RTAPE/400®

Product Description

Looking to protect your critical AS/400 corporate data? Look no further…RTAPE/400, developed by RICOMM Systems, Inc, is an industry leading data management tool that is easy to use and exceptionally efficient. Unlike other products, the design of RTAPE/400 evolved through product development based on three decades of extensive, hands-on experience. RTAPE/400 is an remarkably dependable and product whose functions and capabilities are highly regarded by our customers and often imitated by our competitors.

PRODUCT HIGHLIGHTS

Engineered into RTAPE/400 are performance and time proven data and tape management techniques used by many Fortune 500 companies. These techniques are instrumental in the management, tracking and protection of data contained on tape volumes. RICOMM introduced a number of proven mainframe features to the AS/400 community back in 1990 and has continued its leadership position. Tape Manager contain features such as:

- Non-Labeled Tape Support
- Foreign Tape Support
- Tape Device Management
- Common Shared Tape Pool Management

MAJOR RTAPE/400 COMPONENTS:

- User Interface
- Tape Volume Management
- Multi CPU Management
- Container Management
- Vault Management
- Tape Device Management
- Management Reporting
- OS/400 MSE Interface

USER INTERFACE:

This is the common RTAPE/400 component providing user-friendly interfaces. All panel displays strictly conform to IBM standards for command syntax, function keys and panels, providing the same look and feel as standard OS/400 panels. Navigating and using the various RTAPE/400 functions are as easy as 1-2-3.

Our single inquiry screen is used to search and display volume information by saved object name, by date, as well as by volume number or identifier. All information maintained by RTAPE/400 can be searched and obtained through the inquiry facility. Using this facility, without having to scroll through screen after screen of information, a user can quickly display precise and detailed information regarding the tape volume number(s) containing a saved object, date(s) the object was saved, the location(s) of the tape volume(s), expiration dates, scratch status, and other pertinent information.

TAPE VOLUME MANAGEMENT:
This component is designed to automate the protection, tracking, and retention of data contained on tape volumes. Data can be created from backup and archive operations, or even written directly by application systems. The principal Tape Volume Management function is the automated protection against accidental erasure or overlay of "mission critical" company assets and the assurance that these data are available whenever and wherever they are needed. Tape Volume Management relieves computer operators from the repetitive task of tracking tapes, and it greatly aids them with the difficult but necessary task of protecting "mission critical" data. *Systems which lack all of the functionality provided by RTAPE/400 Tape Volume Management just cannot help the customer to fully utilize Automatic Tape Libraries (ATLs) or Tape Stackers (ACLs).*

Tape Volume Management accomplishes its mission by implementing several key proven features:

Common Shared Tape Pool
Effective tape volume management should allow a data center to maximize the usage of its existing tape volumes while keeping spare (i.e., brand-new) tape inventory growth to a minimum. It should also allow a computer operator to use any available scratch tape volume for any process (e.g., daily, weekly, or monthly jobs). Common Shared Tape Pool relieves the operators from the burden of having to use green dotted tapes for Monday night, blue dotted tapes for Tuesday night, or red dotted tapes for weekly runs, etc. Common Shared Tape Pool treats all of the tape volumes in a data center as a single resource that can be used on any CPU, for any process! By leveraging tape resources as a single pool, a data center can achieve productivity gains by eliminating the requirement for, and the time spent on associating a set of tape volumes with a set of processes. Furthermore, this eliminates the practice of last minute scrounging for additional tape volumes due to unexpected increases in workload. Common Shared Tape Pool radically and drastically improves operational flexibility and reduces tape handling and tape inventory requirements.

Tape Volume Retention
From a business perspective, the criteria for data retention is based on the useful life of the data (i.e., expiration date), the age of the data (i.e., retention), and the number of useful versions (i.e., cycles). It is therefore best to implement a tape volume retention methodology based on business criteria that business users understand. RTAPE/400 does just that. RTAPE/400's tape retention and expiration processes are data centric, they are based on the data contents of the associated tape volume. Therefore, an active volume will become a scratch volume when, and only when, all of the data objects on that volume have expired. This methodology allows a physical tape volume to be used on any CPU, for any process, without any retention constraints.

There are four retention methodologies supported:

Expiration Date Control Data content expires on a particular date.

Retention Control Data expires after a given number of days.

Cycle Control Data expires when a given number of versions of an object exist. This feature is extremely useful to cycle out aged data created by jobs on a daily, weekly, monthly, or quarterly basis.

Expiration Date Control
Within Cycle Control This added flexibility helps keep tape inventory to a minimum when cycle controlled data does not roll off due to seldom created versions.

File Recovery
When the retention criteria for data stored on a tape volume is met, the data is considered to have expired and the tape volume containing these data is considered to be "scratched." Computer operators can reuse scratched tape volumes for whatever purposes. Because of the unique method that Tape Volume Management uses to perform the scratch process, data stored on the scratched tape volume can be recovered using RTAPE/400's unique Scratch Tape Report. In addition to the automated scratch operation, based on retention criteria, the system also provides a manual scratch function to support unplanned emergencies.

Scratch Forecast
Based on historical tape volume usage, this facility can be used to assist the data center to forecast their scratch tape requirements for the next seven days. The Tape Librarian can pre-pull the required number of scratch volumes to streamline tape handling and also use this information on a weekly basis to setup the ATL with a sufficient number of scratch volumes for the following week. This type of predictable and repeatable process greatly enhances data center operations.

Integrity Control
To protect the integrity of data stored on the tape volumes, the system will prevent non-scratch (unexpired) tape volumes from being re-initialized. New tape volumes can be initialized from any starting range. There is no limit to the number of volumes that can be initialized at a time. Newly initialized tape volumes are automatically registered with the system and cataloged.

ADSM Interface Support
Proven interface to capture, track, protect, and manage tape volumes allocated for ADSM operations.

Internal Tape Label Verification
This critical feature prevents an incorrect input tape, or non-expired output tape, from being mounted and written to. This safeguards a user from inadvertently using old or obsolete data or erasing critical data.

Tape Mount by TapeSet Name
TapeSet name allows RTAPE/400 to group a set of related tape contents (i.e., data - objects, library, members, DLOs) under a symbolic name (e.g., MARCHACCOUNTS) and then be able to refer to this group using the symbolic (TapeSet) name. This feature allows the customer to use the same CL program to reference tape volumes without having to code and change the tape volume number(s) from run to run.

When a TapeSet is mounted for:

Input processing Tape Volume Management will locate the proper tape volume number(s) based on the TapeSet Name and instruct the computer operator or the ATL to mount the correct tape volumes.

Output processing Tape Volume Management will recognize the request for a new output tape and instruct the computer operator or the ATL to mount the next available scratch tape volume from the Common Scratch Pool.

Multiple Volume File Support
When a single file spans multiple tape volumes it is called a Multi-volume file. Tape Volume Management will treat all of the volumes in the chain as a single entity. There is no limit to the number of tape volumes that may be in a chain. Using the TapeSet name assigned, multi-volume file(s) can be easily tracked and retrieved in the proper sequence. A special chaining report can also be used to display pertinent information about all the volumes in the chain.

Multiple File Support
To conserve tape volume usage and streamline tape handling, customers can save and store more than 9,999 different files onto a single tape volume. Multiple file support works in concert with Multiple Volume support, so that when the last file on a volume overflows to additional volumes, the system automatically mounts the next available scratch tape. It is that simple!...there is no pre-setup required.

Append Data Option
To further conserve tape volume usage, to easily group data or files of similar types, and to consolidate tape volumes containing small files into a single volume, customers can add (append) new files to an existing active tape volume (i.e., a non-scratch volume containing unexpired data). This feature helps a customer to increase the available tape pool and reduce the level of tape handling activities that is otherwise necessary to keep a near-line device (ATL) at optimum efficiency.

Automatic Volume Recognition
Provides the ability for Tape Volume Management to know which tape volume is on a tape drive during output (save, backup) processing. This further increases productivity gains and flexibility, by allowing a computer operator to **pre-mount** a tape volume to any available tape drive prior to starting the backup process. The full value of an ATL or ACL (Tape Stacker) is totally realized when routine operator interventions are eliminated by Automatic Volume Recognition.

Prefix Support
Provides the ability to use tape volumes based on volume Ids prefix. Using Prefix Support, tape usage can be segregated by job characteristics, tape density, production jobs versus test jobs, mainframe tape volumes versus AS/400 tape volumes, and countless other possibilities.

Foreign Tapes
Tape volumes not pre-defined to RTAPE/400 are considered as foreign tapes. Foreign tapes can be automatically protected, tracked, and managed when used for input or output processing, depending on a customer's unique requirements. When different business units within the same company or different companies share data created on different platforms, the critical need to protect, track and manage these foreign tapes is easily satisfied by Tape Volume Management.

Non-Labeled Tape

Non-labeled or unlabeled tapes are tape volumes that do not contain a standard internal tape label. Tape Volume Management will track and manage these tape volumes via a customer generated external volume identifier.

MULTI CPU MANAGEMENT:
This component helps a customer to manage its tape pool and tape devices including ATLs (near-line devices) and ACLs (tape stackers), as a single resource that can be shared by multiple CPU's in the same data center. Additionally, tape pools residing on remote CPU's in off-site locations can also be tracked. There are three unique functions supported by this component:

MCS
Simplifies the management of multiple CPU's in the data center by sharing a single tape pool using a single tape catalog, and it creates an integrated database which establishes a "many to many" relational environment. Tape volume usage tracking, management and protection are accomplished using existing OS/400 facilities in conjunction with proven MCS functions. MCS eliminates the cumbersome procedures associated with managing and tracking multiple tape pools, catalogs, and databases. MCS eliminates the error prone manual process of selecting the "right" tape for the "right" CPU.

Remote CPU Support
Provides the tracking of remote tape pool usage from a central CPU, if certain restrictions have been met.

Centralized Reporting
Facilitates the management and reporting of enterprise wide tape volume inventory and activities of all selected remote CPU's. This saves valuable resources and time by running management reports from a central location. Decisions concerning computer resources can be made more effectively and more quickly because information about tape volume usage is now easier to obtain.

CONTAINER MANAGEMENT:
The container management component manages and tracks the storage of tape volumes (media), into containers or boxes, for their movement to and from a customer's off-site storage locations. Information regarding media (i.e., tape volumes) stored in the container, as well as the container itself are also tracked. Working in concert with Vault Management, Container Management provides a total automated and integrated solution for managing and tracking media locations and movement. Barcoded container labels can be used to further enhance handling and recording container movements. Please see the 'Vault Management' section for a more detailed description of media "movement and location" tracking and management.

VAULT MANAGEMENT:
Vaulting is the movement of media (tape volumes, CD-ROM, etc.) from the data center to a storage location or moving media in containers to locations or slots within the same storage location or to an entirely different storage location. Storage locations can be a fire walled room inside the computer room, a room inside the data center, a room inside the same building, a building across the street, or an off-site storage facility or vault.

Vault Management provides the computer operations staff with an automated and consistent vaulting operation. Media that is eligible for vaulting is determined, based on various selection criteria established by the customer. Selection criteria can be generic job name or generic TapeSet name, creation date, job run date, days since creation, days since last used, or even specific aging criteria including vault retention days. Actual vaulting operation can be initiated by a simple command line, by a CL program or scheduled using RTAPE/400's built in Job Scheduler or any third party job scheduler on a calendar basis. At the completion of the vaulting job, media eligible for vaulting will be printed on a special media movement report for your operations staff to pack into pre-defined container(s).

Vaulted media can be recalled 'at will', or recalled based on specific aging criteria, retention criteria, or even cycle. Vaulted media can also be automatically rotated (moved) from one vault (location) to the next, for up to 50 different vaults, based on aging, retention, or cycle control.

A simple to use inquiry panel provides instant and complete information regarding the status and whereabouts of a particular object, library, member, and/or media. If the offsite storage service pre-assigns storage slots, RTAPE/400 vault management can automatically move volumes to and from those slots. Barcode technology can be utilized to further improve the customer's efficiency

For further improvements in computer operator productivity, RTAPE/400, the first in the industry, has introduced the following vaulting features:

Automatic Check-In

In vaulting operations without this feature, whenever a vaulted media is recalled, computer operators must manually update the system to reflect the new location of the recalled media. They must also remember to return the recalled media back to the vault. Automatic check-in eliminates the possibility of a recalled media not being returned to the vault as soon as possible. This feature automatically updates the system to reflect a media as being "on-site due to recall" (checked-in), whenever a vaulted media is used for input or output processing. If the recalled media continues to meet vaulting selection criteria, it will be selected for vaulting during the very next scheduled vaulting run.

Vaulting By Cycle

This facility provides computer operators with an added flexibility to automate vaulting operations. Using this option, media can, in concert with retention or aging methodology, be rotated or kept in off-site storage based on the number of cycles, retention period, or age, whichever occurs first. When the number of cycles is reached, the oldest generation is rotated back for reuse or moved to another vault location. "Vault by Cycle" is used to automate vault movement, whereas "Cycle Control" is used to automate object retention.

Slot Management

Slot numbers are assigned based on the media type (i.e., cartridge or a reel). Slots are managed on a FIFO basis so those high activity slots will congregate in a range while less active slots will congregate in yet another range. This allows the potential for reducing the cost of slots at the customers vault by comparing the number normally used with the number of slots reserved and are paid for. Extensive reports, including statistical reports, are produced to help the management of the off-site storage vendor.

TAPE DEVICE MANAGEMENT:
Tape Device Management is designed to manage multiple tape devices shared by multiple CPU's, to enhance scheduling of tape bound jobs among the CPU's, to improve job throughput by eliminating potential conflicts in tape device assignments, and to fully exploit near-line technology to help our customers realize an early return on their investment.

These are three distinct but tightly integrated functions working in concert to provide unmatched productivity improvements:

Device Management
This component is designed to increase computer operator productivity by providing an innovative way to manage multiple tape devices in a multiple CPU environment. Using Device Management, computer operators can now manage and display tape devices that are shared by multiple CPU's from a central console location. They can VARY tape devices online and offline as well as view the detail status information of tape devices including jobs currently using the tape devices, the volume numbers (Ids) currently loaded on the tape devices, the sequence numbers and TapeSet names that are currently being processed.

Automatic Tape Device Assignment
In a single tape drive environment, the tape drive is usually assigned a name. Whenever a user runs a tape job, he assigns that name to his job. Other tape jobs will have to wait until the first tape job finishes with the tape drive, and then unassigns that name. In this environment, waiting for a tape drive to free up is the only option.

As the workload increases, the window to run nightly batch and backup jobs continues to shrink. Eventually, there is a need to add more high-speed tape devices to handle the workload within the window. Managing multiple tape devices which are shared by several CPU's, scheduling jobs among the CPU's, and avoiding potential conflicts in tape device assignments so that jobs are not held up waiting for tape devices while other tape devices are sitting idle, is no small feat!

OS/400 does not provide computer operators with an easy way to dynamically (i.e., "on the fly") assign a different but similar tape device to a job when the device requested by that job is busy. Even if there is a way for the operators to change "hard coded" drive assignments on the spur of the moment, it would be too labor intensive and as a consequence, too impractical.

Automatic Tape Drive Assignment is designed to solve the above problem so that computer operators can take advantage of the multiple tape devices, to improve job throughput by managing and synchronizing tape device assignment with job scheduling. Automatic Tape Drive Assignment allows the AS/400 community to enjoy the operational flexibility of "Device Independence" — a flexibility that mainframe people have enjoyed for the last 30 years. Device Independence eliminates jobs having to wait for a particular tape device to be freed up, when there are similar tape devices sitting idle.

Automatic Tape Libraries and Automatic Cartridge Loader
Because of the architecture and advanced features inherent in RTAPE/400, ATL and ACL (Tape Stacker) support provides our customers with a clean and seamless interface to each manufacturer's devices and helps our customers to fully exploit the features unique to each device.

Using the ATL Support Interface, a customer can enhance operations such as: (1) all cartridges to be moved to a specific area of the ATL (such as a carrying tray or access door); (2) the ability to accept volumes not in the ATL without having to open the door; (3) accept tape inventory reported by the ATL as the volume pool located in the ATL; (4) support the definition of a range of volume Ids as the volume pools in the ATL; (5) reduce tape handling induced delays by pre-setup of the ATL with sufficient scratch volumes based on Scratch Forecast; and (6) system management reports providing volume usage statistics (input/output ratios), number of scratches in the ATL, as well as ATL utilization reports.

MANAGEMENT REPORTING:
There are a variety of pre-defined reports that provide customers with comprehensive information regarding: Tape Usage and Status; Device Usage; Tape Device Error; Tape Volume Error; Scratch Forecasting; and Cycled Tapes. The Cycled Tape Report includes the TapeSet Volume, the number of generations defined, and the number of generations in use.

From time to time, tape devices require maintenance due to excessive correctable read, write, or positioning errors. These types of error corrections can affect program execution times and need to be fixed by hardware maintenance personnel. The Tape Device Error Report provides an easy to understand, consolidated and comprehensive report that can be used to coordinate and focus tape device maintenance.

Just as tape drive usage causes drive wear, tape usage wears down the tape surface as well. On the surface of a tape is a magnetic coating on which the computer writes and reads electronic data. After thousands of read/write operations, this surface begins to wear, causing data errors on a tape. The system checks for tape errors in much the same way that it checks for device errors. The Tape Volume Error Report shows the volume name, the number of errors (both data read errors and write errors) and the amount of data both read and written from the tape. These two statistics are very important to help the Tape Librarian determine whether a tape volume is a candidate for cleaning, replacement or disposal.

In addition to the many pre-defined reports, customers can easily design and generate their own reports using tools such as Query/400 or SQL/400.

Increased information and enhanced readability of the reports give Data Center Managers better tools to use for planning, staffing, decision making, and problem solving. Data Center Managers can easily track all tape volumes and device usage by individual user. Knowing the number and types of errors enables the manager to take corrective action and implement future preventive measures.

OS/400 MSE INTERFACE:
Effective with OS/400 V4R1, IBM has moved the support for Tape Exit APIs into the Media Storage Extensions feature. This feature generally known as MSE must be ordered by the customer directly from IBM in order to support tape management functions.

STANDARD OS/400 COMMANDS ARE USED:
Unlike other tape management products, RTAPE/400 does not replace or 'front end' OS/400 tape commands. RTAPE/400 uses standard OS/400 interfaces (exits and APIs). All compression is

supported as a function of the OS/400 command or AS/400 hardware (e.g., IDRC). Circumvention of customer established integrity policies are rendered impossible.

TAPE LIBRARIAN FACILITIES:
Using RTAPE/400's easy to use User Interface, a Tape Librarian or computer operator can perform all of the tape library management functions, including: initializing new tape volumes individually or by a range of volumes, adding these tape volumes to the tape catalog, displaying and updating any volume in the catalog, projecting scratch volume requirements, pulling scratch tapes to stack ATLs, managing vaulting, and many other Tape Librarian functions.

SYSTEM SECURITY:
Customers can establish specific functional security at 40 different security checkpoints. Security is defined by user and/or group profiles.

OPERATING SYSTEM ENVIRONMENT:
RTAPE/400 currently supports OS/400 versions V4R1 and above.
RTAPE/400 requires OS/400 MSE - Media and Storage Extensions.

SYSTEM IMPACT:
RTAPE/400 processes are run in interactive mode as well as background mode when used to track and protect tape volumes containing critical data. There is minimal additional overhead and there are **no** Operating System modifications (i.e., MI) or hooks.

For More Information
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