Monitoring Sun Java System Directory Server

eG Innovations Product Documentation

eG
Total Performance Visibility

Table of Contents

Table of Figures

1

Chapter 1: Introduction

The Sun ONE Application suite offers a comprehensive list of products for Internet infrastructures, i.e., web server, middleware application server, LDAP server, messaging server, and identity server, that are used in many domains such as banking, trading, healthcare, and logistics to support mission‑critical services. IT infrastructures based on the Sun ONE Application suite follow the popular multi‑tier architecture wherein the web server functions as the front‑end receiving client requests, the application server hosts the business logic components, the identity server manages user policies, the directory server handles access rights and other user information lookups, and the database server stores and retrieves application data.

Routine monitoring of the infrastructure including the network, system, and application is imperative to ensure that the infrastructure functions at peak performance at all times. Since each Sun ONE application performs a different, specialized function, the monitoring has to be specific to each application – e.g., is the mail server delivering emails? is the application server's heap effectively sized?. More importantly, since the different Sun ONE applications inter-operate to support the end-user service, it is critical that the monitoring system track the inter‑dependencies between applications in order to pin-point the exact source of a performance bottleneck in the infrastructure.

2

Chapter 2: How to Monitor Sun Java System Directory Server Using eG Enterprise?

eG Enterprise can monitor a Sun Java System Directory Server in both agent-based and agentless manners. To monitor the Sun Java System Directory Server in the agentless manner, you need to install a single eG agent on a remote Windows host. The eG agent continuously monitors the Sun Java System Directory Server and collects the critical measures pertaining to its performance. To start monitoring, first manage the Sun Java System Directory Server component using the eG administrative interface, The procedure for managing the component is explaine in the bleow section.

2.1 Managing the Sun Java System Directory Server

The eG Enterprise lets you manually add the Sun Java System Directory Server component for monitoring. Remember that the eG Enterprise automatically manages the components that are added manually. To add a Sun Java System Directory Server component, do the following:

1. Log into the eG administrative interface.

2. Follow the Components -> Add/Modify menu sequence in the **Infrastructure** tile of the **Admin** menu.

3. In the **COMPONENT** page that appears next, select *Sun Java System Directory Server* as the **Component type**. Then, click the **Add New Component** button. This will invoke Figure 2.1.

Figure 2.1: Adding a new Sun Java System Directory Server

4. Specify the **Host IP/Name** and the **Nick name** of the Sun Java System Directory Server n Figure 2.1.

5. The **Port number** will be set as 389 by default. If the server to be monitored is listening on a different port, the override this default setting.

6. Then, click the **Add** button to register the changes.

7. Now, try to signout of the administrative interface. You will be prompted to configure a list of tests as shown in Figure 2.2.

Figure 2.2: The list of unconfigured tests for the Sun Java System Directory Server\

8. Refer to the **Monitoring the Sun Java System Directory Server** chapter for the details on configuring these tests.

9. Finally signout of the eG administrative interface.

3

Chapter 3: Monitoring the Sun Java System Directory Server

The eG Sun ONE monitor offers extensive infrastructure monitoring capabilities for the Sun ONE application suite. Pre-built models for Sun ONE web, application, directory, and messaging servers dictate what metrics are to be collected by eG agents, what thresholds are to be applied to the metrics, and how the metrics are to be correlated in order to assist with problem diagnosis.

Figure 3.1 depicts the SunONE Directory Server monitoring model offered by the eG Enterprise Suite.
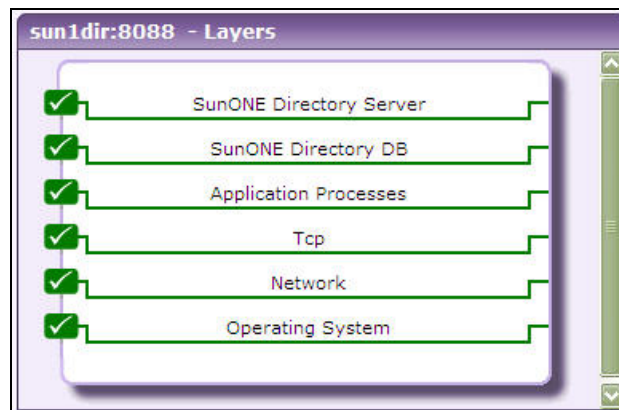

Figure 3.1: The layer model of the Sun Java System Directory server

Using the model depicted by Figure 3.1, the following can be monitored:

➢ Is the directory server available? If so, how quickly is it responding to user requests?

➢ Are the database and entry caches optimally utilized? Are too many requests to any database been fulfilled by direct disk accesses?

➢ Is the Directory server overloaded with connection requests?

➢ Are too many operations awaiting processing by the server?

This section will discuss the tests associated with the **SunONE Directory DB** and **SunONE Directory Server** layers of Figure 3.1.

3.1 The SunONE Directory DB Layer

You can judge the effectiveness of the caching activity performed by the directory server using the tests associated with this layer.
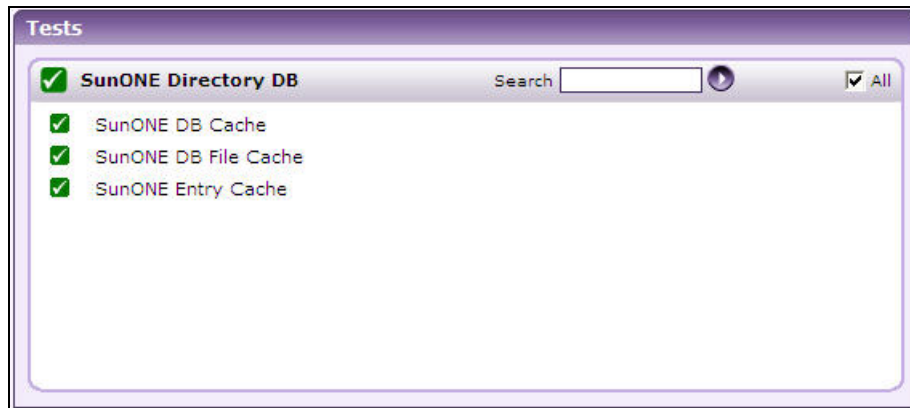

Figure 3.2: The tests associated with the SunONE Directory DB layer

3.1.1 SunONE DB Cache Test

Each Directory Server instance has one database cache. The database cache is a pool of memory that holds pages from the database containing indexes and entries.

The size of the database cache is configurable. The cache should be rightly sized in order to prevent/at least minimize expensive and potentially harmful direct disk accesses. With the help of this test, you can monitor how the cache is utilized over time, promptly detect sizing irregularities, and correct them.

Target of the test : A Sun Java System Directory server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Sun Java System Directory server being monitored.

Configurable parameters for the test

Parameter	Description
Test period	How often should the test be executed
Host	The host for which the test is to be configured.
Port	Refers to the port at which specified host listens to.

Parameter	Description
DistinguishedName	Represents the server's Distinguished name. This value is to be specified when the server requires explicit authentication of requests. By default, this attribute is set to "*none*", implying that authentication is not required.
Password	Specify the password to be used for authenticating the request. The password is to be specified whenever the DistinguishedName is not "*none*".
Confirm Password	Confirm the password (if specified) by retyping it here.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache hits	Indicates the number of times the Directory server has successfully processed a search request to retrieve data from the database cache.	Number	
Cache tries	Indicates the number of times the Directory server has been looked in to retrieve data from the database cache.	Number	
Cache hit ratio	Indicates the ratio of database cache hits to database cache tries.	Percent	The closer this value is to 100%, the better. Whenever a directory operation attempts to find a portion of the database that is not resident in the database cache, the directory server has to perform a disk access to obtain the appropriate database page. Thus, as this ratio drops towards zero, the number of disk accesses increases and directory server performance drops.
Pages read in	Indicates the rate of pages read from disk into the database cache during the last measurement period.	Pages/Sec	

Measurement	Description	Measurement Unit	Interpretation
Pages written out	Indicates the rate of pages for this file written from cache to disk during the last measurement period.	Pages/Sec	A database page is written out to disk whenever a read-write page has been modified and then subsequently evicted from the cache. Pages are evicted from the database cache when the cache is full and a directory operation requires a database page that is not currently stored in cache.

3.1.2 SunONE DB File Cache Test

While the **SunONE DB Cache** test reveals the inefficient use of the database cache as a whole, using the **SunONE DB File Cache** test, you can accurately point to the specific database(s) that is under-utilizing the cache. The latter monitors requests to each database that has been explicitly configured for monitoring, and reports the percentage of these requests that were serviced by the database cache.

Target of the test : A Sun Java System Directory server

Agent deploying the test : An internal agent

Outputs of the test : One set of results per database to be monitored.

Configurable parameters for the test

Parameter	Description
Test period	How often should the test be executed
Host	The host for which the test is to be configured.
Port	Refers to the port at which specified host listens to.
DistinguishedName	Represents the server's Distinguished name. This value is to be specified when the server requires explicit authentication of requests. By default, this attribute is set to "*none*", implying that authentication is not required.
Password	Specify the password to be used for authenticating the request. The password is to be specified whenever the DistinguishedName is not "*none*".
Confirm Password	Confirm the password (if specified) by retyping it here.
DatabaseName	Specify a comma-separated list of databases to be monitored.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache hit ratio	Indicates the percentage of times a search request to this database resulted in a cache hit.	Percent	The closer this value is to 100%, the better. Whenever a directory operation attempts to find a portion of the database that is not resident in the database cache, the directory server has to perform a disk access to obtain the appropriate database page. Thus, as this ratio drops towards zero, the number of disk accesses increases and directory server performance drops. Compare the value of this measure across databases to identify the database that is not utilizing the cache well.
Pages read in	Indicates the rate of pages brought to the cache from this database during the last measurement period.	Pages/Sec	
Pages written out	The rate of pages for this database written from cache to disk file during the last measurement period.	Pages/Sec	A database page is written out to disk whenever a read-write page has been modified and then subsequently evicted from the cache. Pages are evicted from the database cache when the cache is full and a directory operation requires a database page that is not currently stored in cache.

3.1.3 SunONE Entry Cache Test

The entry cache is a mechanism that uses system memory for holding entries in a manner that may be quickly accessed so that it is not necessary to decode them from the database whenever they are needed. Entry caching mechanisms are particularly effective when used with applications that access the same entry multiple times in a sequence of operations (for example, an application which first searches to find a user entry and then binds as that user to verify a password, which is a very common usage pattern).

The entry cache size and the maximum number of entries in the cache are configurable. If these values are not set prudently, then the entry cache may not be able to hold adequate entries to serve the search requests to the Directory server; this in turn will compel the Directory server to directly access the disk for fulfilling the requests. Direct disk accesses are resource-intensive operations, and should be avoided. To do so, you need to continuously monitor how the entry cache services requests, detect sizing irregularities quickly, and correct them.

Using the **SunONE Entry Cache** test, you can track the requests to each database on the Directory server, observe how the cache handles these requests, and ascertain whether the cache size needs to be fine-tuned.

Target of the test : A Sun Java System Directory server

Agent deploying the test : An internal agent

Outputs of the test : One set of results per database configured for monitoring.

Configurable parameters for the test

Parameter	Description
Test period	How often should the test be executed
Host	The host for which the test is to be configured.
Port	Refers to the port at which specified host listens to.
DistinguishedName	Represents the server's Distinguished name. This value is to be specified when the server requires explicit authentication of requests. By default, this attribute is set to "*none*", implying that authentication is not required.
Password	Specify the password to be used for authenticating the request. The password is to be specified whenever the DistinguishedName is not "*none*".
Confirm Password	Confirm the password (if specified) by retyping it here.
DatabaseName	Specify a comma-separated list of databases to be monitored.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache hit ratio	Indicates the ratio of the number of entry cache tries for this database to	Percent	This number is based on the total lookups and hits since the last measurement period of the test. The

Measurement	Description	Measurement Unit	Interpretation
	successful entry cache lookups.		closer this value is to 100% the better. Whenever a search operation attempts to find an entry that is not resident in the entry cache, the directory server has to perform a disk access to obtain the entry. Thus, as this ratio drops towards zero, the number of disk accesses increases and directory server search performance drops.
Entries present	Indicates the number of directory entries for this database currently resident in the entry cache.	Number	The maximum number of entries that can be held by the cache can be configured using the nsslapd-cachesize parameter. If the value of this measure grows dangerously close to the nsslapd-cachesize setting, it indicates that the entry cache will soon lose its ability to hold new entries, after which, it may not be able to service search requests. You may want to consider tuning the nsslapd-cachesize setting under such circumstances, so as to avoid direct disk accesses.

3.2 The SunONE Directory Server Layer

The availability, responsiveness, and the request processing capability of the directory server can be analyzed and ascertained using the measures reported by the tests associated with this layer.
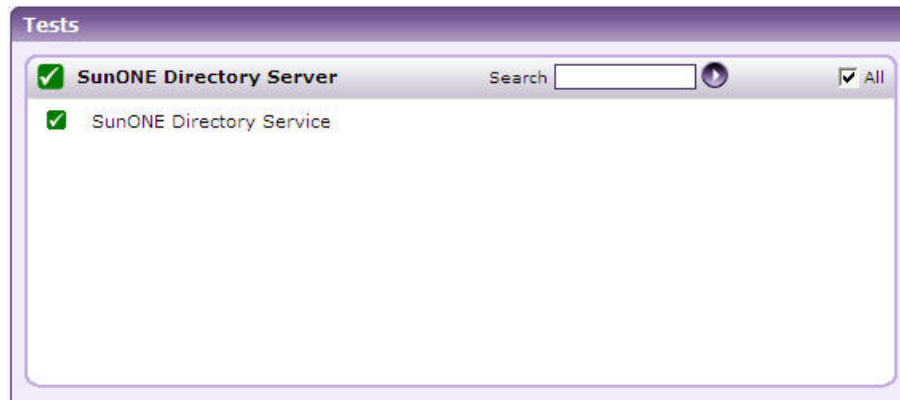
Figure 3.3: he test associated with the NS Directory Server layer

3.2.1 SuONE Directory Service Test

This test emulates a client accessing a SunONE Directory Server to issue a query. Based on the response reported by the server, measurements are made of the availability and responsiveness of the Directory server and also reports a number of usage statistics.

Target of the test : A Sun Java System Directory server

Agent deploying the test : An external agent

Outputs of the test : One set of results per server monitored.

Configurable parameters for the test

Parameter	Description
Test period	How often should the test be executed
Host	The host for which the test is to be configured.
Port	Refers to the port at which specified host listens to.
DistinguishedName	Represents the server's Distinguished name. This value is to be specified when the server requires explicit authentication of requests. By default, this attribute is set to "*none*", implying that authentication is not required.
Password	Specify the password to be used for authenticating the request. The password is to be specified whenever the DistinguishedName is not "*none*".
Confirm Password	Confirm the password (if specified) by retyping it here.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Availability	Whether a successful response is received from the Directory server in response to the emulated user request.	Percent	An availability problem can be caused by different factors - e.g., the server process may not be up, a network problem may exist, or there could be a configuration problem with the Directory server.
Response time	Indicates the time taken (in seconds) by the server to respond to a request.	Secs	An increase in response time can be caused by several factors such as a server bottleneck, a configuration problem with the Directory server, a network problem, etc.
Tcp connection availability	This measure indicates whether the test managed to establish a TCP connection to the server.	Percent	While the value 100 indicates that a TCP connection has been successfully established, 0 indicates that the connection attempt has failed.
Data sent	The rate of data being transmitted by the server to clients during the last measurement period.	KB/Sec	
Entries sent	The rate of entries being transmitted by the server to clients during the last measurement period	KB/Sec	
Active threads	The current number of active threads used for handling requests. Additional threads may also be created by internal server tasks, such as replication, or writing to logs.	Number	
Current connections	The number of connections currently in service by the directory server	Number	
Connections handled	Quantifies the workload in	Conns/Sec	This value directly represents the user

Measurement	Description	Measurement Unit	Interpretation
	terms of connections handled by the directory server per second.		workload.
Ops initiated user	The rate of operations the server has initiated during the last measurement period. Operations include any client requests for server action, such as searches, adds, and modifies in the directory tree. It is likely that multiple operations will be initiated for each connection.	Operations/Sec	
Ops completed rate	The rate of operations the server has completed during the last measurement period.	Operations/Sec	
Outstanding operations	The number of outstanding operations waiting for processing by the Directory server.	Number	

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.

Contact Us

For support queries, email support@eginnovations.com.

To contact eG Innovations sales team, email sales@eginnovations.com.