Several trends in enterprise IT deployment show no signs of abating. First, the number of mission critical applications and databases deployed in virtualized environments using hypervisor technologies is increasing. Second, the interdependency required of applications to fully support business transactions is rising. Third, massive data growth is widening the data protection service level agreement gap. The combined complexity of all these factors makes it more difficult for IT management to deliver a comprehensive enterprise-class data protection service under existing budgets.

EMC RECOVERPOINT FAMILY

The EMC RecoverPoint® family empowers organizations to protect the growing scale of their physical and virtualized IT infrastructure by simplifying and automating the data protection and recovery workflow for their mission critical applications and data. The RecoverPoint family also makes Disaster Recovery (DR) and Operational Recovery (OR) easy for organizations with its continuous data protection for recovery to any Point in Time (PiT) optimizing Recovery Point Objective (RPO) and Recovery Time Objective (RTO).

RecoverPoint has established a strong presence and leadership position for block level storage array data protection, while the newest member of the product family, RecoverPoint for Virtual Machines, addresses the need to protect Virtual Machines (VMs) in a VMware virtualized environment.

The RecoverPoint family consists of:

- **RecoverPoint for Virtual Machines**
- **RecoverPoint**, with its flexible virtual edition option

RECOVERPOINT FOR VIRTUAL MACHINES

EMC RecoverPoint for Virtual Machines redefines data protection for VMware Virtual Machines (VMs), enabling local, remote and concurrent local and remote replication with continuous data protection for recovery to any PiT. It is a VMware hypervisor-based, storage agnostic, software only data protection tool with built-in orchestration and automation capabilities accessible via a VMware vCenter plug-in.
RECOVERPOINT
EMC RecoverPoint protects storage arrays LUNs and provides concurrent local and remote data replication with continuous data protection for any PiT Recovery. It supports EMC ScaleIO, VMAX 10K, 20K, 40K, VNX, VNXe3200, VNX-F, VPLEX, XtremIO and 3rd party arrays via VPLEX. Integrated with VMware Site Recovery Manager (SRM), it extends the protection capabilities of SRM beyond snapshot.

COMMON ARCHITECTURE
The two product members share a common architecture but are offered as separate products with independent licensing options. They deliver similar benefits including the ability to:

- Enable Continuous Data Protection for any PiT recovery to optimize RPO and RTO
- Ensure recovery consistency for interdependent applications
- Provide synchronous (sync) or asynchronous (async) replication policies
- Reduce WAN bandwidth consumption and utilize available bandwidth optimally
- Offer multi-site support with n:1 fan-in for centralized DR site protecting multiple branch offices and 1:n fan-out replication for development and test operations

RECOVER TO ANY POINT IN TIME
RecoverPoint uses a journal-based implementation to hold the PiT information of all changes made to the protected data. Its replication policy supports a short RPO via journal technology that delivers DVR like roll back in time capability to a selected PiT just seconds before data corruption occurred, reversing the error.

RECOVER WITH CONSISTENCY
With RecoverPoint technology, data is protected by Consistency Group (CG), preserving relational dependencies during recovery such as those of a database and a database log. The CG depends on the use of journal volumes which hold all the historical changes in order to preserve write order fidelity. Furthermore, the CG Sets feature enables recovery activities to be performed to the same consistent PiT across all data in the set simultaneously. Both RecoverPoint for VMs and RecoverPoint are designed to ensure recovery consistency for one application or inter-dependent applications with the CG and CG sets options.

REPLICATE WITH WAN EFFICIENCY AND RESILIENCY
The RecoverPoint family delivers remote data replication over WAN, sync or async, at lower costs. Its built-in WAN optimization consists of compression and advanced bandwidth reduction algorithms that reduce WAN bandwidth consumption up to 90%. WAN optimization also ensures replication robustness with an improved resiliency that sustains 50% longer Round Trip Time (RTT) and higher packet loss to fully utilize the available bandwidth.

MULTI-SITE SUPPORT
The multi-site support of RecoverPoint in a 4:1 fan-in configuration enables a centralized DR site implementation for branch office protection. A 1:4 fan-out configuration provides multiple replications of production data to different target devices or sites for additional data protection or to support isolated software
development test. Currently for RecoverPoint for VMs the multi-site feature works in a 2:1 fan-in or a 1:2 fan-out configuration.

**RECOVERPOINT FOR VIRTUAL MACHINES: SIMPLE, EFFICIENT & PROVEN**

Architecturally, RecoverPoint for VMs consists of a VMware vCenter plug-in, a RecoverPoint write-splitter embedded in vSphere hypervisor, and a virtual appliance, all comprehensively integrated in the VMware ESXi server environment.

RecoverPoint for VMs protects VMs with VM level granularity and replicates VMs (VMDK and RDM) accessed by any type of storage connectivity supported by VMware. With built-in orchestration and automation capabilities fully integrated with VMware vCenter via a plug-in, RecoverPoint for Virtual Machines empowers vAdministrators with the visibility and control to protect single or multiple VMs locally or remotely to the target site. vAdministrators can perform automated discovery, provisioning and orchestration for DR test, failover and failback to any PiT, all from the vCenter Web Client GUI.

With CG and CG sets, vAdministrators can perform recovery to a selected PiT with consistency across interdependent applications that span across VMware ESX clusters. For example, businesses can take full advantage of this powerful feature to properly restore the operation of an end-to-end business transaction process that includes a sales order system, payment transactions, inventory management and supply chain management, all deployed in VMs.

**INTEGRATES WITH EMC STORAGE ANALYTICS**

EMC RecoverPoint for VMs integrates with EMC Storage Analytics (ESA), enabling quick deployment with analytic visibility of the RecoverPoint for VMs infrastructure within VMware vRealize Operations Manager. Dashboards, heat maps, and other visual tools are made available for actionable capacity and performance analysis.

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**BENEFITS**

**EMC RecoverPoint for VMs Helps Organizations to**

- Streamline OR and DR data protection workflows with reliable and repeatable processes
- Respond faster to changing business and data protection needs
- Shorten application development cycles by providing a replica for isolated test and development use
- Enable datacenter migration with minimal interruptions
- Leverage offsite replication for backup operations with no impact to the production site
- Empower vAdministrators to meet the required data protection Service Level Agreement (SLA)
- Integrate with VMware vRealize Operations Manager via EMC Storage Analytics (ESA) with deep visibility into your virtualized infrastructure

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**Figure 1:** Illustration of RecoverPoint for VMs protecting VMware VMs
RECOVERPOINT PROTECTS STORAGE ARRAY LUNs

RecoverPoint supports concurrent local and remote replications over any distance, sync or async. It makes data loss reversible and outages transparent so that organizations can achieve the required RPO and RTO goals. Architecturally it consists of an EMC Unisphere management GUI, a physical RecoverPoint Appliance (RPA) or a virtual appliance, and the write-splitter embedded in the supported EMC storage arrays. With EMC XtremIO, the data replication is a splitter-less implementation achieved by leveraging the highly efficient array-based snapshot technology native to the XtremIO platform.

Figure 2: Illustration of local replication, remote replication, and concurrent local and remote replication

In addition to the benefits common to the RecoverPoint family, it offers the following features:

SNAP AND REPLICATE

The Snap and Replicate feature, an alternative to continuous data protection, is enabled by leveraging the intelligent array-based snapshot capability available in EMC VNX and XtremIO platforms. It enhances asynchronous replication with a user defined interval for replication. For EMC XtremIO, a low latency and high performance all flash array, a minimum of 60 seconds RPO is required. This Snap and Replicate feature adds intelligence to the asynchronous replication policy to ensure the capture of data protection points effectively and efficiently under a high data load.

HETEROGENEOUS EMC ARRAY TYPE SUPPORT

RecoverPoint protects storage arrays LUNs allowing data replication of mixed array types in that the target array can be different from the source array type. This heterogeneous array support allows production environments using high performance XtremIO arrays to be protected with a more economical storage array platform at the remote site, helping to maintain data protection and keep the DR budget under control.
METROPOINT TOPOLOGY
With the introduction of MetroPoint topology, EMC raises the bar by delivering the industry’s first and only solution for 3 datacenter availability and disaster recovery that can sustain 2 site failures. MetroPoint topology is enabled by combining the best of EMC VPLEX Metro, an active-active multi-site infrastructure, and RecoverPoint, for continuous data replication to the remote 3rd site. Comprehensive data protection continues even under the complete failure of one of the Metro region sites. The simultaneous protection of the Metro region by a distant 3rd site using RecoverPoint provides any PiT recovery from operational and disaster outages.

Figure 3: Illustration of MetroPoint topology

MetroPoint topology helps organizations to achieve a new level of continuous availability and data protection that completely closes the RPO/RTO gap, which no other vendor in the industry can claim. MetroPoint topology deployment includes:

• VPLEX Metro with Oracle RAC over two clustered datacenters in the metro region and a 3rd distant site for DR protection
• VPLEX Metro with SAP HA for active-active multi-site infrastructure over distance in the metro region and a 3rd distant site for DR protection
• VPLEX Metro with Microsoft Hyper-V Live Migration, Microsoft Failover Cluster and AlwaysOn Availability Groups with a 3rd distant site for DR protection

MetroPoint consistency group, built on the existing consistency group feature, is designed specifically for MetroPoint topology to protect applications and their data and ensure consistent recovery at re-start.

RECOVERPOINT VIRTUAL EDITION FOR VNX AND SCALEIO
RecoverPoint virtual edition consists of RecoverPoint Appliance (RPA) software deployed as a virtual appliance in an existing VMware ESXi VM environment. This software option is currently available for the EMC ScaleIO, VNX, VNXe3200 and VNX-F equipped with iSCSI support.

RecoverPoint virtual edition is a flexible deployment option which offers maximum simplicity with no dependency on a physical appliance, lowering TCO.
RecoverPoint delivers replication capabilities to ScaleIO with the RecoverPoint virtual appliance and the embedded splitter installed on the host where the ScaleIO Data Client (SDC) resides. The splitter is available for SDCs deployed in the Red Hat Enterprise Linux 6.x or CentOS 6.x Operating Environments. RecoverPoint provides sync or async replication over IP locally and remotely over WAN, supporting ScaleIO to ScaleIO replication only. The combination of RecoverPoint virtual edition and ScaleIO helps enterprises to accelerate the adoption of a Software-Defined Storage.