Monitoring Microsoft Exchange 5.5 Server

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

Microsoft Exchange Server 5.5 is a client-server messaging system. Exchange Server 5.5 offers a transparent connection to existing networks and mail servers. It provides users with an innovative electronic mail system, online forms etc.

Microsoft Exchange Server 5.5 is the primary mail server for the Windows NT Server operating system. The OS allows the server to take advantage of the platform's reliability, scalability and multitasking capabilities. For example, Windows NT Server multitasking capability allows Microsoft Exchange Server to simultaneously update directory information, transfer information to a client, and route information to other servers and foreign systems.

The server-side components perform actions that the client-side components request, such as looking up names in the directory, sending messages, and storing information in private and public folders. These components often reside on a dedicated computer where Microsoft Exchange Server is installed.

The server-side components are:

- Directory
- Information store
- Message transfer agent (MTA)
- System attendant

This means that, for the client-server interaction to function smoothly, each of these components should operate without a glitch. Issues with the internal health of these components can affect the responsiveness of the mail server, causing user dissatisfaction. By constantly monitoring the internal operations of the mail servers, such problems can be averted. This can be achieved using eG Enterprise.

Chapter 2: Configuring an Microsoft Exchange Server 5.5 to work with the eG Manager

The **MsXMail** test, which is executed by an eG external agent, mimics an MS Outlook mail client that sends and receives mails from an Exchange server. Whereas eG Enterprise's Mail test relies on SMTP and POP3/IMAP protocols to communicate with the mail server, the **MsXMail** test is used for emulating client accesses via the native Microsoft Mail protocol (i.e. in situations where SMTP/POP3/IMAP are not enabled for a mail server). This test takes three main parameters:

- A user mailbox that the test uses to send and receive mails
- The site on the Exchange server that hosts this user account
- The organizational unit on the Exchange server that hosts this site

In order to ensure that this test functions, the following conditions are to be fulfilled:

- The eG external agent that is executing the **MsXMail** test, should be installed on a Windows NT server/client in the same domain as the MS Exchange server.
- The administrator configuring the test should ensure that the mailbox being used in the test, exists on the Exchange server. If no mailboxes exist, then follow the instructions given below to create one for an existing Windows NT domain user:

1. Click the **Start** button on the task bar of the Windows NT server that hosts the Exchange server, and follow the menu sequence: Start -> Programs -> Microsoft Exchange Server -> Microsoft Exchange Administrator (see Figure 2.1):

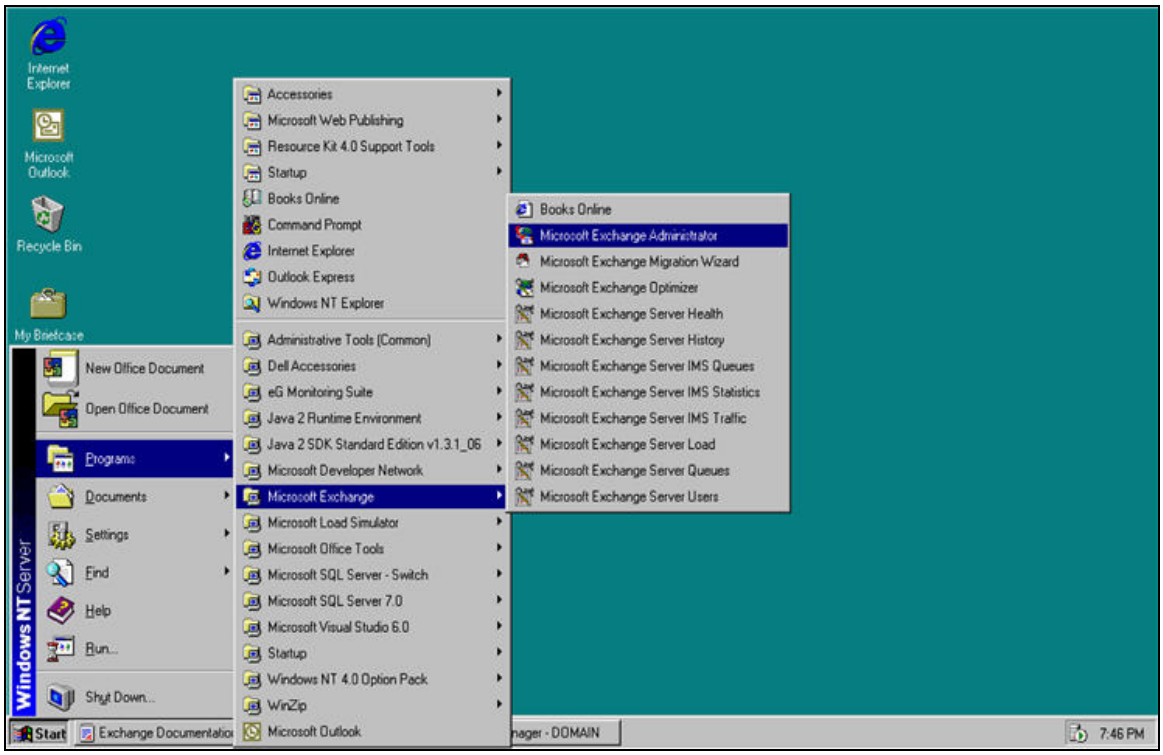

Figure 2.1: The Microsoft Exchange Administrator window

Note:

Administrator privileges are required for creating a mailbox on the MS Exchange server 5.5

2. The administrator window that appears has a tree structure in its left pane (Figure 2.2). The top-most node of the tree structure is the organizational unit on the Exchange server. Expanding this node, reveals the complete list of sites in the organization. Expanding a site, reveals a **Recipients** sub-node, clicking on which, the existing user accounts (mailboxes) on the site will be displayed in the right pane (see Figure 2.2).

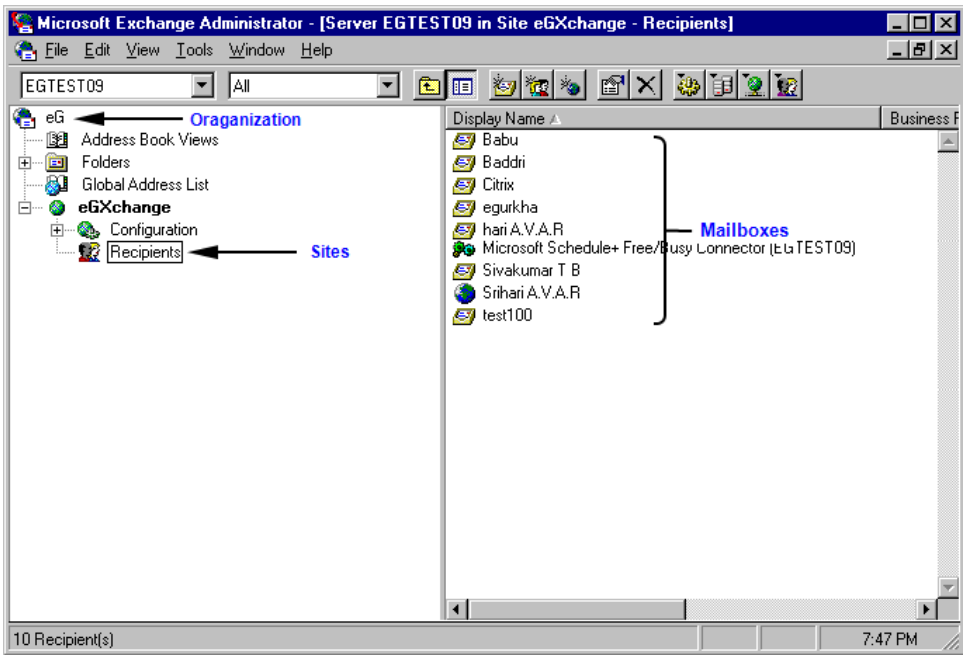

Figure 2.2: The Administrator window

3. Next, select the site on which the mailbox is to be created, click on the **File** option on the menu bar, and select **New Mailbox**, to create a new mail box on the selected site (see Figure 2.3).

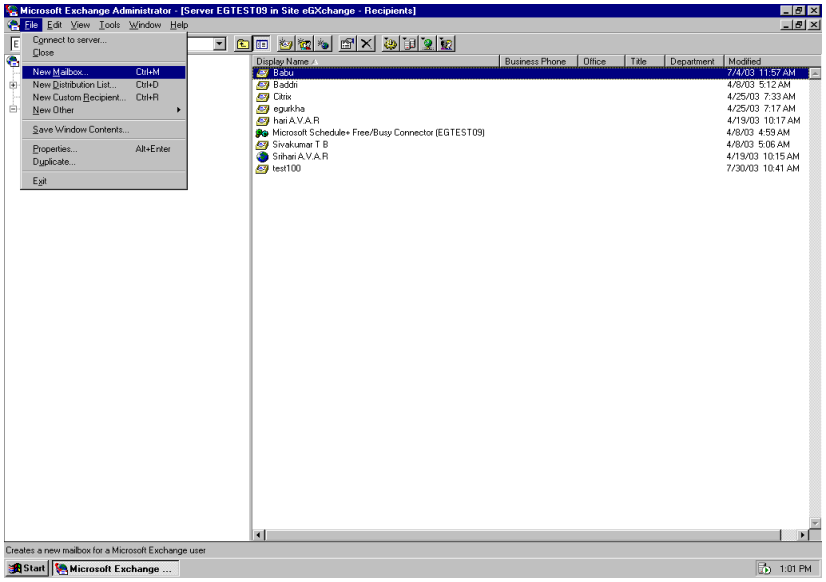

Figure 2.3: Creating a mailbox for a user

4. In the **Properties** dialog box that appears (see Figure 2.4), specify the details of the user's mailbox. If the Windows NT user account which is to be associated with the new mailbox already exists in the same

domain as the MS Exchange server, then that user account will be automatically displayed against **Primary Windows NT Account** (see Figure 2.4). However, such an automatic association is possible only if the name of the user account and the mailbox are the same. If not, you can click on the **Primary Windows NT Account** button to explicitly define the association.

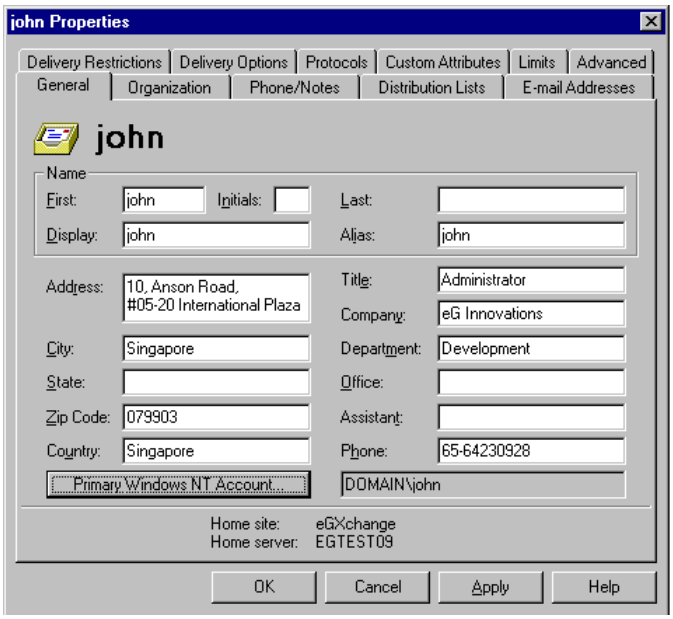

Figure 2.4: Specifying the details of the new user account

5. Finally, click the **Apply** button in Figure 2.4 to register the changes, and then, click the **OK** button to close the dialog box.
6. Once back in the Exchange Administrator window (see Figure 2.5), drill-down the tree structure in the left pane using the following node-sequence: <Organization name> -> <Site name> -> Recipients (see Figure 2.5). This will display the list of mailboxes in the right pane. Note that the newly created mailbox is listed therein (see Figure 2.5).

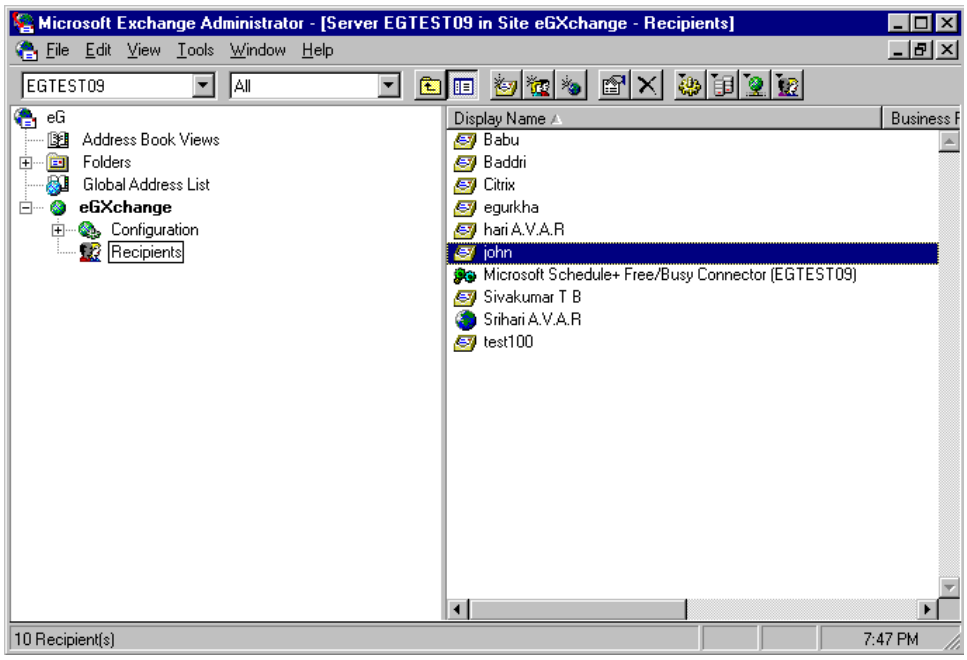

Figure 2.5: The newly created mailbox being displayed in the Administrator window

7. The eGurkhaAgent service should run using the NT account information of the user whose mailbox has been configured for the **MsXMail** test
8. By default, the eGurkhaAgent service uses the LocalSystem account for execution. This account however, may not permit an external agent to access the mailbox that has been configured for the **MsXMail** test. Hence, the eGurkhaAgent service should be made to run using the login information of the user whose mailbox has been configured for the **MsXMail** test.
9. For example, assume that the administrator has decided to use the Windows NT user *john's* mail box for configuring the **MsXMail** test. To login to a Windows NT server/client, *john* uses the user name *john* and the password *john*. To ensure that the external agent gains access to *john's* mailbox for monitoring, the above- mentioned login information should be passed to the eGurkhaAgent service.

To achieve this, do the following:

1. Login to the Windows NT server hosting the external agent as an eG user who has a mailbox on the Exchange server 5.5.
2. Then, open the **Services** window of the server (see Figure 2.6) using the menu sequence: Start -> Programs -> Administrative Tools -> Services.

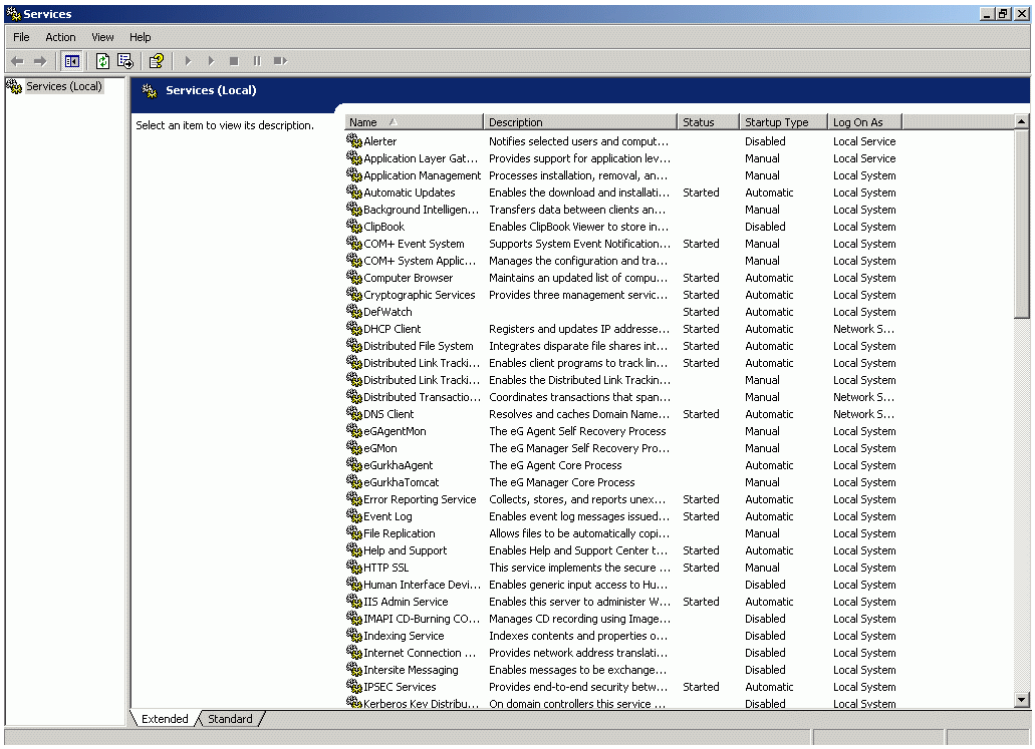

Figure 2.6: The Services window displaying the eGurkhaAgent service

3. Double-click on the eGurkhaAgent service in Figure 2.6 to open its **Properties** (see Figure 2.7) dialog box. Click on the **Log On** tab of the dialog box (see Figure 2.7), select the **This Account** option, and specify the name of user whose mailbox is to be configured. Then, specify the **Password** of the user and confirm it by retyping it in the **Confirm Password** text box. This name and password should be the same as those specified while creating the user on Windows NT. The **Browse** button can also be used to specify the user name (see Figure 2.7).

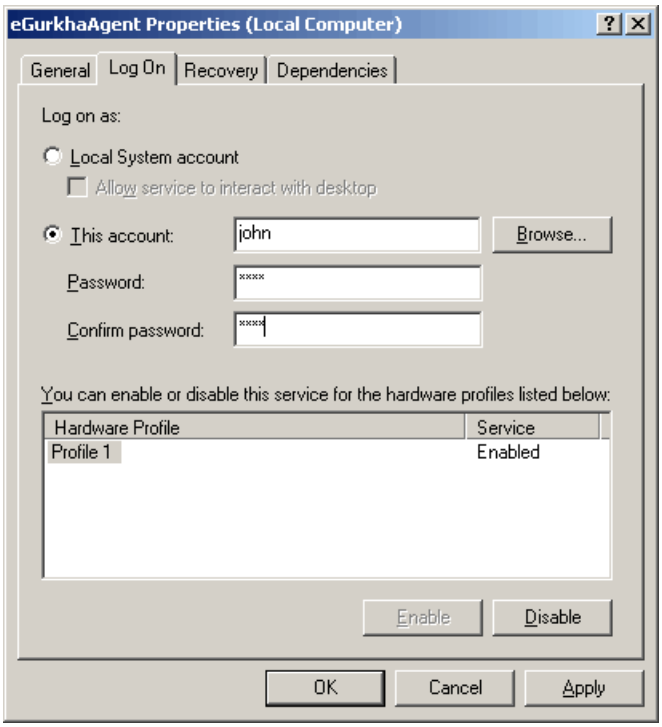

Figure 2.7: Configuring the eGurkhaAgent service to use the eG user name

4. Finally, click on the **Apply** button in Figure 2.7, followed by the **OK** button.

Chapter 3: How to Monitor Microsoft Exchange 5.5 Server Using eG Enterprise?

The eG monitor for Exchange makes monitoring and managing Exchange server performance easy and efficient. Using either an agent-based or an agentless approach, administrators can monitor various aspects of the Exchange server's performance. After installation of the eG agent, refer to the below section to configure eG to monitor Microsoft Exchange servers (version 5.5 and 2000) that were auto-discovered by the eG Enterprise.

3.1 Managing the Monitor Microsoft Exchange 5.5 Server

eG Enterprise can automatically discover the Microsoft Exchange 5.5 Server in the environment and also lets you to add the Exchange 5.5 Server component if the server is not auto-discovered. The following steps explain you how to manage the server that was auto-discovered using the eG administrative interface.

1. Log into the eG administrative interface.
2. If a Exchange 5.5 Server component is already discovered, then directly proceed towards managing it using the **COMPONENTS – MANAGE/UNMANAGE** page.
3. However, if it is yet to be discovered, then run discovery (Infrastructure -> Components -> Discover) to get it discovered or add the component manually using the **COMPONENTS**page (Infrastructure -> Components -> Add/Modify). Remember that components manually added are managed automatically. Discovered components, however, are managed using the **COMPONENTS – MANAGE / UNMANAGE** page.
4. To manage the Exchange 5.5 Server component that is auto-discovered, follow the Infrastructure -> Components -> Manage/Unmanage in the **Infrastructure** tile of the **Admin** menu.
5. In the **COMPONENTS – MANAGE/UNMANAGE** page that appears next, select *Exchange 5.5* as the **Component type**. Then, the auto-discovered components will be listed under **Unmanaged Components** section.
6. Then, Choose a component to be managed from the list of components in the **Unmanaged Components** section.
7. Chapter 3 and Chapter 3 clearly illustrate the process of managing a FTP server.

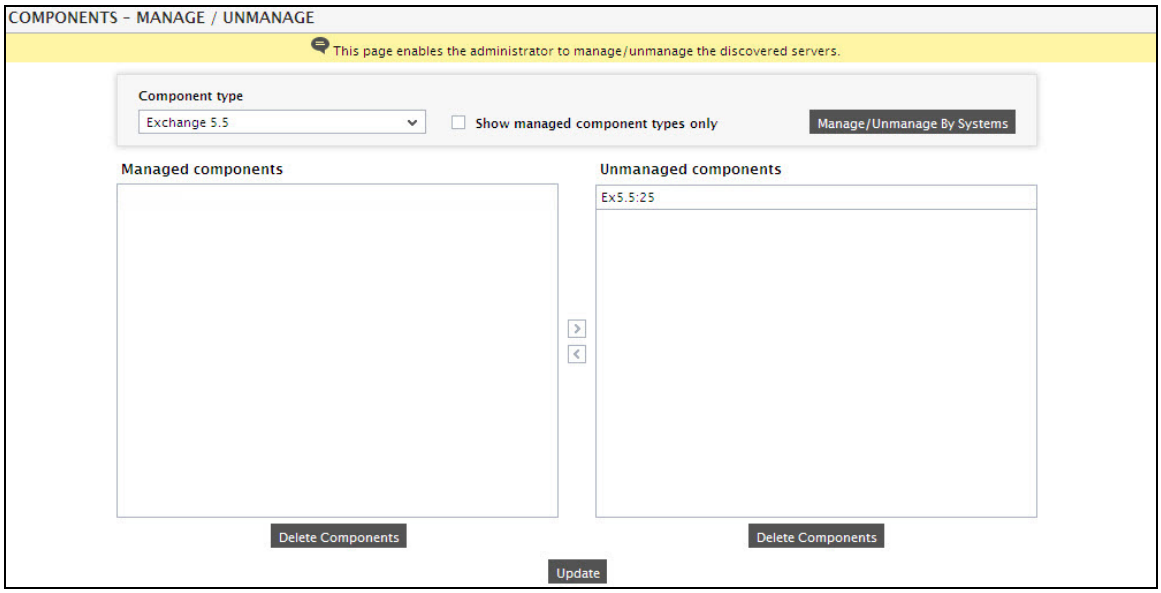

Figure 3.1: Viewing the unmanaged Exchange 5.5 servers

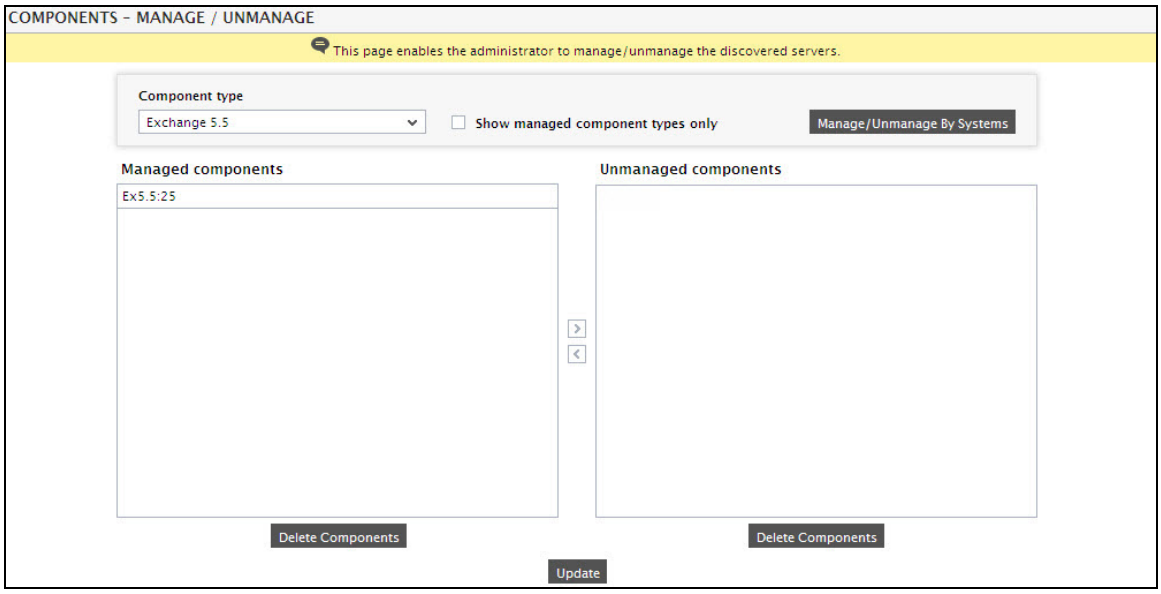

Figure 3.2: Managing an Exchange 5.5 server

4. Once again, on signing out, you would be prompted to configure the MsX**Mail** test. However, if the **Mail** test is already configured (for eg., while configuring an Exchange 5.5 mail server), then no such prompt will appear.

Please refer to Section 1.1 above for a more elaborate discussion on how to configure the

Figure 3.3: Mail test

5. The **MsXMail** test emulates a client connecting to a Microsoft Exchange server and sending/receiving mails. The eG Enterprise system, by default, switches off the execution of the **MsXMail** test. An administrator can optionally turn this test on, so that it can be executed on the Exchange 5.5 server. Figure 3.4 depicts the complete list of performance tests that are enabled and disabled by default for the chosen exchange 5.5 component type. To enable the test open the **ENABLE / DISABLE TESTS** page by following the menu sequence Agents -> Tests -> Enable/Disable. In this page, you can either preclude or exclude a test from being executed for a specific a test type of a component type.
6. For an example, to preclude any of the performance tests of Exchange 5.5 component type, select the desired option from the drop-down list as depicted by the figure. Now select the test names from the **DISABLED TESTS** list box and click on the **<<** button. (see Figure 3.4).

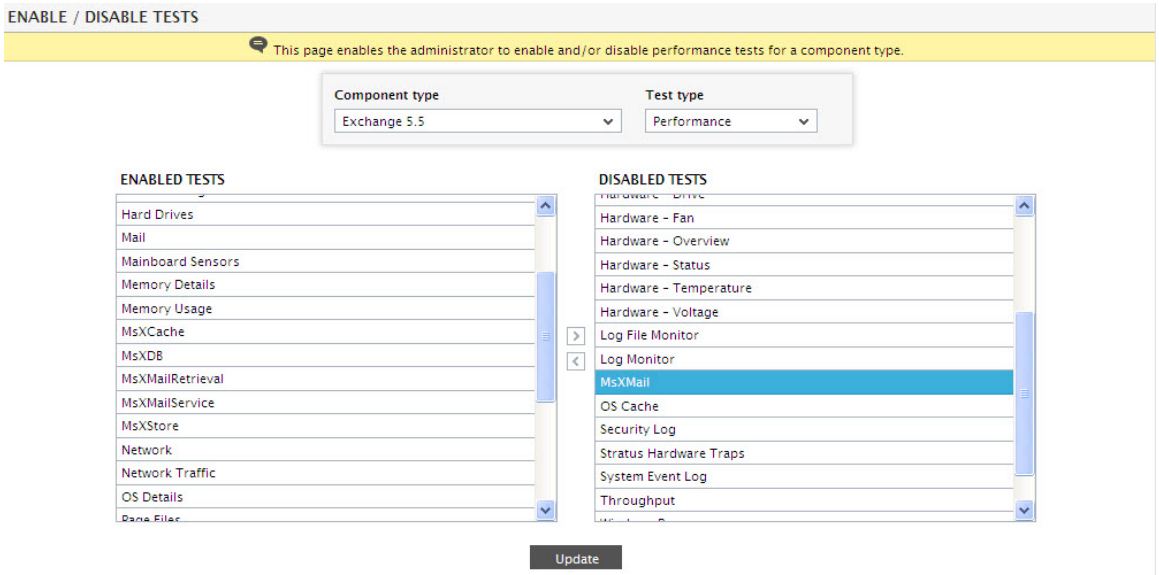

Figure 3.4: Selecting the tests to be enabled for Exchange 5.5 component type

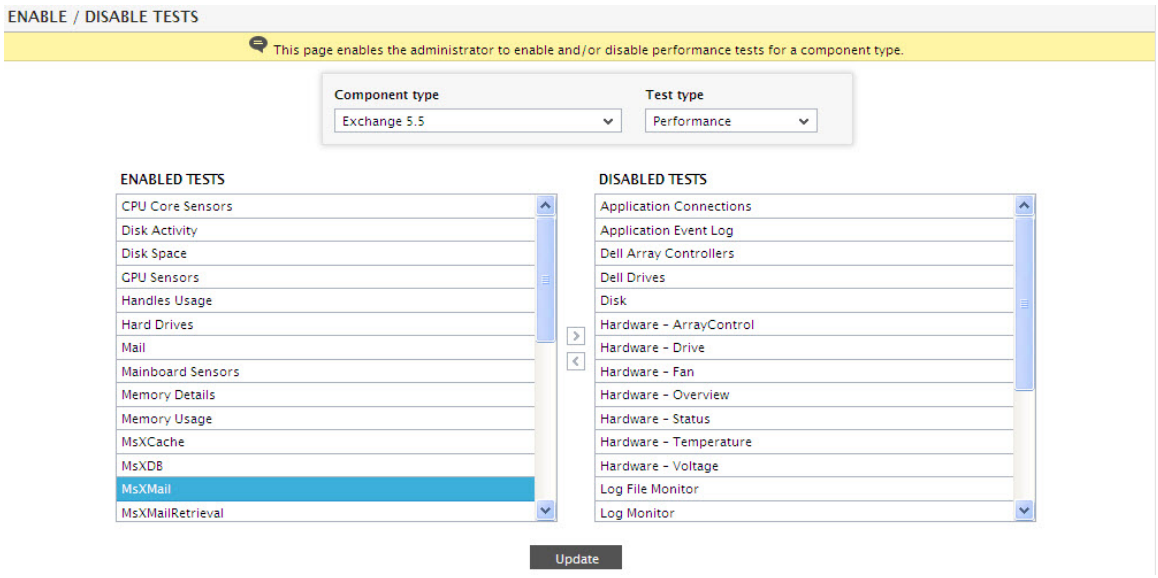

Figure 3.5: Enabling the tests for the Exchange 5.5 component type

7. Then, return to the **SPECIFIC TEST CONFIGURATION** page using the menu sequence ***Agents*** -> ***Tests*** -> ***Specific configuration***.

8. First choose Exchange 5.5 from the **Component type** list box and the specific component from the **Component name** list box. Then choose type of a test say as Performance from the **Test type** list box. Doing so will provide the agent summary details and as well the configuration status of all the tests pertaining to the chosen component respectively.

9. To configure an unconfigured test, select the **MsxMail** test from the unconfigured tests list box and click on the **Configure** button. This will invoke the parameters to be configured for the chosen test. Finally click on the Update button to implement the changes as depicted by the Figure 3.5.

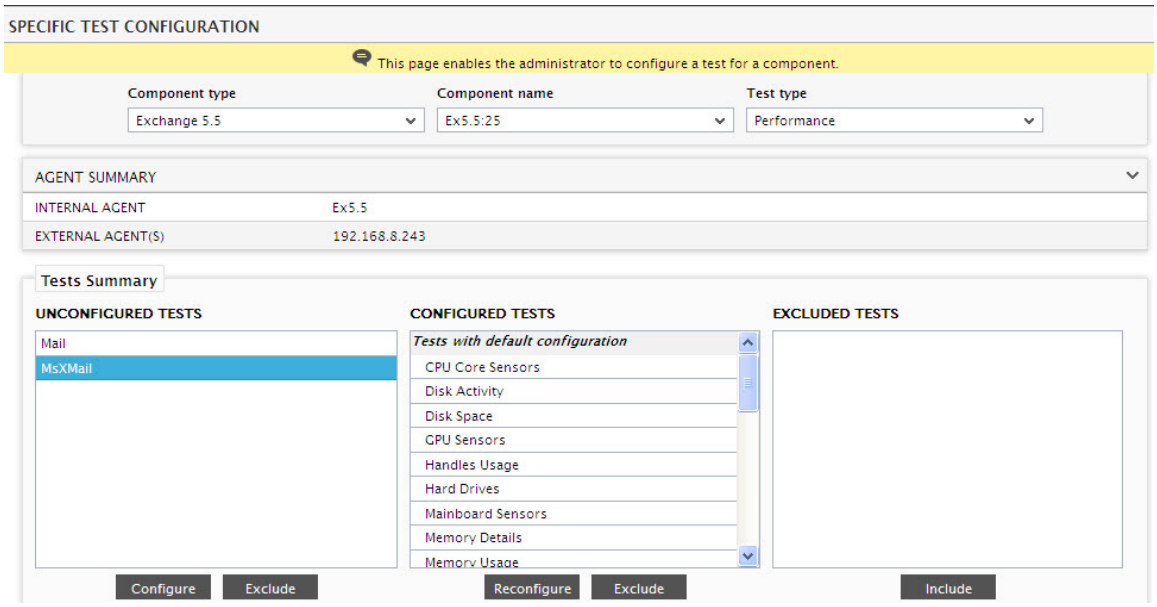

Figure 3.6: Figure 2.11: Selecting MsxMail test from the unconfigured tests

10. Upon clicking, the test parameters will be displayed (see Figure 3.7):

- **TEST PERIOD** - How often should the test be executed
- **HOST** - The IP address of the machine where the Exchange 5.5 server is installed.
- **PORT** – The port number through which the Exchange 5.5 server communicates. The default port number is 25.
- **XCHGMAILBOX** - Specify the user name or the user ID of a user mail box available on the Exchange server that is to be used for this test.
- **XCHGSITENAME** - The name of a site in the Exchange server
- **XCHGORGNAME** - The name of the organization in the Exchange server to which the specified site belongs

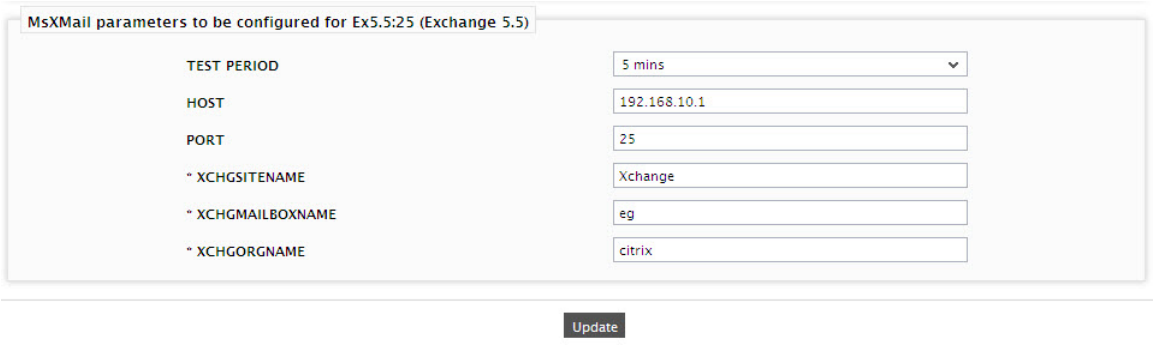

Figure 3.7: Figure 2.12: Configuring the MsXMail test

11. Next, click the **Update** button in Figure 3.7 to configure the test, and finally sign out of the eG administrative interface.
12. Then, start the eG agent on the system that is hosting the Exchange server.

Chapter 3: Monitoring Microsoft Exchange Server 5.5

eG Enterprise suite offers a specialized Exchange 5.5 monitoring model (see Figure 3.8) for the Microsoft Exchange Server 5.5. The tests associated with this model continuously checks whether the core components of the Microsoft Exchange server 5.5 are operating to peak capacity or no, and promptly alert administrators to potential performance issues.

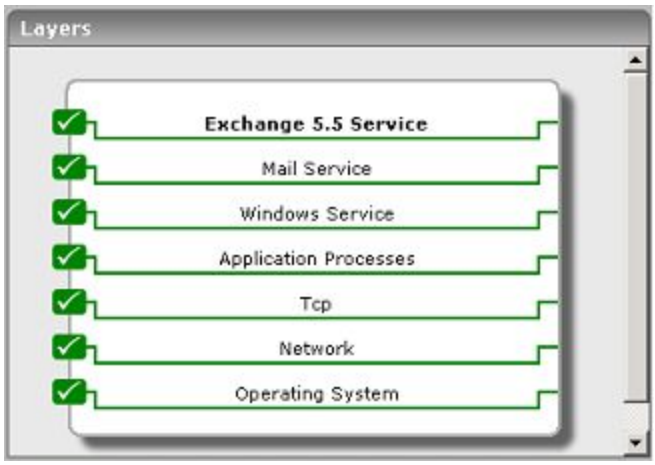

Figure 3.8: Layers of Microsoft Exchange Server 5.5

The **Network**, **TCP**, **Application Processes**, **Windows Service** and **Mail Service** layers have already been discussed in the *Monitoring Unix and Windows Servers* document. The **Mail Service** layer too has been dealt with elaborately in the *Monitoring Unix and Windows Servers* document. The sections to come therefore, will elaborate on the **Exchange 5.5 Service** layer only.

3.2 The Exchange 5.5 Service Layer

This layer monitors the various components that are responsible for enabling the Exchange service, such as the Exchange server database, Exchange server cache. More details about the Exchange Server 5.5 activities are available in the following sections. The tests that map to this layer are depicted by Figure 3.9 below:

Figure 3.9: Tests mapping to the Xchange55_Service layer

3.2.1 MsXCache Test

This test monitors the performance of Exchange Server Directory, the server-side core component.

The Microsoft Exchange Server directory contains objects that are the principal means for applications to find and access services, mailboxes, recipients, public folders, and other addressable objects within the messaging system.

The directory consists of two components:

- Directory database
- Directory service agent.

The directory database stores directory information like recipients, distribution lists, servers, and messaging infrastructure. The directory service agent manipulates the information in the directory database and handles directory requests from applications and services.

Target of the test : An MS Exchange Server 5.5

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every Exchange Server 5.5 being monitored.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the machine where the Exchange Server 5.5 is installed.
Port	The port number through which the Exchange Server 5.5 communicates. The default port number is 25.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache hit ratio	This measure indicates the percentage of database requests that were fulfilled by the Exchange directory cache without causing a Input/Output operation.	Percent	A zero value for this measure may indicate that the Exchange Server 5.5 is not performing any activity on the Exchange directory or no operations are happening on the Exchange Server 5.5 itself. A non-zero value indicates that the directory service has found the required objects in the directory cache thereby reducing the access. A high value for this measure ensures better performance of the Exchange Server 5.5.

3.2.2 MsXDBTest

This test monitors the performance of Exchange Server Database. The information store is key to database management in Exchange Server. This server-side component is responsible for storing data, such as e-mail messages in user mailboxes and information in public folders. The information store is actually two separate databases. The private information store database, called Priv.eb and Public information store, called Pub.ebd.

The private information store manages data in user mailboxes. The public information store manages data in public folders.

Microsoft Exchange Server relies on an embedded database engine that lays out the structure of the disk for Exchange Server and manages memory. The Exchange database engine caches the disk in memory by swapping 4 KB chunks of data, called pages, in and out of memory. The engine updates the pages in memory and takes care of writing new or updated pages back to the disk. The database engine commits a transaction only when it can guarantee that the data is durable and protected from crashes or other failures. The database engine will only successfully commit data when it is sure it has flushed that data from memory to the transaction log file on disk.

Target of the test : An MS Exchange Server 5.5

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every Exchange Server 5.5 being monitored.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the machine where the Exchange Server 5.5 is installed.
Port	The port number through which the Exchange Server 5.5 communicates. The default port number is 25.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Database cache hit ratio	This measure shows the percentage of database requests that were fulfilled by the information store cache without incurring disk input/output activity.	Percent	A significantly low value indicates that the Exchange Server 5.5 is not having enough free memory. Increasing the memory may solve this problem.
Database tables cache hit ratio	This measure shows the percentage of database tables opened using the cached schema information.	Percent	A significantly low value indicates that the Exchange Server 5.5 is not having enough free memory. Increasing the memory may solve this problem.
Log record waiting rate	This measure shows the number of log records that cannot be added to the log buffers because the log buffers are full.	Recrds/Sec	This measure should be as close to zero as possible. If it is not, it might indicate that the size of the log buffer might be a bottleneck. Increasing the memory may solve this problem.
Log threads waiting	This measure shows the number of threads waiting for their data to be written to the log buffer so that the update of the database can be completed.	Number	This measure should be as low as possible. A high value for this measure may indicate that the log buffer might be a bottleneck. Increasing the memory may solve this problem.

3.2.3 MsXMailRetrieval Test

This test monitors the performance of Post Office Protocol version 3 (POP3) and Internet Messaging Access Protocol (IMAP).

POP3 is an Internet protocol that allows a POP3 client to download e-mail from the messaging server like Exchange Server 5.5. This protocol works well for computers that are unable to maintain a continuous connection to a messaging server. Microsoft Exchange Server implements this protocol as a process of the information store.

Internet Messaging Access Protocol (IMAP) works like POP3. This protocol enables clients to access and manipulate messages stored within their mailboxes. Unlike POP3, IMAP4 allows a user to access multiple e-mail folders, search through a mailbox, and maintain read and unread message flags. In addition, a user can download an entire message or a portion of a message, such as an attachment. Like POP3, IMAP4 also runs as a process of the information store.

Target of the test : A Microsoft Exchange Server 5.5

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every Exchange Server 5.5 being monitored.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the machine where the Exchange Server 5.5 is installed.
Port	The port number through which the Exchange Server 5.5 communicates. The default port number is 25.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Current POP3 connections	This measure shows the number of current POP3 connections to the server.	Number	A high value for this measure indicates that a large number of POP3 clients are connected to the Exchange Server 5.5. This measure helps the administrator in planning or upgrading the following

Measurement	Description	Measurement Unit	Interpretation
			parameters: • Server's memory requirements • Control of unnecessary traffic on the mail server • Server's processing capabilities
Current IMAP connections	This measure shows the number of current IMAP connections to the server.	Number	A high value for this measure indicates that a large number of IMAP clients are connected to the Exchange Server 5.5. This measure helps the administrator in planning or upgrading the following parameters: • Server's memory requirements • Control of unnecessary traffic on the mail server • Server's processing capabilities
Current POP3 waits	This measure shows the number of outstanding requests from POP3 clients.	Number	A high value for this measure indicates that either Exchange Server 5.5 is down or Exchange Server is overloaded with jobs.
Current IMAP waits	This measure shows the number of outstanding requests from IMAP clients.	Number	A high value for this measure indicates that either the Exchange Server 5.5 is down or Exchange Server is overloaded with jobs.

3.2.4 MsXMailService Test

This test reports general statistics pertaining to the MS Exchange Server 5.5.

Target of the test : A Microsoft Exchange Server 5.5

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every Exchange Server 5.5 being monitored.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the machine where the Exchange Server 5.5 is installed.
Port	The port number through which the Exchange Server 5.5 communicates. The default port number is 25.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Inbound queue size	The number of messages received from the Internet destined for this MS Exchange Server	Number	This metric checks the inbound side of the MS Exchange server. A consistently high queue size could indicate that the server is not able to cope with the incoming traffic.
Outbound queue size	The number of messages from this MS Exchange Server, that are queued to be delivered to the Internet	Number	Typically, the outbound queue length should be short.
MTS in queue	The number of messages awaiting final delivery in this MS Exchange Server	Number	
MTS out queue	The number of messages waiting to be converted to Internet Mail format	Number	
Incoming connections	The number of current SMTP connections to the Internet Mail Service (IMS) established by other SMTP hosts.	Number	
Outgoing connections	The number of current SMTP connections the Internet Mail Service has established to other SMTP hosts	Number	
Failed connections	The current number of	Number	A lot of failures can occur if the

Measurement	Description	Measurement Unit	Interpretation
	SMTP connection attempts made by the InternetMail Service to other hosts, that have failed		Exchange server is not able to connect to remote server(s) over the Internet
Rejected connections	The current number of SMTP connections from other hosts that the Internet Mail Service has rejected	Number	There may be many reasons why an Exchange server can reject connections from other hosts. eg., based on access control specifications, if the remote host's DNS name cannot be resolved.
Incoming messages	The current number of Internet messages delivered into MS Exchange Server	Number	
Outgoing messages	The current number of outbound messages delivered to their destinations		

3.2.5 MsXStore Test

This test monitors the performance of Exchange Server information store, a server-side component. The information store makes it possible for users to send mail and use public folders. The information store performs the following tasks:

- Stores public folders in the public information store.
- Stores user's messages in the private information store.
- Maintains storage.
- Delivers messages addressed to users on the same server as the sender.
- Forwards messages addressed to recipients on other servers and systems to the message transfer agent (MTA) to deliver.

Target of the test : A Microsoft Exchange Server 5.5

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every Exchange Server 5.5 being monitored.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the machine where the Exchange Server 5.5 is installed.
Port	The port number through which the Exchange Server 5.5 communicates. The default port number is 25.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Current users	This measure shows the actual number of users (not connections) currently using the information store.	Number	This measure is a good indicator of user activity in the Exchange 5.5 Server. This information can be used by the administrator for planning the capacity of the mail server.
Mail send queue size	This measure indicates the number of messages in the send queue of an information store.	Number	This measure is usually zero under normal conditions. This measure can be non-zero in the case of very busy systems (2000 users and more).
Mail receive queue size	This measure shows the number of messages in the receiving queue of the information store.	Number	This measure is usually zero under normal conditions. A non-zero value for this measure indicates that the SMTP service is choking up memory.
Mail sent rate	This measure indicates the rate at which messages are being sent to other storage providers via the Message Transfer Agent (MTA). MTA is a component of	Msgs/Min	A high value over a period for this measure indicates the one of the following: • Microsoft Exchange MTA service is down • Microsoft Exchange MTA service is

Measurement	Description	Measurement Unit	Interpretation
	Microsoft Exchange Server that sends and distributes information between Microsoft Exchange Server systems or between Microsoft Exchange Server and a foreign system. Each MTA is associated with one information store.		choking up memory • The Exchange Server 5.5 is overloaded.
Mail opens	This measure indicates the rate at which the requests, to open the messages are being submitted to the private information store.	Msgs/Sec	This measure shows the overall picture of user activity. An abnormally high value for this measure may indicate that the Exchange Server 5.5 is overloaded.
Folder opens	This measure indicates the rate at which requests, to open the folders are being submitted to the public information store.	Reqs/Sec	This measure is another good indicator of user activity on the mail folders.
Avg mail delivery time	This measure indicates the average time between the submission of a message to the information store and the submission to the MTA for the last 10 messages.	Secs	A non-zero value for this measure indicates a change in user workload. An abnormally high value for this measure indicates inability to deliver to one or more destinations. One of the possible reasons for this can be a network failure.
Avg mail local delivery time	This measure indicates the average time between the submission of a message to the information store and the delivery to all local recipients (recipients on the same server) for the last 10 messages.	Secs	A non-zero value for this measure indicates a change in the user workload. An abnormally high value for this measure may indicate that the server is overloaded.

3.2.6 MsXMail Test

This test monitors the availability and performance of a Microsoft Exchange mail server from an external perspective. The test mimics the mail client activity by using the MAPI (Messaging Application Programming Interface) for sending and receiving mails. Note that Microsoft Mail account needs to be configured in the Exchange server in order to run this test. This test is disabled by default. This test is disabled by default. To enable the test, go to the **ENABLE / DISABLE TESTS** page using the menu sequence : Agents -> Tests -> Enable/Disable, pick the desired **Component type**, set *Performance* as the **Test type**, choose the test from the **DISABLED TESTS** list, and click on the **<** button to move the test to the **ENABLED TESTS** list. Finally, click the **Update** button.

Note:

- The eG external agent that is executing the MsXMail test, should be installed on a Windows NT server/client in the same domain as the Exchange 5.5 server.
- The administrator configuring the test should ensure that the mailbox being used in the test, exists on the Exchange 5.5 server.
- The eGurkhaAgent service should run using the account information of the user whose mailbox has been configured for the MsXMail test.

Target of the test : A Microsoft Exchange Server 5.5

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every Exchange Server 5.5 being monitored.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the machine where the Exchange Server 5.5 is installed.
Port	The port number through which the Exchange Server 5.5 communicates. The default port number is 25.
XchgMailbox	Specify the user name or the user ID of a user mail box available on the Exchange server that is to be used for this test.
XchgSiteName	The name of the site in the Exchange server to which the mailbox belongs.
XchgOrgName	The name of the organization in the Exchange server to which the specified site belongs.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Ability to send mails	Indicates the availability of the mail server for receiving the mails sent by the test.	Percent	A value of 0 indicates that the test was not successful in sending a mail. Possible reasons for this could include the mail server being down, the network connection to the server not being available, or the test configuration information being incorrect.
Sent messages	Indicates the number of messages sent to the mail server.	Number	A value of –1 indicates that the mail server may be down or the configuration information may be incorrect.
Time to send mails	Indicates time taken to send a mail from to the mail server.	Secs	A high value of this measure could indicate high network traffic or that the mail server is busy.
Ability to receive mails	Indicates the availability of the exchange server for sending mails to the mail client.	Percent	The value of 0 indicates that the test was not successful in receiving a mail message from the Exchange server. Possible reasons could be incorrect configuration information.
Received messages	Indicates the number of messages received by the mail client from the mail server.	Number	The value of 0 indicates that the test was not successful in receiving mail messages from the Exchange server. The possible reasons could be: • The sent messages could be in the message queue of the mail server but not routed to the mail box • Configuration information may be incorrect • Network failure • The mail service may not be running

Measurement	Description	Measurement Unit	Interpretation
			in the user account
Mail received time	Indicates the time taken by the mail client to receive a mail from the mail server.	Secs	A high value in this measure indicates that the mail server is busy or the network traffic is high.
Avg roundtrip time	The average of the round trip time (the time lapse between transmission and reception of a message by the server) of all the messages received by the mail server during the last measurement period.	Mins	This is a key measure of quality of the mail service. An increase in this value may be indicative of a problem with the mail service. Possible reasons could include queuing failures, disk space being full, etc.
Max roundtrip time	The high water mark of the round trip time (the time lapse between transmission and reception of a message by the server) of all messages received by the mail server during the last measurement period.	Mins	If the value of the **Received messages** measure is 1, then the value of the **Max roundtrip time** measure will be the same as the **Avg roundtrip time**.

To know the site and organization on which the mailbox configured for the test exists, use the Microsoft Exchange Administrator console. This console can be opened using the menu sequence: Start -> Programs -> Microsoft Exchange -> Microsoft Exchange Administrator. A sample Administrator Window has been given below.

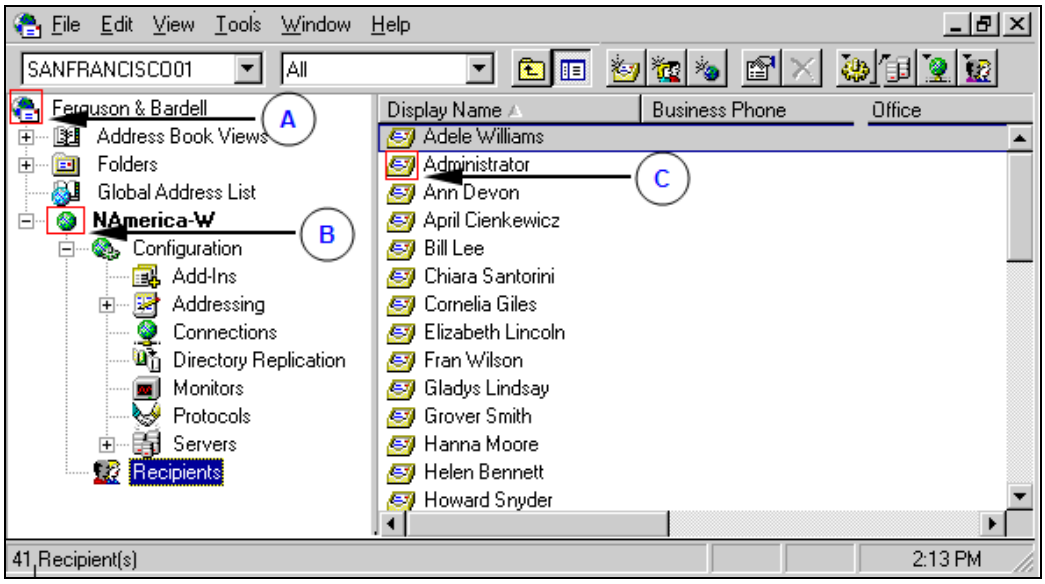

Figure 3.10: The Exchange Administrator window

A	The icon marked A represents an organization in the Exchange server. The text following the icon is the name of the organization. In our illustration, this is Ferguson & Bardell. An organization is the root or starting point of Microsoft Exchange server directory objects.
B	The icon marked B represents a site. The text following this icon is the name of the site. In our illustration, the site name is NAmerica-W. A site is nothing but a group of one or more Exchange server computers connected to the same local area network (LAN). An organization can consist of multiple sites.
C	The icon marked C represents a mail box within an Exchange server. The text following the icon is the name of the mailbox. In our illustration, Administrator is the name of a mailbox under the NAmerica-W site. A mailbox is a private repository for email and other information. To view the complete list of mail boxes within a site, click on the Recipients sub-node under that site in the left pane of the Administrator window.

Note:

Apart from **Processes** test, a **TCP Port Status** test also executes on the **Application Processes** layer of the Exchange Server 5.5. For more details about the **TCP Port Status** test, refer to the *Monitoring Unix and Windows Servers* document.

About eG Innovations

eG Innovations provides intelligent performance management solutions that automate and dramatically accelerate the discovery, diagnosis, and resolution of IT performance issues in on-premises, cloud and hybrid environments. Where traditional monitoring tools often fail to provide insight into the performance drivers of business services and user experience, eG Innovations provides total performance visibility across every layer and every tier of the IT infrastructure that supports the business service chain. From desktops to applications, from servers to network and storage, from virtualization to cloud, eG Innovations helps companies proactively discover, instantly diagnose, and rapidly resolve even the most challenging performance and user experience issues.

eG Innovations is dedicated to helping businesses across the globe transform IT service delivery into a competitive advantage and a center for productivity, growth and profit. Many of the world's largest businesses use eG Enterprise to enhance IT service performance, increase operational efficiency, ensure IT effectiveness and deliver on the ROI promise of transformational IT investments across physical, virtual and cloud environments.

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