

InMage DR Scout: Delivering True Enterprise CDT

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The concept of Continuous Data Technologies (CDT) emerged on the scene two years ago, and is now transforming the data storage industry. Nearly every major storage vendor has one or more CDT products in their offering roadmap, in addition to a vital community of emerging vendors who are the true innovators in this space. Of course, all of these solutions can vary widely in architecture and the capabilities that they deliver. We find that this range of choice leaves technology managers looking at a complex puzzle as they try to figure out how to employ CDT in the enterprise.

We believe that part of the reason for this puzzle is that many CDT solutions are focused on solving specific focused problems, such as file restoration, or MS Exchange recovery. These solutions certainly have extreme merit for those purposes, but, as we have repeatedly stated in our research, we believe CDT is a fundamental “core” technology that has potential to more broadly redefine how storage is managed in the enterprise. When implemented in the right way with a broad range of functionality, CDT can free enterprises from some of the complexity inherent in storage environments, and solve fundamental IT challenges that organizations address today through a large number of different tools: data protection, snapshots, replication, disaster recovery, and testing, to name just a few. InMage’s DR-Scout is one solution that demonstrates precisely how this broad range of converged capabilities can provide new opportunities for enterprise storage management. In this brief, we take a detailed look at InMage’s DR Scout enterprise-class CDT offering and provide a detailed look at how the company plans to impact the broader market in coming quarters.

First Things First: Why CDT?

At their most basic common level, Continuous Data Technologies (CDT) all provide an unbroken, seamless data capture stream for application data. That stream of data can then be moved, manipulated, and repurposed with an incredible amount of flexibility. As Taneja Group has identified previously, CDT is actually made up of a number of more narrowly defined capabilities that revolve around the same core technology. These broad capabilities

that CDT can address from a common architecture include:

- Continuous Data Protection (CDP)
- Continuous Data Replication (CDR)
- Continuous Data Imaging (CDI)

Unfortunately, the majority of today’s CDT products are frequently limited in delivering against all three of these capabilities simultaneously. While the unified “enterprise transformation” vision is now well planted in the industry, the actual ability to deliver is still a tall order for most vendors.

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For example, we see that the market is inundated with solutions that focus only on file-level CDP, or only on host-oriented CDR. Alas, a unified CDT platform is worth the investment in R&D and entrepreneurial sweat, because it can greatly simplify and enhance enterprise storage management. A truly mature CDT platform will bring a common approach to delivering data protection, replication, and image management. *That* would constitute a significant advance in simplicity for the enterprise, and win the hearts of IT teams around the world. The key: Knowing which vendors actually have the potential to even dream of delivering against this goal. And to do this, what is needed are CDT evaluation criteria.

CDT Evaluation Criteria

CDT can significantly change the way enterprises work with data if it achieves broad-based deployment with the right design center. Our research and analysis has led us to the conclusion that CDT will legitimately offer enterprises the possibility of addressing several fundamental storage management needs better than before and within a single well-integrated solution. Since not all CDT solutions are up to that task, IT teams need to consider the following evaluation criteria when trying to identify a comprehensive enterprise-caliber CDT platform.

Criteria #1: Deep APIT Data Capture

Most CDT solutions capture data and present it at any-point-in-time (APIT), but frequently these tools focus specifically on capturing non-complex file level data. For CDT to

completely support the storage management needs of the medium and large enterprise, data capture must guarantee that a specific APIT has complete integrity for the entire data set of a host system, application system, or enterprise. This capability is the foundation for replacing traditional snapshot technology with Continuous Data Imaging (CDI). With integrity underlying CDI, enterprises are assured they have complete data for constructing single or multiple images and are able to use CDT to perform recovery or reuse at a broader level without inconsistencies in database, application, or system states.

Criteria #2: Efficient Operations

An enterprise CDT platform should improve reuse and recoverability by moving data across networks quickly. Further it should be able to seamlessly provision data sets to new hosts or into new applications, including retention systems, fail-over hosts, test labs, or development environments. This rapid, no impact movement of data relative to hosts, networks, and storage is critical to the viability of any CDT offering. One of the larger goals of the CDT revolution is to remove the multiple downtime requirements that have typified the point-solution based approaches of the past with respect to data movement. Not all CDT solutions will live up to that bold vision and so careful evaluation is necessary.

Criteria #3: Total Interoperability

A quality CDT solution should not restrict the IT team's capabilities to deploy any a single application, operating system, or storage system. Rather, a single enterprise toolset for data recovery, reuse, and movement must

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be able to work *outside* the boundaries of any single host, application, or storage system. True heterogeneous deployment capability, both in technical and operative terms (i.e. no vendor lock-in) is critical to the success of enterprise CDT initiatives. This is so critical because the potential economic and management benefits to be accrued are directly tied to the converged, heterogeneous applicability of the platform itself. Indeed, while an enterprise-wide CDT solution can potentially replace duplicate platform-specific data migration, copy, imaging, back up, and retention tools, it must have strong inter-operability and the practical vendor-supported freedom to do so.

Criteria #4: Seamless APIT Capture

Even amongst advanced CDT offerings, a large number of solutions on the market still require significant resynchronization operations if continuous capture is interrupted at any point. While resynchronization is necessary to bring data back up to date, this should not leave a gap in the integrity of a continuous host data stream. Further, with some enterprise-wide CDT solutions, resynchronization overhead can be catastrophically disruptive on large scales. Accordingly, a CDT solution should tolerate host, network, and storage disruption with minimal impact from data set resynchronization.

Criteria #5: A Single Comprehensive CDT Solution

Storage management today involves multiple scattered tools, depending on which host, application, storage, or network system the tool is used on. As we indicated above, many CDT products go no further than replacing

single tools or adding to a collection of multiple tools. A significant, pervasive change in storage management is possible with a CDT solution that is comprehensive in continuous data capabilities and consists of a single, easy to manage system. This allows enterprises to replace not just specific instances of traditional tools across multiple platforms, but to replace numerous core storage technologies in their enterprise portfolios. It should be noted, however, that the best CDT platforms will not require a wholesale change, but rather, enable customers to move step-by-step into a CDT paradigm based on application or functionality (e.g. data protection, snapshots, replication, etc.). In 2007-2008, CDT should never be considered an all-or-nothing engagement; the best vendors know this and they have architected their offerings appropriately.

For customers evaluating CDT offerings, we highly encourage them to keep these five criteria top-of-mind. An offering that cannot satisfy *all* of these criteria is not likely to be a truly enterprise class offering capable of mission critical support and broad production deployment in the data center.

Focus on InMage

Among numerous solutions available in the marketplace today delivering one form of continuous data functionality or another, there are few solutions that address all three of the core storage management needs for data protection, (CDP) replication (CDR) and advanced image management (CDI). In our review of the marketplace, one notable solution that satisfies these criteria is InMage

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DR-Scout. We'll now take a brief look at DR-Scout and then review how this product addresses our evaluation criteria.

DR-Scout Overview

InMage's DR-Scout is a CDT solution designed to continuously capture enterprise-wide data with volume, file system, and application awareness. DR-Scout accomplishes this with broadly interoperable, lightweight host agents for block and file level data that are integrated with common enterprise applications. These agents are paired with CX server software that minimizes host impact by offloading most activities. That CX server is a storage agnostic, capability-rich repository that can capture, de-duplicate, compress, replicate, copy, move, and/or reconstruct data. The DR-Scout CX server is the central hub of an installation and effectively delivers non-intrusive data capture by writing to secondary storage in the form of disk, network file shares, tape, or other media.

It is important to note that InMage has not abdicated gathering critical host-based application intelligence by relying on a centralized appliance, unlike some other vendors. Rather, InMage balances intelligence in both components (hosts and networks), using host agents to queue continuous data writes where necessary, trigger application events, provision captured data, perform customized host administration, or forgo the installation of an appliance altogether at remote sites by capturing data directly on the hosts themselves.

The result of this architectural approach has enabled InMage to assemble a very comprehensive platform that delivers on the broad CDT mission we discussed above:

- CDP, with captured volume and file level data stored through the DR-Scout software.
- CDI, with reconstruction of complete images of consistent data sets for entire hosts or enterprises, supported by bookmarked APITs where all data for a system is consistent.
- CDR, with the DR-Scout CX server de-duplicating, compressing, and managing data replication across SANs, LANs, and WANs.

This complete set of functionality is key to allowing a CDT solution to meet the core enterprise storage management needs we have identified. Next we'll review how InMage delivers these capabilities to meet our stated CDT evaluation criteria.

Criteria #1: DR-Scout captures data with host, storage, and application integrity

DR-Scout agents integrate deeply with hosts *and* application data sets. With that application integration, organizations automate a quiesce of a database with identification the appropriate consistent APIT image available via DR-Scout. As a result, DR-Scout ensures the integrity of the best single system backup approaches while minimizing management overhead, reducing time required, avoiding impact to primary storage, and eliminating the use of multiple different snapshot or data copy tools.

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InMage also integrates an Event-based Recovery Bookmark (ERB) technology that marks a single APIT when data is at a consistent state across multiple systems. Using ERB, administrators can effectively identify and recall any APIT from when all systems were quiesced and consistent for a set of hosts, a set of complex n-tier applications, or for the entire infrastructure. This is an extremely powerful level of business level intelligence that we found impressive and indicative of where CDT technologies need to go in the future.

Criteria #2: DR-Scout is resource efficient in capture, reuse, and movement

DR-Scout host agents differentially log data changes to an appliance running the DR-Scout server software which captures data to any media, including direct or network attached storage, tape, or archive systems. The DR-Scout server offloads all activity from the hosts, and can move, re-provision, or replicate data across LAN, WAN, or SAN using the entire set of captured data. This flexibility yields maximum efficiency for IT teams with respect to de-duplication, compression, and transmission via networks.

Note that since DR-Scout captures data to secondary storage, DR-Scout can manipulate data with no performance impact on original storage. As a result of this efficiency, in most environments, DR-Scout will greatly reduce under-utilized space on primary SAN storage, and simultaneously reduce the I/O demand from providing data for backup or reuse.

Criteria #3: DR-Scout is interoperable

DR-Scout's combination host and lightweight agent-based approach has enabled InMage to make their solution host, storage, and network agnostic in the enterprise. By moving most processing onto a network appliance, InMage has focused on developing a less complex host agent with broad host operating system support. Similarly, with the network appliance playing a central role across all hosts, InMage has focused appropriately on delivering common capabilities for CDP, CDR, and CDI. The offering that results is unique in the industry: DR Scout supports a broad range of hosts, can interface with almost any current storage system, and is able to capture and manage data over any type of common connectivity. Again, this is the long-term CDT vision that we had hoped to see vendors deliver against, and we are happy to see InMage bringing this flexibility to market today.

Criteria #4: DR-Scout captures data pervasively and with integrity

DR-Scout host and lightweight agents capture everything and then ensure the integrity of that data capture. The potential effects of any disruption vents are thereby mitigated by data stream capture at multiple levels. For example, an interruption in a local network or unit of storage is mitigated by queuing data changes in a host agent, avoiding any data capture loss. Further, an interruption to a WAN link is mitigated by the network appliance aggregating all data capture and only replicating de-duplicated blocks. Data accrued over time from an interruption, in most environments, will be small as de-duplication is carried out against a larger accrued data set, and will reduce

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resynchronization impact. This manner of broad-based integrity control is vanishingly rare in the CDT space, and it highlights the unique design center approach pursued by the InMage development team.

Criteria #5: DR-Scout delivers a single comprehensive solution

The DR-Scout CX server maintains a centralized point of management for an entire DR-Scout site. The CX server manages all aspects of the host agents as well as captured data management within one unified interface. With the deep integration and functionality available through DR-Scout's host agents, the central point of management becomes a single toolset that can meet the fundamental storage management needs of an enterprise, inclusive of data protection, replication and advance image creation. While many CDT offerings have tried to address one or more of these issues, we believe that InMage stands apart with respect to its centralized management capabilities, in particular. It is impossible to create an enterprise-wide CDT platform if this manner of detailed centralized management is not included in the architecture from the ground up.

Taneja Group Opinion

A commonly held perception of CDT is that it enhances backup and recovery by reducing Recovery Time Objectives (RTO) while making Recovery Point Objectives (RPO) as close to present as possible. In other words, CDP has taken all the glory. The story is much bigger than CDP, and the devil is in the details.

To truly accomplish enterprise CDT, and expand the seamless data capture benefits to data protection, replication and advanced image management, enterprise needs to have a flexible toolset capable of broad integration with minimal complexity.

To be sure, this is a very tall order, but we believe that InMage has addressed this correctly. Where other vendors have made trade-offs or foregone capabilities or coverage areas, InMage has wisely stayed focused on the much more challenging yet rewarding mission: *Create a true enterprise-wide continuous data platform that can ultimately transform storage management.*

The bottom line is that DR-Scout delivers a broader range of superior functionality than technology managers have historically used to cobble together their current storage management technologies. This offering creates undeniable business efficiency and management gains as a result. Further, we believe this demonstrates the potential that CDT has to re-invent the storage management paradigm in enterprises today.

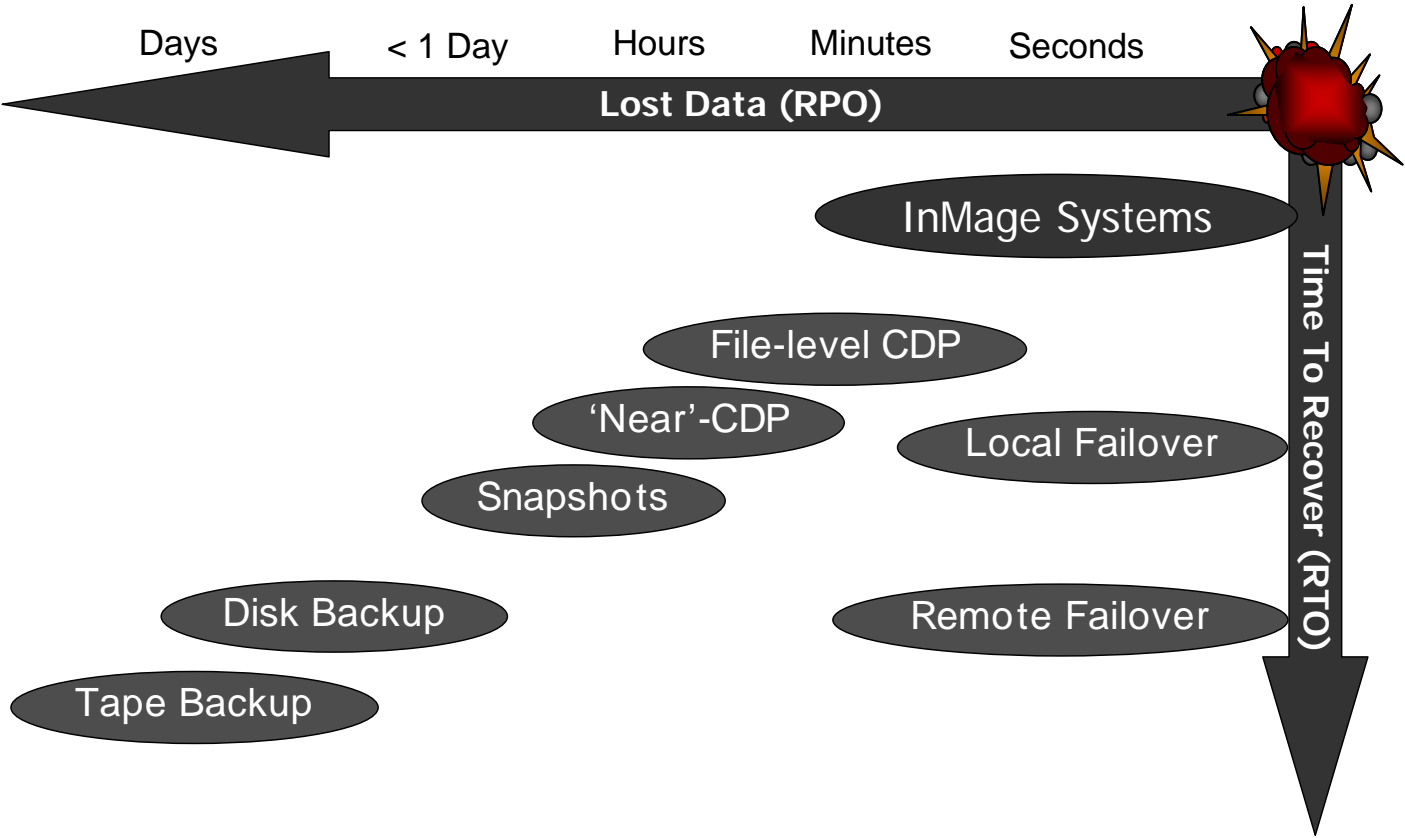
The net-net is that when this technology is employed to its full potential and addressing many different functions in an enterprise, DR-Scout may replace a number of scattered tools that have historically created headaches as often as they solved them. This makes for a compelling case for CDT in the enterprise today, and InMage is the current emerging vendor poster child for the entire movement.

We highly encourage storage managers currently evaluating traditional storage tools today to pause for a moment and look deeply

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at what CDT had to offer. In particular, we believe they should spend time getting to know InMage DR Scout, and see first hand

what this transformative platform can do for their data centers.





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