

On the Radar: Conduktiv Technologies

Reducing I/O in both the physical and virtual environments

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Summary

Catalyst

The modern data center faces many different competing pressures in terms of maintaining service quality and performance. The storage subsystem is currently the biggest technical challenge in terms of delivering service quality and performance, mainly due to the volume of data being processed. Conduktiv has developed a solution that reduces the I/O to the storage subsystem for both virtual and physical environments. The Conduktiv solutions (V-locity and Diskeeper Server) are agnostic of the type of storage and the vendor technology used.

Key messages

- Both Conduktiv solutions (V-locity and Diskeeper Server) operate on the I/O within the kernel of the Microsoft Windows operating system at the driver level; as a result they reduce the total I/O from any system.
- Conduktiv solutions currently only work for Microsoft Windows operating systems.
- The solutions provide a non-disruptive approach to I/O reduction without the need to purchase additional hardware.
- Conduktiv solutions are agnostic in terms of the storage technology, for both vendor and type of storage solutions.

Ovum view

Ovum research shows that x86/x64 architecture represents approximately 80% of the server market (2013 Ovum Data center survey) and of this, 70% is virtualized. While this trend in virtualization shows a continued expansion, the fact that most organizations have at least 30% of the data center operating on physical servers means that any solution for I/O reduction must operate on both physical and virtual environments. Conduktiv developed the I/O reduction technology for virtual environments, and has now added a physical environment equivalent that is compatible with any type of SAN technology. Ovum believes that this provides organizations with a single code-based solution for reducing I/O across the data center.

Recommendations for enterprises

Why put Conduktiv on your radar?

The cost and performance of storage is creating problems for organizations of all sizes as the volume of data continues to increase year on year. The Conduktiv approach is deceptively simple yet effective, with the main objective being to reduce the I/O to the storage subsystem as close to the source of the I/O as possible.

Highlights

Conduktiv solutions represent a simple and cost-effective approach to reducing I/O to the storage subsystem. This I/O reduction will not eliminate the need for additional storage purchases, but will delay the need to purchase additional storage units by ensuring that existing systems operate effectively and efficiently.

Background

Based in Burbank, California, Conduktiv Technologies was founded in 1981 and has spent much of its time working closely with Microsoft and VMware in the operating system kernel and file system areas. Conduktiv is focused on developing high-performance I/O reduction software and is known for its caching technology, with eight of the ten leading computer platform manufacturers using Conduktiv's RAM, SSD, and/or hybrid caching. Conduktiv's software is used by over 90% of the Fortune 500 and almost three-quarters of The Forbes Global 100. Customers include global enterprises, government agencies, independent software vendors (ISVs), and original equipment manufacturers (OEMs) worldwide. With over 30 years of product development, the technology is considered mature and well proven.

Current position

Conduktiv has two main products delivering I/O reduction capabilities: V-locity and Diskeeper Server. They operate on the virtual and physical x86/x64 servers used in many enterprise data centers.

V-locity

The V-locity product family is based on two key technology innovations: IntelliWrite technology (write I/O optimization) and IntelliMemory technology (read I/O optimization). The solution is able to operate with minimal impact on VM performance because it is designed and built to operate in the kernel of the Microsoft Windows operating system. The advantage of operating in the kernel is that Conduktiv V-locity communicates with the storage driver, making it compatible with any Windows storage device with a driver for Windows operating systems.

IntelliWrite technology

Microsoft Windows operating system typically performs its I/O processing as sequential I/O, which means that the data is read from the beginning of the file to the end of the file. The data is then written to pages that are typically 4-64K in size. The problem with this approach is that it increases the number of I/O operations needed to write a single file to disk. Conduktiv V-locity stops Windows from breaking the file into increasingly smaller pieces over time, and therefore reduces the number of I/O operations.

Ovum believes that V-locity's IntelliWrite however, does not just take a random "one size fits all" approach. Using the V-locity analytics engine, V-locity is application aware, and optimizes the write I/O to be specific to work load and behavior. IntelliWrite's built-in auto intelligence thus selectively guarantees ultimate I/O optimization efficiency.

IntelliMemory technology

The second part of the I/O optimization is based on improving the read operation. Conduktiv uses a server-side cache to hold frequently read data. The IntelliMemory capability provides a more

sophisticated solution than simply caching the most frequently accessed data. At the core of IntelliMemory is a behavioral engine that learns what data different workloads read, based on usage, frequency, and time. An additional benefit is that IntelliMemory holds just a single version of any data shared between all applications.

Diskeeper Server

The approach taken by Conduktiv is to reduce the I/O in real time before it reaches the I/O subsystem, rather than defragment the files on a SAN. While many hardware storage vendors state that SAN technology does not need to be defragmented because of the inbuilt capabilities in the hardware, this is only true at the physical layer. With Diskeeper Server, Conduktiv addresses the challenge of fragmented, or inefficient, file I/O at the logical layer by preventing the files becoming fragmented in the first place. The initial release of Diskeeper Server 15 is based on the same code base as V-locity, but currently does not share a common management console – although this is on the roadmap – and also does not have the same read caching capabilities as V-locity. However, Conduktiv’s approach is to understand the problems an organization is having with I/O and performance and to recommend the most appropriate technology based on need; V-locity, although primarily designed for virtual environments, can operate on physical servers if administrators want to take advantage of additional performance via server-side caching.

Data sheet

Key facts

Product name	Conduktiv V-locity, Conduktiv Diskeeper Server	Product classification	Infrastructure performance
Version number	5.2 and 15 respectively	Release date	2013 and 2015
Industries covered	All	Geographies covered	All
Relevant company sizes	All	Licensing options	Perpetual and subscription
URL	www.conduktiv.com	Routes to market	100% channel
Company headquarters	Burbank, CA, US	Number of employees	115

Source: Ovum

Appendix

On the Radar

On the Radar is a series of research notes about vendors bringing innovative ideas, products, or business models to their markets. Although On the Radar vendors may not be ready for prime time, they bear watching for their potential impact on markets and could be suitable for certain enterprise and public sector IT organizations.

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