MailMarshal 6.X Sizing Guide

Contents

The purpose of this document is to present some detail that can be used when planning the hardware specifications of a MailMarshal SMTP 6.X Server.

The document includes minimum recommended specifications for version 6.8, as well as performance and storage guidelines to allow scaling for various numbers of users.

Also included is background information about what hardware components affect the performance of MailMarshal the most, and how best to deploy components over multiple servers.

Finally there is discussion of performance tuning recommendations, and references to other resources that provide more advanced tuning information.

INTRODUCTION

MailMarshal SMTP is a highly scalable email filtering solution. An appropriately sized installation can easily provide reliable processing and redundancy for organizations with 100,000 users or more.

When sizing a MailMarshal installation, the most important factor is to determine the expected throughput of the solution and the volumes of Internet SMTP traffic expected.

Email must be highly available, so it is always recommended to build redundancy into the MailMarshal installation by having more than a single MailMarshal processing server available at all times. Most of the information in this document relates to what a single server can process on a sustained basis. When deciding on the final hardware specifications you should strongly consider deploying at least two MailMarshal processing servers to divide the load and meet your required throughput.

Server specifications depend on the following items, in order of importance:

1. Hard drive subsystem speed
2. Processor Speed
3. Installed Memory

Hard Drive subsystem speed will have the most effect on the expected throughput of the MailMarshal processing server.

Best Practices

When sizing a MailMarshal installation, consider the following best practices as well as the specific minimum requirements listed:

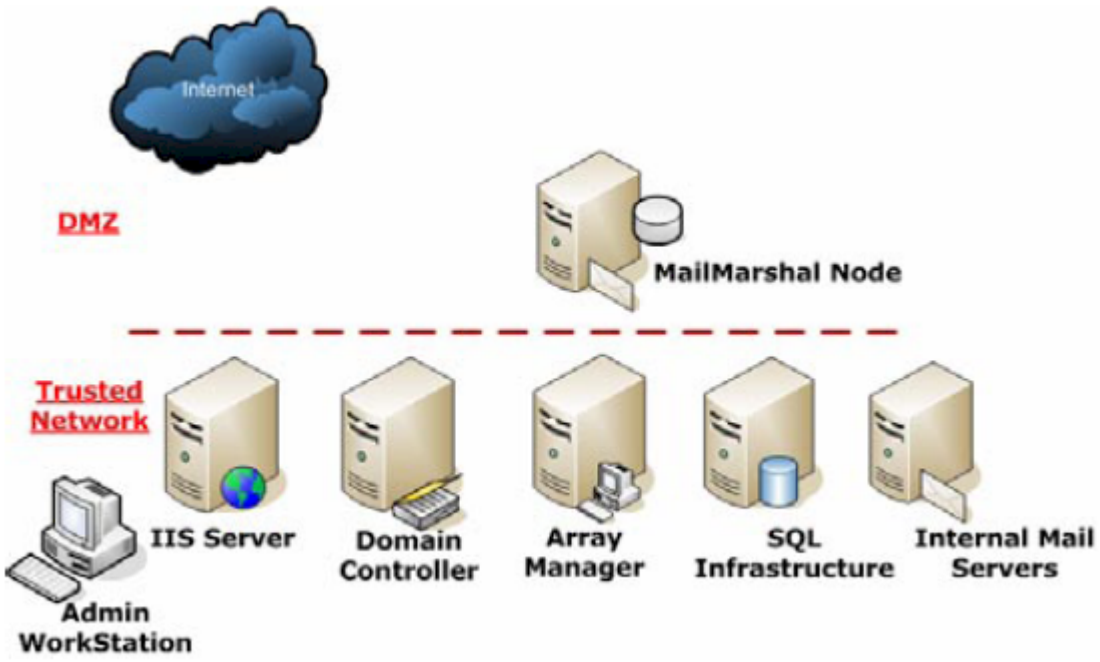
- **Don't** under-specify – allow for growth and unexpected load.
- **Do** allow extra hard disk space – disk performance is reduced when free space is low. 30% free space is a recommended minimum.
- **Do** allow for redundancy and peak flow – the server should be able to clear a backlog comfortably.
- **Do** check the assumptions in this document against your organization's email traffic patterns and message retention requirements.

HARDWARE AND SOFTWARE REQUIREMENTS

The information provided in this section gives a general overview of MailMarshal SMTP components and basic requirements. For details of required hardware and software prerequisites for a particular release of MailMarshal SMTP, consult the *User Guide* and Release Notes provided with the release.

What Components Do I Need?

A MailMarshal SMTP installation is logically divided into a number of functional units. These components can be installed on one or more servers, depending on a variety of factors. The diagram below shows each component as a separate server for clarity.



- **MailMarshal Node** (one or more): Email Processing server; storage for quarantined and archived messages
- **Array Manager:** User interface and configuration; database connectivity
- **SQL infrastructure:** Microsoft SQL Server or SQL Express. Storage for configuration, message indexing, and reporting information
- **IIS Web server:** Hosts optional end user Spam management, web based Administration console, and web based Reporting console
- **Domain Controller:** Existing Active Directory environment queried by MailMarshal for user and group information (optional) (LDAP directories are also supported)
- **Internal Mail Servers:** Existing local delivery location for email

Basic Hardware

The following **minimum** suggestions apply at the time of writing. Always use recent hardware with server-class reliability. See the tables below for more information about processor, memory and disk requirements.

MailMarshal Node

- Dual core processor
- Minimum 1GB memory (2GB preferred)
- 512MB disk for installation, plus minimum 10GB disk free for archive and logs (NTFS)
- Strong preference for two physical disk drives (see discussion in the Performance Tuning section)
- Quarantined email can consume significant disk space

Array Manager, also hosting SQL Express or SQL Server

- Current generation processor (Microsoft recommends 2GHz or better for SQL Server 2008 Standard)
- Minimum 2GB memory
- Minimum 10GB disk free (NTFS)
- See Microsoft recommendations for SQL Server sizing

Web Components (IIS server)

- Dual core processor
- 1GB memory
- 500 MB disk free

SIZING GUIDELINES

MailMarshal Processing Server Sizing

Processing servers are disk intensive.

- Email processing (unpacking and scanning) requires numerous I/O operations.
- Quarantined and archived email can consume significant disk space.

The table below provides basic sizing information for a dedicated 32 bit server, using typical processing rules including an integrated (DLL based) virus scanner.

Users	Messages Quarantined or Archived per Day	Text Log MB per Day	Quarantine Folder and Message Logs MB per Day	CPU GHz	Memory GB	Hard Drive Free GB (Quarantine and Logs)
100	2,000	21	9	1.7	1	2
250	5,000	53	23	1.7	1	5
500	10,000	106	46	1.7	2	10
1000	20,000	212	93	2.4	2	20
5000	100,000	1061	464	2.4	2	50
10,000	200,000	2122	927	2x2.4	4	100
25,000	500,000	5305	2318	2x2.8	4	200
50,000	1,000,000	10610	4635	6x2.8	4	500

Notes:

- The sizing of text logs and quarantine folders is based on the default retention (5 days for logs and 7 days for quarantine folders). Quarantine storage requirements depend on archiving and retention policies. If you archive significant amounts of email you may need much more disk space.
- The processor should be recent (less than 2 years old), but is not the most critical item. MailMarshal components are fully threaded and will take advantage of multiple CPU cores or multiple processors.
- Large user groups will consume additional memory.
- For SQL Express installed on the same server, **add 1GB memory** to each of the specifications.
- 64 bit systems will require at least an additional 1 GB of memory for the operating system.
- For sites with more than 10,000 users, it may be more cost effective to add MailMarshal processing servers (rather than having one larger server). Multiple servers also provide redundancy.

Standalone Server or Array Manager/Node?

The MailMarshal SMTP software is modular. Conceptually it is possible to configure an installation in three scenarios:

1. Processing Node and Array Manager on a single server
2. Processing Node on one server with the Array Manager on another server (possibly also hosting the SQL database)
3. Two or more Processing Nodes, with the Array Manager on another server

The following data, taken from acceptance testing of MailMarshal 6.0, is indicative of the performance differences between scenarios 1 and 2 above:

- All components on a single server: Average **21 messages/second** throughput
- Single Processing node with Array Manager on separate server: Average **33 messages/second** throughput

Many factors will influence the actual throughput for an installation, but these figures clearly show the advantage gained by installing components on separate servers. To further increase capacity, you can add more processing nodes.

Virtual Machines

MailMarshal functions well in a virtualized environment. Note the following points:

- The host server must have enough processor and memory resources for all guest VMs as well as the host operating system.
- The recommendation to use separate PHYSICAL disk drives also applies to VM environments. A server hosting multiple MailMarshal VMs should have a number of physical disks.

SQL Database Sizing

As a general rule, allow 1024 bytes per messages that is logged. The table below shows sample calculations based on 70 messages per user per day. You should review actual usage in your organization.

> **Note:** Each additional message classification or quarantine action applied to a message creates an additional record of similar size. The total database size can quickly grow larger.

Users	Email per Day per User	Days to keep logs	Safety Margin	Total Data (GB)	Database to Use
100	70	100	1.25	0.83	Express or SQL
200	70	100	1.25	1.67	Express or SQL
225	70	100	1.25	1.88	Express or SQL
250	70	100	1.25	2.09	Express or SQL
500	70	100	1.25	4.17	SQL
1000	70	100	1.25	8.34	SQL
2000	70	100	1.25	16.69	SQL
5000	70	100	1.25	41.72	SQL

PERFORMANCE TUNING

Unpacking Directory

Testing of MailMarshal shows that disk I/O is a limiting factor on processing.

In acceptance testing with server-grade hardware, moving the MailMarshal Unpacking folder to a separate physical disk increased the message throughput by close to 50%, and made the server generally more responsive.

For data protection, mirrored disks might be used for the quarantine folders. Mirroring would not be necessary for the Unpacking folder, which is temporary working space.

Location of the Array Manager

The location of the Array Manager can affect the performance of the administration and configuration tools used in MailMarshal, but will not necessarily affect the mail processing performance.

The recommended locations for the Array Manager are listed below, from most to least preferred:

1. On the same server as the SQL Server holding the MailMarshal database. This is because the Array Manager is the only component that actually communicates directly to the MailMarshal database. All the other components communicate to the database through the Array Manager.
2. On a server that is as close as possible to the SQL Server holding the MailMarshal database, and has a LAN speed network connection to it.
3. On the same server as an Active Directory Global Catalog (if MailMarshal uses Active Directory to retrieve user group information).

4. For a small site, the Array Manager, MailMarshal Node and SQL Express database could all be on the same server (with appropriately enhanced hardware specification).

CPU and Processing Capability

Testing of Processing Nodes under heavy load shows both a high CPU usage and high Disk Queue. This indicates a reasonable balance between the I/O and processor performance. To increase the performance of a server, additional processor resource should be accompanied by a suitable improvement in disk I/O capability.

Depending on available hardware, rather than enhancing the specification of each Processing Node it may be more cost effective to install additional Processing Node servers.

Node Memory Requirements

The memory footprint of Processing Nodes is relatively light even under heavy load. The Engine rarely exceeds 250MB of memory. SpamProfiler can consume an additional 100 MB. If large numbers of users and user groups are configured, this also consumes additional memory.

SQL Server Performance and Requirements

Normal operation of the Nodes puts only a light load on the SQL server. Using the Consoles and generating reports places a heavier burden on it.

Above 500 – 1000 users the memory footprint for SQL Server is quite high. SQL server will consume large amounts of memory. For sizing suggestions, see the table and notes above. When installing the MailMarshal Array Manager on a SQL Server computer, you should base memory requirements on the recommended sizing for SQL Server.

For advanced SQL Server administrators, moving the Indexes of the MailMarshal SMTP Message table to another file group (on a separate physical disk) can significantly improve performance.

ADDITIONAL INFORMATION

MailMarshal configuration can significantly affect processing and sizing requirements.

For more information, see the following resources available from the MailMarshal SMTP Support area of the M86 Security website (www.m86security.com):

- MailMarshal 6.X Performance Benchmarking
- MailMarshal 6.X Policy Implementation Sizing Guide
- MailMarshal SMTP User Guide
- Knowledge Base articles, including:
    - Q10829: What are the hardware and software requirements for MailMarshal 6.X?
    - Q10423: How do I performance tune MailMarshal?

ABOUT M86 SECURITY

M86 Security is a global provider of Web and messaging security products, delivering comprehensive protection to more than 20,000 customers and over 16 million users worldwide. As one of the largest independent internet security companies, we have the expertise, product breadth and technology to protect organizations from both current and emerging threats. Our appliance, software and cloud-based solutions leverage real-time threat data to proactively secure customers' networks from malware and spam; protect their sensitive information; and maintain employee productivity. The company is based in Orange, California with international headquarters in London and offices worldwide. For more information about M86 Security, please visit www.m86security.com.

TRY BEFORE YOU BUY

M86 Security offers free product trials and evaluations. Simply contact us or visit www.m86security.com/downloads

Corporate Headquarters
828 West Taft Avenue
Orange, CA 92865
United States

Phone: +1 (714) 282-6111
Fax: +1 (714) 282-6116

International Headquarters
Renaissance 2200
Basing View, Basingstoke
Hampshire RG21 4EQ
United Kingdom
Phone: +44 (0) 1256 848080
Fax: +44 (0) 1256 848060

Asia-Pacific
Millennium Centre, Bldg C, Level 1
600 Great South Road
Ellerslie, Auckland, 1051
New Zealand
Phone: +64 (0) 9 984 5700
Fax: +64 (0) 9 984 5720

Version 10.07.10