



Deployment Guides

Help Documentation

Deployment Guides

SmarterMail in Individual and Micro-business Deployments

Who Should Use This Document

This document is intended for use by individuals and micro-businesses as they develop an effective architecture for their SmarterMail system implementation. For best results, this document should be used in conjunction with the SmarterTools Knowledge Base .

Determining the Required Architecture

It is not unusual for a business to generate upwards of 50 legitimate mail messages, per employee, per day on average 1 . Considering the relative volume of spam and other abusive messages that are currently prevalent, the total number of messages processed per user/mailbox could easily exceed 250 per day 2 . Companies in technology, finance, and other communication-intensive industries might have much higher average email volumes. A tendency toward the prolific use of attachments and email graphics can also influence performance in mail environments. SmarterTools encourages readers to determine which architecture is right for them based upon anticipated email volume as opposed to head-count because email load is a far better predictor of server requirements than the number of mailboxes on a system.

SmarterMail is built around a fully scalable model, so moving from one architecture recommendation to another requires relatively simple enhancements or modifications that can yield significant increases in performance and volume capacity.

That said, the authors have chosen to divide their recommendations into three categories: individual and micro-business architectures, small to medium-sized business architectures, and high-volume deployment architectures. For the purposes of these recommendations:

- Individuals and micro-businesses shall be defined as mail environments with average email volumes of up to 25,000 messages per day (12,500 in/12,500 out). This infers a maximum of 100 mailboxes. Information regarding these architectures is available in this SmarterTools document.
- Small to medium-sized businesses shall be defined as mail environments with average email volumes of up to 400,000 messages per day (200,000 in/200,000 out). This infers a maximum of 1,600 mailboxes. Information regarding these architectures can be found in our Small to Medium-sized Business guide.
- High-volume deployments shall include ISPs, hosting companies, large businesses, and

enterprise organizations with average email volumes numbering in the millions. This infers organizations with many thousands of mailboxes. Information regarding these architectures is available in our High Volume Deployments guide.

1 Intel presentation, “IT Business Value”, 9-16-2005.

2 Nearly 80% of email messages sent world-wide are spam....”; Deleting Spam Costs Business Billions, Information Management Journal, May/June 2005, Nikki Swartz

General Architecture

Small businesses generally have a single SmarterMail server that processes all mail for all users. This includes webmail client logins, antispam and antivirus protection, syncing of contacts, calendars, tasks and notes using a syncing protocol, and it can even include archiving, if necessary. Just remember: the more you add, the more you need in terms of processing power and memory. In addition, if the server processes large amounts of email, it may be necessary to add a larger hard drive, or even move from standard hard drive configuration, such as a SATA drive, to using a SSD. Here is what a standard Small Business Deployment looks like:



SmarterMail Primary Server

This server is the central data processor and repository of your client’s email. Users connect to this server using POP and IMAP to receive email, and use SMTP to send email out. Webmail is also hosted on this server to help those without email client software. In addition, the SmarterMail server performs all spam-blocking and virus protection operations.

Hardware recommended in this configuration for individuals and micro-businesses includes:

- Dual-core processor
- 2+ GB of RAM
- Windows Server 2012 R2, 64-bit is required
- 250GB SSD for your Operating System and data (NOTE: size is dependent on the number of

users, data to store, etc.)

- 250GB 7200 RPM SATA drive for your Spool

A Note on the Spool

Nothing taxes hard drives more than an email server. Due to the nature of what a mail server does, i/o is a HUGE mitigating factor in terms of performance. This is because, generally, so many files are written to, and read from, the hard drive. As a result, even on small installations it's a good idea to keep your Spool -- the primary location where ALL messages go when they're sent or received -- on a drive that's separate from your operating system. The Spool folder, while crucial to a mail server working properly, can be relatively transitory -- moved, renamed and re-created, etc. as needed. However, your OS drive is not. In addition, as so many files are written to the Spool, the drive where the Spool is located should be defragged regularly.

Email Virtualization: VPS Environments

A virtual server environment is when one physical hardware device is partitioned so as to operate as two or more separate servers. SmarterMail can be deployed in all types of virtual server environments and has been tested with most major virtualization software (such as Hyper-V, VMware, Virtual Box, Virtuozzo and Zen). The most important factor of performance in a shared environment is the design and implementation of the storage network to ensure SmarterMail has enough IOP availability to the storage pool. Leveraging iSCSI with IO Multipathing is recommended over standard 1Gbe connections if fiber channel, or 10Gbe is unavailable.

SmarterMail in the Cloud

SmarterMail has been tested in Amazon EC2, Google Cloud, as well as Azure and functions as expected. One thing to take into consideration here is ordering the proper instance with adequate storage IOPS.

Please take into consideration, most cloud providers also restrict SMTP traffic.

With Amazon, you'll need to fill out a request form to remove e-mail sending limitations. This can be found here: <https://aws.amazon.com/forms/ec2-email-limit-rdns-request?catalog=true&isauthcode=true>

With Google Cloud, you'll need to leverage an Outbound gateway such as SendGrid. More information can be found here: <https://cloud.google.com/compute/docs/tutorials/sending-mail/>

Windows Azure does not place such restrictions when it comes to sending out over port 25 but do place restrictions on overall outgoing traffic and implement bandwidth throttling based on the size of your VM.

Note: If using Hyper-V, SmarterTools recommends attaching a physical network adapter from the Hyper-V host to the SmarterMail virtual machine instead of using the virtual network manager to create virtual LANs/bridges. This is because there is a risk of losing network access to all of the virtual machines if they are all tied to a single virtual network and a network-related issue occurs on one of the virtual machines. By allowing the SmarterMail virtual machine a dedicated physical connection, this risk can be eliminated.

Securing an Email Server for Small Business

SmarterMail's included antispam and antivirus measures will work perfectly fine for most small business installations. That said, they may need monitoring and scores adjusted as needed to ensure that the majority of spam your mail server receives is handled appropriately. In addition, it's recommended that greylisting is used. While this can impact the delivery of messages, it's a good way to prevent one-off spam messages from getting through. The unfortunate thing about spam is that there is no silver bullet: spam protection takes some time and diligence. However, having multiple layers of spam protection, like using the included antispam measures, greylisting and potentially adding in another antispam measure, is the best approach to keeping inboxes free from the clutter of unwanted email.

The nice thing is, if additional services are needed, they can be easily integrated into SmarterMail. That includes Cyren Premium Antispam and Zero-hour Antivirus, as well as any third-party services a business wants to implement. (E.g., SpamExperts.) In addition, SmarterMail runs well if other antivirus products are used on the server, such as AVG or Eset.

Regarding security, the default security settings will be fine for most small businesses. However, it's never a bad idea to implement good password policies and have IDS in place to ensure your mail server is at least protected. Other things, like throttling and more, can be put in place to ensure your mail server remains unaffected should issues occur, such as a mailbox becomes compromised. In these instances, throttling can keep that compromised account from blasting out emails that could get your mail server blacklisted.

Then there's putting things in place to help offer proof that an email is originating from the server it says it's coming from. These include DKIM, SPF and DMARC, which are all supported by SmarterMail. These, PLUS requiring SMTP authentication for your users, can help prevent mail from being blocked at the recipient's mail server.

SmarterMail in Small to Medium-sized Business Deployments

Who Should Use This Document

This document is intended for use by small to medium-sized businesses as they develop an effective architecture for their SmarterMail system implementation. For best results, this document should be used in conjunction with the SmarterMail Online Help and the SmarterTools Knowledge Base .

Determining the Required Architecture

It is not unusual for a business to generate upwards of 50 legitimate mail messages, per employee, per day on average ¹ . Considering the relative volume of spam and other abusive messages that are currently prevalent, the total number of messages processed per user/mailbox could easily exceed 250 per day ² . Companies in technology, finance, and other communication-intensive industries might have much higher average email volumes. A tendency toward the prolific use of attachments and email graphics can also influence performance in mail environments. SmarterTools encourages readers to determine which architecture is right for them based upon anticipated email volume as opposed to head-count because email load is a far better predictor of server requirements than the number of mailboxes on a system.

SmarterMail is built around a fully scalable model, so moving from one architecture recommendation to another requires relatively simple enhancements or modifications that can yield significant increases in performance and volume capacity.

That said, the authors have chosen to divide their recommendations into three categories: individual and micro-business architectures, small to medium-sized business architectures, and high-volume deployment architectures. For the purposes of these recommendations:

- Individuals and micro-businesses shall be defined as mail environments with average email volumes of up to 25,000 messages per day (12,500 in/12,500 out). This infers a maximum of 100 mailboxes. Information regarding these architectures can be found in our Individual and Micro-business Deployments guide.
- Small to medium-sized businesses shall be defined as mail environments with average email volumes of up to 400,000 messages per day (200,000 in/200,000 out). This infers a maximum of 1,600 mailboxes. Information regarding these architectures can be found in this guide.
- High-volume deployments shall include ISPs, hosting companies, large businesses, and enterprise organizations with average email volumes numbering in the millions. This infers organizations with many thousands of mailboxes. Information regarding these architectures is available in our High Volume Deployments guide.

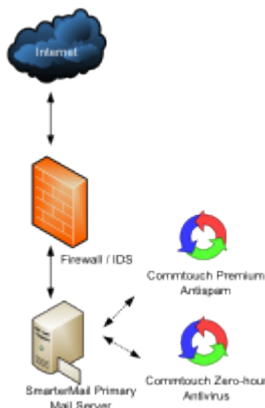
1 Intel presentation, “IT Business Value”, 9-16-2005.

2 "Nearly 80% of email messages sent world-wide are spam..."; Deleting Spam Costs Business Billions, Information Management Journal, May/June 2005, Nikki Swartz

General Architecture

Medium-sized businesses generally still have a single SmarterMail server that processes all mail for all users. The difference is in the number of users and the amount of daily message traffic. Medium businesses will almost always move beyond webmail usage and have syncing in place for mobile devices using technologies like EAS and/or EWS. Based on the amount of email they process, medium businesses will also have multiple antispam measures in place, such as Cyren Premium Antispam. Depending on the business, they may also require email archiving.

As with ANY SmarterMail installation, the more you add, the more you need in terms of processing power and memory. In addition, if the server processes large amounts of email, it may be necessary to add a larger hard drive, or even move from standard hard drive configuration, such as a SATA drive, to using a SSD. Here is what a standard Medium Business Deployment looks like:



SmarterMail Primary Server

This server is the central data processor and repository of your client’s email. Users connect to this server using POP and IMAP to receive email, and use SMTP to send email out. Webmail is also hosted on this server to help those without email client software. In addition, the SmarterMail server performs spam-blocking (with the exception of SpamAssassin) and virus protection operations.

Hardware recommended for this configuration in small to medium-sized businesses includes:

- Dual-core processor
- 6 GB of RAM
- Windows Server 2012 R2, 64-bit is required
- 4 x 7200 RPM SATA drive (minimum) for OS and data (NOTE: SSDs can be used as needed)

or as budget allows)

- RAID 10 3
- 500GB 7200 RPM SATA drive for the Spool

3 Regarding the RAID 10 recommendation, we realize that some companies have policies in place that require the use of alternate RAID configurations. This is perfectly acceptable, except RAID 1 is NOT recommended. Using RAID 1 arrays will likely result in significant reductions in hard drive performance -- up to a 50% loss vs. a single drive and up to 8x slower than a 4-drive RAID 10 implementation. Estimated i/o usage for a medium-sized deployment can range between .5 - 3 MBps or between 128 and 758 IOPS.

A Note on the Spool

Nothing taxes hard drives more than an email server. Due to the nature of what a mail server does, i/o is a HUGE mitigating factor in terms of performance. This is because, generally, so many files are written to, and read from, the hard drive. As a result, even on small installations it's a good idea to keep your Spool -- the primary location where ALL messages go when they're sent or received -- on a drive that's separate from your operating system. The Spool folder, while crucial to a mail server working properly, can be relatively transitory -- moved, renamed and re-created, etc. as needed. However, your OS drive is not. In addition, as so many files are written to the Spool, the drive where the Spool is located should be defragged regularly.

Email Virtualization: VPS Environments

A virtual server environment is when one physical hardware device is partitioned so as to operate as two or more separate servers. SmarterMail can be deployed in all types of virtual server environments and has been tested with most major virtualization software (such as Hyper-V, VMware, Virtual Box, Virtuozzo and Zen). The most important factor of performance in a shared environment is the design and implementation of the storage network to ensure SmarterMail has enough IOP availability to the storage pool. Leveraging iSCSI with IO Multipathing is recommended over standard 1Gbe connections if fiber channel, or 10Gbe is unavailable.

SmarterMail in the Cloud

SmarterMail has been tested in Amazon EC2, Google Cloud, as well as Azure and functions as expected. One thing to take into consideration here is ordering the proper instance with adequate storage IOPS.

Please take into consideration, most cloud providers also restrict SMTP traffic.

With Amazon, you'll need to fill out a request form to remove e-mail sending limitations. This can be

found here: <https://aws.amazon.com/forms/ec2-email-limit-rdns-request?catalog=true&isauthcode=true>

With Google Cloud, you'll need to leverage an Outbound gateway such as SendGrid. More information can be found here: <https://cloud.google.com/compute/docs/tutorials/sending-mail/>

Windows Azure does not place such restrictions when it comes to sending out over port 25 but do place restrictions on overall outgoing traffic and implement bandwidth throttling based on the size of your VM.

Note: If using Hyper-V, SmarterTools recommends attaching a physical network adapter from the Hyper-V host to the SmarterMail virtual machine instead of using the virtual network manager to create virtual LANs/bridges. This is because there is a risk of losing network access to all of the virtual machines if they are all tied to a single virtual network and a network-related issue occurs on one of the virtual machines. By allowing the SmarterMail virtual machine a dedicated physical connection, this risk can be eliminated.

Recommended Spam Protection Measures

SmarterMail uses a flexible, multi-layered spam prevention strategy to achieve 97% spam protection out-of-the-box. Initial spam settings are configured during installation, but System Administrators can modify these settings to meet their unique needs at any time.

Since spam prevention strategy is an integral component of mail server deployment, a few of the most important spam-fighting measures available for SmarterMail are discussed below.

Message Sniffer

Available as an optional add-on for SmarterMail, Message Sniffer complements SmarterMail's built-in antispam and antivirus features and accurately captures more than 99% of spam, viruses, and malware right out of the box. It learns about your environment automatically to optimize its performance and accuracy without your intervention; and it can be easily customized to meet your requirements. Because Message Sniffer runs all of its signatures locally, it doesn't need to communicate with any services outside of the mail server, making it quicker and more efficient. Furthermore, the database is regularly and automatically updated to protect against new spam and malware attacks.

For more information about the Message Sniffer add-on, please visit the SmarterTools website.

Cyren Premium Antispam

Available as an optional add-on for SmarterMail, Cyren Premium Antispam uses recurrent pattern detection (RPD) technology to protect against spam outbreaks in real time. Rather than evaluating the content of messages, the Cyren Detection Center analyzes large volumes of Internet traffic in real

time, recognizing and protecting against new spam outbreaks the moment they emerge. When combined with SmarterMail's out-of-the box antispam measures, the Cyren Premium Antispam add-on can effectively block 99% of spam from users' inboxes.

For more information about the Cyren Premium Antispam add-on, please visit the SmarterTools website.

SpamAssassin-based Pattern Matching Engine

SmarterMail incorporates the SpamAssassin-based Pattern Matching Engine as part of its multi-layered spam protection strategy. Based on SpamAssassin technology, this powerful pattern matching engine can process substantially higher volumes of email per day without the need for a distributed antispam server. For more information, please refer to the SmarterMail Online Help.

Greylisting

SmarterMail includes greylisting—an effective method of blocking spam at the SMTP level. Using the greylisting feature in conjunction with SpamAssassin will prevent a large percentage of spam messages from being received by the SmarterMail server and drastically reduce the SpamAssassin work load. At the time of this writing the greylisting feature is effectively blocking up to 85% of spam at the SMTP level and greatly enhancing the effectiveness of SpamAssassin. The authors expect that the effectiveness of greylisting will diminish over time as spammers learn to adjust to this technique. Additional information about greylisting can be found in the SmarterMail Online Help or at <http://greylisting.org>.

Other Built-in Antispam Measures

SmarterMail's multi-layered spam prevention strategy also includes SPF, DKIM, reverse DNS, RBL, blacklist/whitelist, SMTP blocking, custom headers, and per-user spam weighting. More information about these important features is available in the SmarterMail Online Help and/or the SmarterTools Knowledge Base.

Distributed SpamAssassin Servers

SmarterMail includes support for SpamAssassin, an open source spam filtering program. When implemented, SmarterMail will pass an incoming message to SpamAssassin. SpamAssassin returns the message with a spam score that can be used to filter mail alone or in conjunction with the other spam filtering options in SmarterMail.

The Windows version is limited to processing a single message at a time, effectively handling approximately 25,000 spam messages per day and is usually more than adequate to the needs of individual and micro-business environments. However, the Linux version of SpamAssassin can process multiple spam messages simultaneously, allowing it to process significantly more messages

than its Windows counterpart. Therefore, SmarterTools recommends the stand-alone Linux version of SpamAssassin for small to medium-sized business environments (see Figure 2).

The Linux version of SpamAssassin is available at no charge from the SpamAssassin website and is installed on its own server (distributed environment). Additional information about SpamAssassin, including downloading instructions, is available at <http://spamassassin.apache.org>.

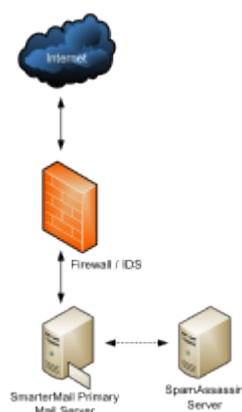
SmarterTools recommends the following hardware for stand-alone, distributed SpamAssassin servers:

- Dual-core processor
- 1 GB of RAM
- Dedicated SATA drive

It is possible to use a virtual server environment (Virtual PC, VMWare, etc.) to run SmarterMail (primary) in Windows and SpamAssassin (distributed) in Linux on the same physical hardware. This configuration may even be preferable in certain situations due to physical space requirements, fast communication between SmarterMail and the distributed SpamAssassin, and the cost savings of purchasing only one physical device.

If a virtual server configuration is chosen, where one physical server device operates as the primary mail server and contains the SpamAssassin Linux version as a distributed virtual server, SmarterTools recommends the following hardware:

- Dual-core processor
- 2 GB of RAM
- 7200 RPM SATA drive (minimum)
- RAID 10 4



4 While a RAID 10 configuration is recommended for SmarterMail Primary Servers, the Authors recognize that some companies have policies that require the use of alternate RAID configurations. In this case, other RAID configurations may be used with the exception of RAID 1. The use of RAID 1

arrays in this configuration will likely result in a significant reduction in disk performance (up to a 50% loss vs. a single drive and up to 8 times slower than a 4-drive RAID 10 implementation).

Recommended Virus Protection Measures

SmarterMail includes several antivirus enhancements that prevent the mail server from being compromised, including support for incoming and outgoing SSL/TLS connections, administrator access restriction by IP, intrusion detection (IDS), active directory authentication, harvest attack detection, denial of service (DOS) attack prevention, malicious script authentication, and brute force detection for webmail.

Cyren Zero-hour Outbreak Detection

Available as an optional add-on for SmarterMail, Cyren Zero-hour Outbreak Detection can further extend SmarterMail's built-in virus protection measures. Rather than depending on heuristics, Cyren Zero-hour Outbreak Detection uses Recurrent Pattern Detection (RPD) technology to scan the Internet and identify virus and malware outbreaks as soon as they emerge.

For more information about the Cyren Zero-hour add-on, please visit the SmarterTools website.

Extending Capacity via Outbound Gateways

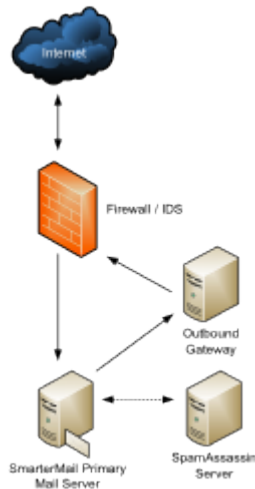
Outbound gateways are used for handling the delivery of remote mail to reduce the load on the primary mail server(s). An outbound gateway does not perform the tasks of storage and/or retrieval of end users' mail, freeing it to process many times more outgoing messages than a primary server could be expected to handle effectively.

Most small to medium-sized business environments will not need an outbound gateway. However, as a business grows, the addition of an outbound gateway can add significant capacity to a mail network and smooth the transition to higher volumes and larger networks. In the opinion of the authors, a single primary server in this configuration with distributed spam handling and a SmarterMail outbound gateway can effectively process upwards of 400,000 messages per day (200,000 in/200,000 out). This infers a maximum of 1,600 employees/mailboxes.

Businesses that choose to extend capacity via an outbound gateway can download SmarterMail Free and set it up as a free gateway server. More information about configuring SmarterMail as a free gateway server is available in the SmarterTools Knowledge Base.

General Architecture with an Outbound Gateway

The general recommendation for SmarterMail architectures in a small to medium-sized business environments including an outbound gateway (up to 400,000 messages per day) is as shown in Figure 3.



SmarterMail Outbound Gateway Servers

The Authors recommend the following hardware configuration for SmarterMail outbound gateways:

- Dual-core processor
- 1 GB of RAM
- SATA drive dedicated for the spool

This hardware configuration can support many SmarterMail servers, but SmarterTools recommends an ideal ratio of one gateway server for every five primary mail servers, reducing the risks of blacklisting and the effects of potential hardware failures.

Using Third-party Solutions with SmarterMail

Inbound Gateways

SmarterMail is designed to function at very high levels of performance in a small business environment without the need for an inbound gateway. Some companies choose to use spam and virus filtering solutions in front of their mail server—an inbound gateway. In the opinion of the authors, it should not be expected that the addition of an inbound gateway will have a significant impact on the performance of the mail network in a small to medium-sized business environment.

The majority of spam checks built into SmarterMail work off the IP address of the sender. When you use an inbound gateway, SmarterMail will receive all mail from that gateway which will cause the IP-based spam filters to no longer function correctly. For this reason, you will want all spam filtering to be performed via the inbound gateway.

Generally, inbound gateways are applicable only in higher-volume environments. Additional information and recommendations on SmarterMail implementations in various environments is available at the SmarterTools website.

SmarterMail in High-volume Deployments

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Determining the Required Architecture

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SmarterMail is built around a fully scalable model, so moving from one architecture recommendation to another requires relatively simple enhancements or modifications that can yield significant increases in performance and volume capacity.

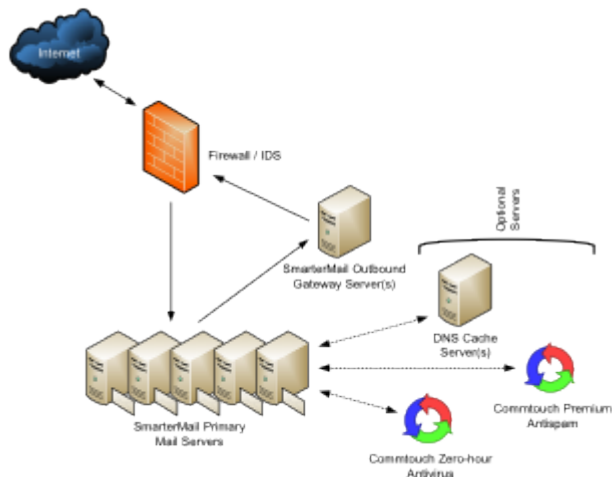
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organizations with many thousands of mailboxes. Information regarding these architectures is available in this SmarterTools document.

General Architecture

The general recommendation for the high-volume system architecture is detailed in Figure 1 below.



SmarterMail Primary Servers

This server is the central data processor and repository of your client's email. Users connect to this server using POP, IMAP, EAS, EWS or MAPI to receive email, and use SMTP to send email out. Webmail is also hosted on this server to help those without email client software. In addition, the SmarterMail server performs spam-blocking (with the exception of SpamAssassin) and virus protection operations. Users can also synchronize their contacts, and calendar across several different methods. A SmarterMail network may contain one or more mail servers. Under normal activity—and assuming sufficient disk space 3 —each server should be able to handle up to 40,000 users per server (1 million messages per day).

For high-volume deployments utilizing this architecture, SmarterTools recommends the following server specifications for SmarterMail servers:

- Dual-core, server-grade processors
- 8 - 16 GB of RAM, depending on the syn technologies used
- RAID 1 array for the operating system and program files
- One single SSD drive or RAID 0 array for the email spool
- RAID 10 4 array to store user data and email (8 disk minimum when using platter drives, even SAS 10 and 15k drives.) If a Hybrid setup can take place with SSD Cache on a RAID10, even better. The administrator will want to configure their storage to optimize random 4k reads/writes. SmarterMail is very heavy on random Reads/Writes on small sectors. Estimated IOPS usage for a high volume deployment = 10-20 MBps with heavy random 4k reads/writes,

which breaks down to 5,000 - 10,000 IOPS.

- Windows Server 2012 R2 or higher, 64-bit is required
- Virtual machines are not recommended for large deployments as restrictions on disk i/o can seriously impact performance. (Though this is not a factor when leveraging properly designed storage networks with adequate i/o availability)

Email Virtualization: VPS Environments

A virtual server environment is when one physical hardware device is partitioned so as to operate as two or more separate servers. SmarterMail can be deployed in all types of virtual server environments and has been tested with most major virtualization software (such as Hyper-V, VMware, Virtual Box, Virtuozzo and Zen). The most important factor of performance in a shared environment is the design and implementation of the storage network to ensure SmarterMail has enough IOP availability to the storage pool. Leveraging iSCSI with IO Multipathing is recommended over standard 1Gbe connections if fiber channel, or 10Gbe is unavailable.

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Please take into consideration, most cloud providers also restrict SMTP traffic.

With Amazon, you'll need to fill out a request form to remove e-mail sending limitations. This can be found here: <https://aws.amazon.com/forms/ec2-email-limit-rdns-request?catalog=true&isauthcode=true>

With Google Cloud, you'll need to leverage an Outbound gateway such as SendGrid. More information can be found here: <https://cloud.google.com/compute/docs/tutorials/sending-mail/>

Windows Azure does not place such restrictions when it comes to sending out over port 25 but do place restrictions on overall outgoing traffic and implement bandwidth throttling based on the size of your VM.

Extending Capacity Via Outbound Gateways

Outbound gateways are used for handling the delivery of remote mail to reduce the load on the primary mail server(s). An outbound gateway does not perform the tasks of storage and/or retrieval of end users' mail, freeing it to process many times more outgoing messages than a primary server could be expected to handle effectively.

Most small to medium-sized business environments will not need an outbound gateway. However, as a business grows, the addition of an outbound gateway can add significant capacity to a mail network and smooth the transition to higher volumes and larger networks. In the opinion of the authors, a single primary server in this configuration with distributed spam handling and a SmarterMail outbound gateway can effectively process upwards of 400,000 messages per day (200,000 in/200,000 out). This infers a maximum of 1,600 employees/mailboxes.

Businesses that choose to extend capacity via an outbound gateway can download SmarterMail Free and set it up as a free gateway server. More information about configuring SmarterMail as a free gateway server is available in the SmarterTools Knowledge Base.

SmarterMail Outbound Gateway Servers

SmarterTools recommends the following hardware for SmarterMail outbound gateways:

- Dual-core processor
- 1 GB of RAM
- SSD drive for dedicated spool, though SATA can be used for lower volume

This hardware configuration can support many SmarterMail servers, but SmarterTools recommends an ideal ratio of one gateway server for every five primary mail servers, reducing the risks of blacklisting and the effects of potential hardware failures.

Configuring SmarterMail for Failover

SmarterMail Enterprise allows organizations to decrease the likelihood of service interruptions and virtually eliminate downtime by installing SmarterMail on a hot standby that is available should the primary mail server suffer a service interruption. For businesses that use their mail server as a mission-critical part of their operations, failover functionality ensures that the business continues to communicate and that productivity remains at the highest levels possible, even if there is a primary server failure.

For more information on configuring failover, see the Configuring SmarterMail for Failover section of the online help.

Recommended Spam Protection Measures

SmarterMail uses a flexible, multi-layered spam prevention strategy to achieve 97% spam protection out-of-the-box. Initial spam settings are configured during installation, but System Administrators can modify these settings to meet their unique needs at any time.

Since spam prevention strategy is an integral component of mail server deployment, a few of the most important spam-fighting measures available for SmarterMail are discussed below.

Message Sniffer

Available as an optional add-on for SmarterMail, Message Sniffer complements SmarterMail's built-in antispam and antivirus features and accurately captures more than 99% of spam, viruses, and malware right out of the box. It learns about your environment automatically to optimize its performance and accuracy without your intervention; and it can be easily customized to meet your requirements. Because Message Sniffer runs all of its signatures locally, it doesn't need to communicate with any services outside of the mail server, making it quicker and more efficient. Furthermore, the database is regularly and automatically updated to protect against new spam and malware attacks.

For more information about the Message Sniffer add-on, please visit the SmarterTools website.

Cyren Premium Antispam

Available as an optional add-on for SmarterMail, Cyren Premium Antispam uses Recurrent Pattern Detection (RPD) technology to protect against spam outbreaks in real time. Rather than evaluating the content of messages, the Cyren Detection Center analyzes large volumes of Internet traffic in real time, recognizing and protecting against new spam outbreaks the moment they emerge. When combined with SmarterMail's out-of-the box antispam measures, the Cyren Premium Antispam add-on can effectively block 99% of spam from users' inboxes.

For more information about the Cyren Premium Antispam add-on, please visit the SmarterTools website.

Greylisting

SmarterMail includes greylisting, an effective method of blocking spam at the SMTP level. Using the greylisting feature in conjunction with SpamAssassin will prevent a large percentage of spam messages from being received by the SmarterMail server and drastically reduce the SpamAssassin work load. At the time of this writing, the greylisting feature is effectively blocking up to 85% of spam at the SMTP level and greatly enhancing the effectiveness of SpamAssassin. The authors expect that the effectiveness of greylisting will diminish over time as spammers learn to adjust to this technique. Additional information about greylisting can be found in the SmarterMail Online Help or at <http://greylisting.org>.

Other Built-in Antispam Measures

SmarterMail's multi-layered spam prevention strategy also includes SPF, DKIM, DMARC, reverse DNS, RBL, blacklist/whitelist, SMTP blocking, custom headers, and per-user spam weighting. More information about these important features is available in the SmarterMail Online Help and/or the SmarterTools Knowledge Base.

Recommended Virus Protection Measures

SmarterMail includes several antivirus enhancements that prevent the mail server from being compromised, including support for incoming and outgoing SSL/TLS connections, administrator access restriction by IP, intrusion detection (IDS), active directory authentication, harvest attack detection, denial of service (DOS) attack prevention, malicious script authentication, and brute force detection for webmail.

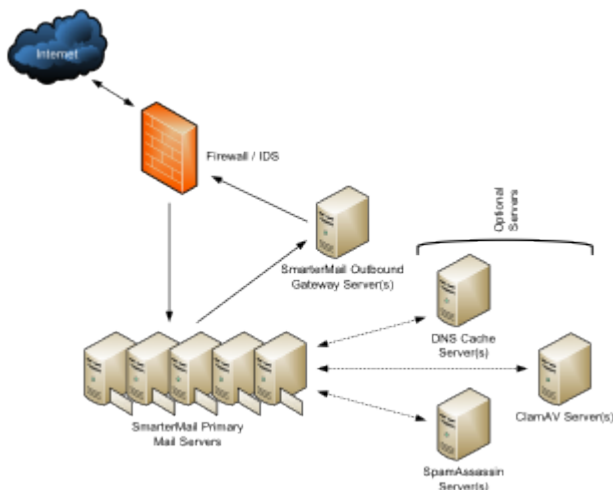
Cyren Zero-hour Outbreak Detection

Available as an optional add-on for SmarterMail, Cyren Zero-hour Antivirus can further extend SmarterMail's built-in virus protection measures. Rather than depending on heuristics, Cyren Zero-hour Outbreak Detection uses Recurrent Pattern Detection (RPD) technology to scan the Internet and identify virus and malware outbreaks as soon as they emerge.

For more information about the Cyren Zero-hour Outbreak Detection add-on, please visit the SmarterTools website.

Optional Servers

An alternative recommendation for the high-volume system architecture that incorporates optional servers is detailed in Figure 2 below.



Distributed SpamAssassin Servers

SmarterMail includes support for SpamAssassin, an open source spam filtering program. When implemented, SmarterMail will pass an incoming message to SpamAssassin. SpamAssassin returns the message with a spam score which can be used to filter mail alone or in conjunction the other spam filtering options in SmarterMail.

The Windows version is limited to processing a single message at a time, effectively handling approximately 100-200k spam messages per day and is usually more than adequate to the needs of low

and medium-volume environments. However, the Linux version of SpamAssassin can process multiple spam messages simultaneously, allowing it to process significantly more messages than its Windows counterpart. Therefore, SmarterTools recommends the stand-alone Linux version of SpamAssassin for high-volume environments (see Figure 2).

Additional information about SpamAssassin, including downloading instructions, is available at <http://spamassassin.apache.org>.

SmarterTools recommends the following hardware for stand-alone SpamAssassin servers:

- Dual-core processor
- 2 GB of RAM
- Dedicated SATA drive

ClamAV Servers

SmarterMail includes support for ClamAV, an open-source project offering superior antivirus protection that resides on the primary mail server, or in high-volume environments, on a remote server in a Linux environment. More information about ClamAV is available at www.clamav.net.

SmarterTools recommends the following hardware for stand-alone ClamAV servers:

- Dual-core processor
- 1 GB of RAM
- Dedicated SATA drive

DNS Cache Servers

DNS cache servers can be added to speed email delivery through systems with exceptionally heavy traffic or to take the load off of existing network DNS servers in Web hosting (or other) environments in which Web traffic is very high. Adding an email-dedicated DNS cache server also allows the control of caching rates for DNS queries for mail servers independently of the main network. The requirements—or lack thereof—for email-dedicated DNS servers vary greatly from organization to organization. Therefore, SmarterTools does not currently provide a hardware or configuration recommendation for DNS servers.

Additional information regarding DNS and DNS servers is available on the following websites:

- www.dns.net/dnsrd/servers/
- http://en.wikipedia.org/wiki/Domain_name_system

If it is determined that a system requires email-dedicated DNS caching, SmarterTools recommends a BIND solution. Information regarding BIND solutions is available at <http://www.isc.org/index.pl?sw/bind/>.

Using SmarterMail with Third-party Solutions

Inbound Gateways

In certain ultra-high-volume environments, inbound gateways are used to offload spam and virus checking from the primary server(s). In such environments, SmarterTools does not recommend that SmarterMail servers be used as inbound gateways. Instead, the load should be passed to third-party products.

Most spam checks and filters built into SmarterMail utilize the IP address of the mail sender. When using a third-party inbound gateway, all mail passes through that gateway prior to arriving at the SmarterMail server(s), which will negatively impact the functioning of the IP-based spam filters. For this reason, you will want all spam filtering to be done via the inbound gateway when using a third-party inbound gateway solution.

For full list of third-party antispam/antivirus products that have been tested with SmarterMail, refer to the SmarterMail Resources Resources page on the SmarterTools website.

Summary

SmarterMail is a good choice for high-volume mail environments. The proper configuration and system architecture outlined in this document will provide a solid, reliable foundation. Because variations exist due to different volumes and client needs, SmarterTools suggests starting with these recommendations and then adjusting server proportions, limits and specifications based on the usage patterns that result.

1 Intel presentation, "IT Business Value", 9-16-2005.

2 "Nearly 80% of email messages sent world-wide are spam..."; Deleting Spam Costs Business Billions, Information Management Journal, May/June 2005, Nikki Swartz.

3 The amount of disk space allocated per user and per domain is set by the System Administrator.

4 While a RAID 10 configuration is recommended for SmarterMail Primary Servers, the authors recognize that some companies have policies that require the use of alternate RAID configurations. In this case, other RAID configurations may be used with the exception of RAID 1. The use of RAID 1 arrays in this configuration will likely result in a significant reduction in disk performance (up to a 50% loss vs. a single drive and up to 8 times slower than a 4-drive RAID 10 implementation).