to hundreds or thousands of servers with just a few clicks
- “Time saved” reporting dashboard to validate benefits
- Enterprise-wide visibility into I/O performance health from the operating system to storage

## Supported Platforms and Configurations

V-locity installs on all Windows virtual machines and supports Windows 7, Windows 8, Windows 8.1, Windows Server 2008 R2 and Windows Server 2012/R2

### Supported Clustered Configurations for Virtual Environments:

Active/Passive Hypervisors, Active/Active Hypervisors, Active/Passive VMs

### Supported Clustered Configurations for Physical Environments:

Active/Passive

**Required Cache Size:** 3GB of physical memory per VM or physical server

**Recommended Minimum Cache Size:** 4GB of physical memory per VM or physical server

**Maximum Cache Size:** 128GB per VM or physical server

## Management Console

V-locity Management Console UI supports IE 9, IE 10

VMC master node installs on physical servers and VMs and supports Windows Server 2012 64 bit, Windows Server 2008 R2, 64 bit

## About Conduktiv

Conduktiv Technologies is the world leader in software-only storage performance solutions for virtual and physical server environments, enabling systems to process more data in less time for faster application performance.

## More Information

**To speak with a product specialist in North America:**

Call toll-free 800-829-6468.

### Conduktiv Technologies

7590 North Glenoaks Blvd.  
Burbank, California 91504, USA  
800-829-6468

[www.conduktiv.com](http://www.conduktiv.com)

**To speak with a product specialist outside the U.S.:**

Call +44 (0) 1483 342 360

### Conduktiv Technologies Europe

One Crown Square  
Church Street East, Woking,  
GU21 6HR  
+44 (0) 1483 342 360

[www.conduktiv.co.uk](http://www.conduktiv.co.uk)