

StorTrends Whitepaper

“ Information Lifecycle Management ”

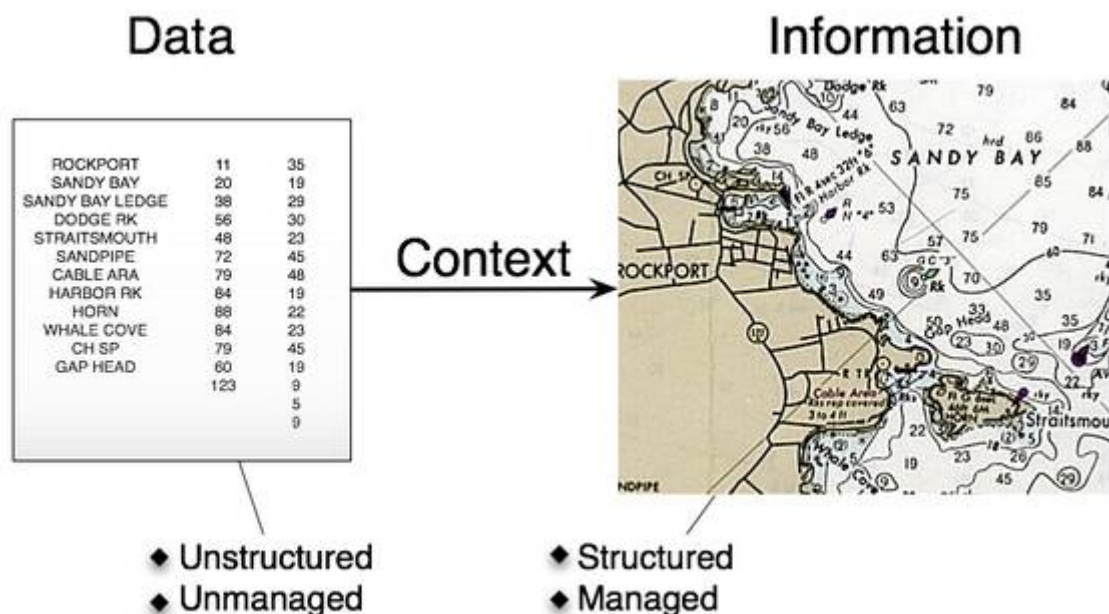
American Megatrends International GmbH
15.01.2008

INHALTSVERZEICHNIS

CHAPTER 1: INTRODUCTION.....	3
CHAPTER 2: STORTRENDS TIERED STORAGE AND ILM.....	5
CHAPTER 3: HOW IT WORKS.....	7
CHAPTER 4: STORTRENDS ADVANTAGE.....	8
CHAPTER 5:	9
TRADEMARKS AND COPYRIGHT ACKNOWLEDGEMENTS	9
FOR ADDITIONAL INFORMATION	9
LIMITATIONS OF LIABILITY	9
LIMITED WARRANTY	9
REVISION HISTORY	9

1. Introduction

Data, which is the lifeblood of any storage system, is now experiencing unprecedented growth. This has become the dominant driving factor for the storage industry to bring forth a paradigm shift in the way data is handled. A NAS or SAN storage unit, which is the housekeeper of data, can now no longer afford to treat data as an opaque entity. Data thus has matured from being looked just as a binary stream of ones and zeros to an intelligent entity with values assigned. This has led to birth of a new discipline in storage industry called Information Life Cycle Management (ILM). It is a key aspect of Storage Resource Management (SRM), where a 'context' is assigned to the data based on some value that the block of data possess. This context could be based on the pattern of data usage and/or on the content of the data. Data classification is the discipline where data is discovered (eDiscovery), analyzed and classified based on some policies. There are various products in the market today that do this job online with the incoming stream of data or offline with data-at-rest. Though the need is felt, the technology of data classification is still very fluid, since the perceived value of data may change over time and can not be definitive.



*Figure 1:
Adding structure and context to unmanaged data makes it information*

Parallel to this the Disk Drive technology is also undergoing enhancements. SATA drives have proliferated the market today and will be there to stay for quite some time. They are very economical, but lack the performance and robustness called for by true enterprise class storage infrastructure. SAS drives are penetrating the storage arena with its enterprise class tag. SAS and SATA drives can coexist in the same SAN network ushering in the generation of affordable tiered-storage. To effectively utilize these storage devices that carry different price tags and performance characteristics, an efficient ILM is now almost mandatory.

According to researches conducted by the TheInfoPro Group, the interest in ILM over the last 18 months has heated up. The TIP heat index for ILM which was 4 (in order of priority) in Spring 2005, has moved to 1 by Spring of 2006.

2. StorTrends Tiered Storage and ILM

With StorTrends, even at block level, we handle ‘information’ and not just ‘data’. Data when it is assigned a right context or intelligence becomes ‘information’. The first challenge is to effectively segment out the data and assign appropriate value. Next comes the policy aspect of ILM, where these chunks of ‘information’ are promoted or demoted according to certain strategies. Many block level storage vendors track the information at the data volumes level and, thereby, dilute the efficacy. StorTrends assigns and maintains relevant meta-data information at block level and parents this information from “Cradle to Grave”.

Let us consider an example where a volume holds MS Exchange Database. The growth of email users, email data and corresponding regulatory push to retain emails for an extended period will result in messages and data to be scattered all over the space with various degrees of importance. The relevance of emails and corresponding references to them sharply tapers off with the passage of time. StorTrends has a powerful ‘data collection and trending’ agent that keeps track of near term and long term block usage. It automatically demotes historically less referenced blocks from a more expensive storage tier to a less expensive one. Access of cheaper tiers is also monitored and blocks are promoted back to faster tiers appropriately. In this way, by detecting ‘stale’ data and moving them out to lower tiers makes more room for newer and frequent data in faster tiers.

According to ESG: “.... The recommended users for Exchange Server increased by more than 100 simply by moving infrequently accessed blocks of data to a lower tier.”

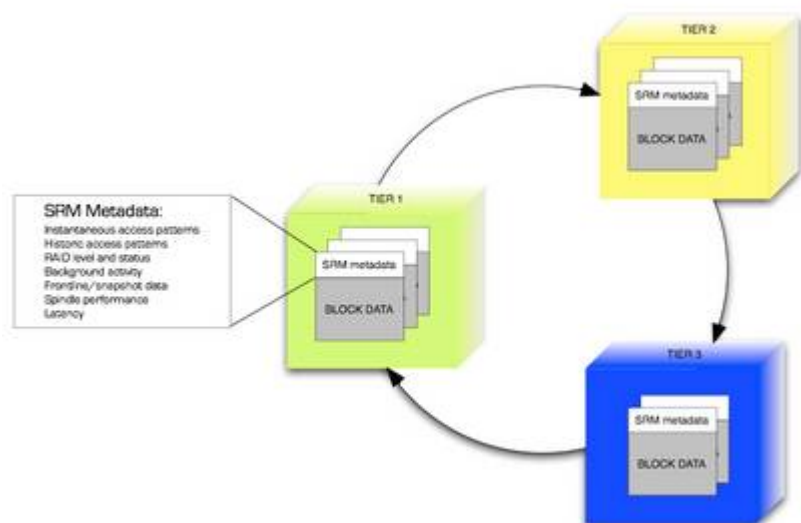


Figure 2: Information Lifecycle Management achieved by moving data based on SRM Metadata

3. How it works

At the core of iTX stack there is a data collection and trending module that collects and categorizes both instantaneous and historical access patterns extending up to years. Storage blocks are also cataloged with respect to their RAID levels, class of disk drives (SAS, SATA etc) and rotational speed (15K RPM, 10K RPM, 7200 RPM etc.). Status and background activity of underlying logical drives (eg degraded or being rebuilt etc.) are also considered for the policy of migration. Along with this the extended knowledge of system activity is considered to determine the right time to migrate. Having chosen the right block to move out and the appropriate time to do so, iTX stack utilizes a very efficient algorithm to perform the migration. 'Data Mover' technology that works on advertisement of locks ensures that data blocks are migrated without corruption in the fastest possible time.

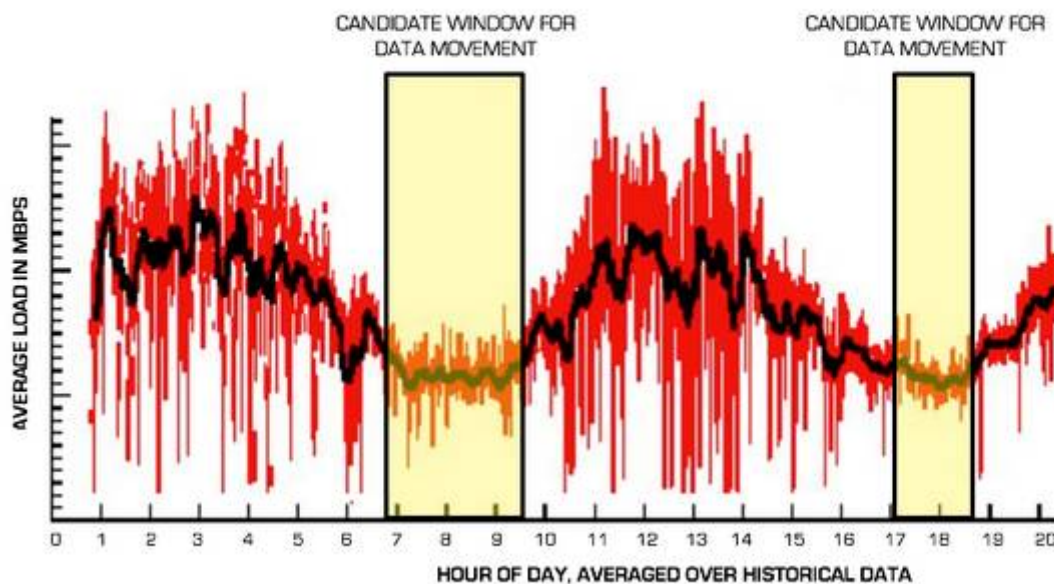


Figure 3: Choosing the best time to move depending on the average historic hourly load

In essence, even at block level, efficient ILM is implemented by maintaining block-level metadata. No content analysis is attempted, in managing blocks of data from

conception to extinction.. According to the Taneja Group: " If you are just interested in doing ILM and migrating between tiers, nine times out of ten you'll be content just using metadata about the files that shows access patterns".

StorTrends also moves out snapshots to more cost-effective storage tier. Depending on the access pater, StorTrends not only demotes inactive data to less expensive storage tier, but also compresses data at rest.

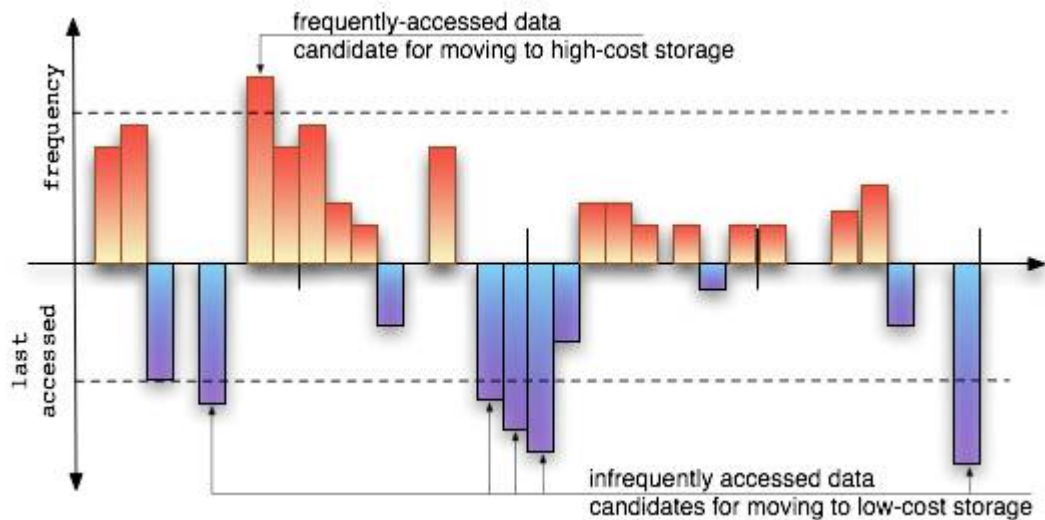


Figure 4: ILM metadata consists of both frequency information and age information

StorTrends Advantage

- Granular block level tracking of access patterns
- Bi-directional migration between tiers
- Efficiency of migration
- Automatic classification by type of storage, RPM, Size of drives, RAID level and background activity
- Visual tools to monitor and analyze
- Optimizes and improves performance
- Reduces expenditure on disks by supporting multiple levels of tiered storage
- Improves Continuity by conserving space for Snapshots

© Copyright 1998-2007 American Megatrends, Inc.
All rights reserved.
American Megatrends, Inc.
6145-F Northbelt Parkway
Norcross, GA 30071

© Copyright 1998-2007 American Megatrends International GmbH.
All rights reserved.
American Megatrends International GmbH
D 81825 München , Wardeinstrasse 3 a
Deutschland

TRADEMARK AND COPYRIGHT ACKNOWLEDGMENTS

This publication contains proprietary information that is protected by copyright. No part of this publication can be reproduced, transcribed, stored in a retrieval system, translated into any language or computer language, or transmitted in any form whatsoever without the prior written consent of the publisher, American Megatrends, Inc.

Trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. American Megatrends, Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

FOR ADDITIONAL INFORMATION

Call American Megatrends at 1-800-246-8600 for additional information. You can also visit us online at ami.com.

Call American Megatrends International GmbH at +49 89 96 999 510 for additional information. You can also visit us online at ami.de.

LIMITATIONS OF LIABILITY

In no event shall American Megatrends be held liable for any loss, expenses, or damages of any kind whatsoever, whether direct, indirect, incidental, or consequential, arising from the design or use of this product or the support materials provided with the product.

LIMITED WARRANTY

No warranties are made, either express or implied, with regard to the contents of this work, its merchantability, or fitness for a particular use. American Megatrends assumes no responsibility for errors and omissions or for the uses made of the material contained herein or reader decisions based on such use.

REVISION HISTORY

15.03.2007 Preliminary release

15.01.2008 Revised version

More information: europe@ami.com - www.ami.de - www.ami.com