## Microsoft Exchange Load Generator

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## Abstract

In this article I will show you how to use the Microsoft Exchange Server Load Generator to simulate multiple MAPI client requests against Exchange Server to stress your Exchange Servers for testing purposes or Benchmarking.

## Let's begin

As a first step you should know that you use the Microsoft Exchange Load Generator only in test environments and not in your production Exchange Organization. Exchange Load Generator is simulating Active Directory users which send messages against the Exchange Servers. Microsoft Exchange Load Generator uses many simulated Exchange user mailboxes which need a corresponding Active Directory user account so the Load Generator creates the required user accounts. The password for all created user accounts must be the same

After the tests are complete you can use the test results to do the following:

- Identifiying bootlenecks on your Exchange Servers
- Verifying a Exchange deployment plan
- Validating Exchange Server configurations and settings

## Improvements in Exchange Load Generator

Microsoft Exchange Load Generator has several enhancements against Microsoft Exchange Loadsim. Some of these enhancements are:

- Improved simulation accuracy
- Contacts and external e-mail addresses
- Improved scalability
- Better error recovery
- New graphical user interface
- Multiple types of Outlook clients
- No dependency on Outlook

## Limitations of Exchange Load Generator

Exchange Load Generator does not account for all factors that may be required for a complete server testing scenario. The following factors can not be simulated by the Microsoft Exchange Load Generator:

- Incoming Spam from the Internet is not part of the Loadgen process
- Incoming SMTP traffic from the Internet
- Non MAPI protocols such as IMAP4, POP3

## System requirements

Microsoft Exchange Load Generator has the following system requirements:

- Intel Pentium 550 Mhz or higher on 32 Bit platform
- X64 architecture on Intel EM64T or AMD64 platform
- Windows Server 2003 SP1 or R2 (32 and 64 Bit)
- Windows XP SP2
- 512 MB RAM
- 300 MB free Harddisk space
- .NET Framework 2.0
- Run against Exchange 2000 / 2003 and 2007

## Installing the Microsoft Exchange Load Generator

It is possible to install the Microsoft Exchange Load Generator on Exchange Server to reduce the time of the initialization process. After the first initialization you should simulate the workload from a client computer.

The computer from which you are running the Microsoft Exchange Load Generator should be a member of the Active Directory domain. Microsoft Exchange Load Generator requires Windows Enterprise Administrator permissions because it must create users, Organizational units and query based distribution groups in the Actve Directory Forest.

During the installation of the Microsoft Exchange Load Generator the setup process install the Microsoft Message queuing component from Windows Server 2003.

If you try to install the Microsoft Exchange Load Generator on a client computer with Windows XP SP2 you must install the Exchange Server 2007 administrative tools before you install the Load Generator tool.

After downloading the Microsoft Exchange Load Generator from the following <u>website</u>, you can install the installation package which is around of 12 MB in size. Start the installation process and follow the installation instructions.

😽 Microsoft Exchange Load Generator			×		
Welcome to the Microsoft Generator Setup Wizard	Exchange	e Load			
The installer will guide you through the steps on your computer.	required to insta	all Microsoft Exchange	Load Generator		
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.					
	Cancel	<u>≤</u> Back	Next >		

Figure 1: Start the installation process

After setup has finished, you can start the Exchange Load Generator. The new Exchange Load Generator comes with the same GUI as several other utilities like the Exchange Best Practice Analyzer (EXBPA) and the Exchange Troubleshooting Assistant (EXTRA), so if you are familiar with one or more of these tools it would be easy to use the Microsoft Exchange Load Generator. Click *Create a new test configuration* to start the Load Generator process.

Microsoft Exchange Load Ge	nerator	
Microsoft Excha	ange Load Generator	
Welcome     Start a new test     View a test report	Start a new test Select whether to create a new configuration or load a previously saved configuration file.	
See also	Create a new test configuration	
<ul> <li>Exchange Load Generator Help</li> <li>About Exchange Load Generator</li> </ul>	<ul> <li>Use the following saved configuration file:</li> <li>Continue</li> </ul>	Browse

Figure 2: Create a new test configuration

Next we must specify some test settings how long the Load Generator should be running, and if you would like to use the Load Generator in Stress mode. As a last step in this window you must specify logon account credentials and the Active Directory Forest name.

Microsoft Exchange Load Ge	nerator	
Microsoft Excha	inge Load Generator	Windows Server System
🖸 Welcome	Specify test settings	
<ul> <li>Start a new test</li> </ul>		
View a test report		as the Active Directory forest that contains your Exchange ed to connect to Active Directory and your Exchange servers.
See also		
<ul> <li>Exchange Load Generator Help</li> </ul>	Define the length of a 'simulation day':	8 Hour(s) 0 Minute(s) 0 Second(s)
About Exchange Load Generator	Define the total length of the simulation:	O Forever
	Specified duration: 10	Hour(s) 0 Hinute(s) 0 Second(s)
	Run the simulation in stress mode	
	Stop the simulation after number of exceptions:	0
	Enter domain and credential settings:	
	Active Directory Forest (or Domain Controller) Name	DOMAIN
	Directory Access Username	Administrator
	Directory Access Password	
	Directory Access Domain	DOMAIN
	Mailbox Account Master Password	
2006 Microsoft Corporation. All rig	hts reserved.	Microsoft
jure 3: Specify test setting	nas	

Microsoft Exchange Load Generator now collects the required information about the Exchange Organization and the Exchange Servers from Active Directory.

Microsoft Exchange Load Ger	nerator
Microsoft Excha	nge Load Generator
<ul> <li>Welcome</li> <li>Start a new test</li> <li>View a test report</li> </ul> See also <ul> <li>Exchange Load Generator Help</li> <li>About Exchange Load Generator</li> </ul>	Topology loading is in progress Please wait while the topology is loaded

Figure 4: The topology will be generated

You can now specify which Exchange Server should be used for the simulation tests. You must also specify the number of users in a Mailbox database. Exchange Load Generator will create these accounts and will use them for load generation.

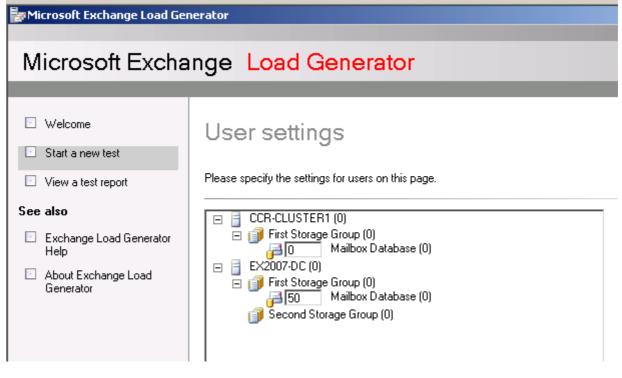


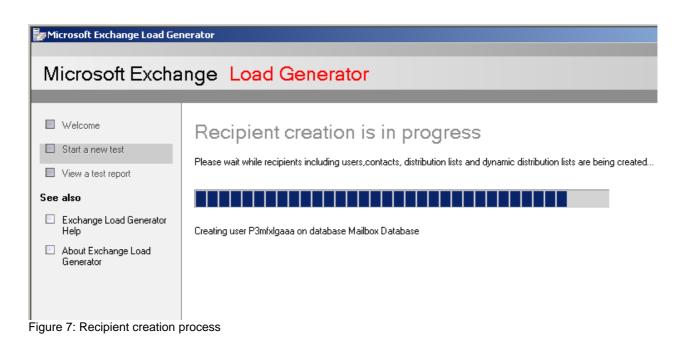
Figure 5: Specify number of users

Exchange Load Generator can also simulate the workload from static and dynamic distribution lists. You can select if static or dynamic distribution groups should be used. It is also possible to use contacts in your load simulation planning.

Microsoft Excha	ange Load Generator	_		
Welcome     Start a new test	Advanced recipient setting			
View a test report	Please specify the settings for distribution list, dynamic distrib	ution list, contact and	l external recipient on th	ns page.
iee also	Distribution List Settings			
Exchange Load Generator Help	Administration Group	Count	Mininum Size	Average Si:
About Exchange Load	Exchange Administrative Group (FYDIBOHF23SPDLT)	O	0	0
				-
	Dynamic Distribution List Settings			
	Use dynamic distribution lists			
	Create one for all the users			
	Create one for all the users			
	Create one for all the users  Create one per server  Create one per mailbox database			
	Create one for all the users  Create one per server  Create one per mailbox database  Contact Settings			

Figure 6: Advanced recipient settings

Microsoft Exchange Load Generator now creates the recipients and distribution lists.



With Exchange Load Generator it is now possible to select different Outlook client types which you can use for workload testing. It is also possible to specify the type of simulated network traffic for the Outlook clients.

whicrosoft Exchange Load Ger						
Microsoft Exchange Load Generator						
Welcome     Start a new test     View a test report	Specify test us	Ser groups of users who will be simulated in this test.				
See also Exchange Load Generator Help About Exchange Load Generator	Name UserGroup0	Client Type Cutlook 2003 Online Outlook 2003 Online Outlook 2003 Cached Outlook 2007 Cached Outlook 2007 Cached	Action Profile Heavy	Container	Edit	
	<ul> <li>Back</li> <li>Continue</li> </ul>					

Figure 8: Specify test user groups

If you want to distribute workload to different computers you must enable the task engine to distribute the load to remote load generators.

Microsoft Exchange Load Generator						
Microsoft Exchange Load Generator						
	3					
Welcome	Remote configurations					
<ul> <li>Start a new test</li> <li>View a test report</li> </ul>	Configure one or more remote load generators if you want to enable the task engine to distribute the load to remote load generators.					
See also	Enable the task engine to distribute the load to remote load generators					
<ul> <li>Exchange Load Generator Help</li> </ul>	- ×					
About Exchange Load Generator	Remote Load Generators					
	E Back					
	Continue					

Figure 9: Remote configurations

Before you start the initialization test you can read the generated configuration summary from the Microsoft Exchange Load Generator. If you find something missconfigured you can go back and correct the settings.

Microsoft Exchange Load Ge	nerator				
Microsoft Evelo					
Microsoft Excha	inge Load Ger	ierator			
Velcome	Configuration	summary			
Start a new test					
View a test report See also	additional customization, the o	test parameters that will be used for this configuration file can be manually edited onfiguration file may be loaded in to this v	by following the instruc		
Exchange Load Generator Help     About Exchange Load	A simulated day will last 8 hou The test will run for 10 hours.	<b>I</b> IS.			
Generator	Stress mode is disabled. The simulation will not stop, regardless of the number of exceptions that occur while generating messaging load.				
	No distribution lists will be used for internal messages.				
	No dynamic distribution lists will be used for internal messages.				
	No contacts will be used for outgoing messages.				
	External outbound SMTP mai	l will not be generated.			
	Total user group(s) defined: 1				
	Name	Client Type	Action Profile	Container	
	UserGroup0	Outlook 2007 Online	Heavy	🔽 OU=Users,OU=LoadGen	
	Remote load generator is not	configured.			

Figure 10: Configuration summary

Exchange Load Generator is now initializing the test process.

Microsoft Exchange Load Generator		
Microsoft Exchange	Load Generator	
<ul> <li>Start a new test</li> <li>View a test report</li> <li>See also</li> <li>Exchange Load Generator Help</li> <li>About Exchange Load Generator</li> </ul>	tialization in progress we wait while the mailboxes are initialized we wait while the public store is initialized Stop initialization	1% 100%

Figure 11: Initialization in progress

Depending on the number of mailboxes and other configuration settings the initialization process can consume a lot of time.

After the initialization process has finished, Exchange Load Generator starts the simulation process.

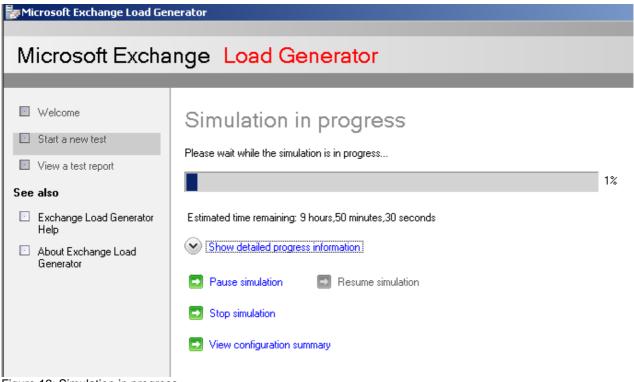


Figure 12: Simulation in progress

If you click *View configuration summary* Exchange Load Generator will create a report of all Load Generator settings and the current state of running processes.

# View Load Generator Report

# Microsoft Exchange Server Load Generator

Topology Configuration	
Target forest:	DOMAIN
Total number of user groups:	1
Total number of users:	10
Total number of distribution lists:	20
Total number of dynamic distribution lists	:0
Total number of contacts:	0
Total number of external recipients:	0

# Simulation Statistics—

20.01.2007 11:20:07 00D:10H:00M:00S 00D:00H:12M:05S			
00D:00H:12M:05S			
False			
23			
0			
23			
0			
23			
	0 23 0	0 23 0	0 23 0

Γ	UserGroups					
	Name	Client Type	Action Profile	User Count	Tasks per User Day	
	🗙 UserGroup0	Outlook 2007 Online	Heavy	10	47	

Figure 13: Microsoft Exchange Load Generator report

Exchange Load Generator has a command line option called LOADGENCMD. You can use LOADGENCMD for several configuration tasks such as to configure a generic configuration file.

🖼 Eingabeaufforderung	
C:\Programme\Exchange Load Generator>loadgencmd Microsoft Exchange Load Generator	<b>^</b>
Usage: LoadGenCmd.exe [Action Argument] [Configuration Arguments]	
Action Arguments (only one may be specified at a time):	
<pre>Help : This help (e.g. /h, or /?) LoadCtr : Load performance counters (e.g. /l counter.xml) UnloadCtr : Unload performance counters (e.g. /u counter.xml) AddTrace : Add trace listeners (e.g. /add trace.log) SupTrace : Suppress trace listeners (e.g. /sup console) EnsMessage : Ensure message files (e.g. /ens *.msg) GenConfig : Generate a configuration file (e.g. /g) InitPrivStore : Initialize mailbox stores (e.g. /i) PrepPublicStore : Prepare the public store (e.g. /p) RunLoadSim : Run load simulation (e.g. /r)</pre>	
Configuration Arguments:	
Config [filename] : Config file (default is ∕c LoadGenConfig.xml)	
C:\Programme\Exchange Load Generator>_	<b>_</b>
Figure 14: Loadgen CMD	

Figure 14: Loadgen CMD

You will find more information about LOADGENCMD and the Load Generator in general in the help file, a word document which you can find in the installation directory of the Exchange Load Generator after the tool is installed.

While Exchange Load Generator is running you can use any performance reporting tool as you want to test your Servers with the load Exchange Load Generator generates. As an example you can use the Windows Server 2003 Performance Monitor to see your system utilization.

## Conclusion

Microsoft Exchange Load Generator is a great tool to simulate workload on your Exchange servers for several test or performance scenarios before you implement new Exchange servers in your production environment. Exchange Load Generator has several improvements compared to Exchange Loadsim and you should give it a try when you want to see what your Exchange servers are doing under heavy load.

## **Related Links**

Download the Microsoft Exchange Load Generator <u>http://www.microsoft.com/downloads/details.aspx?familyid=DDEC1642-F6E3-4D66-A82F-8D306</u> <u>2C6FA98&displaylang=en</u>