CHAPTER 1

1 Product Overview

1.1 About RecoverPoint with SANTap

EMC RecoverPoint offers a single product solution for local data protection, remote replication, and disaster recovery. Based on scalable out-of-band appliances that leverage intelligent write-splitting, EMC RecoverPoint delivers Continuous Data Protection (CDP), Continuous Remote Replication (CRR), and Concurrent Local and Remote (CLR) data protection of the same data with recovery to any point in time.

This document focuses on the following high-level benefits. It does not focus on the various features provided by EMC RecoverPoint.

- Quick Recovery of Business Applications Data

  Application-awareness for Data Consistency

  Heterogeneous Storage for Tiered Disaster Recovery Site

For details on EMC RecoverPoint, go to http://powerlink.emc.com. This design guide discusses the integration and benefits provided by EMC RecoverPoint CRR with Cisco MDS 9000 SANTap technology. SANTap configuration and design are the same for CDP, CRR, and CLR. See 4.6 RPAs Clustering for more details.

The Cisco MDS 9000 SANTap Service enables customers to deploy EMC RecoverPoint using SANTap Services to replicate heterogeneous storage without compromising the integrity, availability, and performance of the I/Os between the Host and primary Target. Cisco's SANTap provides a reliable copy of storage write operations which enable applications to guarantee data continuity, data protection, online data migration, storage performance, and SLA monitoring, without the drawbacks of deploying in-band data-path or out-of-band host-based devices.

1.2 Concepts and Terminology

In the following definitions, every entity has been characterized as pertaining to back-end or front-end, where applicable. These two concepts are related to the Storage Virtualization in general

SANTap is an abstraction layer between Initiator (host) and Target (storage). SANTap divides the environment in two parts, front-end (where the host is) and back-end (where the storage is). SANTap creates Data Virtual Targets (DVTs) in the front-end and Virtual Initiators (VIs) in the backend. The host sees only the DVT and sends I/Os to the DVT. SANTap forwards the Write I/O operation to the target and provides a copy to RecoverPoint Appliance. The Read I/Os are sent to the target "as is".

RecoverPoint Appliance (RPA)

Services Node (SN)

This is a generic term that can refer to either a system (MDS 9222i switch) or a module (SSM or MSM-18/4) capable of offering intelligent services. In particular, the service used by RecoverPoint is SANTap.

Data Path Processor (DPP)

Session

A record/object that is created for every ITL whose WRITE I/Os the appliance is interested in. A session is neither front-end nor back-end; it can be thought of as a target LUN that requires SANTap-based services. Once configured, the session can be in two different states, up or down:

Session up or Replication active means that SANTap is sending to the RPA the WRITE I/Os from this Initiator to this Target LUN.

Session down or No Replication means that SANTap is not sending to the RPA the WRITE I/Os from this Initiator to this Target LUN.

Front-End VSAN (FE)

Data Virtual Target (DVT)

front-end VSAN. It has the same WWN as the actual storage port and behaves exactly the same way (this is possible because of the separation between the front-end VSANs and the back-end VSAN.) As far as the initiator (host) is concerned, it is still writing to the real storage target. A user manually creates a DVT for every storage port that needs to be included in SANTap-based services. Write I/Os sent to the Data Virtual Target are sent to the actual target via the SANTap service.

Initiator-Target-LUN (I-T-L)

5.1 SANTap Limitations.

Back-End VSAN (BE)

Virtual Initiator (VI)

- Front-End Initiator Target (FIT)—The VI of this IT pair is a virtualization of the host initiator using the same World Wide Name as the real initiator. As far as the storage target is concerned, the real host is writing to it.

  DPP VI—The initiator created by SANTap and used to send a copy of the Write I/Os to the ADT (see Figure 1-1).

  CPP VI—The initiator created by SANTap and used to exchange control information (SANTap Control Protocol, SCP) with the ADT.

Control Virtual Target (CVT)

Appliance Virtual Target (AVT)

- Discovery—AVT is on a per [Initiator, DVT] basis. So for every [Initiator, DVT], an AVT is created by RPA to discover all the ITLs for this [Initiator, DVT]. In all environments (with or without reservation), RPA creates AVT to discover the ITLs in the backend VSAN.

  Bypass SCSI reservation—When RPA needs to read from target LUNs to sync up, it accesses the storage directly. However, if the LUNs are reserved by the host, then the RPA uses the AVT to issue the Read I/Os to the target.

Back-end. This is the “Appliance Target” to which SANtap sends all data (DPP VI), SCP responses and notifications (CPP VI). It resides on the RPA, not on the SN.

Back-end**.**

Figure 1-1 RecoverPoint with SANTap Entities