Deploying EMC SourceOne Email Management

Best Practices Planning

Abstract
This white paper provides a set of proven practices for deploying EMC SourceOne™ Email Management. The information is intended as an enhancement to the information provided in the EMC® SourceOne Email Management customer-facing documentation set as well as supporting information to be used in conjunction with the EMC SourceOne Email Management sizing and deployment activities.

April 2010
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Executive summary
There are many factors to consider when planning a deployment of the EMC SourceOne™ Email Management system. You can adjust many of these factors according to your specific requirements and optimize the performance of your e-mail archiving system.

Introduction
This white paper contains select proven practices related to deploying EMC® SourceOne Email Management in typical environments. The paper includes:

- Considerations for disk configuration and selecting appropriate storage array and RAID options
- Disk layout considerations for the master, worker, and Native Archive servers (and associated storage locations)
- Methods for monitoring disk performance
- General practices for tuning the operating system for optimum performance
- Recommendations for partitioning the Native Archive database

Audience
The planning information in this paper is intended for IT administrators, IT management, and other corporate officers who are considering, or have begun, the process of evaluating, adopting, and implementing an e-mail management solution for their enterprise. It is expected that the audience for this white paper has a detailed understanding of e-mail system architecture and administration and a general understanding of the information governance strategy of their enterprise.
Disk configuration options

This section describes:

- Options for selecting storage arrays
- Choosing an appropriate RAID level
- Hardware RAID options
- RAID trade-offs
- General RAID considerations

Options for storage array selection

The information in this section is reproduced from a Microsoft document entitled *Performance Tuning Guidelines for Windows Server 2003*, which can be found at:


Note: The content has been edited to include additional information about RAID 10 that was not included in the original Microsoft document, but is applicable to storage array selection with EMC SourceOne Email Management.

There are many considerations in choosing a storage array and adapters. The choices include the type of storage arrays being used, including the following options.

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection media</td>
<td>Fibre Channel allows long glass or copper cables to connect the storage array to the system while providing high bandwidth.</td>
</tr>
<tr>
<td></td>
<td>SCSI Small Computer System Interface. SCSI provides very high bandwidth but has cable length restrictions.</td>
</tr>
<tr>
<td></td>
<td>iSCSI Internet Small Computer System Interface. iSCSI allows transmission of SCSI protocol commands (CDBs) on IP networks, thereby overcoming the distance limitations of standard SCSI connections.</td>
</tr>
<tr>
<td>HW RAID capabilities</td>
<td>It is important for the storage controllers to offer HW RAID capabilities. RAID levels 0, 1, 5, and 10 are described in “Hardware RAID options” on page 6.</td>
</tr>
<tr>
<td>Maximum storage capacity</td>
<td>Total storage area.</td>
</tr>
<tr>
<td>Disk I/O</td>
<td>Bandwidth at which storage can be accessed. Actual specifications include many complex factors, but determining factors include the number of physical disks in the array, speed of controllers, connection media (for example, iSCSI, SCSI, or Fibre Channel), HW RAID configuration, and the adapters (HBAs) used to connect the storage array to system.</td>
</tr>
</tbody>
</table>

For more detailed information on storage criteria, refer to the following Microsoft article:

Choosing the RAID level

Each RAID level is a trade-off among the following factors:

- Cost
- Performance
- Availability and reliability

You can determine the best RAID level for your file servers by evaluating the read and write loads of the various data types and then deciding how much you are willing to spend to achieve the performance and availability/reliability that your organization requires.

Hardware RAID options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAID 0</td>
<td>RAID 0 presents a logical disk that stripe disk accesses over a set of physical disks. Overall this is the fastest HW RAID configuration. This is the least expensive RAID configuration, because data is not duplicated. RAID 0 does not provide additional data recovery mechanisms as do RAID 1, RAID 5, and RAID 10.</td>
</tr>
<tr>
<td>RAID 1</td>
<td>RAID 1 presents a logical disk that is mirrored to another disk. RAID 1 is slower than RAID 0 for write operations, because the data needs to be written to two or more physical disks, and the latency is the slowest of the write operations. In some cases, RAID 1 can provide faster read operations than RAID 0 because it can read from the least busy physical disk. RAID 1 is the most expensive in terms of physical disks, because two or more complete copies of the data are stored. RAID 1 is the fastest in terms of recovery time after a physical disk failure, because the second physical disk is available for immediate use. A new mirror physical disk can be installed while full data access is permitted.</td>
</tr>
<tr>
<td>RAID 5</td>
<td>RAID 5 presents a logical disk that has parity information written to other disks. RAID 5 uses independent data disks with distributed parity blocks. RAID 5 is slower then RAID 0, because each logical disk write I/O results in data being written to multiple disks. However, RAID 5 provides additional data recovery capabilities over RAID 0, because data can be reconstructed from the parity. RAID 5 requires additional time (compared to RAID 1) to recovery from a lost physical disk, because the data on the disk needs to be rebuilt from parity information stored on other disks. RAID 5 is less expensive than RAID 1, because a full copy of the data is not stored on disk.</td>
</tr>
<tr>
<td>RAID 10</td>
<td>RAID 10 is implemented as a striped array whose segments are RAID 1 arrays. RAID 10 has the same fault tolerance as RAID 1. RAID 10 has the same overhead for fault tolerance as mirroring alone. High I/O rates are achieved by striping RAID 1 segments. Under certain circumstances, RAID 10 array can sustain multiple simultaneous drive failures. Is an excellent solution for sites that would have otherwise gone with RAID 1 but need some additional performance boost.</td>
</tr>
<tr>
<td>Other</td>
<td>Other combinations of RAID exist, including RAID 0+1 and RAID 50.</td>
</tr>
</tbody>
</table>
RAID trade-offs

<table>
<thead>
<tr>
<th>Minimum number of disks</th>
<th>RAID 0 striped</th>
<th>RAID 1 mirrored</th>
<th>RAID 5 striped with parity</th>
<th>RAID 10 mirrored then striped</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

| Usable storage capacity | 100%           | 50%            | N-1/N where N is the number of disks | 50%                          |

| Fault tolerance        | None. Losing a single disk causes all data on the volume to be lost. | Can lose multiple disks as long as a mirrored pair isn’t lost. | Can tolerate the loss of one disk. | Can tolerate the loss of one disk per mirror set. |

| Read performance       | Generally improved by increasing concurrency | Good read performance | Generally improved by increasing concurrency | Good read performance |

| Write performance      | Generally improved by increasing concurrency | Worse than JBOD (between 20% and 40% for most workloads) | Poor unless full-stripe writes (large requests). Can be as low as ~25% of JBOD (4:1 requests). | Good write performance |

| Best uses              | Temporary data only | Operating system, log files | Operating system, user and shared data, application files | Operating system, user and shared data, application files |

General RAID considerations

If you use more than two disks, RAID 10 is almost always a better solution than RAID 1.

When determining the number of disks that should be included in RAID 0, RAID 5, and RAID 10 virtual disks, consider the following information:

- Performance increases as you add disks.
- Reliability, in terms of mean time to failure (MTTF) of two disks, decreases as you add disks for RAID 5 or a single disk for RAID 0.
- Usable storage capacity increases as you add disks, but so does cost.
- Stripe unit size. Software solution is fixed at 64 KB. Hardware solutions may range from 4 KB to 1 MB. Ideal stripe unit size maximizes the disk activity without unnecessarily breaking up requests (so that multiple disks are required to service a single request). For example:
  - One stream of sequential requests (large) on “just a bunch of disks”, or JBOD, would keep only one disk busy at a time. To keep all disks busy, the stripe unit needs to be equal to 1/N where N is the request size.
  - For N streams of small random requests, if N is greater than the number of disks, and if there are no hotspots, striping will not increase performance. However, if there are hotspots, the stripe unit size needs to maximize the chance that a request will not be split, while minimizing the chance of a hotspot falling entirely within one or two stripe units. You might pick a low multiple of the request size, like 5x or 10x, especially if the requests are on some boundary (for example, 4 KB or 8 KB).
  - For fewer streams than disks, you need to split the streams so that all disks are kept busy. Interpolate from the previous two examples. For example, if you have 10 disks and five streams, split each request in half (use a stripe unit size equal to half the request size).
Configuring disk layouts

This section describes disk layout considerations for the servers comprising the EMC SourceOne Email Management system, including the master servers, worker servers, and Native Archive servers and Windows servers hosting the message center, index location, or container files.

**Master server**

The master server is not disk I/O-intensive. Disk considerations for the master server should instead be driven by high-availability concerns (such as using RAID 1 or RAID 5 for the Operating System Physical Disk location).

**Note**: If master services are installed on a physical server on which worker services are also installed, use the disk layout guidelines for a worker server.

**Worker server**

<table>
<thead>
<tr>
<th>Operating System</th>
<th>This disk location is light on I/O, but should be protected by RAID 1 or RAID 5 to guard against system downtime and data loss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Location and</td>
<td>This location is not necessarily high in I/O, but if logging is turned up then it can take significant storage space and cause a steady stream of I/O. This should be protected by RAID 1 or RAID 5. Although it is recommended that the installation and log location be on separate disks, it is not required.</td>
</tr>
<tr>
<td>SourceOne Log Files</td>
<td></td>
</tr>
<tr>
<td>Work Directory</td>
<td>This area is not heavily used on the worker server, but in a single-server configuration, this area is shared with the Native Archive services and the Native Archive server guidelines should be followed. You can use RAID 0, RAID 1, or RAID 5. This area houses temporary data, so there is less of a high-availability impact if using RAID 0 and a drive has to be replaced. The RAID level decision is dependent on the customer’s high-availability preference and cost considerations.</td>
</tr>
</tbody>
</table>

**Native Archive server**

<table>
<thead>
<tr>
<th>Operating System</th>
<th>This disk location is light on I/O, but should be protected by RAID 1 to guard against system downtime and data loss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Location and</td>
<td>This location is not necessarily high in I/O, but if logging is turned up then it can take significant storage space and cause a steady stream of I/O. This should be protected by RAID 1 or RAID 5 to guard against system downtime and data loss.</td>
</tr>
<tr>
<td>SourceOne Log Files</td>
<td></td>
</tr>
<tr>
<td>Work Directory</td>
<td>On the Native Archive server this area can be very high in I/O. This is because the index processes use this area to create the indices. However, because this area is volatile in nature and all data is recoverable, RAID 0 is acceptable. The RAID level decision is dependent on the customer’s high-availability preference and cost considerations.</td>
</tr>
</tbody>
</table>
**Storage locations**

<table>
<thead>
<tr>
<th>Storage Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message Center Location</td>
<td>This area is not high in sustained I/O and the data is transient in nature. However, if a disk failure occurred, the system would not be able to process. For this reason RAID 5 will generally suffice, however in very high throughput environments, RAID 10 may be needed. Also, since the product supports multiple message center locations, another alternative is to use two or more message center locations on RAID 5.</td>
</tr>
<tr>
<td>Index Storage Location</td>
<td>This is perhaps the highest I/O location in a system where both indexing and full text search are occurring. This disk location is a permanent storage area for the indexes and very high in I/O, so RAID 10 is preferred. This configuration gives very high throughput rates for reads and writes, and total redundancy on a disk by disk basis. Also, since the product supports multiple index locations, another alternative is to use two or more index locations on RAID 5.</td>
</tr>
<tr>
<td>Volumes Storage Location</td>
<td>This area is not high in sustained I/O, but will see spikes occur when volume files are closed and moved to this permanent storage location. Message retrievals can also have an effect on this location. Because of this, RAID 5 will generally suffice. However, in very high throughput environments that create a high number of volumes, RAID 10 may be needed.</td>
</tr>
</tbody>
</table>

**SQL Server logical volume considerations**

To optimize I/O, it is important that you configure the logical volumes of the SQL server to meet your specific requirements, including the SQL-DB, SQL-TempDB, and SQL-Logs volumes.

For information on storage best practices, including setup considerations of the SQL-DB, SQL-TempDB, and SQL-Logs volumes, refer to the following Microsoft article:


**Monitoring system and disk log counters**

<table>
<thead>
<tr>
<th>EMC SourceOne system counters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message counters</strong></td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Failed Archive</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Failed Archive/sec</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Failed Processing</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Failed ProcessingOption</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Processed</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Processed/sec</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Submitted to Archive</td>
<td></td>
</tr>
<tr>
<td>\ES1\System\Msgs Submitted to Archive/sec</td>
<td></td>
</tr>
<tr>
<td><strong>Base server counters</strong></td>
<td></td>
</tr>
<tr>
<td>\Processor( Total)% Processor Time</td>
<td></td>
</tr>
<tr>
<td>\Memory\Committed Bytes</td>
<td></td>
</tr>
<tr>
<td>\Memory% Committed Bytes In Use</td>
<td></td>
</tr>
<tr>
<td>\Memory\Pages/sec</td>
<td></td>
</tr>
<tr>
<td>\Memory\Page Faults/sec</td>
<td></td>
</tr>
<tr>
<td>\Memory\Pool Paged Bytes</td>
<td></td>
</tr>
<tr>
<td>\Paging File( Total)% Usage</td>
<td></td>
</tr>
</tbody>
</table>
Logical Disk – Current Disk Queue Length <= 1 (This should be less than or equal to 1 in order to avoid bottlenecks in the system.)

File server counters

Processor (Total) % Idle Time
Memory/Committed Bytes
Memory/% Committed Bytes In Use
Memory/Pages/sec
Memory/Page Faults/sec
Memory/Pool Paged Bytes
Paging File (Total) % Usage
Logical Disk (C): % Idle Time
Logical Disk (C): Free Megabytes
Network Interface (MS TCP Loopback interface) Bytes Received/sec
Network Interface (MS TCP Loopback interface) Bytes Sent/sec
Network Interface (MS TCP Loopback interface) Bytes Total/sec
Network Interface (MS TCP Loopback interface) Output Queue Length
Network Interface (MS TCP Loopback interface) Current Bandwidth

Exchange

MSExchangeIS: RPC Requests
MSExchangeIS: RPC Averaged Latency
MSExchangeIS: RPC Num. of Slow Packets
MSExchangeIS Client (Total): RPC Average Latency
MSExchange Database ==> Instances (edgetransport/Total) I/O Database Reads Average Latency
MSExchange Database ==> Instances (edgetransport/Total) I/O Database Writes Average Latency
MSExchange Database ==> Instances (edgetransport/Transport Mail Database) Log Generation

Disk (where n is the drive letter)

Logical Disk (n): Disk Reads/sec
Logical Disk (n): Disk Writes/sec
Logical Disk (n): Avg. Disk Bytes/Read
Logical Disk (n): Avg. Disk Bytes/Write
Logical Disk (n): Avg. Disk sec/Read
Logical Disk (n): Avg. Disk sec/Write
Logical Disk (n): Avg. Disk sec/Transfer
Logical Disk (n): Current Disk Queue Length
Logical Disk (n): Free Megabytes

Tuning the system

This section describes tuning best practices for tuning the system, including the Microsoft Windows 2003 Server operating system for the master servers, worker servers, Native Archive servers, or Windows servers hosting the message center, index location, or container files.

Note: Where applicable, the specific servers on which tuning guidelines should be followed are specified.
**General tuning practices**

Network adapter file sharing settings (worker servers and Native Archive servers)

On all workers and Native Archive servers:

1. In the Local Area Connection Properties dialog box, click **File and Printer Sharing for Microsoft Networks** and click **Properties**.

   ![File and Printer Sharing for Microsoft Networks Properties](image)

2. Select **Maximize data throughput for network applications**.
3. Click **OK**.
Network adapter file sharing settings (file servers hosting storage)

On file servers used to host shared drives:

1. In the Local Area Connection Properties dialog box, click **File and Printer Sharing for Microsoft Networks** and click **Properties**.

![File and Printer Sharing for Microsoft Networks Properties](image)

2. Select **Maximize data throughput for file sharing**.
3. Click **OK**.

Virtual memory amount and location

On worker Native Archive servers:

1. Set virtual memory to 1.5 times the amount of physical memory on the computer (for example, with 4 GB of RAM, set the virtual memory to 6 GB).
2. Set the **Initial size (MB)** and **Maximum size (MB)** to the same maximum number. This will prevent the swap file from needing to grow dynamically while processing data.
3. It is good practice to place the swap file on a fast local drive on which no other data processing occurs.

Note: In the example below, the swap file is placed on the OS drive, as program binaries are on a separate physical disk. Swap file usage can be monitored using Performance Monitor.
Turn off the Indexing Service for drives

On the New Volume Properties dialog box (shown below), clear the Allow Indexing Service to index this disk for fast file searching checkbox for each drive in the EMC SourceOne system. This will prevent Windows from indexing files for the purpose of Windows search. In a server environment this is not necessary and can take system resources away from EMC SourceOne.

![New Volume Properties dialog box](image1)

Disable Auto-Protect virus scanning for the file system and mail clients

File System Auto-Protect (shown below) will scan each packet of information in memory when it passes from one system to another. This has a significant impact on file system throughput. For optimum performance this can be disabled; however, each customer must weigh this against their particular virus protection needs.

*Note:* Additional recommendations for configuring antivirus software are provided in the *EMC SourceOne Email Management Administration Guide.*

![File System Auto-Protect](image2)
Storage-related registry tuning

To increase file system performance on Windows servers hosting the message center, index location, or container file storage, you can implement the registry settings described in this section. Each setting requires a system reboot to take effect.

CountOperations

This parameter allows you to turn off system and process level I/O counters. This counter affects system and disk counting of disk and network I/O requests. Physical and logical disk counters—in addition to network interface, IP and TCP counters—are not affected by this parameter. It is useful to turn off the process and system counters by using this registry parameter on systems where there is a measurable cost associated with counting I/O at the process and system level but where I/O rates can still be analyzed at the physical, logical, network interface, IP, and TCP levels. To turn off the process and system I/O counters, you need to create a registry value (and I/O system key if one doesn’t already exist) and set the value to 0 (REG_DWORD) in the following registry entry:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Session Manager\I/O System\CountOperations

Recommended Value: Set to 0 or remove the CountOperations registry entry

A reboot is required for this setting to take effect. Process and system counters can be turned on again either by setting CountOperations to 1 or by removing the CountOperations registry entry.

DontVerifyRandomDrivers

This parameter prevents the driver verifier from randomly verifying drivers for debugging. To disable the driver verifier set a value of 1 (REG_DWORD) for the following registry entry:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Session Manager\Memory Management\DontVerifyRandomDrivers

NtfsDisableLastAccessUpdate

This parameter determines whether NTFS updates the last-accessed timestamp of a file when that file is opened. If you have an NTFS volume with a high number of folders or files, and a program is running that briefly accesses each of these in turn, the I/O bandwidth used to generate the last access time updates can be a significant percentage of the overall I/O bandwidth. To increase the speed of access to a folder or file, you can set NtfsDisableLastAccessUpdate to 1 to disable updating of the last access time.

By default, this registry key is not created. To disable the last access timestamp, set the following registry entry:

HKLM\System\CurrentControlSet\Control\FileSystem

Data Type: REG_DWORD

Recommended Value: 1

After you use this command and restart the computer, the last access time is no longer updated. If you create a new file, the last access time remains the same as the file creation time.

NumberOfRequests

This parameter allows you to specify the number of SCSI Request Blocks (SRBs) created for a given adapter. This improves performance and allows Windows to give more disk requests to a logical disk, which is most useful for HW RAID adapters that have concurrency capabilities (since each logical disk consists of multiple physical disks). However, the default setting is often less than optimal for many high-speed HW RAID disk arrays. Overall disk array performance can be improved by setting NumberOfRequests to a value in the range of 32 to 96 (decimal).
**Note:** This setting should not be utilized unless you are using a hardware RAID adapter that has concurrency capabilities to host your external storage.

Set the following registry entry:

```
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\adapter_name\Parameters\DeviceN\NumberOfRequests (REG_DWORD)
```

Replace `adapter_name` with the specific adapter name. Make an entry for each device, and in each entry replace `DeviceN` with `Device1`, `Device2`, and so forth, depending on the number of devices you are adding. A reboot is required for this setting to take effect. For example, for two Emulex LP9000 miniport adapters whose miniport driver name is `lp6nds35`, you would create the following registry entries set to 96:

```
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\lp6nds35\Parameters\Device0\NumberOfRequests
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\lp6nds35\Parameters\Device1\NumberOfRequests
```

### Indexing performance-related registry tuning

The following registry parameter changes can be used on Windows servers hosting the indexing location to mitigate delayed write issues.

**UseWriteBehind**

This parameter change is used to disable write-behind caching. Most Windows systems, by default, have write-behind caching enabled. This speeds up disk-write operations by holding data in memory until the computer determines the optimal time to write it to disk. In the context of SourceOne indexing, delayed write issues can impact performance. To disable write-behind caching, set the following registry entry:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Rdr\Parameters
  Value Name: UseWriteBehind
  Data Type: REG_DWORD (set to 0)
```

**UtilizeNTCaching**

This parameter indicates whether the redirector uses the cache manager to cache the contents of files. Disable this parameter to guarantee that all data is flushed to the server immediately after it is written by the application. To disable this parameter, set the following registry entry:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Lanmanworkstation\parameters
  Value Name: UtilizeNTCaching
  Data Type: REG_DWORD (set to 0)
```

**MaxMpxCt**

Perform this change on the computer on which the index share is located (not the Native Archive server on which indexing is performed). This parameter specifies a suggested limit on the number of outstanding client requests that can be maintained for each client on this server, increasing the number of active network receive buffers to allow for more simultaneous pending I/O. To change this parameter, set the following registry entry:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lanmanserver\parameters
  Value Name: MaxMpxCt
  Data Type: REG_DWORD (default = 50, set to 200)
```
Memory management registry tuning

The settings described in this section are used to control the operating system’s memory management behavior on Windows servers hosting the message center, index location, or container files.

PoolUsageMaximum

Optimizing the paged pool memory can improve performance. Adjusting the PoolUsageMaximum value from its default (80) to a lower value (60) informs the Memory Manager to start the trimming process at 60 percent of PagedPoolMax rather than the default setting of 80 percent. If a threshold of 60 percent is not enough to handle spikes in activity, reduce this setting to 50 percent or 40 percent.

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Session Manager\Memory Management
Value Name: PoolUsageMaximum
Data Type: REG_DWORD (default = 80, set to 60)

For more background information and specific steps for adjusting this setting, see the following Microsoft KB article:

http://support.microsoft.com/kb/312362

PagedPoolSize

In addition to the PoolUsageMaximum setting, you can set the PagedPoolSize to 0xFFFFFFFF to allocate the maximum paged pool in lieu of other resources to the computer.

Caution: The 0xFFFFFFFF PagedPoolSize setting is not recommended for use on 32-bit Windows Server 2003-based computers that have 64 GB of RAM. This will potentially bring the Free System PTE entry down and can cause continuous reboot of the computer. For this configuration, carefully choose a value based on the requirements and available resources.

For more background information and specific steps for adjusting this setting, see the following Microsoft KB article:

http://support.microsoft.com/kb/312362

IP network traffic tuning

For disks that use iSCSI connections, it is important to monitor and, if necessary, control IP networking traffic to prevent degradation of system I/O.

Various methods are available to optimize IP network traffic on the disk connection media, including IP packet sequestration.

For more information on IP network traffic monitoring and control, refer to:

- http://support.microsoft.com/kb/839686
Recommendations for partitioning the Native Archive database

Before deciding whether to partition your Native Archive database, you should understand:

- The SQL Server software requirements for partitioning
- The data management and performance benefits of partitioning
- How partitioning works

SQL Server requirements for partitioning


Benefits of partitioning

Separating the EMC SourceOne Native Archive into multiple partitions is typically done when you have a large Native Archive. Creating multiple partitions within the Native Archive database delivers the following data management and performance benefits:

- Partitioning the database causes the logical and physical decomposition of tables into smaller entities. This reduces the amount of time needed to perform data backup, index maintenance, and defragmentation of the database.
- Older database partitions can be moved to cheaper storage devices and to a less frequent maintenance cycle, which can reduce database maintenance costs.
- Partitioning large Native Archive database tables can improve database performance since parallel operations can occur on those partitioned tables. This performance increase is due to the ability to query several smaller tables rather than one much larger table. The performance improvements increase if the database server has multiple processors, since then the partitions can be queried in parallel in the same query, or if the partitions are spread across multiple file groups or devices.

Refer to the article “Partitioned Table and Index Concepts” for more information on the benefits of SQL Server database partitioning:


How partitioning works

By default there is one partition in the Native Archive database. You can enable EMC SourceOne to create multiple partitions in the database. This partitioning can be performed manually or automatically.

Manual partitioning

When an administrator manually creates a partition using the EMC SourceOne console, a resulting SQL command is executed by SQL Server.

Automatic partitioning

When an administrator sets up automatic partition creation using the EMC SourceOne console, partitions are created based on the partitioning criteria selected by the administrator. As new messages are inserted into the Native Archive database, EMC SourceOne checks whether automatic partitioning is enabled and configured. If the criterion for a new partition is met, a new partition is created and then used.

For procedures for partitioning the Native Archive database using the EMC SourceOne console, refer to the “Configuring Archives” chapter in the EMC SourceOne Email Management Administration Guide.
Conclusion
To optimize the performance of your EMC SourceOne Email Management system, consider making adjustments to many operating factors to meet the specific requirements of your e-mail archiving system.