Monitoring DHCP Server

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

The Microsoft® Windows® 2000 Server network operating system builds on the Microsoft support for Dynamic Host Configuration Protocol (DHCP).

Each host computer connected to a TCP/IP network must be assigned a unique IP address. The Microsoft DHCP server allows the network administrator to dynamically assign network settings to the clients that connect to a network.

The DHCP server offers the following features:

- Integration of DHCP with DNS.
- Dynamic assignment of IP addresses allows, address reuse through leases.
- Multicast address allocation.
- Automatic pushdown of configurations to clients allows configuration changes to be applied transparently.

If the DHCP server experiences an overload or a slowdown while processing requests, it is bound to delay the automatic discovery of additions (client / server) to the network and the assignment of identification (i.e., IP address) to them; consequently, users may be denied timely access to critical clients or servers. Continuous monitoring of the DHCP server can alone help administrators in promptly identifying and resolving such problem conditions. The eG Enterprise helps administrator in this task.

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

Chapter 2: Administering eG Manager to work with DHCP server

To manage the DHCP server, do the following:

1. Log into the eG administrative interface.
2. If a DHCP 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 DHCP 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 a DHCP server.

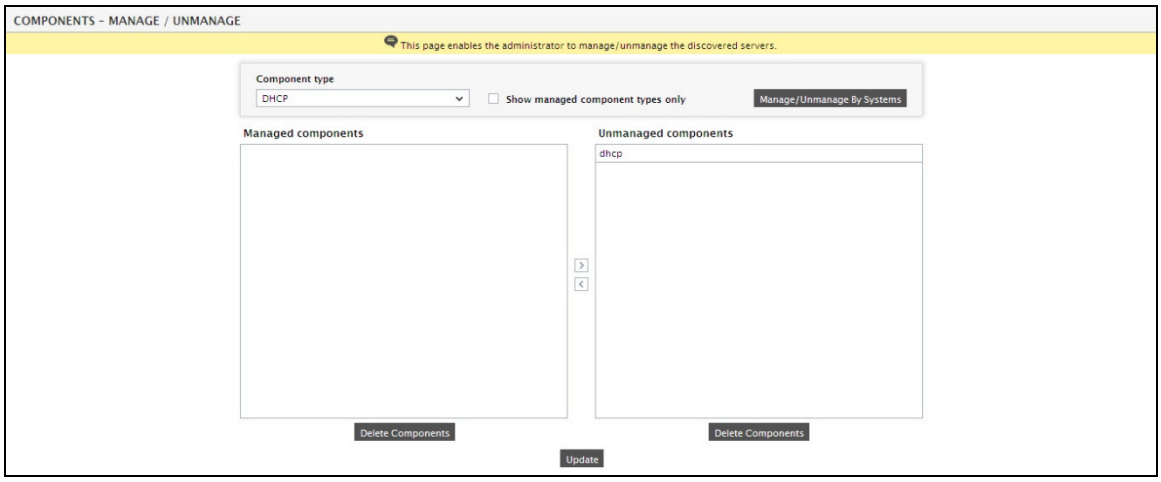

Figure 2.1: Viewing the list of unmanaged DHCP servers

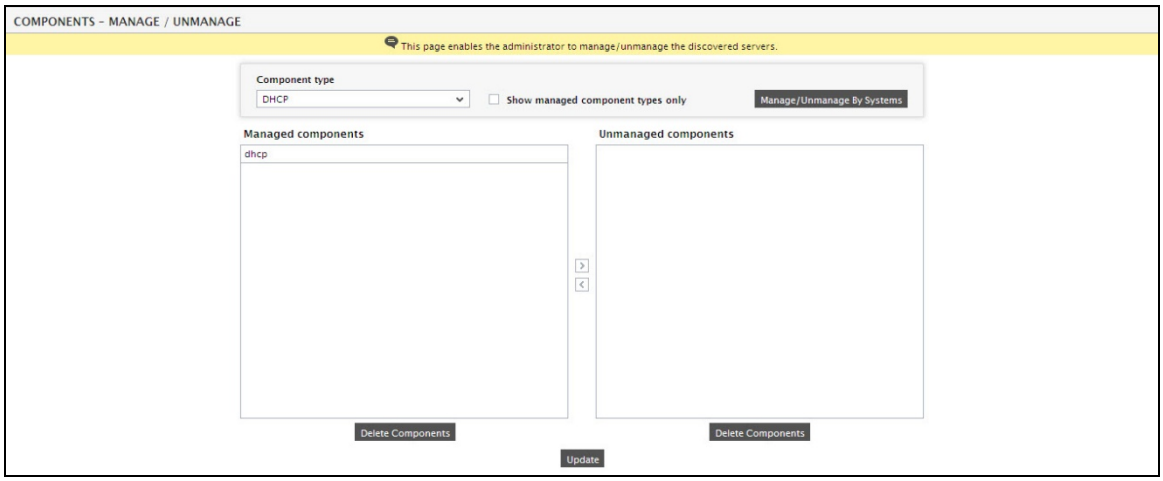

Figure 2.2: Managing the DHCP server

3. Next, sign out of the eG administrative interface.

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Chapter 3: Monitoring DHCP Servers

eG Enterprise prescribes a unique *DHCP* monitoring model (see Figure 3.1) for the DHCP server, which keeps a watchful eye on the requests received and acknowledgments sent by the server to help administrators determine the following:

- How quickly is the DHCP server processing request packets? Were too many requests enqueued? Have too many packets expired?
- Is the hardware on the DHCP server adequately sized to facilitate swift processing of the request packets?
- Were any negative acknowledgment messages sent by the DHCP server?
- Were any DHCP decline messages received by the server?
- Have enough IP addresses been configured on the server for assignment to clients?

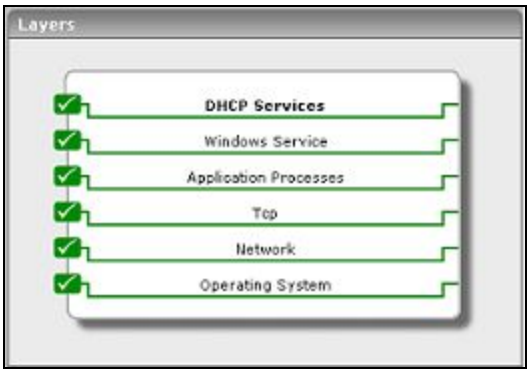

Figure 3.1: Layer model of a DHCP server

Every layer of Figure 3.1 above is mapped to a set of tests. The eG agent executing on the DHCP server runs these tests on the server, and extracts the metrics of interest.

Since the bottom 5 layers of Figure 3.1 have already been discussed in the *Monitoring Unix and Windows Servers* document, the section to come will discuss the **DHCP Services** layer only.

3.1 The DHCP Services Layer

The tests associated with this layer do the following:

- Track the overall responsiveness of the DHCP server to requests received from clients
- Verify the availability of free IP addresses on the server for assignment to clients

Figure 3.2: Tests associated with the DHCP Services layer

3.1.1 DHCP Performance Test

This test reports the performance statistics of the Microsoft 2000 DHCP server running on the network.

Target of the test : A DHCP Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every DHCP 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 variable name of the host for which the test is to be configured.
Port	Refers to the port used by the DHCP server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Avg packet rate	Refers to the average time in seconds used by the DHCP server to process each packet it receives.	Pkts/sec	This measure can vary depending on the server hardware and its I/O subsystem. A sudden or unusual increase might indicate a problem, either with the I/O subsystem becoming slower or because of an intrinsic processing overhead on the server computer.
Current message queue length	Refers to the current length of the internal message queue of the DHCP server.	Number	A large value in this measure might indicate heavy server traffic.
Request rate	Refers to the number of DHCP request messages received per second by the DHCP server from clients.	Reqs/sec	A sudden or unusual increase in this measure indicates a large number of clients trying to renew their leases with the DHCP server
Request acks rate	Refers to the number of DHCP acknowledgment messages sent per second by the DHCP server to clients.	Reqs/sec	A sudden or unusual increase in this measure indicates that a large number of clients are being renewed by the DHCP server
Request nacks rate	Refers to the number of negative acknowledgment messages sent per second by the DHCP server to clients.	Reqs/sec	A very high value might indicate potential network trouble in the form of misconfiguration of either the server or clients. When servers are misconfigured, one possible cause is a deactivated scope. For clients, a very high value could be caused by computers moving between subnets, such as laptop portables or other mobile devices.
Request declines rate	Refers to the number of DHCP decline messages	Reqs/sec	A high value indicates that several clients have found their address to be

Measurement	Description	Measurement Unit	Interpretation
	received per second by the DHCP server from clients.		in conflict, possibly indicating network trouble.
Packets expired rate	Refers to the number of packets per second that expire and are dropped by the DHCP server.	Pkts/sec	A large value in this measure indicates that the server is either taking too long to process some packets while other packets are queued and becoming stale, or traffic on the network is too high for the server to manage.
Packet drop rate	Refers to the number of duplicate packets per second dropped by the DHCP server.	Pkts/sec	This measure can be affected by multiple clients or network interfaces forwarding the same packet to the server. A large value in this measure indicates that either clients are probably timing out too fast or the server is not responding fast enough.
Requests release rate	Refers to the number of DHCP release messages received per second by the DHCP server from clients.	Reqs/sec	This measure only exists if a DHCP client sends a release message to the server. This measure remains low for many DHCP network configurations.

3.1.2 DHCP Utilization Test

This test reports general statistics pertaining to the Microsoft 2000 DHCP server running on the network.

Target of the test : A DHCP Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every DHCP 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 variable name of the host for which the test is to be configured.
Port	Refers to the port used by the DHCP server.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Current addresses in use	Refers to the number of IP addresses in use in the target network.	Number	This measure indicates the number of IP addresses assigned to clients in the target network.
Free addresses	Refers to the number of free IP addresses available in the target network.	Number	This measure indicates the number of IP addresses available for allocation to clients in the target network.
Total addresses	Indicates the total number of IP addresses allocated to the target network.	Number	
Current address usage	Indicates the percentage of IP addresses that are currently used in the target network.	Percent	If the value of this measure reaches close to 100% then it is a cause for concern, which indicates excessive usage of the IP addresses in the target network.

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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