

EMC ALPHASTOR: MEDIA AND LIBRARY MANAGEMENT FOR EMC NETWORKER

A Detailed Review

Abstract

This white paper outlines how EMC® AlphaStor® delivers media management and device sharing services for EMC NetWorker®. By automating tape management and enabling sharing of hardware resources across multiple backup servers, AlphaStor helps increase utilization of existing resources and decrease management and operational costs.

January 2011

Copyright © 2011 EMC Corporation. All Rights Reserved.

EMC believes the information in this publication is accurate of its publication date. The information is subject to change without notice.

The information in this publication is provided “as is.” EMC Corporation makes no representations or warranties of any kind with respect to the information in this publication, and specifically disclaims implied warranties of merchantability or fitness for a particular purpose.

Use, copying, and distribution of any EMC software described in this publication requires an applicable software license.

For the most up-to-date listing of EMC product names, see EMC Corporation Trademarks on EMC.com.

All other trademarks used herein are the property of their respective owners.

Part Number h8160

Table of Contents

Executive summary.....	4
Introduction	4
Media tracking and rotation.....	5
Efficient sharing and utilization of tape resources	6
Centralized management and reporting	7
Mixed media support.....	8
Firewall security	9
Conclusion.....	9

Executive summary

IT organizations that rely on tape for backup and recovery face a number of tape hardware and media management challenges. These include reliability, underutilization of resources, missing or underdeveloped policies, manual processes prone to human error, and inability to forecast capacity requirements. To address these issues, backup administrators require tools and processes that automate media lifecycle management, maximize the use of tape-based resources, and provide enterprise-wide visibility.

EMC® AlphaStor® software provides media, device, and library management that automates the media lifecycle, and provides a single point of management control for tape-based storage. It simplifies backup operations and reduces costs by enabling the sharing of storage resources, and improving operational media handling efficiencies. From a single web-based console, AlphaStor helps ensure that critical media can be found when needed, regardless of location.

This white paper is intended for EMC NetWorker® administrators looking to augment backup and recovery operations with feature-rich media and device management for tape and/or virtual tape environments. The paper highlights the features of AlphaStor and reviews best practices for maximum return on investment related to tape media and library management.

Introduction

Managing and protecting increasing volumes of backup data is becoming more difficult. IT administrators face the overwhelming task of managing this data growth with flat or even reduced staffing, while ensuring secured access to, and recovery of critical information.

Organizations using tape-based backup storage face a number of issues that add to the cost and complexity of data protection operations. These challenges include:

- Underutilization of tape hardware
- Inadequate offsite tape rotation policies and procedures
- Device and media failures
- Loss of media and lack of tape accessibility
- Inability to restore data in a timely fashion
- Unpredictable media usage
- Human intervention errors
- Lack of a consolidated view and centralized management of tape devices and libraries across the enterprise
- Inability to proactively plan for new storage acquisitions

To address these issues, storage administrators often resort to a number of different remedies, many of which require manual intervention.

AlphaStor is a software solution that enables NetWorker backup and recovery users to improve operational efficiencies and reduce human involvement with tape devices and libraries. It provides comprehensive media and device management and helps administrators solve the challenges associated with removable tape media.

Media tracking and rotation

Any organization with a large number of tapes is aware that management of media from within a device or library to an onsite location and subsequent offsite location – and back again – can be challenging. This process is often disorganized and cumbersome. One of the primary areas of difficulty is simply tracking media to ensure tapes are in the right place at the right time. In many backup environments tracking media is accomplished manually using spreadsheets or other paper-based processes. Most organizations have schedules for when tapes need to be sent to an offsite vault for storage. Rotation schedules are, however, often loosely defined and tracking media is frequently accomplished manually using spreadsheets or other paper-based processes. This increases personnel costs, introduces the potential for human error, and compromises data security.

Due to the nature of removable media there is inevitable human intervention in the process; however, an automated media lifecycle management solution such as AlphaStor helps eliminate steps in the process that are otherwise highly manual and therefore reduces the opportunity for error. To ensure security of data as well as recoverability, it is vital to know the status and location of all tape media and at what stage each tape is in its lifecycle.

AlphaStor works hand-in-hand with NetWorker to provide a comprehensive media management solution that simplifies the tape rotation process. With AlphaStor you can:

- Track and manage the location of tapes, whether in the library or offsite
- Track the lifecycle of each tape, from its first use until the time it is retired
- Define and enforce media policies for offsite tape rotation
- Report on tape usage, current location, and other critical metrics

With NetWorker, AlphaStor can be used to control volume rotation. Each NetWorker pool can have an assigned rotation schedule. For example:

1. Remain inside the library for one day
2. Move to an onsite location for two days
3. Ship to an offsite vault and held for 60 days
4. Return onsite to the original library location

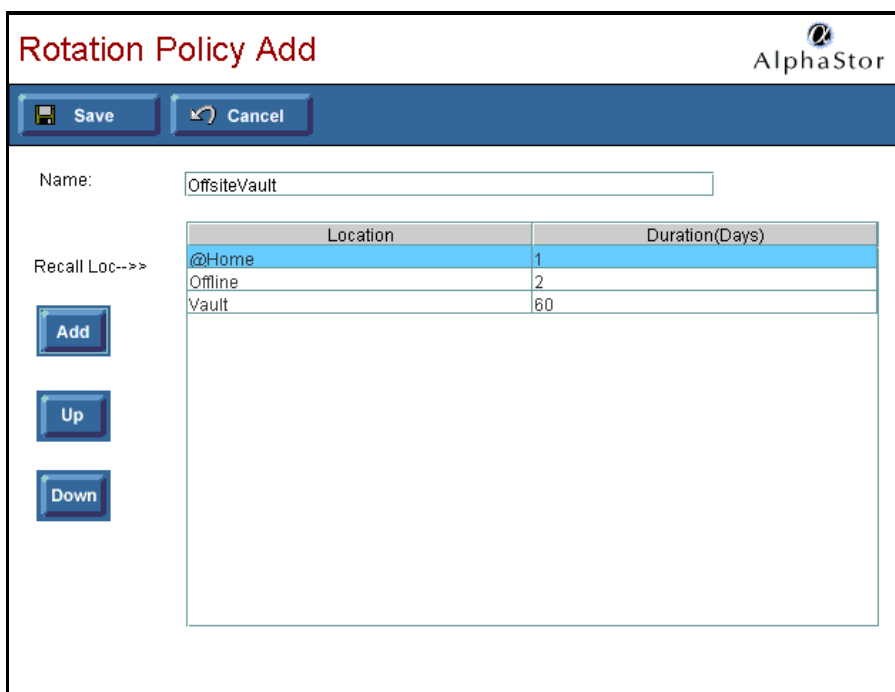


Figure 1. AlphaStor rotation policy wizard

AlphaStor features an easy-to-use interface that lets the operator display and print a list of all tapes to be sent to an offsite vault and allows the operator to reconcile this information with what is actually in the library. In the converse, AlphaStor also provides the operator proactive notice as to when tapes need to be returned onsite. This information can be exported to a delivery report that shows a list of tapes to be returned at a future date. Subsequently, this information can be used to request the return of media from the vault vendor. Without this capability, tapes that have expired may be unnecessarily housed in the offsite location and not returned for use, thereby generating unnecessary costs for vault services and wasting tape resources.

Automation and a well-defined policy for offsite media tracking and rotation not only reduce the effort required to ensure media is recycled and used efficiently, but more importantly, they lower the risk of encountering delays in returning a tape or tapes needed for disaster or other recovery purposes. In the event a recovery is required from offline tape media, AlphaStor helps ensure tapes can be located and returned, and data restored in time to meet your service-level requirements.

Efficient sharing and utilization of tape resources

Tape storage continues to be widely used in backup environments. As data volumes grow, the size and number of tape libraries utilized in the IT environment continue to increase as well. Over the past several years, however, many organizations have augmented data protection operations with backup-to-disk to improve performance and reliability. Deduplication technology has accelerated the trend toward disk usage in backup environments. Even in these environments, there is often still a

reliance on tape for disaster recovery purposes. Backup data is cloned from disk to a central tape library and tape copies are sent to an offsite vault. Many IT organizations are seeking to reuse existing tape resources and reduce the amount of tape hardware in use to help reduce management burden as well as the overall device and maintenance costs. This increases the need to share tape devices across NetWorker datazones. AlphaStor enables consolidation of tape resources by enabling dynamic sharing of one or more tape libraries with one or more NetWorker servers and/or storage nodes.

By creating a separation between the backup (or data movement) function and the ownership and allocation of tape devices, AlphaStor allows back-end library resources to be managed as a consolidated "pool" that can be dynamically shared across multiple backup servers.

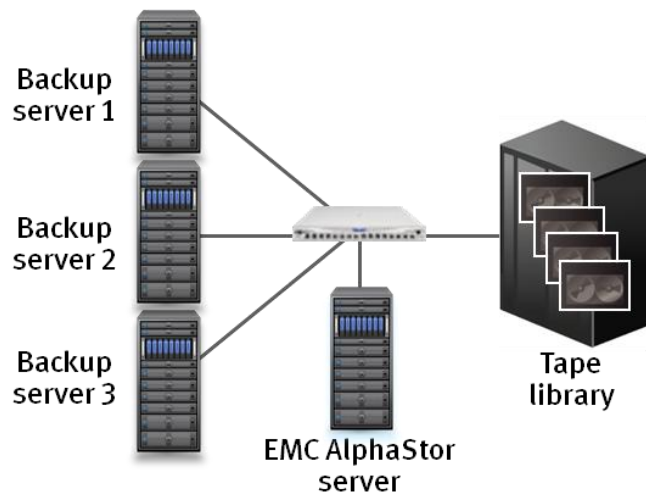


Figure 2. Library sharing across NetWorker datazones

Centralized management and reporting

To simplify the process of operating tape media and hardware, AlphaStor provides users with a consolidated list of media, device, and library activity from a single, Web-based console.

Media and device operations are shown in an easy-to-use interface, which helps ensure even entry-level backup administrators can successfully perform the required device and tape operations. Increased visibility into hardware conditions helps improve reliability and increase uptime. For instance, device verification helps users quickly and easily detect and diagnose drive path errors that can occur in a SAN environment.

Within the AlphaStor console, operators can be audited to account for activity relating to the handling of tape media and hardware. Organizations with high data center personnel turnover or complex tape handling processes are strongly encouraged to frequently audit operator activity. When automated media management is in use,

these systems should deliver a log that can be reviewed for future auditing of operator activity.

The AlphaStor interface also features enterprise-level reporting for media, device, and library activity across backup servers. These reports help IT organizations to better plan for, manage, and inform the business about tape and media usage.

The screenshot shows the AlphaStor Operations Center interface. At the top, it says "Operations Center" and "AlphaStor". Below that, it displays the date and time: "Friday, January 21 6:17 PM".

On the left side, there is a navigation menu with buttons for: "Log Out", "Recall Offsite Volume", "Mark Library Up / Down", "Mark Device Up / Down", "Import Volumes", "Library Audit", "Library Inventory", "Create Volume Movement Jobs", and "Resource Queues". Below these is a "Reports" section with a "SELECT" dropdown and an "Administration Console" icon.

The main area contains a table with the following columns: "Time", "Priority", and "Requests".

Time	Priority	Requests
01/20 17:02	Med	Export volumes from insideQualStar to Offsite (1 volumes)
01/20 17:02	Med	Import volumes from Offsite to insideCL5500 (1 volumes)
01/20 17:02	Med	Import volumes from Offsite to insideBL5500 (10 volumes)
01/20 17:02	Med	Import volumes from ASlost to insideBL5500 (2 volumes)
01/20 17:02	Med	Import volumes from Offsite to insideCL5500 (8 volumes)
01/20 17:02	Med	Import volumes from ASlost to insideCL5500 (1 volumes)
01/20 17:02	Med	Import volumes from ASlost to insideCL5500 (4 volumes)
01/20 17:02	Low	Create volume movement job report
11/21 13:40	Low	Import Media Report
11/21 12:35	Low	Import Media Report
11/15 15:13	Low	Import Media Report
08/09 15:41	Low	Import Media Report
08/07 10:33	Low	Import Media Report
08/02 14:57	Low	Import Media Report

Below the table is a "Status" log with the following entries:

```

01/21 18:19 CLI Unmount success: volume '000042' unmounted from drive 'QualStar1' ...
01/21 18:19 CLI Unmount request for volume '000042' by user 'wilsob1@chela'
01/21 18:19 CLI Mount success: volume '000042' on 'QualStar1@chela:/dev/rmt0cbn' f...
01/21 18:18 User 'admin' reset all connections for device 'b2_0800'
01/21 18:18 User 'admin' changed library 'Spectra' status to 'UP'
01/21 18:17 User 'admin' changed device 'Spectra1' status to 'UP'
01/21 18:17 CLI Mount request for volume '000042' on host 'chela' by user 'wilsob1@ch...
  
```

Figure 3. AlphaStor Operations Center console

Mixed media support

Over time, many IT organizations have utilized a number of tape formats such as SDLT, LTO-3, LTO-4, and others. As a result, many tape library vendors have provided the ability to house older and newer drive types in the same physical library. As tape operations become more and more consolidated, the ability to effectively manage a mixed media environment is a key advantage. AlphaStor provides a solution because it enables you to share a tape library that uses mixed media types and eliminates the need to maintain and operate multiple libraries – one to support each tape form factor.

Firewall security

AlphaStor provides an additional benefit to NetWorker users by minimizing the number of firewalls required for communication with tape library resources. Port usage is limited to a small number of well-known ports to increase security. This is especially useful for meeting requirements for backup and recovery for systems in a DMZ outside of the local area network.

Conclusion

IT organizations are seeking ways to contain or even lower their storage spending by increasing the utilization of existing storage resources and decreasing management and operational costs. AlphaStor helps maximize use of tape storage resources in a NetWorker environment. By providing a way to plan and enforce rotation policies, AlphaStor enables better usage of existing investments in removable media and helps eliminate mistakes that have become common due to human error. By enabling the sharing of tape hardware with all backup servers in an enterprise, AlphaStor also helps ensure that tape hardware resources are used to their maximum potential. NetWorker customers who rely on tape and are looking for a way to gain better control over their resources should consider AlphaStor as a key addition to their backup and recovery environment.