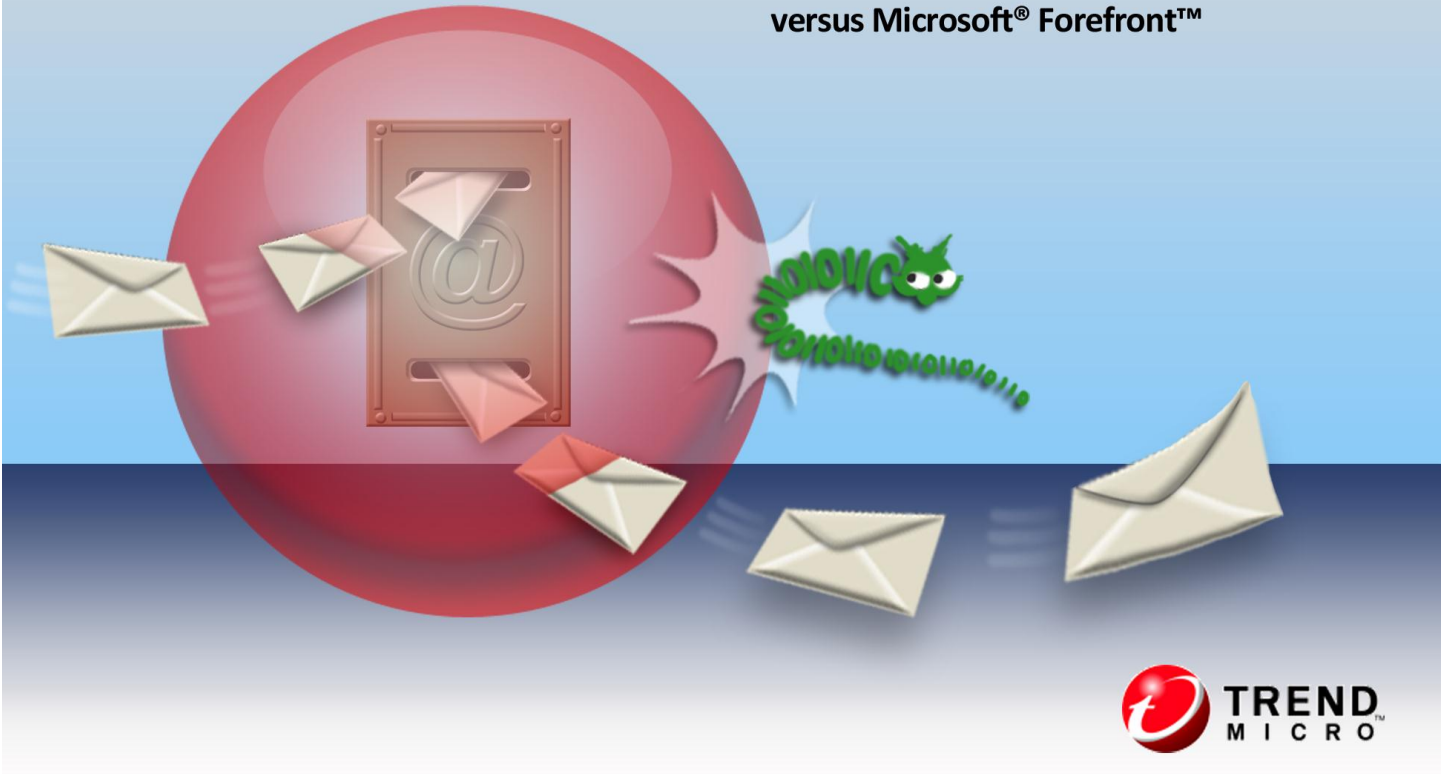


## Trend Micro™ ScanMail™ Suite kept mail safe from viruses and delivered 57.1% better Exchange performance versus Microsoft® Forefront™



Busy organizations require two things from their IT infrastructure: great performance and reliable protection. Email is the backbone of an organization's productivity, and users need to communicate quickly and effectively. To keep the data safe, anti-malware software scans every piece of mail processed by the server, to ensure nothing that enables attackers may pass. This safety, however, has the potential of reducing performance and increasing wait times for users sending and receiving mail, resulting in excessive hardware expenditures. Organizations should ideally select a product that offers complete protection while causing the least amount of overhead on the server.

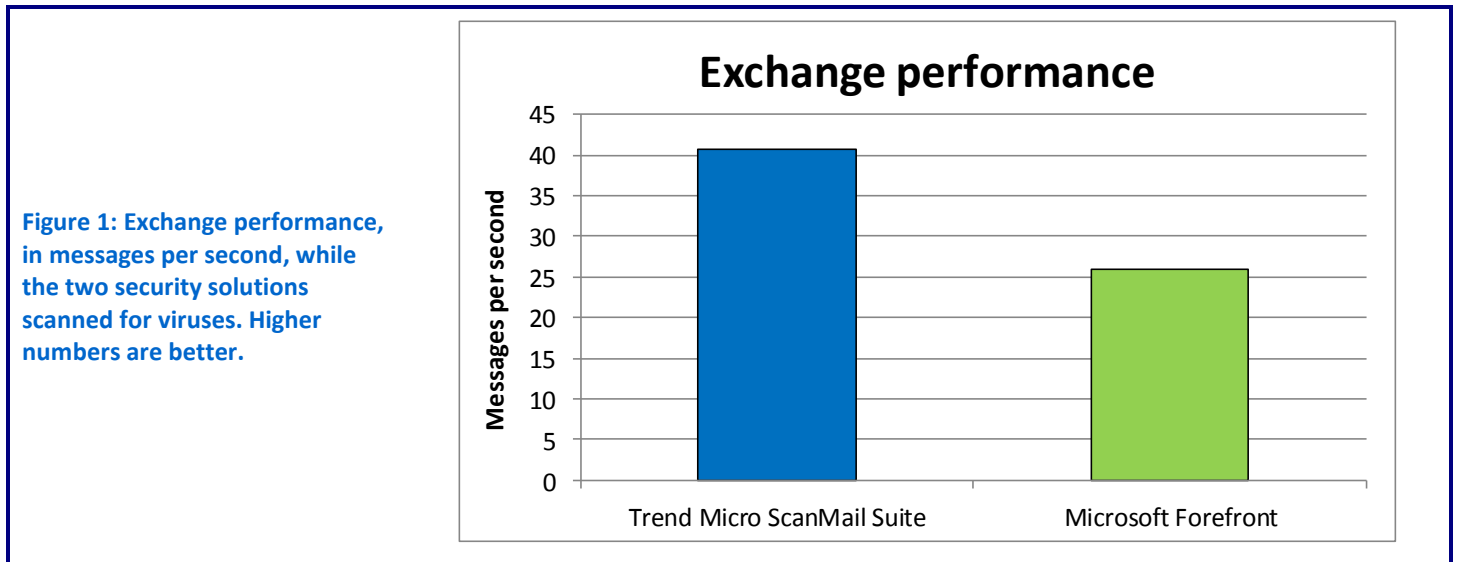
We compared the performance impact on Microsoft Exchange Server 2010 SP1 of two solutions—Trend Micro ScanMail Suite for Microsoft Exchange version 10.2 and Microsoft Forefront Protection 2010 for Exchange Server—and found that Exchange performance with ScanMail was **57.1 percent faster** than with Forefront.

## MINIMIZE RISKS TO YOUR DATA

While sending mail electronically is convenient, it also creates potential security risks to your organization’s data. While external attacks that seek to access your data are always a threat, users sending internal emails can also unknowingly introduce or spread malware to your system and could lead to data breach. Such breaches are costly for several reasons; including the severe hit customer confidence takes when a company’s data is compromised.

### A better mail experience

Security, while important, should not come at the expense of performance. A security solution that keeps data safe without compromising performance is ideal for you and your users. We found Exchange performance while running a malware scan with Trend Micro ScanMail to be 57.1 percent faster than Exchange performance while running Microsoft Forefront. (See Figure 1.)



## WHAT WE FOUND

Figure 2 shows performance, in messages per second, we recorded for the server, while running no security, while running TrendMicro ScanMail Suite, and while running Microsoft Forefront in our Exchange performance testing. Higher numbers are better, as they indicate that the server could handle more messages.

Please note that when we tested Microsoft Forefront, we increased the number of processes to 10 to obtain maximum performance, and used the default scan setting of “Scan with the subset of engines that are available.”

	Baseline (no security)	Trend Micro ScanMail Suite	Microsoft Forefront
Messages per second	55.9	40.7	25.9

Figure 2: Exchange performance, in messages per second, for the security solutions. Higher numbers are better.

## WHAT WE TESTED

In this section, we discuss the products we tested, along with the tool we used to create our mail workload. For information about how we configured the servers for our tests, see [Appendix A](#), and see [Appendix B](#) for detailed information about how we tested.

### About Trend Micro ScanMail Suite for Microsoft Exchange

Trend Micro ScanMail Suite for Microsoft Exchange is a security solution optimized for the latest Exchange platforms. Trend Micro ScanMail Suite has the unique function of blocking messages that contain malicious URLs, provides up-to-the-minute threat intelligence, and includes anti-spam, anti-malware, and zero-day protections, and optional data loss prevention. For more information, please visit <http://us.trendmicro.com/us/products/enterprise/scanmail-for-microsoft-exchange/>.

### About Microsoft Forefront

Microsoft Forefront helps deliver end-to-end security and access to information through an integrated line of protection, access, and identity management products. For more information, visit <http://www.microsoft.com/forefront/en/us/default.aspx>.

### About Microsoft Exchange Load Generator 2010

To test the Exchange performance of a server running malware scans, we used Microsoft Exchange Load Generator 2010 (LoadGen) to build our workload.

LoadGen measures the impact that various clients (MAPI, OWA, IMAP, POP, and SMTP) have on Exchange servers. This allows users to test how effectively a server running Exchange responds to email loads. The simulator uses a client machine to send multiple message requests to the server running Exchange, resulting in a mail load.

We created a custom workload and adjusted it for 100 users with 100MB mailboxes that LoadGen distributed across four mailbox databases. We ran the Microsoft Exchange Load Generator benchmark for 10 minutes on the servers.

For more details about LoadGen, see <http://www.microsoft.com/downloads/details.aspx?FamilyId=DDEC1642-F6E3-4D66-A82F-8D3062C6FA98&displaylang=en>.

## FINAL THOUGHTS

Securing your Exchange server against internal and external threats is of the utmost importance. Using security software to scan messages for malware is necessary, but can sometimes drive down performance, increasing user frustration and decreasing productivity. Not all security software is created equal, however— choosing a solution that protects your data without hurting performance and creating significant waiting times for users is key. In our tests, we found that using Trend Micro ScanMail Suite delivered 57.1 percent better Exchange performance than using Microsoft Forefront.

## APPENDIX A – SERVER AND STORAGE CONFIGURATION INFORMATION

Figure 3 provides detailed configuration information for the servers we used in our testing.

Servers	Dell™ PowerEdge™ R710 (Exchange mailbox server)	Dell PowerEdge R510 (Active Directory® server)	Dell PowerEdge T410 (Exchange Client Access server)	Dell PowerEdge R910 (Exchange Hub Transport)
<b>General processor setup</b>				
Number of processor packages	2	2	2	2
Number of cores per processor package	6	4	4	8
Number of hardware threads per core	2	2	2	2
<b>CPU</b>				
Vendor	Intel®	Intel	Intel	Intel
Name	Xeon® 5660	Xeon X5570	Xeon X5570	Xeon X7560
Stepping	B1	D0	D0	D0
Socket type	1366 LGA	1366 LGA	1366 LGA	1567 LGA
Core frequency (GHz)	2.80	2.93	2.93	2.26
Bus frequency	6.4 GT/s	6.4 GT/s	6.4 GT/s	6.4 GT/s
L1 cache	6 x 32 KB	4 x 32 KB	4 x 32 KB	8 x 32 KB
L2 cache	6 x 256 KB	4 x 256 KB	4 x 256 KB	8 x 256 KB
L3 cache (MB)	12	8	8	24
Thermal design power (TDP, in watts)	95	95	95	130
<b>Platform</b>				
Vendor and model number	Dell PowerEdge R710	Dell PowerEdge R510	Dell PowerEdge T410	Dell PowerEdge R910
Motherboard model number	Dell 00W9X3	Dell 0W844P	Dell 0Y2G6P	Dell 0P658H
Motherboard chipset	Intel 5520 Chipset	Intel 5500 Chipset	Intel 5500 Chipset	Intel ID3407 Chipset
BIOS name and version	Dell 3.0.0 (1/31/2011)	Dell 1.6.3 (02/01/2011)	Dell 1.3.9 (04/07/2010)	Dell 2.2.3 (04/05/2011)
BIOS settings	Maximum Performance	Maximum Performance	Maximum Performance	Hyper-threading disabled and Maximum Performance
<b>Memory modules</b>				
Vendor and model number	Samsung M393B1K70BH1-CH9	Samsung M393B5170FHD-CH9	Crucial CT51272BB1339.36SF D1	Hynix HMT151R7AFP8C-G7
Type	PC3-10600	PC3-10600	PC3-10600	PC3-8500
Speed (MHz)	1,333	1,333	1,333	1,066
Speed in the system currently running @ (MHz)	1,333	1,333	1,333	1,066

Servers	Dell™ PowerEdge™ R710 (Exchange mailbox server)	Dell PowerEdge R510 (Active Directory® server)	Dell PowerEdge T410 (Exchange Client Access server)	Dell PowerEdge R910 (Exchange Hub Transport)
Timing/Latency (tCL-tRCD-iRP-tRASmin)	9-9-9-24	9-9-9-24	9-9-9-24	7-7-7-20
Size (GB)	48	24	24	64
Number of RAM modules	6 x 8 GB	6 x 4 GB	6 x 4 GB	16 x 4 GB
Chip organization	Double-sided	Double-sided	Double-sided	Double-sided
<b>Internal storage controller</b>				
Vendor and model number	Dell PERC 6/i	Dell PERC 6/i	Dell PERC H700	Dell PERC H700
Driver version	Dell 4.5.0.64 (2/6/2009)	Dell 4.5.0.64 (2/6/2009)	Dell 4.31.1.64 (8/9/2010)	Dell 4.31.1.64 (8/9/2010)
<b>External storage controller</b>				
Vendor and model number	Dell PERC H800	N/A	N/A	N/A
Driver version	Dell 4.31.1.64 (8/9/2010)	N/A	N/A	N/A
<b>Hard disk drive</b>				
<b>HDD #1</b>				
Vendor and model number	Seagate ST9146852SS	Dell MBA3147RC	Seagate ST373455SS	Seagate ST973452SS
Number of disks in system	8	2	2	16
Size (GB)	146	146	73	73
Type	SAS	SAS	SAS	SAS
RPM	15,000	15,000	15,000	15,000
<b>HDD #2</b>				
Vendor and model number	N/A	Seagate ST3300657SS	Hitachi HUS154530VLS300	N/A
Number of disks in system	N/A	4	4	N/A
Size (GB)	N/A	300	300	N/A
Type	N/A	SAS	SAS	N/A
RPM	N/A	15,000	15,000	N/A
<b>HDD #3</b>				
Vendor and model number	N/A	Seagate ST3300656SS	N/A	N/A
Number of disks in system	N/A	2	N/A	N/A
Size (GB)	N/A	300	N/A	N/A
Type	N/A	SAS	N/A	N/A
RPM	N/A	15,000	N/A	N/A

Servers	Dell™ PowerEdge™ R710 (Exchange mailbox server)	Dell PowerEdge R510 (Active Directory® server)	Dell PowerEdge T410 (Exchange Client Access server)	Dell PowerEdge R910 (Exchange Hub Transport)
<b>Operating system</b>				
Name	Windows Server® 2008 R2 Enterprise SP1	Windows Server 2008 R2 Enterprise SP1	Windows Server 2008 R2 Enterprise SP1	Windows Server 2008 R2 Enterprise SP1
Build number	7601	7601	7601	7601
File system	NTFS	NTFS	NTFS	NTFS
Language	English	English	English	English
<b>Network card/subsystem</b>				
Vendor and model number	Broadcom® BCM5709C NetXtreme® II	Broadcom BCM5716C NetXtreme II	Broadcom BCM5716C NetXtreme II	Broadcom BCM5709C NetXtreme II
Type	Integrated	Integrated	Integrated	Integrated
<b>USB ports</b>				
Number	4	4	6	4
Type	USB 2.0	USB 2.0	USB 2.0	USB 2.0

Figure 3: System configuration information for the servers we used in our tests.

We configured the Dell PowerEdge R710 (Exchange Mailbox server) with a Dell PERC H800 external 6Gbps SAS card and attached two Dell PowerVault™ MD1220 storage arrays to provide ample disk I/O for the mailbox databases during testing. Each PowerVault MD1220 was configured into a single 24-drive RAID 0 volume. Figure 4 provides detailed configuration information.

Enclosure	Dell PowerVault MD1220
Number of enclosures	2
Host interface type	6Gbps SAS
Number of volumes	2 (1 per enclosure)
RAID level	0
<b>Hard disk</b>	
Vendor and model number	Dell ST973452SS
Total number of disks	48 (24 per enclosure)
Size (GB)	73
RPM	15K
Type	SAS

Figure 4: Detailed system configuration information for the test storage.

## APPENDIX B - HOW WE TESTED

Our test bed consisted of five servers—a dedicated Exchange Hub Transport server, a dedicated Exchange Mailbox server, a dedicated Exchange CAS server, an Active Directory server, and an Exchange Load Generator server—and an isolated network. The Active Directory server is a basic active directory domain controller set up with defaults. We gave all servers appropriate IPs and logged them in on the domain.

We used Exchange Load Generator to run a load test that simulated 100 users, spread evenly across four databases, simultaneously sending emails to our Exchange test bed. The load test was 11 minutes long, consisting of a 1-minute pre-logout period, and a 10-minute run time. We configured the test to have a 50-second workday with 31 tasks per user per “day.” The theoretical max load for the configuration, according to Microsoft’s documentation, would be 62 messages per second.

While the test was running, we recorded messages per second on our Hub Transport server using Windows Performance Monitor until it had completed all LoadGen tasks. After each run, we restored the databases to their original state and rebooted the servers. We conducted three runs of each configuration: no security running, Trend Micro ScanMail for Exchange security scan running, and Microsoft Forefront security scan running. We determined the median run based on the average messages-per-second score from each run.

### Installing Windows Server 2008 R2 SP1 (all servers)

1. Insert the installation DVD for Windows Server 2008 R2 SP1 into the DVD drive.
2. Choose the language, time and currency, and keyboard input. Click Next.
3. Click Install Now.
4. Choose Windows Server 2008 R2 Enterprise (Full Installation), and click Next.
5. Accept the license terms, and click Next.
6. Click Custom.
7. Click the Disk, and click Drive options (advanced).
8. Click New→Apply→Format, and click Next.
9. After the installation completes, click OK to set the Administrator password.
10. Enter the administrator password twice, and click OK.

### Configuring the OS (all servers)

Note: We installed all the most recent drivers, firmware, and Windows updates as of September 9, 2011. We also disabled hyper-threading on the Hub Transport server due to recommendations for Exchange servers found here:

<http://technet.microsoft.com/en-us/library/dd346699.aspx>

1. Set a static IP address using the following steps:
  - a. Right-click the network icon in the quick-launch bar, and choose Network and Sharing Center.
  - b. Click Manage network connections.
  - c. Right-click the local area connection, and choose Properties.
  - d. Select Internet Protocol Version (TCP/IPv4), and click Properties.
  - e. Select the Use the following IP address radio button, and fill in the appropriate IPs in the IP address field.
  - f. Press Tab to auto-fill 255.255.255.0 in the Subnet mask field.
  - g. Enter the IP of the Active Directory server in the Preferred DNS field.
  - h. Click Close.
2. Give the system a name using the following steps:
  - a. Click Start, right-click Computer, and select Properties.

- b. Click Change Settings.
  - c. Click Change.
  - d. Enter the name in the Computer name field, and click OK.
  - e. In the Computer Name/Domain Changes pop-up, click OK.
  - f. Click OK.
  - g. In the Microsoft pop-up, click Restart Now.
3. Join the servers to the domain:
  - a. Click Start, right-click Computer, and select Properties.
  - b. Click Change Settings.
  - c. Click Change.
  - d. Enter the name of the domain in the Domain name field, and click OK.
  - e. Enter the domain administrator credentials, and click OK.
  - f. At the warning prompt, click OK.
  - g. Click OK.
  - h. Click OK.
  - i. In the Microsoft pop-up, click Restart Now.
4. Adjust power settings:
  - a. Click Start, type `change power-saving settings` and press Enter.
  - b. Click Change plan settings.
  - c. Change the Turn off the display drop-down menu to Never.
  - d. Click Save changes, and close the Power Options, Screen Saver Settings, and Personalization windows.
5. Disable the firewall:
  - a. Open Server Manager.
  - b. Click Configuration → Windows Firewall.
  - c. Click Windows Firewall Properties.
  - d. Set each profile Firewall state to Off.
  - e. Click OK.
6. Enable remote desktop:
  - a. Click Start, right-click Computer, and select Properties.
  - b. Click Remote settings.
  - c. Select Allow connections from computer running any version of Remote Desktop (less secure).
  - d. Click OK.

## Installing Microsoft Filter Pack 2.0 (Exchange servers)

1. Download the Microsoft Filter Pack 2.0.  
(<http://www.microsoft.com/downloads/en/details.aspx?FamilyID=5cd4dcd7-d3e6-4970-875e-aba93459fbee>)
2. Run FilterPackx64.EXE.
3. Click Next.
4. Click I accept the terms in the License Agreement, and click Next.
5. When the installation is complete, click OK.

## Installing prerequisite role services (Exchange servers)

1. Click Start → All Programs → Accessories → Windows PowerShell.
2. Type `Import-Module ServerManager`, and press Enter.
3. Depending on which Exchange server role you are installing, enter the following information into the Windows PowerShell screen:



- a. For the Hub Transport server role prerequisites, type `Add-WindowsFeature NET-Framework,RSAT-ADDS,Web-Server,Web-Basic-Auth,Web-Windows-Auth,Web-Metabase,Web-Net-Ext,Web-Lgcy-Mgmt-Console,WAS-Process-Model,RSAT-Web-Server -Restart`
- b. For the Mailbox server role prerequisites, type `Add-WindowsFeature NET-Framework,RSAT-ADDS,Web-Server,Web-Basic-Auth,Web-Windows-Auth,Web-Metabase,Web-Net-Ext,Web-Lgcy-Mgmt-Console,WAS-Process-Model,RSAT-Web-Server -Restart`
- c. For the Client Access server role prerequisites, type `Add-WindowsFeature NET-Framework,RSAT-ADDS,Web-Server,Web-Basic-Auth,Web-Windows-Auth,Web-Metabase,Web-Net-Ext,Web-Lgcy-Mgmt-Console,WAS-Process-Model,RSAT-Web-Server,Web-ISAPI-Ext,Web-Digest-Auth,Web-Dyn-Compression,NET-HTTP-Activation,RPC-Over-HTTP-Proxy -Restart`

## Installing Exchange Server 2010 SP1

Note: When installing and configuring Exchange, start with setting up the Hub Transport server first, followed by the CAS server and finishing with the mailbox server. Note that the CAS server does not require any configuration.

1. Insert the installation DVD, and click Setup.EXE when prompted.
2. Select a folder to extract the installation files to, and click OK.
3. Run Setup.EXE.
4. The installer should consider steps 1 and 2 complete, and gray them out.
5. Click the link to Step 3: Choose Exchange Language Option.
6. Click Install only languages from the DVD.
7. Click the link to Step 4: Install Microsoft Exchange Server 2010 SP1.
8. Click Next to go past the introduction screen.
9. Accept the license agreement, and click Next.
10. Select No for error reporting, and click Next.
11. Select Custom Exchange Server Installation, and click Next.
12. Select Mailbox Role when installing on the Mail server, Client Access Role when installing on the CAS server, and select Hub Transport Role when installing on the Hub server (Exchange will automatically select Exchange Management Tools as well). Click Next.
13. Leave the default organization name (First Organization), and click Next.
14. At the question about client computers running Outlook 2003 and earlier, select No, and click Next.
15. Click Next to accept defaults for Configure Client Access server external domain.
16. At the Customer Experience Improvement Program screen, select I don't wish to join the program at this time, and click Next.
17. If a warning about a lack of SMTP appears after the check finishes, ignore it.
18. Click Install to start the installation process.
19. Once installation is complete, click Finish. Exchange should automatically open the Exchange Management Console.

## Configuring Exchange Server 2010 Hub Transport role (Hub only)

1. If Exchange does not automatically open the Exchange Management Console, select Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. In the left pane, click Microsoft Exchange On-Premises.
3. In the left pane, expand Organization Configuration, and select Hub Transport.

4. In the action pane on the far right, select New Send Connector.
5. Name the send connector *SMTP*, select the intended use as Internet, and click Next.
6. In the Address space window, click Add.
7. In the SMTP Address Space window, type \* as the address, ensure that the installer has checked Include all subdomains, and click OK.
8. Click Next.
9. Accept defaults for the next two pages by clicking Next.
10. At the New Connector page, click New to create the connector.
11. Click Finish to close the New SMTP Send Connector wizard.

## Configuring the Exchange Server 2010 SP1 Mailbox role (Mail only)

There are four mailbox databases for the test. We used the default mailbox created by Exchange with the properties changed as shown below, and manually created and configured three more. We stored our databases and logs on separate RAIDS on external storage.

1. Select Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console.
2. In the left pane, expand Organization Configuration and Mailbox so that the Database Management tab is visible.
3. In the right-hand pane, click New Mailbox Database.
4. Enter a name for the new database, and browse for the desired mail server host.
5. Click Next.
6. Enter the desired path for the database and log files.
7. Click New, and click Finish.
8. Right-click the new mailbox database, and select Properties.
9. Select the Maintenance tab.
10. Check the Enable circular logging box.
11. Check the box beside This database can be overwritten by a restore.
12. Click Customize next to Maintenance interval.
13. Remove all blue from the boxes so the system will not perform maintenance, and click OK.
14. Click OK.
15. Click OK to any warnings about circular logging being applied after the database is remounted.
16. Repeat steps 3 through 15 for two more databases.

## Installing and configuring the Exchange 2010 mail test client (LoadGen)

### Installing Windows Server 2008 R2 SP1 Enterprise Edition

1. Insert the installation DVD for Windows Server 2008 R2 SP1 Enterprise into the DVD drive.
2. At the Language Selection Screen, click Next.
3. Click Install Now.
4. Select Windows Server 2008 R2 Enterprise (Full Installation), and click Next.
5. Click the I accept the license terms check box, and click Next.
6. Click Custom.
7. Click Next.
8. At the User's password must be changed before logging on warning screen, click OK.
9. Enter the desired password for the administrator in both fields, and click the arrow to continue.
10. At the Your password has been changed screen, click OK.
11. Click Start, type `change power-saving settings` and press Enter.
12. Click Change plan settings.
13. Change the Turn off the display drop-down menu to Never.

14. Click Save changes, and close the Power Options, Screen Saver Settings, and Personalization windows.

To set up this server, we had to install several additional software components. The following subsections detail the necessary installation processes.

### Joining the domain

1. Select Start→Control Panel→Network Connections→Local Area Connection.
2. Click Properties.
3. Highlight Internet Protocol (TCP/IP), and click Properties.
4. Select the Use the following DNS server addresses radio button, and enter the IP of the DNS server in the Preferred DNS server field. Click OK.
5. Right-click My Computer, and select Properties.
6. Under the Computer Name tab, click Change.
7. In the Computer Name Changes window, under the Member of section, select the Domain radial box, and type the name of your domain
8. Select OK to start joining the domain.
9. When the window appears asking for a person qualified on the domain, fill in the username and password fields, and click OK.
10. At the welcome pop-up and the window warning that you must reset the computer for the changes to take effect, click OK.
11. At the System Properties window, click OK.
12. When a pop-up appears asking if you want to restart now, click Yes to restart your computer.

### Installing Internet Information Services

1. Click Start→Administrative Tools→Server Manager.
2. In the left pane, click Roles.
3. Click Add Roles.
4. Click the Application Server check box.
5. When the Add features required for Application Server screen appears, click Add Required Features.
6. Click Next.
7. Click Next.
8. At the Select Role Services page for Application Server, click the Web Server (IIS) Support check box.
9. Click Next.
10. Click Next.
11. At the Select Role Services page for Web Server (IIS), click IIS 6 Management Compatibility, ASP, and CGI check boxes. Click Next.
12. Click Install.
13. Click Close.

### Installing Load Generator

Download and install Load Generator 2010 using all defaults.

### Preparing Load Generator

1. Log into the mail client using the administrator account.
2. Select Start→All Programs→Microsoft Exchange→Exchange Load Generator 2010.
3. When the Load Generator window appears, select Start a new test.
4. Select Create a new test configuration, and click Continue.
5. Change the total length of simulation to 10 minutes.
6. Verify that the account name is Administrator.

7. In the Specify test settings window, enter the domain password in the Directory Access Password and Mailbox Account Master Password fields, and click Continue with recipient management.
8. Evenly distribute 100 users among the databases, and click Continue.
9. To accept defaults for Advanced recipient settings, click Continue.
10. In the Specify test user groups window, select the plus sign to add a user group.
11. Change the Client Type to Outlook 2007 Cached, the Action Profile to Average, and the Mailbox size to 100MB.
12. Check the PreTestLogon check box, and click Continue.
13. Leave defaults in Remote configurations, and click Continue.
14. Click Save the configuration file as, and name it.
15. After saving the configuration file, click Start the initialization phase (recommended before running the test).

### Backing up the mail database

Once you have set up the LoadGen client and created its initial mail database, you need to back up that database so you can have clean copies for each test.

1. Select Start→All Programs→Microsoft Exchange Server 2010→Exchange Management Console in the mail server.
2. In the left pane, expand Organization Configuration and Mailbox.
3. In the right pane, right-click Mailbox Database, and select Dismount Database from the menu.
4. At the Do you want to continue? pop-up, click Yes.
5. Repeat steps 3 and 4 for all databases.
6. Using Windows Explorer, create a new folder named `backup` on your database and log drives.
7. With Windows Explorer, copy all database and public folder files from your original database and log folders into the new backup folders you created. This process may take several minutes.
8. Close Windows Explorer.
9. In the Exchange Management Console, right-click Mailbox Database, and select Mount Database from the menu.
10. Repeat Step 9 for all databases.
11. Close the Exchange Management Console.

### Editing the configuration file

Before you can run a test with your configuration file, you will need to make the following changes to customize the workload.

1. Browse to the loadgen XML file you created.
2. Right-click the XML file, and choose Edit.
3. Search through the document, and change the TaskCount number to 0 for every task except SendMailTask.
4. Change the TaskCount number to 31 for the SendMailTask.
5. Change the simulated work day length to 50s.
6. Save the file with the same filename, overwriting the old configuration file.

### Installing ScanMail for Exchange (Hub Transport server only)

Additional IIS roles must be installed for SMEX to run.

1. Click Start→Administrative Tools→Server Manager.
2. Click Roles.
3. Select Web Server (IIS), and click Add Role Services.
4. Check the boxes for CGI, Static Content, and Default Document. Click Next.
5. Click Install.
6. Close Server Manager when the install finishes.
7. Double-click the SMEX setup.EXE.
8. At the welcome screen, click Next.

9. Accept the license agreement, and click Next.
10. At the Select an Action screen, select Install/Upgrade, and click Next.
11. At the Server Version Selection screen, select Exchange Server 2007/2010 and Hub Transport. Click Next.
12. At the Select Target Servers screen, enter the name of your Hub Transport Server, and click Add. After you have added your server, click Next.
13. At the Log On screen, enter your domain user name and Password, and click Next.
14. Create a Share directory, enter it into the Shared directory section of the Configure Shared/Target Directory screen, and click Next.
15. Leave defaults at the Web Server screen, and click Next.
16. Allow SMEX to identify your Exchange setup, and click Next.
17. At the Connection Settings screen, leave defaults, and click Next.
18. Enter your product key, and click Next.
19. At the World Virus Tracking Program screen, select No, I don't want to participate, and click Next.
20. At the Spam Prevention Settings screen, select Integrate with Outlook Junk E-mail, and click Next.
21. At the Control Manager Server Settings, leave defaults, and click Next.
22. At the Management Group Selection screen, select Skip Now and Specify later, and click Next.
23. At the Review Settings screen, leave defaults, and click Next.
24. Once the Installation has completed successfully, click Next.
25. Click Finish.
26. Install 32-bit Java on your Hub server.

### Configuring ScanMail for Exchange

1. Open the ScanMail Management Console, and log in.
2. On the left-hand side, click Security Risk Scan.
3. Click the Action tab, change all notification settings to Do not notify, and click Save.
4. On the left-hand side, click Administration to expand the menu.
5. Click Trend Support/Debugger.
6. Uncheck all the options, and click Apply.
7. Be sure that all scans other than the Anti-virus/anti-malware scan are disabled.
8. Update all engines to the current versions.

### Installing Microsoft Forefront for Exchange (Hub Transport server only)

1. Run the forefrontexchangesetup.EXE.
2. Accept the license agreement, and click Next.
3. At the Service Restart screen, click Next.
4. At the Installation Folders screen, leave defaults, and click Next.
5. At the Proxy Information page, leave defaults, and click Next.
6. At the Antispam Configuration screen, select Enable antispam later, and click Next.
7. At the Updates page, select I don't want to use Microsoft Update, and click Next.
8. Do not join the Customer Experience Program, and click Next.
9. At the Confirm Settings screen, click Next.
10. When installation finishes, click Finish.

### Configuring Microsoft Forefront for Exchange

1. Click Start→All Programs→Microsoft Forefront Server Protection→Forefront Protection for Exchange Server Console.
2. At the evaluation license notice screen, click OK.
3. Click Policy Management →Antimalware→Hub Transport.
4. Scroll down to the Process count option and set the dropdown menu to 10, and click save.

5. Click Policy Management→Advanced Options→Logging Options.
6. Uncheck all of the logging options except the disable perfmon counters option, and click Save.
7. Click Monitoring→Configuration→Notifications.
8. Disable all notifications, and click Save.
9. At the Service Restart Warning. click Yes.
10. Restart the server.
11. Update all anti-virus engines with the current versions.

## Running LoadGen

We used the following script to kick off LoadGen:

```
cd "c:\Program Files\Exchange Load Generator\"
LoadGenCmd.exe /r /c default_sendmail.xml
cd c:\Users\Administrator\Desktop
echo %TIME%
```

We used the following counters on the Exchange Hub Transport server to generate our results:

MSExchangeTransport Queues(\_total)\Messages Completed Delivery Per Second and Processor(\_Total)\% Processor Time

We used the Hub Transport count for

MSExchangeTransport Queues(\_total)\Messages Completed Delivery Total

and for

MSExchangeTransport Queues(\_total)\Messages Submitted Total

We did so to determine when a run was finished. When the messages delivered total equaled the messages submitted total, we stopped the counters and averaged the Messages delivered per second.

## ABOUT PRINCIPLED TECHNOLOGIES



Principled Technologies, Inc.  
1007 Slater Road, Suite 300  
Durham, NC, 27703  
[www.principledtechnologies.com](http://www.principledtechnologies.com)

We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

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Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.

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