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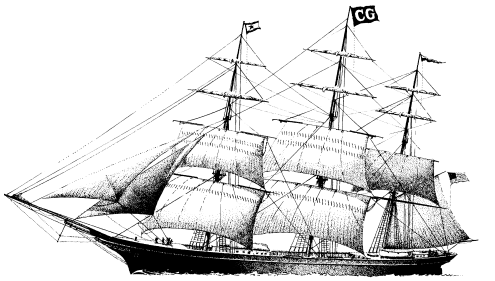

Navigating Information Technology Horizons℠

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Taking the Bottleneck Out of Enterprise Backup — Diligent Technologies Announces *VTF Open*

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Management Summary

Enterprises have learned to live with the onerous, burdensome, and yet vital task of backing up business data stored on disks**. You know backups must be done because it is essential for business continuity.** Of course, you'd rather spend more time on your core business efforts. Without proper backup of data, which keeps a business functioning after an interruption of service, the business might suffer severe repercussions. This is true for the whole range of business interruption from short-term outages of the IT system or subsystems - to loss of critical data through corruption - to disaster recovery. For each situation, the integrity and rapidity of recovery of backup data is critical to returning to normalcy. That effort, no matter how onerous and burdensome, is the insurance payment to provide maximum continuity of information systems and, ultimately and more importantly, the enterprise.

The normal backup practice copying data stored on disk to tape media is a tried method proven over many years. **While this has worked well in the past, traditional backup methods have a number of shortcomings in today's high-pressure, round-the-clock business environment.** The real problem is not with the integrity of the process (although there are lots of opportunities for human error), but with the time it takes to store and retrieve data and the cost/benefit relationship. This is not a criticism of tape's ability to store lots of information, relatively cheaply, for a long period**. It is a criticism of the time it takes to get important data onto and off of tape. And time has a money component to it, and this affects the cost/benefit relationship of how you protect your enterprise.**

Nobody backs up to tape with the intention of restoring it immediately. One usually hopes that it will never be read again. **What is critical is the duration between backup operations.** Is this being done once a once a day, for example? If so, you may have as much as 24 hours of new data to store and, maybe, restore at a later time. Today, that can be a lot of data, which probably takes a lot of time to move to tape. That's why you may be backing up only once a day. Unfortunately, this means that you have a lot of data to recover by other means, maybe as much as 24 hours of transactions since the last backup. Today, you can't be down for that long without suffering serious economic repercussions**. So you want to backup more frequently, but you can't get it spun to tape that fast and you don't want to double or quadruple your investment in tape drives and infrastructure.** You could take a number of snapshots of your disk storage each day, and use them for intermediate purposes; but this would add significantly to your costs, and would require many new procedures.

There is another alternative: virtual tape. This is not new to the mainframe world, but most of today's data is running on open systems, and being preserved by a handful of leading backup software vendors that do the mundane but necessary task of assembling blocks of storage for transfer to tape. A new software company has an interesting virtual tape solution that makes your disk look like tape. So your backup software can write, just as it does now, to disk in an emulated tape format. This happens much faster, allowing many more backups per day, shortening the period for rebuilding. You still can write to tape, if you want, without the pressure of time, or you can use remote copy software to move the tape image to an array at a remote location, just in case. Read on to learn more about *VTF Open*, from Diligent Technologies.

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Finding More Hours in the Day

In today's global enterprise, where 24X7 is the norm, many enterprises live or die on the uptime of its computing systems, so that availability is critical to its proper functioning. Downtime, especially scheduled downtime for regular tasks like backup, must be minimized because there is a severe enterprise cost associated with it, ranging up to millions of dollars per hour.

When there is a failure, there is almost always going to be an interruption. The challenge is to reduce the hiatus to the least that you can afford. Remember, this is like buying insurance. How much of a deductible can you afford? As you know, the greater the deductible, the lower the premium! Each enterprise needs to determine its tolerance for interruption and its ability to pay in advance to mitigate it. There are two operational parameters to this analysis, beyond the cost:

1. How frequently can you afford to backup?
2. How fast do you need to recover?

They are usually related.

The duration to recover is based upon the amount of data you need to recover and the speed of the transfer. You can reduce, in many cases, the amount of data that you need to recover by doing more frequent backups, as long as you don't violate the important directive of being down for too long, as each enterprise must define for each of its applications. But if you need to restore completely a large amount of data, because of a physical problem (e.g., a fire), it is going to take a while, unless you have a mirrored storage subsystem at a remote location. In all cases, the speed of transfer is important. If you can significantly increase the transfer speed, you can either:

- Reduce the downtime, or
- Increase the frequency of your backups, to reduce your exposure to a longer recovery time,

or a combination of the two. **This is the most important advantage of virtual tape – it buys time.**

Virtualization 101

Virtualization is the process of separating the assets of the real world (think about IT infrastructure) from the way that they are allocated, managed, and accessed (i.e., removing the physical dependencies so that all you care about are *virtual resources*). For example, you don't really care how you are connected to the person on the other end of the phone line (either in terms of transit route or technology); it's just a call to you (logically) and someone else's problem (physically) to make it all seamless to you. Likewise, **virtualized tape (or *virtual tape*) allows software and servers to think that they are communicating with and transferring data to and from a tape drive, even though there is no tape drive present.** Neither the software nor the server has to change the way that they communicate; they think that they are communicating with a physical device. **A more long-winded name describes it better: *virtual tape storage on disk*.**

Diligent's *Virtual Tape Facility (VTF) for Open Systems*

Diligent Technologies of Framingham, Mass., which was spun off from EMC about a year ago, already has a software virtual tape solution for mainframes[1]. Recently Diligent announced its open virtual tape solution, *VTF Open*. It uses readily-available servers and existing SAN storage infrastructure to make this virtualization happen. **Substituting tape media with disk by virtualizing tapes has proven to be a faster and more cost-effective vehicle for mainframes and should be the same for open systems.** Diligent now has applied that same philosophy and technology to address open systems.

With virtual tape solutions, backup and recovery times are less, and reliability is greater; both are critical as data stored and

[1] Diligent's first product was *VTF Mainframe*.

transaction volumes have skyrocketed over the past few years, and enterprises increasingly rely on the continuous availability of data and processing. So Diligent's announcement is timely and important.

VTF Open is a software system resident on a dedicated Linux or Solaris server; together they become a backup appliance that looks like tape to servers and applications. It connects to the application host server(s) and disk array(s) over fibre channel. Optionally, a switch may be placed between the application host server and the VTF Open system, to allow for greater sharing. Virtualization and emulation of tape drives takes place in the VTF Open server(s).

For flexible scalability, VTF Open can accommodate multiple application host servers and heterogeneous disk arrays. (Because VTF Open can communicate with heterogeneous disk subsystems, the storage administrator can allocate different classes of disk (in terms of performance, availability, and cost, for example) to be used as virtual tape drives, according to the requirements for the applications and data.[2] New ATA Disks may provide a lowest cost option.

If the enterprise is running an application like Legato *NetWorker* or Veritas *NetBackup* and writing to DLTXXXX tapes, no changes are required to the application host to install or run VTF Open, other than redirecting the backup to a different device. For attached disk subsystems with remote mirroring or copy capabilities, the enterprise has a number of remote backup options to consider via VTF Open.

The Speed Advantage

With VTF Open, data transfer between the application host and disks (and the reverse process for recovery) is much faster[3] and more reliable than tapes. Recovery time becomes even more critical because of the increased amount of data that exists in today's IT environment which must be restored. Since disks are random access devices, recovery times can often be greatly improved by eliminating the search time on tapes which must be performed linearly.

The Time Advantage

Recovery time is the paramount issue to maintain a viable business. Using common disk arrays, a system such as VTF Open provides a vehicle for minimizing recovery time. **From a business perspective, it is critical to restore an information system to its former integrity as soon as possible.** IT executives realize that all data may be created equal, but once stored on disks the value varies, as does the required recovery period. **With a disk-based virtual tape system, the backup and recovery time for the critical data is appreciably less than what is experienced with tapes.** VTF Open is not intended to replace all tapes: there still is a need for removable media, especially for long-term archiving.

Relieving the Pressure on IT

Faster backups can relieve the pressure on IT to perform backups. With globalization and longer periods of online availability, IT organizations find they are "running out of night" to perform backups. During the daytime when some backups are being performed, the time saved with a system such as VTF Open can make for more frequent backup of data.

Furthermore, operational efficiencies can be gained because any manual intervention required by tape handling is eliminated. This is especially valuable, and even vital, when there are IT system failures and operations personnel go into a crisis mode to recover.

Disks are intrinsically more efficient and reliable than tapes, making the VTF Open backup media a preferred method for contributing to a greater assurance when recovery is required.

VTF Open is compatible with and

[2] For an in-depth discussion on tiered storage, see *Tiered Storage Classes Save Money – Getting The Most Out Of Your Storage Infrastructure* in **The Clipper Group Explorer** dated August 29, 2002, and available at www.clipper.com/research/TCG2002030.pdf.

[3] Several orders of magnitude, or more.

qualified with the preeminent solutions for backup such as Legato, EMC, Veritas, Atempo and CommVault, eliminating any conversion effort to operate with these applications.

User Benefits of VTF Open

System outages can be very damaging to the enterprise when availability of the system is interrupted. Although it has a negative affect on users who are employees, it is especially true of external users who are involved in business transactions with the enterprise. Although outages cannot be eliminated, the time to recover can have a significant impact on these users. Restoring the system to operational status in a much shorter time will lessen the impact of any outage, including lost revenues and tarnished goodwill.

Configuration and Pricing

Pricing for VTF Open varies based on the number of data ports attached to the backup server/SAN, which determines the amount of data that you can back up. This means that pricing is variable - based on system throughput - as varying rates of data transfer can be provisioned by configuring one to four ports per server. So IT managers face the same decisions described above: to shorten the down time for backup or to reduce the risk. If you decide that you are satisfied with your current backup schedule you still gain additional processing capability because of the speed with which VTF Open software operates.

VTF Open is targeted at a wide range of enterprise data centers that will benefit significantly from changing the media from tape to disk in their complex and overburdened backup equation. It is available now on an annual licensing fee basis, with pricing starting at $35,000, depending on number of front-end ports utilized on the VTF server. The price includes maintenance. Alternatively, a perpetual license starts at $55,000, based on the number of front-end ports on the VTF server. Maintenance for this offering is $8,250 annually.

Conclusion

The issue of business continuity has reached new heights beyond the simpler times of hardware and software reliability. The global economy with its 24x7 requirements, the threats to continuity of IT systems from external and the new threat of internal sabotage have placed greater emphasis on minimizing computer disruption of service. **Reducing recovery times is an essential component of business continuity efforts. The explosion of enterprise data requirements has placed greater burdens on backup and recovery efforts.**

Backup to tapes, the standard for many years, no longer meets the speed and time challenges of the many enterprises. **The much faster speed of disk-based backup, along with much faster recovery times, makes disk-based solutions like virtual tape a more responsive technology, and also reduces the need to handle and store media.** Diligent's VTF Open system for backup and recovery creates an opportunity for the enterprise to respond to the new challenges of business continuity.

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About the Author

Joseph S. De Natale **is Director of Enterprise Systems Planning with The Clipper Group.** He brings more than forty years of experience in the data processing field with particular emphasis on systems management and application development on large-scale mainframes. Prior to joining The Clipper Group shortly after its founding, Mr. De Natale was an independent consultant, first with Ropes and Gray, Attorneys at Law, where he provided expert opinion on data center management for civil cases. He later joined International Data Corporation (IDC), as a senior consultant and analyst, where he covered banking systems, data center management software, and large systems computers and storage. Formerly, Mr. De Natale spent eleven years at Citicorp Information Resources (CIR) as CIO of the Boston Data Center, where he managed the support of over 200 outsourcing contracts for thrift institutions. Earlier, he was MIS Director for the Lahey Clinic, and prior to that was a Project Manager for Computer Sciences Corporation, where he was involved with NASA and FAA outsourcing and applications contracts. Previously he was Director of AVCO Computer Services for fourteen years. At AVCO, in addition to being responsible for all internal data processing, he initiated the marketing and sales of computer services to commercial clients. Mr. De Natale began his career with Pratt and Whitney Aircraft as a programmer of nuclear physics and business applications. During his career, Mr. De Natale was involved in the evaluation, installation and operation of large-scale mainframe systems and for the development of commercial, scientific and engineering application systems. He has also had successful experience in the marketing and operation of outsourcing contracts. Mr. De Natale earned a Bachelor's and Master's degree in Mathematics from Boston College. During his period at AVCO, he was selected by AVCO to attend the Northeastern University Management Development program, a co-op program covering an MBA curriculum.

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