



Real-Time Data Protection & Recovery

Continuous Data Protection with TimeScale[®] 200

Xiotech's TimeScale 200 and 300 Series systems provide easy-to-use, real-time continuous data protection (CDP) for recovery to any point in time. These flexible, scalable solutions enable you to proactively protect and recover your data, while reducing your costs.

Joel Ruf
Technical Marketing
Xiotech Corporation

August 2006

Complete data protection and recovery solutions will provide multiple levels of protection, including remote replication for major outages and CDP for any-point-in-time (APIT) recovery. This strategy allows for data to be back online in a matter of seconds to minutes instead of hours or days, while simultaneously being protected from major disaster.

Xiotech Corporation's TimeScale™ 200 Series systems provide easy-to-use, real-time CDP for recovery to any point in time. The TimeScale 300 Series also provides CDP but adds asynchronous replication to protect you from geographic site disasters. These flexible, scalable solutions enable you to proactively protect and, more importantly, recover your data—while reducing your total cost of data protection.

Data Protection

Well-publicized disasters highlight the need for an effective and timely data recovery solution. While current tape and disk backup provide some peace of mind, they do not keep up with the demands placed on your business. You cannot afford to wait hours (or days) to recover your critical applications and data.

To reduce recovery time, you might implement local or remote volume replication. Remote replication protects your data from a major disaster or outage at the primary location. However, it usually does not provide complete recovery of *all* your data. You must make a best guess as to when to create point-in-time images.

Continuous Data Protection

CDP changes the focus of data protection plans from backup to recovery. By continually journaling all mission-critical changed data, it enables fast, easy data recovery following any type of outage.

CDP is a relatively new term but is already being widely publicized with different meanings. True CDP solutions follow the definition of the Storage

“Continuous data protection solutions offer quick recovery from any point in time.”

Thus data that was created or changed between the time the image was taken and the time a disaster occurs will not be included. This data is either lost or, if you are lucky, must be rebuilt from transaction logs.

A server failure, while not disastrous on a grand scale, also prevents access to your data. Whereas remote volume replication protects against major disasters, it does not provide the best option for recovery for a local outage such as this. You must be able to rapidly restore all your data to minimize missed revenue opportunities. Continuous data protection (CDP) solutions offer quick recovery from *any* point in time to effectively address this need.

Networking Industry Organization (SNIA):

All data changes from the source server are continuously tracked or journaled, allowing rollback to an unlimited number of change points. For an effective CDP solution, the data changes are stored in a separate location, typically another server.

CDP is not snapshot technology. Creating predefined schedules for snapshots and then exporting them to another system is not continuous; thus, it cannot be considered a CDP solution. Exporting data to another system and then creating a snapshot addresses the

requirement for a separate location but does not provide rollback to any point in time.

CDP offers more flexible recovery points and faster recovery times than traditional data protection solutions. It does this by providing access to data at any point in time, thereby reducing data loss and eliminating costly downtime. Data retrieval is reliable, fast, and granular.

TimeScale 200

Xiotech's TimeScale 200 Series is an easy to use CDP solution for Microsoft® Windows® 2003 environments. This flexible and scalable CDP solution allows you to recover your data in either an *application consistent* state or from any point in time. The TimeScale 200 solution leverages your existing infrastructure to attain unprecedented cost savings without sacrificing performance or features. Additionally, TimeScale 200 enables centralized management and offloads CPU-intensive tasks such as compression and encryption.

The TimeScale 200 Series architecture allows you to start with just a single appliance and perform CDP at either the local or remote site, or even both. The architecture further lets you deploy CDP locally while deploying asynchronous remote replication (with the TimeScale 300 Series).

TimeScale 200 can also be architected to provide CDP for other purposes. For example a development group may create an image of a production Microsoft SQL or Oracle® database from any previous point in time so that application changes can be tested prior to its final deployment.

When performing CDP with applications like Microsoft Exchange 2003 or SQL Server 2000/2005, all data changes are tracked for a predetermined amount of time in a retention volume. The target server not only has a full copy of the replicated source volumes but also a retention volume in which it tracks all the data changes. The size of the CDP retention volume can be set for each application and is based on the number of hours or days you want to be able to recover your data and the amount of data that changes per day.

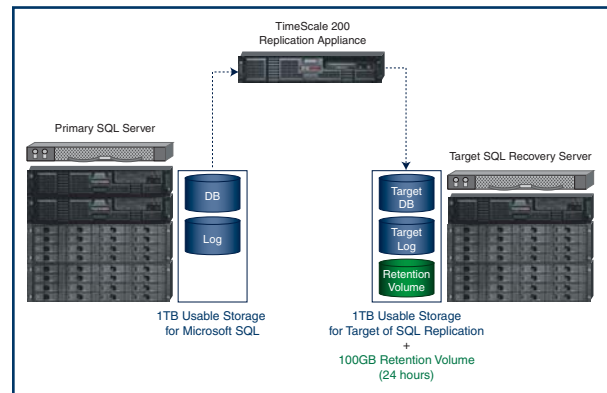


Fig. 1. Continuous Data Protection with SQL Server

In Fig. 1, the source SQL server has 1TB of data to be protected and the target SQL server has 1TB of storage for the replicated SQL data. The target SQL server also has a 100GB retention volume for tracking changes coming from the source server. In this scenario, we wanted to recover any data within the last 24 hours, and the data change is estimated at 10% a day.

To calculate the size of the CDP retention volume, take the:

$$(\text{volume size}) \times (\% \text{ change in recovery period})$$

In this example, that works out to be 100GB:

$$(24 \text{ hours}) \times (10\% \text{ change}/24 \text{ hours}) = 100\text{GB}$$

In addition to continuously capturing data changes, TimeScale 200 is able to capture application-consistency points by utilizing Microsoft's Volume Shadow Copy Service (VSS). Application consistency ensures that the application can be recovered without errors—it is known to be in a "consistent" state. For example, you may want to perform scheduled application-consistency points every hour, this way you are guaranteed that your application recovery point objective (RPO) is one hour. These consistency points can be scheduled or user defined.

Let's say you are making a critical update to your financial application. Prior to doing the update, kick off a

user-defined consistency job and name it Prefinancial Update. If the update fails, you can recover exactly to the point prior to applying the update. After the update has been completed, you can define another consistency point, marked as Postfinancial Update.

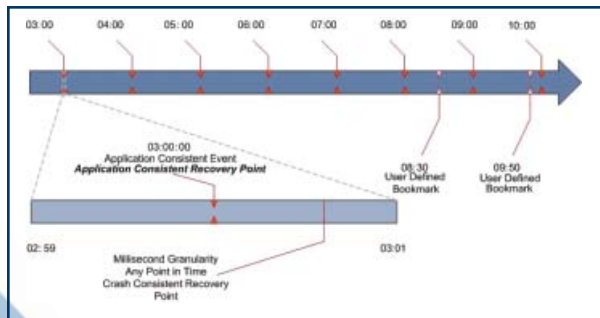


Fig. 2. TimeScale CDP Recovery Points

Fig. 2 shows how data can be recovered with a CDP strategy. In this example, you can recover data from any time between 3:00 and 10:00. The data can be recovered from a scheduled consistent recovery point, a user-defined recovery point, or APIT recovery point.

APIT recovery is slightly different than application consistency point recovery. With APIT, you can recover to any day, hour, minute, or even millisecond within the retention volume timeframe. The biggest difference in APIT is that you are recovering in a crash-consistent state. A crash-consistent state is similar to powering off a server. Because data is recorded in write order, file systems and applications are, in general, capable of recovery via transactional file system and database recovery or with file system check utilities.

TimeScale 200 Technology

TimeScale 200 uses full-volume (block-level) replication agents to perform CDP functions in Microsoft Windows 2003 environments. When replicating servers at a volume level, a volume agent will exist on both the source and target servers. Performing CDP at the volume level gives you the ability to replicate the boot partition along with data volumes.

One of the key benefits to the TimeScale 200 solution is that it leverages your existing infrastructure. The data to be replicated flows across the Ethernet to the TimeScale Replication Appliance, and then the data is pushed to the target server.

TimeScale 200 Features/Benefits

- **Purpose-Built Data Protection:** CDP for Microsoft Windows 2003 with full-volume, application-level, and file-level recovery
- **Application-Consistency Support:** Microsoft Active Directory®, Exchange 2003, and SQL 2000/2005 by leveraging Microsoft's standard VSS
- **Virtual Snapshot:** Virtual snapshot creation for any point in the past
- **Multiple Recovery Points:** APIT, user-configured application-recovery points, or bookmarked events that allow rollback to the target volume or creation of full-volume snapshots
- **One-to-Many Replication:** Multiple local and remote CDP targets
- **Many-to-One Replication:** Multiple servers to a single local or remote target server
- **Multiple Deployment Options:** CDP only (TimeScale 200) or CDP and asynchronous replication capabilities (TimeScale 300)
- **Easy Deployment and Upgrades**
- **Native IP Interfaces:** No network or protocol conversion equipment required, meaning lower cost, less management, and minimal learning curve
- **Centralized Management:** An intuitive Web browser interface that actively manages RPOs



Summary

Xiotech's TimeScale 200 and 300 solutions provide powerful, flexible, easy to use CDP replication that allows you to recover to any application-consistent point as well as any point in time. These systems remove the complexity from managing your data protection and recovery requirements. Your organization can also realize reductions in capital and operating expenses, as you leverage your existing data center, bandwidth, and skill sets.

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Corporate Headquarters:

6455 Flying Cloud Drive

Eden Prairie, MN 55344-3305

1.866.472.6764

www.xiootech.com