

ArchiveOne Content Archiving Solution

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Executive Overview

As a storage services contractor in Southern California for many years, I have been working with my clients to evaluate and improve their overall data storage management and protection strategies. In response to several requests for an assessment of the data archiving products available, especially for email, I began researching a number of competitors to find the product suite I would be recommending. My methodology was similar to that used by most companies looking to invest in a new software solution. I began with a high level review of major vendor offerings before selecting two for a more thorough side by side analysis.

I found all the major competitors offered very robust features sets that covered all major content archiving requirements. All were policy based with numerous selection criteria supported, each offered full support for compliance archiving and e-discover needs; and all of them supported multiple content platforms: Microsoft® Exchange, SharePoint; Lotus Domino and Windows file systems. To determine which vendor provides the best value, I had to look deeper into key areas such as ease of use, price and overall return on investment while ensuring all critical functional requirements were met.

This paper is a derivative of that work and is not intended to be a side-by-side competitive review. It provides a top level review of the product I selected after completing the analysis. I believe this product offers a very compelling, complete solution for data archiving and I have been recommending it to my client base with excellent results. From the start, I evaluated each vendor's offerings using the following criteria that reflected my customer's most critical needs.

1. Provide comprehensive Exchange Email archiving tools that meet both capacity management and legal / regulatory compliance needs. My clients wanted to reduce the overall size of their Exchange data stores, reduce backup times and improve performance, while also ensuring they could meet the compliance requirements they have today and into the future.
2. The solution must be easy to install, implement and roll out company wide. While some professional services are expected in support of large implementations, the solution must not be so complex as to require days of onsite vendor support in order to ensure a successful implementation and subsequent rollout to the end users.
3. The features available must provide sufficient functionality to allow for the customization required to tailor usage to meet the needs of each client and internal stakeholders. The goal was to have the solution adapt to each clients individual needs and business practices while not forcing procedural changes before realizing all the solutions benefits.
4. The preferred solution must offer support for additional data types such as instant messaging, Windows file systems, and SharePoint content. While most clients were focused on addressing their Exchange archiving needs in the immediate future, the ability to expand the solution to additional content was considered a mandatory requirement.
5. While initial cost is always a concern, it was generally addressed during the sales cycle as most vendors are competitive and will exhibit some price elasticity at closing time. Of far greater importance was the total cost of ownership (TCO) from ongoing management over an expectedly long lifecycle. Once you are fully deployed with an archiving solution, you will generally not find it cost-effective to replace. The right choices need to be made from the very start. Key considerations were initial equipment and storage needs, and the expertise required to manage and tailor the solution as requirements changed over time.
6. The final criterion was vendor support. Once implemented, archival solutions become an integral part of the storage subsystem. Issues and the need for vendor assistance will crop up from time to time. Choosing a vendor that is focused on delivering archiving solutions and capable of providing the level of support needed for long-term success will not only pay big dividends to my clients, it will help protect my future business relationship with them as well.

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Before diving into the details, the solution I chose was ArchiveOne from C2C Systems. The C2C product set is robust, providing the product offerings and expertise I needed to address the major requirements of my clients. Email archiving solutions must address two distinct sets of needs. The first includes corporate governance, regulatory compliance and the ability to provide full content disclosure during litigation procedures. And secondly, I needed tools that fully address the capacity management and application optimization requirements of clients struggling to manage the rapid data growth in their messaging and file systems environments.

While the technology required to meet these often conflicting requirements share a common foundation, successful implementation requires an awareness of each requirement's unique challenges as well as those of the different stakeholders engaged in the selection process. C2C understands this and offers a variety of product offerings that have been specifically designed to address both sets of needs. In accounts where both compliance and capacity management are issues, a complete ArchiveOne solution is offered that provides all the features needed to implement a full email management solution. However, each component in the solution can be licensed separately when clients have a more focused set of pain points and objectives.

C2C's products also stack up well against the competition and have been generally recognized by Industry Analysts as being easy to install and use. That said, there is often a need for professional services to help ensure my larger clients got off to a good start. I was able to perform most implementations in less than one day using C2C's phone support for assistance when needed. I also found that when the email compliance offering was deployed, professional services became more important. However, in general, a ½ day web-based training session proved adequate. This saved my clients a lot of money and allowed them to get up and running quickly.

There is one point that should be addressed up front before getting into the full review. While the C2C Exchange offering provides all the major features required to address my client's message archiving needs, it does not provide Exchange data protection services. One of the products reviewed, Mimosa, positioned its NearPoint offering as providing an integrated solution for archiving and data protection by providing for message and server level recovery through a replication service based on a proprietary log shipping function. While compelling at first glance, the storage resources required to implement the solution, estimated to be 300 to 500% of the Exchange Store itself, negated one of our primary concerns — capacity management — and forced us to add in the cost of dedicated servers and additional storage devices when calculating TCO.

In addition, most of this storage required primary class devices due to their use of MS SQL Server for indexes and a standby copy of Exchange NearPoint used to provide its data protection services. With C2C, I was able to utilize a more appropriate mix of primary or secondary storage devices to meet our performance objectives, and my clients' Exchange Administrators already had a handle on their Exchange backup and recovery requirements. Those looking to add replication were watching future Exchange enhancements to meet their real-time availability needs. Beginning with Exchange Server 2007, Microsoft has been providing very similar replication capabilities as part of Exchange leaving us to focus our near term efforts on archiving. Furthermore, C2C's email archiving products will fit nicely into any data protection strategy a client used by reducing both the number of messages and the size of the Exchange data store, which reduces backup and restore times — a win-win proposition.

C2C's Competitive Advantages

As mentioned, the competitors all seemed to have equivalent levels of the key functionality. Most of the differentiation is found in: the breath of application and storage platform support; a vendor's claims to have improved technology such as a better indexing engine; or as in the case of C2C, a more flexible and scalable back-end data repository that does not rely on a RDBMS. C2C also has the following advantages that I found differentiated ArchiveOne from the other products I researched:

- The Discovery Manager offering provides an integrated search and retrieval function for live Exchange Data Stores: Many competitors can only search within their own archive files.

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- Legal and Compliance Search Support: The C2C search engine supports very granular federated searches across all content managed by ArchiveOne. Using Boolean logic-based queries and over 70 attributes as selection criteria, detailed searches can be performed to locate all case-related content. While all the products I looked at had search capabilities, the C2C engine supported federated searches across multiple locations such as the archive data store, the Internet, Windows file shares, Microsoft SharePoint sites and many other corporate data stores.
- Integrated Data Management Function: Many of the competitive products only supported an archive action for content selected through a search query. ArchiveOne supports copy, move, delete, report and sampling operations in addition to archive. These functions, called Intelligent Actions by C2C, allow administrators to perform critical management tasks using contextual menus that automatically enable supported functions based on the type of items selected.
- Comprehensive PST Management Support: ArchiveOne for Exchange allows administrators to find and manage PST files wherever they reside. PST's can be found on file servers and mobile computers whether or not pointers exist in the mail user's Outlook profiles. Once identified, administrators can manage PST's in place by selectively archiving messages or eliminate PST usage completely by moving all content directly into the central archive or optionally back into each user's primary Outlook data store.
- Remote User Access to Archived Data: HTML links inserted in archived content stub files allows archived email and file system data to be accessed from virtually anywhere. Content and messages can be retrieved by installing the optional embedded web server and using Outlook Web Access (OWA), any web mail system or a compatible Internet-enabled mobile device.
- High Performance Index and Archive Repository: Many competitive solutions use a relational database, at least for the archive index, which complicates installation and often requires a separate database license, dedicated server hardware and typically consumes more disk space than a non-relational database structure that was specifically designed for the archive solutions precise requirements.

C2C's Weaknesses

As will become apparent when reading this review, my clients and I really liked the ArchiveOne solution. However, in the interest of full disclosure, I did find a few shortcomings. The ArchiveOne for SharePoint offering did not seem as easy to install and use as the other product offerings. The documentation was lacking, and I needed a little more technical assistance before I was able to get a pilot up and running. This was not a huge problem for my clients and did not represent a major obstacle in the selection process as SharePoint is still not widely deployed by my clients. In addition, I reviewed the first release of C2C's SharePoint support, and based on the quality of their Exchange offerings, I fully expect these issues to be resolved in the company's future updates.

One other area I found limiting was support for Apple environments. Some clients were running MAC OSX with the Entourage email client, and although the ArchiveOne solution did support this combination, there was no client component (as there is for Outlook) to make the retrieval 100% transparent. Again this did not represent a big issue as Mac users could still retrieve their archived email, and most other competitors did not provide clients for Mac either. Microsoft recently announced that Entourage would be replaced by Outlook for Macintosh in the next release of Office for Mac due in late 2010. For more information see [Outlook for Mac to Ship With Next Version: Entourage 2008 for Mac, Web Services Edition available today; will ship with new Office 2008 for Mac Business Edition](#). I have yet to find out from C2C when or even if this version of Outlook will be supported so check with your reseller if this is a concern in your company.

Introduction to the ArchiveOne Solution

C2C Systems is a software provider whose solutions are well positioned to serve the email data management needs of different sized accounts. Their packaging offers an entry level solution, ArchiveOne Express, that is well suited to the needs of the SMB and SME marketplace. Using wizards Express, it installs in about 20 minutes and does not require any end user training, yet it provides a feature-rich solution that benefits a company's capacity management needs as well as providing support of their e-Discovery and regulatory compliance requirements. See the packaging section for more details.

C2C also markets a complete solution, ArchiveOne Enterprise, that consists of two major components — Policy Manager and Compliance Manager — each of which can also be purchased separately when required to meet a client's more focused requirements. This report will concentrate on the functionality and benefits provided in the ArchiveOne Enterprise offering, as well as two more tactical product offerings ideally suited to attack very specific Exchange capacity management and user-related security issues.

Business Requirements and Problems Addressed

My clients had three main business drivers that framed our decisions and led us through the final selection process. C2C met and exceeded all our detailed requirements in each category:

- Capacity and Availability Management: As the number of emails and the size of message attachments continue to grow rapidly, there is often a negative impact on network bandwidth, Exchange Server performance and its administration. For example, the inability to perform timely backup and recovery procedures will affect system availability. One client reported it was taking 27 hours to perform mailbox level backups on a 1.2 TB message store. These issues extend to data stored on network file servers and storage appliances as more information is being stored online and from the proliferation of rich media data formats. As a result, while storage prices keep declining, the costs associated with managing it exceeds the cost of acquisition.
- Regulatory Compliance: Recent trends in statutory law and business litigation have elevated the necessity for secure business data archives — particularly message related data — to a high priority for information technology managers. Failure to maintain “on-demand” access to relevant business information for regulators can lead to significant financial penalties or a weakening of an organization's legal position during litigation. Furthermore, the cost of executing searches of poorly organized archival information can generate significant workloads that add expense to IT operations, create unnecessary risks to the enterprise, and impact higher value-added activities.
- End User Productivity: As the Exchange Server environment becomes impacted, there is a direct correlation to end user productivity. Depending on the hardware and networking infrastructure in place, there is a point at which Exchange Server performance will begin to slow and degrade the user experience. I have all seen days where simply retrieving and opening messages takes longer than usual and may even fail completely. To control Exchange data store growth, administrators will often enforce a mailbox quota on users, which often leads to end user frustration and the bigger issue of messages being migrated into unmanaged PST files.

As expected, each client placed a different weighting on the requirements in each of these broad categories. While compliance was important for publically-traded companies, healthcare and financial institutions, many placed a higher value on capacity management in order to offset the rising personnel costs of data management, as well as the floor space required and costs for power and

cooling. In order to meet their diverse needs, I wanted a comprehensive product that met all the business needs of my clients, yet was flexible enough to allow a solution to be customized for each of them.

ArchiveOne Architecture

ArchiveOne has a flexible architecture consisting of up to three discreet layers. The heart of the system is the ArchiveOne server that runs the centralized services required to perform most of the system's major functions. The services are tied to the product options licensed; for example, the Policy Service controls archiving functions and manage the migration of content into the repository if it meets a policies selection criteria. It also replaces that content with links pointing to the offline archive. If the compliance support is licensed, another service is enabled to process the Exchange Server's journal mailbox and ensure a duplicate copy of every incoming and outgoing message is secured in the archive.

Other centralized services include content indexing, a search engine, task scheduling, and various service monitors that are used to ensure key functions are active, thus facilitating a service and/or task-level recovery when possible. ArchiveOne Server level recovery is also available in larger accounts where more than one server is deployed to meet load balancing and application availability requirements. The system's modular architecture allows deployment to be designed around each client's unique needs. In smaller accounts, only a single ArchiveOne Server is needed. Scaling the system to meet performance and availability objectives is accomplished by 'simply' adding more servers.

The server's operation is accessed and controlled using an administrative interface that can be run locally on the server or remotely on any authorized user's Windows workstation. More importantly, an IIS Web Server application may be installed on the server to provide remote administrative and end user access from virtually anywhere. The ArchiveOne server also manages layer two, the data archive or back-end storage repositories used to house all archived content. Details of the repositories design and benefits will be discussed a little later in this section.

The key benefits of the ArchiveOne architecture are:

- no software is installed on the Exchange Server, which greatly simplified the installation process;
- there was no requirement for a MSSQL license or database server;
- any tier storage can be used for the disk repository; and
- the ArchiveOne Server itself does not require dedicated server hardware as with several competitive solutions.

The server's efficient operation often allowed us to install it on an existing under-utilized machine as long as sufficient access to the disk repositories storage was provided. These points were all key factors in the ArchiveOne TCO and ROI calculations made for each client's specific deployment.

Client Access

The third layer is the client or agent footprint that consists of one or more optional components depending on the functionality desired. ArchiveOne also supports clientless message restore operations using the IIS web server by providing an HTML link in the stub file created after a message has been archived. Users can select the HTML link to retrieve an archived message directly from their local machines, Outlook Client interface or remotely from any OWA-enabled web mail application. The client access and agent options supported by ArchiveOne consist of the following:

- An Outlook plug-in that provides integrated access to the mail archive and can be dynamically pushed out to end-users during the implementation phase of the project.

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- Web Services access that allows end users to remotely search a folder based hierarchy of their archives from anywhere with internet access enabling users to search their archived data when traveling or anytime they are away from their personal computer or workstation.
- A Laptop Client, that synchronizes archived messages locally to provide content access when users are disconnected from the network for any reason.
- A PST Processor application that, if licensed, processes PST files in use by their Outlook Client.

The client options provided are important as they directly addressed one of my biggest concerns — the end user experience. I wanted a solution that was transparent to users, minimizing training requirements and freeing administrators to be as aggressive with archival criteria as needed to achieve the desired reduction in the Exchange data stores. I was able to automatically push the Outlook Client to end users with the only user experience change being a slightly modified icon indicating a message was in the archives. Access to archived messages was a simple point and click, just as before, and all the usual Outlook functions are available after a message was retrieved. Some of the products I reviewed required archived messages to be retrieved from a web page. With ArchiveOne, this option is also provided, but it's not the only way to access the archives.

Disk Repositories

The archive or back-end data repositories, as C2C refers to them, consist of a series of flat data and index files that, while not unique, offer many competitive advantages. First the system allows for an unlimited number of repositories to meet the demands of the content being processed. For example, a WORM disk 'compliance' repository could be set up to store all key executive, financial and legal mailbox archives to ensure that their message activity is fully preserved for the required retention period while remaining fully available to the respective owner. Other content could then be archived into a series of repositories based on age or relative business priority, with each class of data occupying a different tier of storage to match cost structures with the importance of the data being protected.

The ArchiveOne disk repository design has the following characteristics and benefits:

1. No structured RDBMS database is required for index or data files
 - Provides improved operational performance and lowers TCO by not requiring a license and a database administrator for ongoing management.
 - Simplifies archive repository portability as the files can be copied or moved to other storage devices using basic Windows utilities or third party data movers.
2. Integrity of archived content is preserved using a two phased write commit process.
3. Most archived content is securely stored in shared, fully optimized data repositories.
 - Minimizes storage requirements when multiple components are installed, typically using only 40 to 60% of the original contents space reducing hardware expenditures.
 - C2C's SIS Plus data reduction function minimizes storage requirements by eliminating duplicate data across all content types, including message and file system data. Multiple data hashing algorithms identify duplicate attachments even when contained in emails with different text in the message bodies.
4. The ArchiveOne data repository consists of a number of small, 10MB in size, fully encrypted data and index files. This design has several benefits:
 - Enables ArchiveOne's checkpoint recovery operations for restart after a service failure.
 - Supports synchronization with third party backup products allowing the active repository to be migrated to long-term media storage without impacting ongoing archive operations.

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Another key benefit of the architectural design was its ability to easily scale. Using a technique similar to Exchange, multiple front-end processors are deployed to increase system throughput and provide for high availability in a peer-to-peer arrangement that supports scaling for my larger clients. For example, when used for message archiving, each server will process a subset of the Exchange mailboxes spreading overhead between all the available servers. In the event one fails, redundancy is provided through an automatic fail-over technique that moves the failed server's responsibilities over to one of the surviving machines. I especially liked the fact that fail-over is embedded in the ArchiveOne server so that no third party clustering products are required.

A feature I found useful during a companywide rollout is the ability to assign responsibilities to multiple administrators. Allowing senior administrators to implement tiered delegation of actions for specific tasks across the ArchiveOne product line provides enhanced administrator security. Delegation allows key policy decisions to be moved closer to the affected stakeholder community by allowing business unit level administrators to perform their duties without jeopardizing the security of the entire company's archives. This is extremely important when compliance-based archiving is in place to ensure sensitive information remains under the tight control of only authorized personnel. In addition, the ArchiveOne suite reduces administrative training requirements by providing a complete Microsoft Management Console (MMC) compatible user interface.

Product Offerings and Packaging

The C2C product family is packaged in a modular manner to allow clients to implement, and pay for, the functionality they require. I can hone in my client's specific needs and find a good starting point for each project by implementing one or two components that address their most pressing needs first. This allows me to minimize impact to their operations and ensure early successes before expanding the scope of the project. When they are ready, I simply install the next component into the existing ArchiveOne framework, and the modular architecture ensures a smooth implementation of new components.

C2C offers ArchiveOne in two editions: Express and Enterprise. The Express version is limited in both content scope and functionality. However, for mid-market accounts the pricing is very competitive, and it meets most message archiving requirements. The Express version provides the major product component offerings, content archiving and compliance support, with virtually all the functionality found in the Enterprise version, making it ideal for clients with less than 200 mailboxes. The main differences between ArchiveOne Express and the Enterprise version are as follows:

Feature	ArchiveOne Enterprise	ArchiveOne Express
Exchange Support	✓	✓
Windows File System	✓	
Lotus Domino Support	✓	
SharePoint Support	✓	
Max Users Supported	Unlimited	200
Compliance Support	Full	Limited
# of Policies	Unlimited	50
# of Data Repositories	Unlimited	1 per year

A complete comparison can be found at:
<http://www.c2c.com/Products/ArchiveOneforExchange.aspx>

The specific product component offerings I focused on were: ArchiveOne for Exchange, Discovery Manager, Access Security Manager, Max Compression and ArchiveOne for Files. C2C offers two other content archiving components: ArchiveOne for Domino and ArchiveOne for SharePoint, which I did not research too deeply. This was because none of my current clients use Lotus Domino, and while a few have SharePoint, they are still working on the implementation and customization needed for the pilot projects, which is taking longer and costing more than anticipated. At this point it is just nice to know that when they're ready to begin applying archiving strategies to SharePoint content, there is a C2C component that will snap into the existing architecture.

ArchiveOne for Exchange

ArchiveOne for Exchange is a message archiving component that is positioned for accounts looking to reduce the size of their Exchange data stores and improve system performance. ArchiveOne for Exchange archives messages from mailboxes, PST files or public Exchange folders automatically and transparently to the end user. It provides a flexible facility for selecting messages based on a variety of attributes such as age, user id, or the size of either the message itself and/or any attachments. The policy engine provides support for any number of policies allowing administrator's to tailor the solution to meet the needs of individual departments, workgroups or users in the organization.

Once a message meets a policies selection criterion it is moved to an ArchiveOne data repository. The repository location, storage or media types and the retention periods of the archives are flexible and under the full control of the administrator. Policy Manager replaces the message content on email servers with a short summary and a link to the archived version. The archiving process fully preserves the original folder structure and all messages appear within that structure as they did before with sender, subject and date information intact. The only hint to users that the message is in the archive is a small 'A' placed in the messages envelope icon and a shortened version of the message body text.

If access to the complete message is required, users are able to access archived email directly from their mail client software using the normal Outlook open actions as prior to its archival. Once a recovery is started the email is reinstated to its original state seamlessly and opened for the user complete with all attachments. There is one noticeable change after a message has been recalled — the message is not returned to its original position in the folder hierarchy as the archive stub message still resides at that location. Instead the recovered messages are placed into a new folder, default name of Retrieved Messages, where they remain until a user either deletes them or moves them into another folder.

This allows the user to review or edit the message as needed without disrupting the pointer to the original message in the archive. Once the user is finished with the recalled version of the message, it can simply be deleted from the recovery folder and the entire mailbox structure remains exactly as it did before the recovery. Working with archived messages is intuitive for the user, demands little end user training and benefits the organization by improving productivity for email users. ArchiveOne for Exchange provides users with the appearance of limitless email storage while allowing administrators to control the size of the actual Exchange data stores, which improves Exchange Server performance while reducing the time required for data protection operations.

Enhanced Compliance Support

An ArchiveOne for Exchange option, Compliance Manager, provides the corporate governance component of the ArchiveOne suite. It is well suited for accounts looking to provide a complete and secure record of messages generated or received by all or a focused subset of the company's Exchange users. Compliance support is different from the archive function in that the folder and

message structure is not altered when the compliance copy is stored, i.e., an exact copy of all messages are written to the repository with no alteration to messages or capacity reduction occurring in the Exchange data store.

The compliance function preserves chain of custody for all message traffic by supporting the customers email retention policies as mandated by legal and corporate governance officers. It accomplishes this by creating a secure, indexed email archive whose contents cannot be altered except by the authorized administrative accounts, and their control is limited to search and grooming activities to ensure the archived data is never compromised.

ArchiveOne for Exchange provides a menu-driven, search and retrieval function that enables administrator's to find all messages related to specific subject matter for internal audits as part of a litigation process or for regulatory inquiries. As with most competitive offerings, there is an impressive set of features available to support the compliance-related activities of legal staff, compliance officers, or other authorized personnel. The robust selection criteria available in the search function make it easy to find subject matter content, even when contained in an embedded message. Once content has been identified it can be tagged, placed on legal hold, migrated to a specific mailbox or public folder for internal review or exported to a PST file that makes it easy to provide content for external review.

The sampling feature is especially useful with policies that can be defined to run regularly and then provide specific reviewers with a subset of the selected messages to help ensure company messaging policies are being followed and protect against potential liability from misuse. The system automatically keeps track of when reviewers have confirmed receipt of the sampled items, whether they have approved or rejected a sample, and also allows reviewers to record notes about the process results.

ArchiveOne for Exchange can extend compliance support beyond just preserving a copy of email messages by also including in the archives: supported Instant Message content; SMTP mail sources; Exchange 2007 Unified Messaging voice and fax files; Bloomberg data messages; and even information from RSS feeds. The breadth of coverage is important, especially when deployed by securities firms or financial institutions. However, it perfectly meets the needs of any organization required to adhere to the growing number of worldwide regulatory requirements such as those generated by the SEC, NASD, and the NYSE or as a result of new legislation e.g., Sarbanes-Oxley, HIPAA, BSI, and Basel II.

Regardless of how you implement ArchiveOne for Exchange, all content shares the same indexing, search / retrieval and data reduction functions, making it easier for administrators to centrally manage all archived content. In addition, SIS Plus capabilities are applied across both archived and compliance copies of message attachments, when both optionally share the same repository structure, allowing us to use more aggressive archiving policies without consuming an inordinate amount of disk space. Thanks to the flexible repository design, it is also possible to configure the compliance store completely separate from the archive store to provide enhanced security. This separation can also be extended to the administrative structure whenever a client prefers to maintain strict control of their compliance related copies of data.

Comprehensive PST Management

Often sold as an optional component in the solutions I reviewed, C2C ArchiveOne for Exchange includes comprehensive support for PST management, which is often cited by administrators as a major issue effecting security, availability and end user productivity. PST's are generally created by users when the Exchange administrator implements mailbox quotas as the first attempt to control the rapidly growing Exchange data store. Using tools in Outlook, messages can be 'archived' into a PST stored on a user's personal machine or somewhere in the network. Once moved into a PST, the

messages are generally beyond the centralized control of IT, meaning they are not properly protected from loss and can be almost impossible to find during a legal discovery operation, all of which leaves the company exposed to potentially serious consequences.

ArchiveOne makes it easy to understand the scope of a client's PST exposure by discovering all PSTs, including those not in Outlook profiles. Once found, the system records associated information, e.g., size, owner, location, and provides the tools needed to manage them effectively. Using an easily deployed logon script, I were able to discover all PST's associated with a users' Outlook Client and archive messages directly to the ArchiveOne repository or migrate them back into the users mailbox. Regardless of the migration option chosen, a link is placed in the appropriate location to facilitate message search and retrieval. Most importantly, administrators are in full control of the operation from PST discovery operations to complete message migration. It is also possible to allow some or all users to keep their PST's while enabling administrators to easily search PST content along with archived messages, report on PST usage statistics, or selectively migrate messages back into Exchange Server.

Discovery Manager

Discovery Manager provides a compliance-related facility that enables enhanced message search functions and e-discovery capabilities for all primary Exchange data stores including PST files. Whether running standalone or as part of complete ArchiveOne solution, Discovery Manager can be used to provide a comprehensive search engine for non-archived Exchange messages while providing flexible exporting tools and useful data movement options. With Discovery Manager, administrators can use a single query to search across multiple Exchange Servers and Data Stores using any combination of the 70 data selection attributes supported. Search results also include deleted messages from the Exchange dumpsters further enhancing a client's e-discovery and compliance capabilities. Note: All features of Discovery Manager are included in ArchiveOne for Exchange. This product is useful in a stand-alone environment or in conjunction where the Compliance solution is used on its own.

Discovery Manager shares many of the back-end functions used in the other ArchiveOne offerings to provide a powerful search capability that's ideal for any sized Exchange environment. Administrators are provided with the complete set of hierarchical user access controls to ensure only authorized personnel have access to specific groups of mailboxes and a complete audit trail is maintained of all actions performed by users. Key functions include: useful reporting capabilities; automatic PST compaction; and the ability to take actions on discovered items such as move, copy or delete. In addition, search results can be exported to an Access Database for further analysis. When ArchiveOne for Exchange and Discovery Manager are used together, authorized administrators have all the tools required to perform a detailed, content-based, federated search of email messages stored in both live message stores and the archive repositories meeting even the strictest compliance requirements.

I have also found that Discovery Manager is very useful for clients already running competitive archiving solutions that lack federated, i.e., live and archived message, Exchange search capabilities. Adding Discovery Manager to provide a complete, secure email discovery solution ensures they are better prepared to meet legislative and legal discovery requirements. The discovery functionality goes way beyond that provided in Exchange and third party search tools by allowing administrators to find pertinent information without impacting end users. More importantly, Discovery Manager helps protect the organization by ensuring critical content is readily discovered by searching for items that may have been accidentally deleted, hidden by a user or even destroyed maliciously.

Access Security Manager

Access Security Manager provides a robust set of useful tools the Exchange administrator uses to maintain a secure Exchange environment. There is never any manipulation of the actual message store, and messages are never written to the ArchiveOne repository in conjunction with a Security

Manager function. Access Security Manager's critical role is to validate the integrity of end user access to the organizations Exchange Server, including mailboxes and public folders, by detecting and even helping to prevent unauthorized access to message content.

Access Security Manager performs these tasks by interrogating both Exchanges internal security database and Active Directory to correlate information pertaining to both end user and user group access rights to individual mailboxes and public folders. My clients have found that Access Security Manager is a vital, time-saving standalone service that allows administrators to easily investigate and manage Exchange security attributes. I liked the fact that when deployed alongside ArchiveOne for Exchange, Access Security Manager helps provide added integrity for mail systems by allowing administrators to detect and correct violations before compromised data is ever committed to the archive.

Access Security Manager allows administrators to perform a variety of security-related tasks such as:

1. Providing complete information on user permissions to mailboxes and Exchange data stores;
2. Discovering 'Send on Behalf of' permissions to identify and block rogue users who may try to impersonate other staff;
3. Collating permissions for parts of the information store to focus on specific users, distribution lists and mailbox folders across different servers using mailbox-specific controls;
4. Storing permission settings and updates to an external database where it can be analyzed and reused automatically to update permissions across all users and folders in a single action.

I found that once the Exchange administrator saw what Access Security Manager had to offer, it quickly became a must-have product regardless of how they felt about implementing a comprehensive message archiving solution. The clincher for most was detection of 'shadow users' — users who might gain access (accidentally or otherwise) to the mailboxes of others when a user is deleted from the mail system and their legacy permissions remain in Exchange. Later, if a new user joins with the same user ID, they would inherit those dormant permissions in full, possibly compromising the rights of other users.

ArchiveOne for Files

As part of an integrated solution, Archive One for Files provides more than just archiving for Windows NTFS-based file systems. It provides fully automated data management that aids capacity management objectives as well as extending the overall solutions benefits in compliance, e-Discovery and retention management to files from creation until they are no longer required. With ArchiveOne for Files, I can help clients control costs for primary storage while ensuring that business-critical information is always safely protected, available for discovery searches and instantly retrievable from the archives.

The products major functions work the same as the Exchange offering which helped during the implementation process as I already know how to use the policy engine. Creating archive policies to transparently migrate older files into the archive was done with relative ease. If users need to access an archived file, they can see and access it from Explorer as they did before. More importantly, I were also able to construct meaningful retention policies for archived data to automate deletion down the road and avoid simply transferring the capacity issues from the primary storage environment to the archives over the long run. ArchiveOne indexes all items during the capture process and data can be searched for and retrieved by users, administrators or compliance officers either from within the product or through popular search solutions, such as Google Enterprise Server or Microsoft Search Server 2008.

MaX Compression

While it's not clear to me if MaX Compression is part of the ArchiveOne solution, it is a great offering that is easy to cost-justify. I deployed Max Compression in many client accounts as a simple-to-use, automated, Exchange capacity management solution that quickly reduced the size of Exchange data

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stores by 50% or more. This was a great way to begin our message archiving projects as it provided preemptive compression for the archive processes to follow, and more importantly, yields immediate control of Exchange data store growth. MaX Compression's benefits also included improved Exchange system performance through reduced bandwidth requirements. Depending on the size and type of attachments, I found MaX Compression reduced the size of individual messages by up to 90%.

MaX Compression provides modules for Outlook Clients, Outlook Web Access (OWA), Exchange Server and SMTP Gateways and works by transparently zipping and unzipping email attachments according to centrally applied rules. There is a 'Smart Mode' that allows administrators to construct centralized policies to determine which compression mode to use and whether a specific type of message attachment, such as a fax, should be compressed at all. The industry standard compression and decompression routines used provide 100% assurance of the 'zipping' function, while ensuring optimal benefits from data reduction and reduced bandwidth are realized without relying on users to remember to zip large attachments when composing a message.

Operational transparency is provided through seamless integration with Outlook that ensures there is no noticeable effect to the user's mail client; even the original attachment icons are preserved instead of being changed to indicate the file has been 'zipped'. There is also a reader utility provided. However, the algorithm used is fully compatible with third party compression utilities such as WinZip to ensure mail delivered outside of the controlled environment can be opened without having MaX Compression installed. MaX Compression is also fully compatible with other system utilities such as anti-virus and encryption software.

Table 1: ArchiveOne Solution Overview

The following table provides a high level overview of the main products in the ArchiveOne solution set.

Solution	Pain Points	Product(s) Offered	Functional Summary
Capacity Mgmt	<ul style="list-style-type: none"> Lengthy backup & restore times Exchange performance impacted by data store growth Quotas impact on productivity Managing the proliferation of PSTs on file servers and users desktops 	Archive One for Exchange	See Email Archiving.
		MaX Compression	Reduces network overhead and storage footprint by automatically zipping and unzipping email attachments according to centrally applied rules.
	<ul style="list-style-type: none"> Increasing cost and management issues associated with rapidly growing Windows file server storage environments 	ArchiveOne for Files	Adds the ability to manage storage capacity by selecting files for archiving based on user policies without impact to the end user.
Email Archiving	<ul style="list-style-type: none"> Lengthy backup times especially for mailbox level support 	ArchiveOne for Exchange	Archives messages from mailboxes, PST files or public Exchange folders automatically and invisibly to users using flexible policy-based criteria. Users have complete access to archives from Outlook clients or most Internet devices using the Web support.
	<ul style="list-style-type: none"> Poor Exchange performance due to growing message stores 		
	<ul style="list-style-type: none"> Inability to fully manage the increasing volume of messages 		
	<ul style="list-style-type: none"> No control over message retention requirements to fulfill corporate governance policies 		
	<ul style="list-style-type: none"> Inability to manage proliferation of PSTs on file servers and users desktop and mobile computers 		
Compliance	<ul style="list-style-type: none"> Increased exposure from the inability to respond to new regulatory requirements 	ArchiveOne for Exchange	Creates a secure index of archived email and other content to assist organizations in meeting regulatory requirements. All content is extracted and indexed to preserve chain of custody and allow fast data search and retrieval.
	<ul style="list-style-type: none"> No control over message retention requirements needed to fulfill corporate governance policies 	ArchiveOne for Domino	
Exchange Security	<ul style="list-style-type: none"> Mailbox and message archive access security exposure 	Security Access Manager	Gathers information on mailbox and folder permissions, access rights and 'send on behalf' controls from multiple mail servers. The information is organized so that administrators can easily modify individual or group settings automatically.
	<ul style="list-style-type: none"> Limited ability to manage message environment security and end user account access rights 		
Legal Discovery	<ul style="list-style-type: none"> Difficulty meeting new e-discovery legislation requirements 	Discovery Manager	Discovery Manager searches folders, mailboxes and subfolders in live Exchange Servers to ensure all relevant information is able to be discovered. The product also searches PSTs and deleted item dumpsters to ensure search accuracy.
	<ul style="list-style-type: none"> Legal exposure due to inability to perform comprehensive searches of live Exchange messages, including deleted messages 		
	<ul style="list-style-type: none"> Discovery requests lead to searches that are time consuming and error prone 		