Monitoring ISA Proxy Server

eG Innovations Product Documentation

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Total Performance Visibility

Table of Contents

Table of Figures

Chapter 1: Introduction

Microsoft Internet Security and Acceleration (ISA) Server can be deployed as a dedicated firewall that acts as the secure gateway to the Internet for internal clients. ISA Server protects all communication between internal computers and the Internet. In a simple firewall scenario, the ISA Server computer has two network interface cards, one connected to the local network and one connected to the Internet. By setting the security access policies, you prevent unauthorized access and malicious content from entering the network. You can also restrict what traffic is allowed for each user and group, application, destination, content type, and schedule.

To assure users of safe and secure access to the Internet, and to shield the network from malicious attacks, the availability and internal health of the ISA Proxy server should be constantly monitored. The eG Enterprise Suite helps you in this regard!

This document describes the monitoring model that eG Enterprise prescribes for the ISA server, and the performance metrics each model collects.

Chapter 2: Administering eG Manager to Work with ISA Proxy server

To manage the ISA Proxy server, do the following:

1. Log into the eG administrative interface.
2. If an ISA 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 ISA 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 ISA Proxy server.

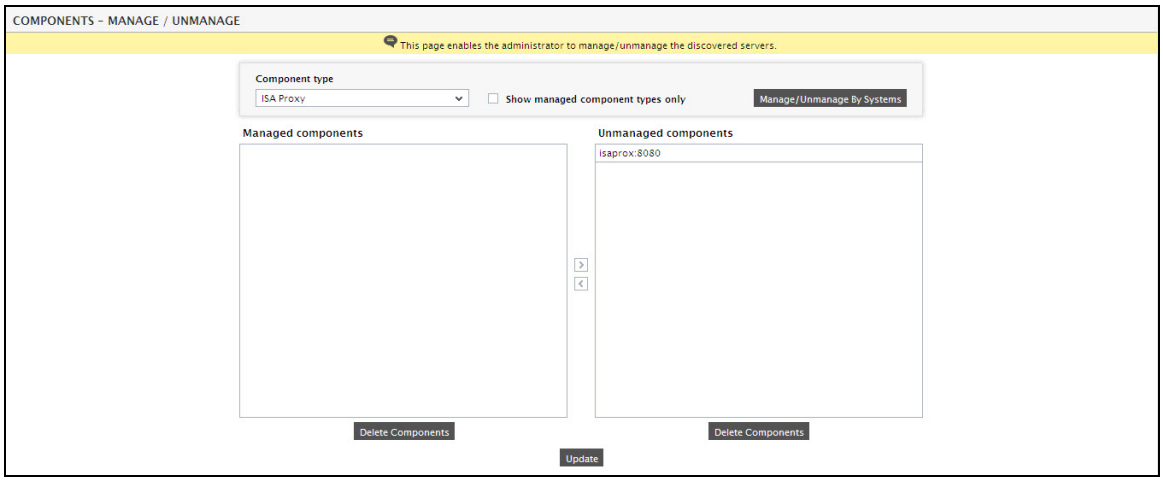

Figure 2.1: Viewing the list of unmanaged ISA Proxy server

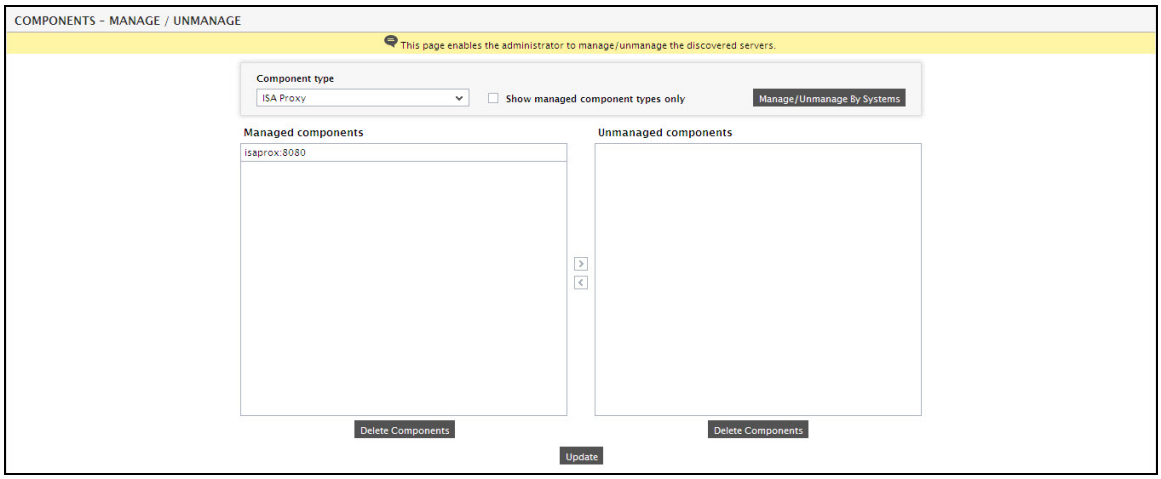

Figure 2.2: Managing the ISA Proxy server

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

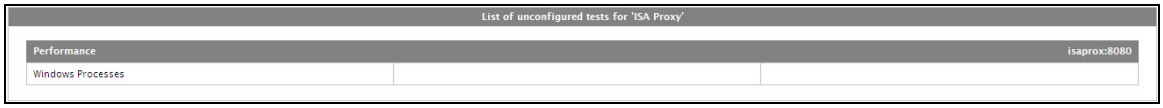

Figure 2.3: List of unconfigured test for the ISA Proxy server

4. To configure the **Windows Processes** test, click on the test name in Figure 2.3. Refer to the *Monitoring Windows and Unix servers* document to know more about how to configure the test.
5. Once the **Windows Processes** test is configured, signout of the eG administrative interface.

Chapter 3: Monitoring ISA Proxy Servers

Microsoft Internet Security and Acceleration (ISA) Server can be deployed as a dedicated firewall that acts as the secure gateway to the Internet for internal clients. ISA Server protects all communication between internal computers and the Internet. In a simple firewall scenario, the ISA Server computer has two network interface cards, one connected to the local network and one connected to the Internet. By setting the security access policies, you prevent unauthorized access and malicious content from entering the network. You can also restrict what traffic is allowed for each user and group, application, destination, content type, and schedule.

To assure users of safe and secure access to the Internet, and to shield the network from malicious attacks, the availability and internal health of the ISA Proxy server should be constantly monitored.

The eG Enterprise suite's unique ISA Proxy monitoring model (see Figure 3.1) executes a wide variety of tests on the proxy server to enable administrators to determine the following:

- Does the server take too much time to service firewall requests?
- Is the Web Proxy server functioning optimally?
- Is the Web Proxy Cache utilized effectively?

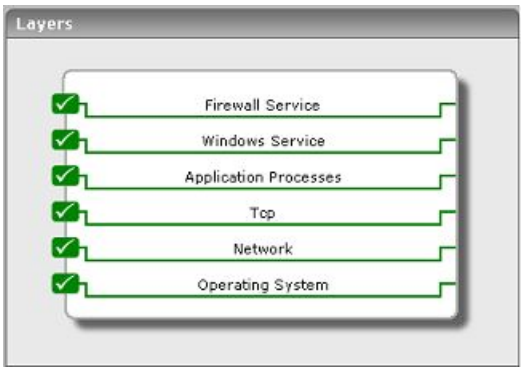

Figure 3.1: Layer model of an ISA Proxy server

The sections to come will discuss the tests associated with the **Firewall Service** layer only, since the remaining layers have already been discussed in the *Monitoring Unix and Windows Servers* document.

3.1 The Firewall Service Layer

The tests associated with the **Firewall Service** layer monitor various critical firewall services provided by the ISA Proxy server.

Figure 3.2: The tests associated with the Firewall Service layer

3.1.1 ISA Cache Test

This test reports statistics pertaining to the ISA Proxy server cache.

Target of the test : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Data received from	Indicates the rate at	KB/Sec	

Measurement	Description	Measurement Unit	Interpretation
disk cache	which data is retrieved from the disk cache.		
Data received from memory cache	Indicates the rate at which data is retrieved from the memory cache.	KB/Sec	
Disk failures	Indicates the rate at which I/O failures occurred since the Firewall service started.	Fails/Sec	An I/O failure occurs when the ISA server fails to read from or write to disk cache.
Disk writes	Indicates the rate at which data was written to the disk cache.	Writes/Sec	
Memory cache util	Indicates the percentage of fetches made from the memory.	Percent	A high percentage may indicate that it is worthwhile allocating more available memory resources to the cache.
URLs in cache	Indicates the number of URLs currently stored in the cache.	Number	

3.1.2 ISA Firewall Test

This test reports statistics pertaining to the Firewall service of the ISA Proxy server 2004.

Target of the test : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
DNS cache hit ratio	Indicates the percentage of DNS domain names retrieved from the DNS cache.	Percent	
Pending DNS resolutions	Indicates the number of gethostbyname and gethostbyaddr API calls pending resolution. These are calls used to resolve host DNS domain names and IP addresses for Firewall Service connections.	Number	
Worker threads	Indicates the number of Firewall Service worker threads that are currently alive.	Number	A high value indicates that the current workload of the ISA Proxy Server is very high.

3.1.3 ISA Web Proxy Test

This test monitors the performance of the Web proxy service of the ISA Proxy server 2004.

Target of the test : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active web sessions	Indicates the number of active Web sessions currently connected to the ISA proxy Server.	Number	
Connect errors	Indicates the total number of errors that occurred while connecting.	Number	
DNS cache hit ratio	Indicates the percentage of DNS domain names served from the DNS cache.	Percent	
Failed requests	Indicates the rate of requests that have failed because of some type of error.	Conns/Sec	A high failure rate, in comparison to the rate of incoming requests, will suggest that the ISA Proxy server is having difficulty in coping with all incoming requests. Connection settings for incoming Web requests may be incorrectly configured, or connection bandwidth may be insufficient.
Inbound connections	Indicates the rate of incoming connections.	Conns/Sec	
Outbound	Indicates the rate of	Conns/Sec	

Measurement	Description	Measurement Unit	Interpretation
connections	outgoing connections.		
Requests rate	Indicates the rate of requests to the Web Proxy filter.	Requests/Sec	A higher value means that more ISA Proxy server resources will be required to service incoming requests.

3.1.4 Packet Engine Test

The PacketEngine test reports statistics relating to the firewall packet engine of the ISA Proxy server 2004.

Target of the test : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active connections	Indicates the number of active connections currently transmitting data.	Number	A high value indicates that the current workload of the ISA Proxy Server is very high.
Allowed packets rate	Indicates the number of packets allowed per second.	Packets/Sec	

Measurement	Description	Measurement Unit	Interpretation
Data sent rate	Indicates the rate at which data was transmitted by the firewall packet engine driver.	KB/Sec	
Dropped packets rate	Indicates the rate at which packets were dropped.	Packets/Sec	
New connections rate	Indicates the rate at which connections were created.	Conns/Sec	
Packets inspected rate	Indicates the rate at which the firewall packet engine driver inspects the packets.	Packets/Sec	

3.1.5 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 ISA Proxy server.

Target of the test : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every web proxy service 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 ISA 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	Percent	A high value can indicate an increase in load on web proxy

Measurement	Description	Measurement Unit	Interpretation
	domain names served from the proxy server cache, from the total DNS entries that are retrieved by the web proxy service.		service.
Failing requests	The rate of request that have completed with some error.	Reqs/Sec	The high value indicates possible problems in the web proxy service.
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	Kb/sec	A high value can indicate an increase in the load on the web proxy service from one or more

Measurement	Description	Measurement Unit	Interpretation
	remote servers on the internet/proxy servers surrounding the current proxy server		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 surrounding the current proxy server	Kb/sec	A high value can indicate an increase in the load of one or more remote servers.

3.1.6 Firewall Service Test

This test measures the firewall protection of the ISA proxy 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 *ISA Proxy* server 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 : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active sessions	Indicates the number of active sessions for the firewall service.	Number	Comparing this measure at both peak and off- peak times will provide you with valuable insight into the usage patterns of the ISA server.
Active TCP connections	Indicates the number of active TCP connections transmitting data.	Number	
Active UDP connections	Indicates the number of active UDP connections for the firewall service.	Number	
Active threads	Indicates the number of firewall worker threads that are currently active.	Number	
Read rate	Indicates the number of kilobytes read by the data-pump per second.	KB/Sec	A consistent decrease in the value of this measure may indicate a delay in servicing firewall requests.
Write rate	Indicates the number of kilobytes written by the data-pump per second.	KB/Sec	A consistent decrease in the value of this measure may indicate a delay in servicing firewall requests.

3.1.7 Web Proxy Service Test

This test monitors the Web Proxy service. Requests from Web Proxy clients are directed to the Web Proxy service on the ISA server to determine if access is allowed.

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 *ISA Proxy* server 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 : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache hit ratio	The percentage of successful web proxy client requests to the ISA Server.	Percent	This measure is a good indicator of the effectiveness of the cache. A higher percentage indicates that a number of requests are being serviced from the cache. This in turn is indicative of faster responsiveness. A zero value indicates that caching is not enabled, and a low value may indicate a configuration problem.
Current users	Indicates the number of clients that are currently running the web proxy service.	Number	Monitoring this measure at both peak and off-peak times will enable users to assess the extent of server usage. This measure may also be useful if you need to temporarily stop ISA Server services.
Read rate	Indicates the rate at which data bytes are	KB/Sec	A consistent decrease in the value of this measure may indicate a

Measurement	Description	Measurement Unit	Interpretation
	received from Web Proxy clients.		delay in servicing requests.
Active threads	Indicates the rate at which data bytes are sent to Web Proxy clients.	KB/Sec	A consistent decrease in the value of this measure may indicate a delay in servicing requests.
Avg requests sec	Indicates the number of kilobytes read by the data-pump per second.	KB/Sec	A consistent decrease in the value of this measure may indicate a delay in servicing firewall requests.
Write rate	Indicates the average amount of time required by the ISA server to process a request.	Secs/Request	This measure can be monitored at peak and off-peak times to receive a clear idea about how fast client requests are being serviced. A very high value of this measure might indicate that the ISA Server is having difficulty in handling all requests.
Thread pool size	Indicates the number of threads in the thread pool	Number	
Thread pool sessions	Indicates the number of sessions being actively serviced by thread pool threads.	Number	
Thread pool failures	Indicates the number of requests rejected because the thread pool was full.	Number	

3.1.8 Web Proxy Cache Test

This test monitors the Web Proxy cache. The ISA server implements a cache of frequently-requested objects to improve network performance. You can configure the cache to ensure that it contains the data that is most frequently used by the organization or accessed by your Internet clients.

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 *ISA Proxy* server 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 : An ISA Proxy server 2004

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every ISA Proxy server 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 ISA Proxy server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Disk cache space	Indicates the amount of space used by the disk cache.	KB	If the value of this measure grows closer to or equal to the allocated disk cache space, it would indicate that subsequent cache requests might be rejected due to non-availability of adequate cache space. This, in turn, would increase the rate of direct disk accesses,

Measurement	Description	Measurement Unit	Interpretation
			which will consequently degrade system performance.
Memory cache space	Indicates the amount of space used by the memory cache	KB	An excessive consumption of the memory cache space would result in slow-down of the system. This is because the lack of sufficient space in the memory cache would cause the real memory (RAM) to directly service the requests for objects.
URL commit rate	Indicates the speed at which URLs are being written to the cache.	URLs/Sec	

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.

To learn more visit www.eginnovations.com.

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