Monitoring Microsoft Proxy Server

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

Microsoft Proxy Server 2.0 is an extensible firewall and content cache server, providing Internet security while improving network response time and efficiency by 50%, on average, for businesses of all sizes. It is the first firewall product to include high-performance content caching. Similarly, it is the first content cache server to provide firewall support. Microsoft Proxy Server 2.0 offers distributed (hierarchical and array- based) Web caching, providing unbeaten scalability, fault-tolerance and load balancing to meet even the rigorous demands of large enterprises and Internet Service Providers. Microsoft Proxy Server acts as a gateway with firewall-class security between a LAN and the Internet. The product also blocks access to undesirable sites and provides other easy-to-use management features. It works with existing networks, including IPX networks, and supports several Internet protocols and services. It is therefore imperative that the Microsoft Proxy server is continuously monitored, so that security risks to your environment are minimized, and business is transacted smoothly and efficiently. The eG Enterprise Suite helps administrators in this task. The below topics describe how to configure and monitor the Microsoft Proxy server using the eG Enterprise Suite.

- Administering eG Manager to work with Microsoft Proxy server
- Monitoring Microsoft Proxy Servers

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Chapter 2: Administering eG Manager to work with Microsoft Proxy server

To do the above, do the following:

1. Log into the eG administrative interface.
2. If a Microsoft Proxy server is already discovered, then directly proceed towards managing it using the **COMPONENTS - MANAGE/UNMANAGE** page (Infrastructure -> Components -> Manage/Unmanage). However, if it is yet to be discovered, then run discovery (Infrastructure -> Components -> Discover) to get it discovered or add the Microsoft Proxy server 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. Figure 2.1 and Figure 2.2 clearly illustrate the process of managing an Microsoft Proxy server.

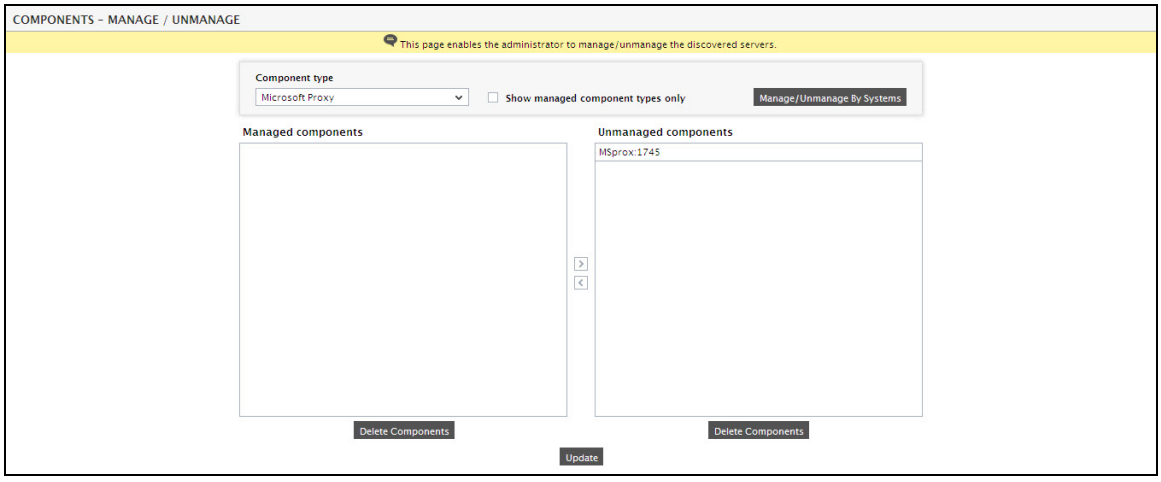

Figure 2.1: Viewing the list of unmanaged Microsoft Proxy servers

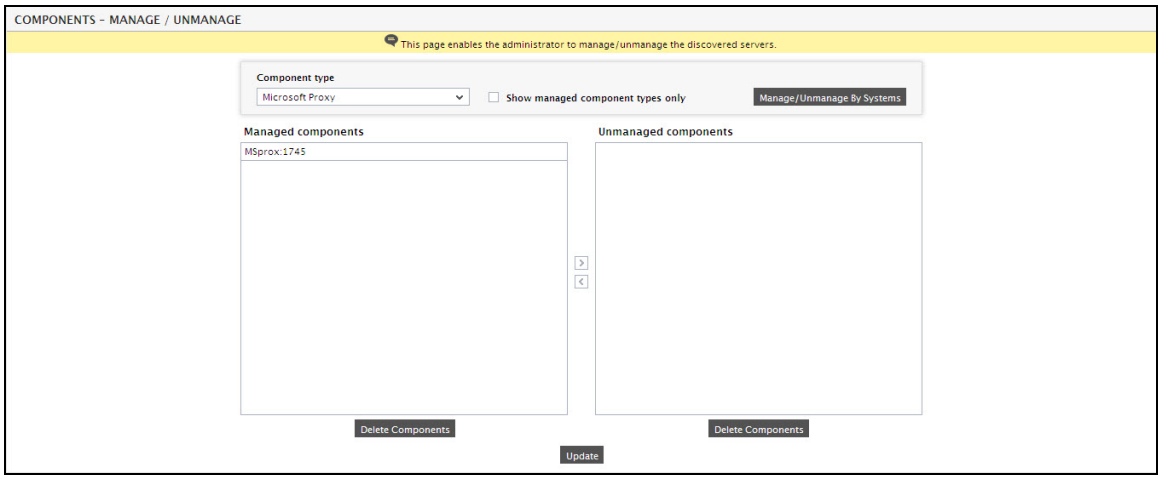

Figure 2.2: Managing an Micosoft Proxy server

3. Next, sign out of the eG administrative interface. Then Figure 2.3, appears prompting you to configure the **Windows Processes** test.

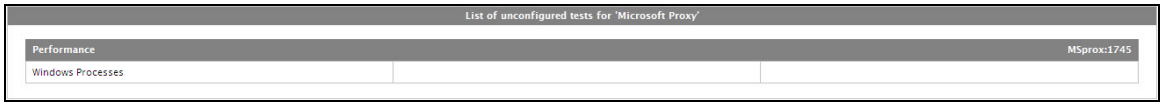

Figure 2.3: List of unconfigured tests for the Microsoft Proxy

4. Next, click on the **Windows Processes** test to configure it. Refer to the *Monitoring Windows and Unix Servers* document to know more about how to configure the **Windows Processes** test.
5. Once the **Windows Processes** test is configured, signout of the eG administrative interface.

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Chapter 3: Monitoring Microsoft Proxy Servers

eG Enterprise provides a specialized *Microsoft Proxy* monitoring model (see Figure 3.1) that monitors the internal health and external availability and responsiveness of the Microsoft Proxy server, and alerts administrators to potential performance issues.

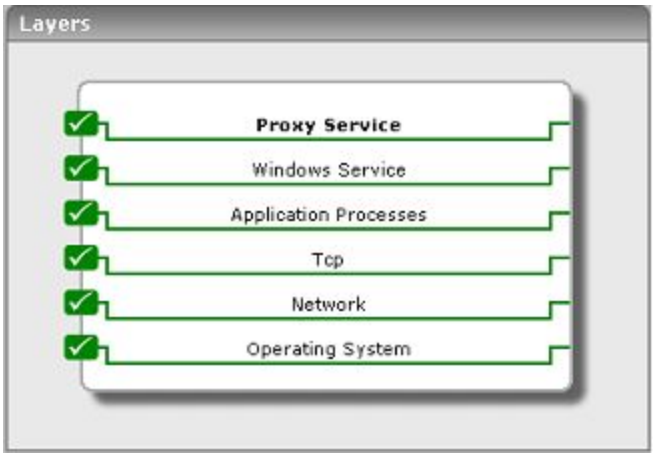

Figure 3.1: Layer model of a Microsoft Proxy server

3.1 The Proxy Service Layer

The tests mapped to the **Proxy Service** layer monitors the performance of the following services executing on a Microsoft Proxy server:

- The WinSock Proxy Service
- The Web Proxy Service
- The Caching service

Figure 3.2: Tests associated with the Proxy Service layer

The tests mapped to this layer are detailed in the following sections.

3.1.1 Win Sock Test

The WinSock Proxy service supports Microsoft Windows operating systems using Windows Sockets. Windows Sockets is an interprocess communication mechanism derived from the Berkeley Sockets interface (originally designed for Unix systems). The Sockets interface was extended to support Windows-based clients running Microsoft implementations of TCP/IP. The name given to this Sockets interface for Windows was WinSock (for Windows Sockets). The WinSock Proxy Service support is available for both Transmission Control Protocol/Internet Protocol (TCP/IP) and Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) protocols. The WinSock Proxy service applies mainly to Windows clients, including Windows 3.x, Windows 95, and Windows NT.

This test reports the performance statistics pertaining to each WinSock Proxy Service.

Target of the test : A Microsoft Proxy server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every WinSock that is being monitored.

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.

Parameters	Description
Host	The host for which the test is to be configured.
Port	Refers to the port used by the Microsoft Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Accepting TCP connections	The number of TCP connection objects that will wait for TCP connections from WinSock proxy clients	Percent	A high value could indicate an increase in the proxy server load, due to which lesser TCP connection requests are accepted.
Active sessions	The number of active sessions for the WinSock proxy service	Number	
Active TCP connections	The total number of TCP connections that are currently transmitting data	Number	
Active UDP connections	The number of active UDP connections	Number	
Available worker threads	The number of available WinSock worker threads	Number	The high increase in the number may affect the performance of the host / applications.
Data received	The rate at which data is received	KB/sec	A low value could indicate a network bottleneck
Data transmitted	The rate at which data is submitted	KB/sec	A high value of this measure could result in a network congestion
Failed DNS resolutions	The number of calls that have failed to resolve DNS domain name and IP address for WinSock proxy connections	Number	This value must be low; a high value indicates that there may be a network / WinSock service problem on the host.

Measurement	Description	Measurement Unit	Interpretation
Pending DNS requests	The number of calls awaiting DNS domain name and IP address resolution for WinSock proxy connections	Number	This value must be low; a high value indicates that there may be a network / WinSock service problem on the host.
Worker threads	The number of WinSock worker threads that are currently available or alive.	Number	

3.1.2 Proxy Server Test

The Web Proxy service provides support for HTTP (a.k.a. Web publishing), FTP, Gopher, and secure (SSL) communications. The Web Proxy service works with any CERN-compliant Web browser, such as Internet Explorer or Netscape Navigator. Because the Web Proxy supports only these widely adopted Internet standard communication methods, it isn't operating system dependent. Clients running Unix, Macintosh, or Windows operating systems can communicate with the Web Proxy service as long as they're configured with a CERN-compliant Web browser.

This test reports the performance statistics pertaining to this Web Proxy service running on an Microsoft Proxy server.

Target of the test : A Microsoft Proxy server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every web proxy service that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	Refers to the port used by the Microsoft Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache hit ratio	The percentage of requests that have used cached data, to the total number of requests to the web proxy service.	Percent	A high value could indicate an increase in the proxy server load, due to which lesser TCP connection requests are accepted.
Client data receive rate	The number of active sessions for the web proxy service.	Number	A high value can indicate an increase in the load on one or more applications, or a change in the characteristics of one or more applications.
Client data transmit rate	The rate at which the data bytes are sent by the proxy server to the web proxy clients.	Kb/sec	A high value could indicate a high data transfer from the proxy server to the web proxy client, which may result in congestion in network traffic
Avg response time	The mean response time in seconds to service a request.	Secs/req	High network traffic, low server performance are some of the factors that cause this measure to increase.
Current users	The current number of users connected to the web proxy service.	Number	A high value can indicate an increase in the load on the web proxy service.
DNS cache hits	This measure give the percentage of DNS domain names served from the proxy server cache, from the total DNS entries that are retrieved by the web proxy service.	Percent	A high value can indicate an increase in load on web proxy service.
Failing requests	The rate of request that have completed with	Reqs/Sec	The high value indicates possible problems in the web proxy service.

Measurement	Description	Measurement Unit	Interpretation
	some error.		
FTP requests	The number of ftp requests that have been made to the web proxy service.	Number	A high value can indicate an increase in the load on the web proxy service.
HTTP requests	The number of http requests that have been made to the web proxy service.	Number	A high value can indicate an increase in the load on one or more applications, or a change in the characteristics of one or more applications.
HTTPS sessions	The total number of HTTP-Secured sessions serviced by the SSL tunnel.	Number	A high value can indicate an increase in the load on one or more applications, or a change in the characteristics of one or more applications on the server.
Thread pool active sessions	The number of sessions being actively served by the pool of threads.	Number	A high value can indicate an increase in the load on the web proxy service.
Thread pool failures	The number of requests rejected, since the thread pool was overcommitted.	Number	The high value indicates a possible problem in the thread pool of the web proxy service.
Upstream receive rate	The rate at which the data is received by the web proxy service from remote servers on the internet/proxy servers surrounding the current proxy server.	Kb/sec	A high value can indicate an increase in the load on the web proxy service from one or more remote servers.
Upstream transmit rate	The rate at which the data is sent by the web proxy service to remote servers on the internet/proxy servers	Kb/sec	A high value can indicate an increase in the load of one or more remote servers.

Measurement	Description	Measurement Unit	Interpretation
	surrounding the current proxy server.		

3.1.3 Proxy Cache Test

Web site caching is an efficient use of resources and another benefit of the Microsoft proxy server. Since you can use the Microsoft proxy server as a common connection point to the Internet, you can also use it to cache frequently accessed resources. The proxy server allocates a portion of the server's hard disk space to store frequently accessed objects. Internet requests are more efficiently responded to through the use of fresh-cached data, which in the long run, helps in minimizing internet response times. Caching can either be passive or active. Passive caching just stores objects as they are requested, so the cache is updated only when users request information. Active caching directs the server to refresh objects in the cache automatically.

You can selectively control the proxy server caching so that you can limit the size of cached objects, change the expiration limits (control the freshness of objects), and determine whether the server always caches, or always excludes from cache, certain content.

This test reports the performance statistics pertaining to this caching activity of the Microsoft Proxy server.

Target of the test : A Microsoft Proxy server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every web proxy server cache that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	Refers to the port used by the Microsoft Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active refreshes	The rate at which data is retrieved from the Internet to refresh popular URLs in the URL cache.	Kb/sec	A low value indicates low refresh rate and a possible network problem.
Active URL refreshes	The rate at which the URLs in the URL cache are refreshed from the internet	URSs/sec	A low or 0(zero) indicates the non-availability of URLs or DNS servers from the internet.
Cache size	The total number of bytes currently available in the URL Cache	Kb	A high value indicates possible high usage of virtual memory on web proxy cache.
URL commits	The rate at which the URLs are committed to the URLs cache	URLs/sec	The low value or 0 (zero) indicates low URL commits, low network resource availability.
URLs retrieved	The rate at which the URLs are retrieved from the URL cache.	URLs/sec	A low value indicates the low availability of the URLs from the proxy cache.
URLs in cache	The current number of URLs in the URL cache	Number	A high value indicates possible low availability of virtual memory.

3.1.4 Proxy Svc Test

This test can be executed from a location external to the proxy server, and presents an unbiased external perspective of the state of the server. 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 *Microsoft proxy* as 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.\

Target of the test : A Microsoft Proxy server

Agent deploying the test : An external agent executing on an eG server

Outputs of the test : One set of outputs for every URL being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	Refers to the port used by the Microsoft Proxy server.
URL	The web page being accessed. While multiple URLs (separated by commas) can be provided, each URL should be of the format *URL name:URL value*. URL name is a unique name assigned to the URL, and the URL value is the value of the URL. For example, a URL can be specified as *HomePage:http://192.168.10.12:7077/*, where HomePage is the URL name and http://192.168.10.12:7077/ is the URL value.
Cookiefile	Whether any cookies being returned by the Microsoft Proxy server need to be saved locally and returned with subsequent requests.
Proxyhost	The host on which a web proxy server is running (in case a proxy server is to be used)
Proxyport	The port number on which the web proxy server is listening.
Proxyusername	The user name of the proxy server.
Proxypassword	The password of the proxy server.
Confirm password	Confirm the password by retyping it here.
Content	Content is a set of *instruction:value* pairs that are used to validate the content being returned by the test. If the Content value is *none:none*, no validation is performed. The number of pairs specified in this text box, must be equal to the number of URLs being monitored. The instruction should be one of **Inc** or **Exc**. Inc tells the test that for the content returned by the Microsoft Proxy server to be valid, the content must include the specified value (a simple string search is done in this case). An instruction of **Exc** instructs the test that the server's output is valid if it does not contain the specified value.
Credentials	The HttpTest supports HTTP authentication. The Credentials parameter is to be set if a specific user name / password has to be specified to login to a page. This parameter is a comma separated list of user *name:password* pairs, one

Parameters	Description
	pair for each URL being monitored. A value of none:none indicates that user authorization is not required. Please be sure to check if your web site requires HTTP authentication while configuring this parameter. HTTP authentication typically involves a separate pop-up window when you try to access the page. Many sites uses HTTP POST for obtaining the user name and password and validating the user login. In such cases, the Username and Password have to be provided as part of the POST information and NOT as part of the Credentials specification for the **HttPTest**.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Proxy service availability	This measurement indicates whether the server was able to respond successfully to the query made by the test.	Percent	Availability failures could be caused by several factors such as the MS Proxy process(es) being down, the MS Proxy servers being misconfigured, a network failure, etc. Temporary unavailability may also occur if the proxy server is overloaded. Availability is determined based on the response code returned by the server. A response code between 200 to 300 indicates that the server is available.
Total response time	This measurement indicates the time taken by the server to respond to the requests it receives.	Secs	Response time being high denotes a problem. Poor response times may be due to the server being overloaded or misconfigured. If the URL accessed involves the generation of dynamic content by the server, backend problems (e.g., an overload at the application server or a database failure) can also result in an increase in

Measurement	Description	Measurement Unit	Interpretation
			response time.
TCP connection availability	This measure indicates whether the test managed to establish a TCP connection to the server.	Percent	Failure to establish a TCP connection may imply that either the MS proxy server process is not up, or that the process is not operating correctly. In some cases of extreme overload, the failure to establish a TCP connection may be a transient condition. As the load subsides, the server may start functioning properly again.
TCP connection time	This measure quantifies the time for establishing a TCP connection to the MS proxy server host.	Secs	Typically, the TCP connection establishment must be very small (of the order of a few milliseconds). Since TCP connection establishment is handled at the OS- level, rather than by the application, an increase in this value signifies a system- level bottleneck on the host that supports the MS proxy server.
Server response time	This measure indicates the time period between when the connection was established and when the server sent back a HTTP response header to the client.	Secs	While the total response time may depend on several factors, the server response time is typically, a very good indicator of a server bottleneck (e.g., because all the available server threads or processes are in use).
Response code	The response code returned by the server for the simulated request	Number	A value between 200 and 300 indicates a good response. A 4xx value indicates a problem with the requested content (eg., page not found). A 5xx value indicates a server error.

Measurement	Description	Measurement Unit	Interpretation
Content length	The size of the content returned by the server	Kbytes	Typically the content length returned by the server for a specific URL should be the same across time. Any change in this metric may indicate the need for further investigation on the server side.
Content validity	This measure validates whether the server was successful in executing the request made to it.	Percent	A value of 100% indicates that the content returned by the test is valid. A value of 0% indicates that the content may not be valid. This capability for content validation is especially important for multi-tier web applications. For example, a user may not be able to login to the web site but the server may reply back with a valid HTML page where in the error message, say, "Invalid Login" is reported. In this case, the availability will be 100 % (since we got a valid HTML response). If the test is configured such that the content parameter should exclude the string "Invalid Login," in the above scenario content validity would have a value 0.

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Chapter 4: Conclusion

This document has described in detail the monitoring paradigm used and the measurement capabilities of the eG Enterprise suite of products with respect to **Microsoft Proxy** server. For details of how to administer and use the eG Enterprise suite of products, refer to the user manuals.

We will be adding new measurement capabilities into the future versions of the eG Enterprise suite. If you can identify new capabilities that you would like us to incorporate in the eG Enterprise suite of products, please contact support@eginnovations.com. We look forward to your support and cooperation. Any feedback regarding this manual or any other aspects of the eG Enterprise suite can be forwarded to feedback@eginnovations.com.