

# EMC RecoverPoint Family of Products

Silverton Consulting, Inc.

StorInt™ Briefing

## Introduction

Previously, storage replication or data mirroring was only available and feasible for high-end, more sophisticated data centers. EMC® changed the landscape with the acquisition of Kashya in 2006, rebranding the technology as RecoverPoint and has since continued to disrupt the data replication market. The EMC RecoverPoint family of network-based replication solutions delivers differentiated, high-end continuous data replication services at an affordable price to both mid-range and enterprise storage customers.

## RecoverPoint Family of Products

The two products in the RecoverPoint family are:

- **RecoverPoint** which offers a comprehensive set of replication capabilities across heterogeneous storage systems to provide continuous data protection and remote replication for business continuity and disaster recovery.
- **RecoverPoint/SE** which offers the same advanced replication functionality across EMC CLARiiON®, Celerra® and VNX series storage systems.

## RecoverPoint capabilities

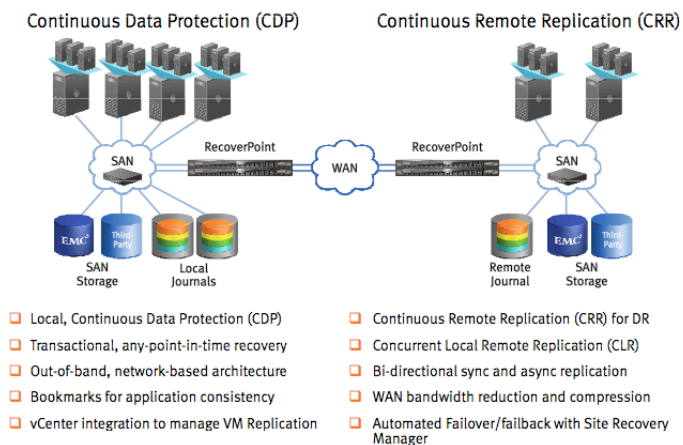
### Journaling Architecture

Much of the formidable strength of the EMC RecoverPoint line of products derives from its use of write journaling. This innovative architecture deftly provides both local and remote data protection with granular recovery. One of the benefits of this architecture is to integrate with EMC Replication Manager or other applications to provide bookmarks at application specific consistency points in time.

### Any point-in-time recovery

Historically, write journals have been commonly used in preserving file and database integrity. RecoverPoint, with its superior, any point-in-time restore capability, extends this benefit to replication across distance, through its **continuous remote replication (CRR)** solution.

### RecoverPoint Solution Architecture



## EMC RecoverPoint Family of Products

By using a journaling approach to replication, EMC's solution allows data to be recovered or restored not only from the last completed write but additionally from any prior point-in-time still present in RecoverPoint's write journal. As such, EMC RecoverPoint can effectively circumvent data corruption at the primary site, which can easily be rolled back to the point in time just prior to the corruption at the secondary site. With other replication alternatives, corrupted data will likely be replicated to offsite storage systems rendering both the primary and replicated secondary storage unusable.

### **Any point-in-time local data protection**

In addition to CRR, RecoverPoint's journaling architecture also provides local **continuous data protection (CDP)** services for onsite storage. With CDP, RecoverPoint supplies ongoing data protection services to a local site without requiring replication to offsite storage. Here again, the any-point-in-time recovery capabilities provided by RecoverPoint's write journal yields a error-free state of the local data to use for recovery. Moreover, many EMC CDP users have found that they need fewer backups because the data can be more easily recovered from RecoverPoint than more traditional backups.

### **Application/transaction consistent bookmarking**

The EMC RecoverPoint architecture is also decidedly beneficial in maintaining the integrity of applications and database transactions that require multiple writes across different volumes within a consistency group to reach a consistent state. For example, one transaction that updates a database with logs, indexes and tables, actually requires multiples writes and would be corrupted if recovery was made in mid-transaction. With RecoverPoint's journaling architecture, the database can be restored to a prior, **transaction consistent** point-in-time to minimize data loss and lower the Recovery Point Objective (RPO). RecoverPoint also offers application specific bookmarks to identify **application consistent** points-in-time for reducing Recovery Time Objectives (RTO). This bookmarking capability benefits both CDP and CRR services and makes the journaling architecture of RecoverPoint even more application aware.

### **Advanced Dynamic Synchronous Replication mode**

Another beneficial feature of EMC RecoverPoint product is the ability to set any consistency group to operate in one of three different replication modes, Asynchronous, Synchronous or Dynamic Synchronous. Combining characteristics of the first two, the Dynamic Synchronous mode can automatically switch between synchronous and asynchronous replication depending on network conditions.

Because of its superior data recoverability, synchronous replication is still the preferred replication mode. Nevertheless, common and frequent intermittent networking problems can impact production application performance. RecoverPoint solves this frequent occurrence by providing **Dynamic Synchronous Replication** that can switch from synchronous to asynchronous replication and

## EMC RecoverPoint Family of Products

back again to prevent production performance impact during intermittent networking issues. Without this automated switching, during periods of high network latency, production applications would queue I/O waiting for remote site acknowledgement. With Dynamic Synchronous replication, the mode would automatically switch from synchronous to asynchronous changing back to synchronous mode when network conditions return to specifications.

### ***Out-of-Band Solution with independent processing power***

Another drawback of traditional storage replication services is that they often demand scarce primary storage processing cycles and other resources to process and replicate data to offsite storage. Replication may also consume valuable primary storage cache memory while data was held for mirroring. EMC RecoverPoint successfully overcomes these difficulties by supplying its own cache and processing resources and thus, enabling most of this replication activity to be offloaded from primary storage.

The independent processing power of RecoverPoint also enables the appliance to provide enhanced data reduction and data compression to reduce bandwidth requirements. Conventionally, such capabilities would only have been available from specialized WAN appliances. However, with the considerable processing power of RecoverPoint, data mirroring bandwidth requirements can be significantly reduced resulting in noteworthy cost savings.

Moreover, EMC RecoverPoint has successfully overcome a major problem of out-of-band CDP or CRR solutions by using fabric- or storage-based write splitters. Historically, systems have utilized high maintenance host-based software to split write operations and issue them both to the primary storage and replication appliance. In contrast, RecoverPoint centralizes the splitting function on SAN fabric switches or EMC storage systems, offloading the process for the production hosts. RecoverPoint storage-based write splitters are available on any EMC CLARiiON, Celerra or VNX systems shipping today. Fabric-based write splitters are available on equipment from Brocade and Cisco.

### ***Intricate VMware integration***

For VMware environments, EMC RecoverPoint now uses vCenter APIs to better manage and protect VMs from data loss. The operator can now take appropriate action before an outage or other crisis occurs. Prior to having capabilities like RecoverPoint, when operators were moving VM's they were unable to reliably identify when a VM's data became unprotected. However, RecoverPoint provides extremely valuable, tangible visibility of each VM's continuing data protection or replication status. RecoverPoint further extends its VMware integration by providing a Storage Replication Adapter (SRA) that enables VM failover integrated with VMware vCenter Site Recovery Manager (SRM). Additionally, EMC offers a vCenter plug-in that enables VM failback automation, further strengthening protection of VMware virtual infrastructure. Such broadened monitoring and

## EMC RecoverPoint Family of Products

integration capabilities strengthen the likelihood of a successful, coordinated failover and failback event.

### **RecoverPoint unique capabilities**

As part of the EMC RecoverPoint product line, both RecoverPoint and RecoverPoint/SE offer all the exceptional capabilities as discussed above. However, RecoverPoint, the higher-end offering, has some unique capabilities not available in other storage replication solutions or RecoverPoint/SE. Such capabilities even further enhance and ease the local data protection and storage replication process.

#### ***Third party or non-EMC block storage replication***

A unique capability of RecoverPoint is its ability to provide replication for non-EMC storage environments. In fact, many common storage systems from IBM, HDS, and HP can be found on the EMC's RecoverPoint support matrix, maintained by EMC E-LAB. For example, RecoverPoint can easily deliver CRR services to IBM storage at the primary site and HP, HDS or EMC storage at the secondary site. As such, EMC's product offering provides much more flexibility than a storage system replication service which requires identical storage at both the primary and secondary sites.

#### ***Tiered Storage Replication***

Using capabilities similar to the above, RecoverPoint replicates between dissimilar EMC storage systems. For example, RecoverPoint can support data replication between an EMC VMAX at the primary site and VNX storage at the secondary site, significantly reducing costs for remote site recovery storage. This gives customers the flexibility of replicating between two VMAX systems or tiering the replication between VMAX and VNX.

### **RecoverPoint/SE capabilities**

RecoverPoint/SE is a version of RecoverPoint that has been specifically tailored to support continuous replication for EMC mid-tier and Unified storage environments. RecoverPoint/SE provides a cost-effective means to deliver these advanced replication services on EMC CLARiiON, Celerra or VNX storage systems.

### **RecoverPoint V3.4 enhancements**

#### ***Integrated WAN deduplication***

Version 3.4 advances data reduction for both RecoverPoint and RecoverPoint/SE by using proven EMC Avamar deduplication technology. RecoverPoint WAN deduplication works in conjunction with the data reduction and compression technology, operating at the block level, transmitting only changed blocks on the WAN. Use of this process can significantly reduce the amount of information that must be transferred to replicate storage and thus, also materially lowering WAN bandwidth costs.

## EMC RecoverPoint Family of Products

### ***Protects both file and block storage for EMC VNX series storage***

In conjunction with EMC's newly released VNX family of storage products that combine unified file and block storage, RecoverPoint V3.4 enables RecoverPoint/SE to now support unified storage replication services. That is, RecoverPoint/SE now provides replication of both block and file services on VNX storage.



### ***Simplifies RecoverPoint/SE packaging and licensing***

Additionally, RecoverPoint/SE protection solutions have been repackaged to agree with recent EMC customer survey preferences. Specifically, RecoverPoint/SE

when sold on VNX is now available in local and remote protection suites as well as the Total Protection Pack which bundles RecoverPoint/SE with solutions such as Replication Manager and Data Protection Advisor.

## Summary

In summary, EMC RecoverPoint family of products offers a data center new and unique functionality for both local data protection and remote replication. This line of products successfully addresses some of the more problematic difficulties of data protection and mirroring. Specifically,

- Write journaling has decisively improved data corruption recoverability.
- Dynamic Synchronous Replication has effectively overcome the problems associated with sporadic networking hiccups.
- Independent processing power has advantageously offloaded storage system replication resource consumption.

All in all, the RecoverPoint line of products, including the full scale RecoverPoint and the RecoverPoint/SE, offer exceptional value for CDP and CRR services. Both high- and low-end users should carefully consider EMC RecoverPoint offerings.

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***Silverton Consulting, Inc. is a Storage, Strategy & Systems consulting services company, based in the USA offering products and services to the data storage community.***