Monitoring Informix Dynamic Server

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

The Informix Dynamic Server is a database server that manages traditional relational, object-relational, and web-based databases. It supports alphanumeric and rich data, such as graphics, multimedia, geospatial, HTML, and user-defined types. It is typically used on UNIX, Linux, or Windows with online transaction processing (OLTP), data marts, data warehouses, and e-business applications. Any operational inefficiency or non-availability of the Informix server can therefore adversely impact the performance of the e-business application it supports, causing the business itself to suffer. To avoid such adversities, it is imperative that the Informix server is monitored, and performance problems instantly brought to the attention of the administrator. This can be achieved using eG Enterprise.

Chapter 2: How to Monitor Informix Dynamic Server Using eG Enterprise?

eG Enterprise is capable of monitoring the Informix Dynamic Server in both agent-based and agentless manners. The agent-based approach requires an eG agent that is installed and configured on the target server. The agent-less approach requires a single agent that is deployed on a remote Windows server. To enable the eG agent to connect to the server and pull out the critical measures pertaining to its performance, a set of pre-requisites should be fulfilled. These requirements are discussed in the following section.

2.1 Pre-requisites for monitoring the Informix Dynamic Server

A valid database user vested with 'select' permissions to the SMI tables in the sysmaster database. You do not need to explicitly create users for the Informix database server, as the server recognizes all the users of the system it is installed on. However, you need to explicitly GRANT the users permission to access the sysmaster database. For example, to grant user 'john' permission to access the database 'sysmaster', do the following:

1. In a Windows environment, follow the menu sequence depicted by Figure 2.1.

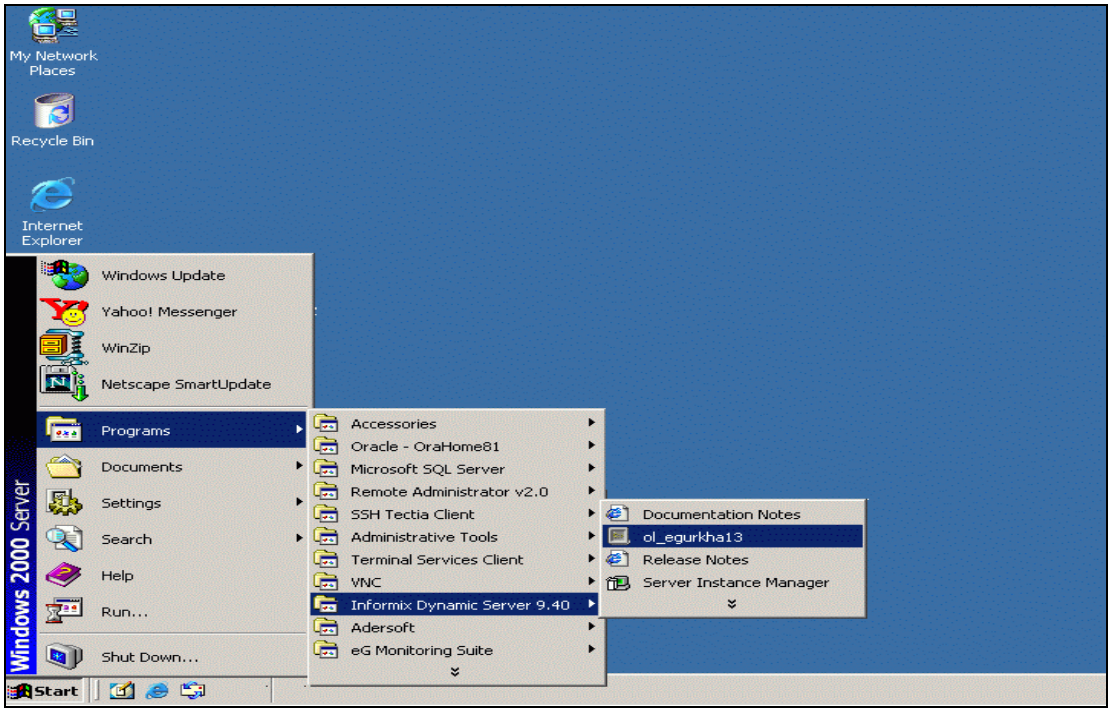

Figure 2.1: Opening the database instance

2. Next, from the command prompt, issue the command: **dbaccess** (see Figure 2.2). To issue the same command in Unix environments, first switch to the install directory of the Informix server from the command prompt, and then issue the command.

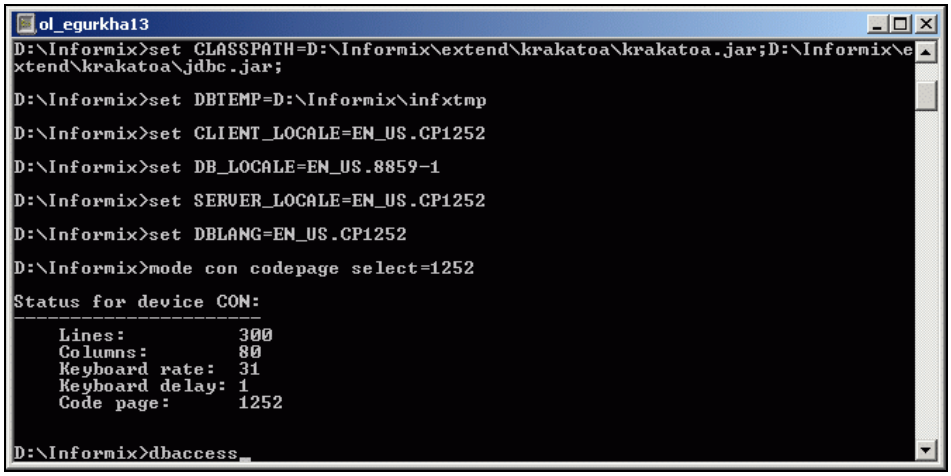

Figure 2.2: Issuing the dbaccess command

3. Figure 2.3 will then appear.

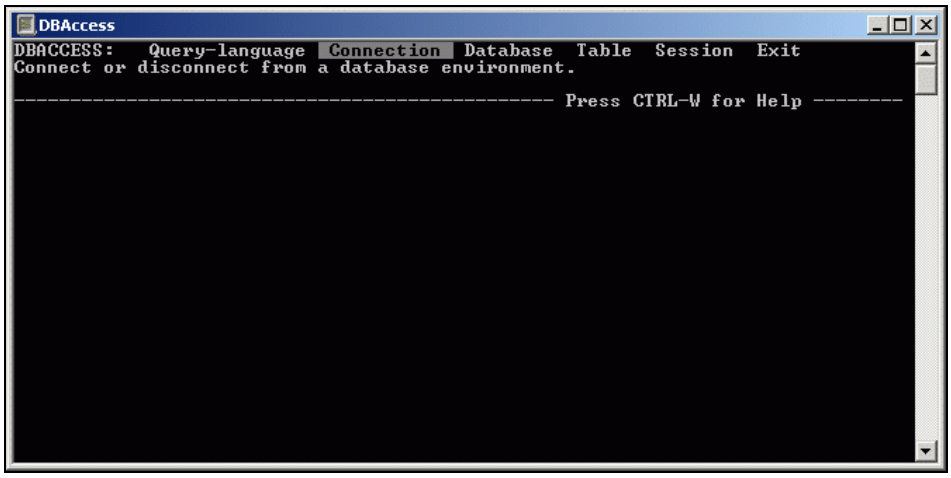

Figure 2.3: The DBACCESS menu

4. From the **DBACCESS** menu that appears in Figure 2.4, select the **CONNECTION** option. For that, first, navigate to that **CONNECTION** option using the right arrow button on the keyboard. Then, click the Enter key. The **CONNECTION** menu is the next to open (see Figure 2.4).

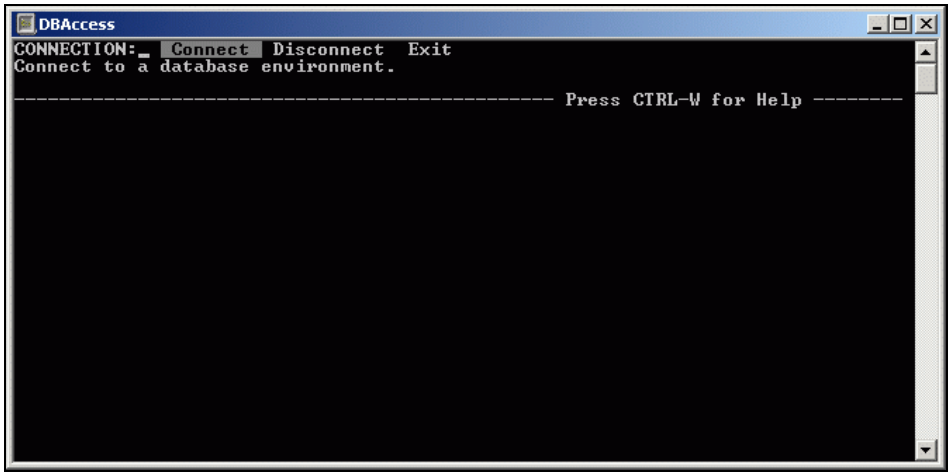

Figure 2.4: The CONNECTION menu

5. Select the **Connect** option from the **CONNECTION** menu. You will then be requested to choose a database server instance (see Figure 2.5).

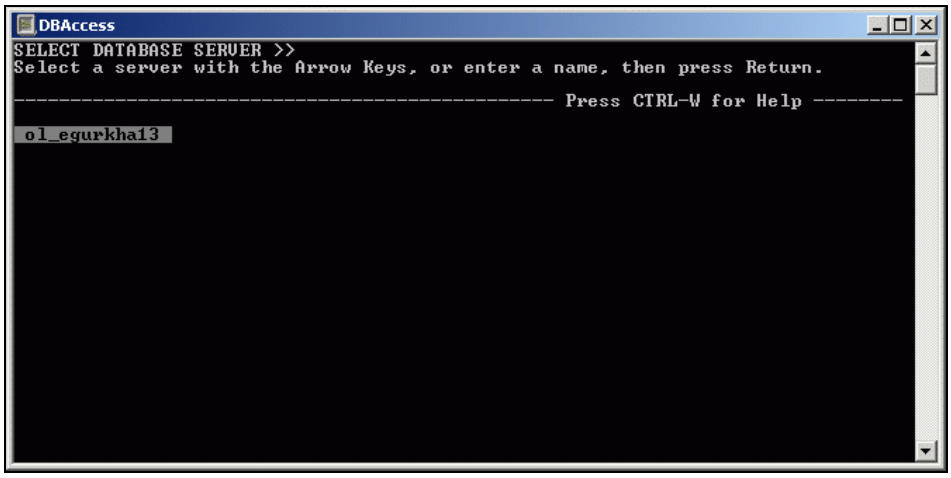

Figure 2.5: Selecting the Database server instance

6. A list of server instances will also be available in Figure 2.5 to choose from. Select a server instance from the list.
7. Then, proceed to login to the chosen database server as an administrative user. This because only an administrator can grant permissions to a user. As a first step, provide the admin user name against **USER NAME** (see Figure 2.6). **Informix** is the default admin user of an Informix server.

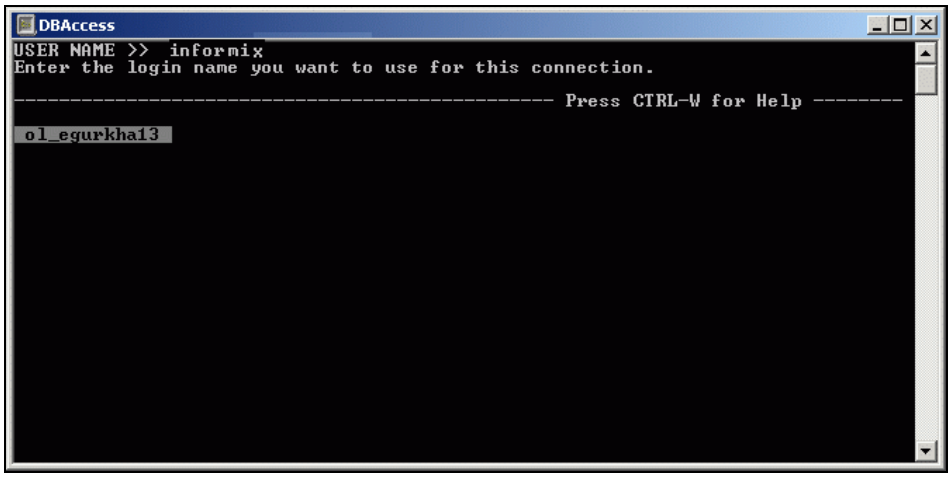

Figure 2.6: Logging into the database server

8. Next, specify the **PASSWORD** of the administrative user (see Figure 2.7).

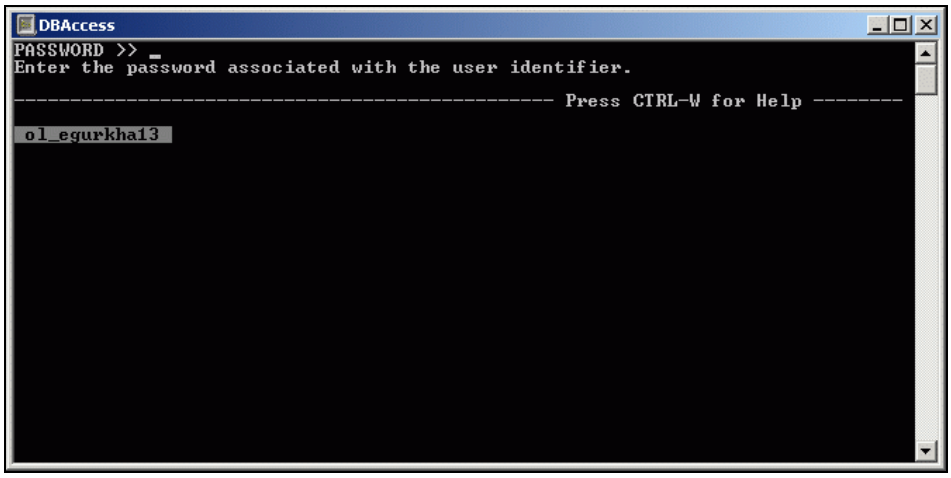

Figure 2.7: Specifying the admin password

9. Upon successful login, a **Connected** message will appear (see Figure 2.8). Then, select the database to open (see Figure 2.8) from the list of databases displayed.

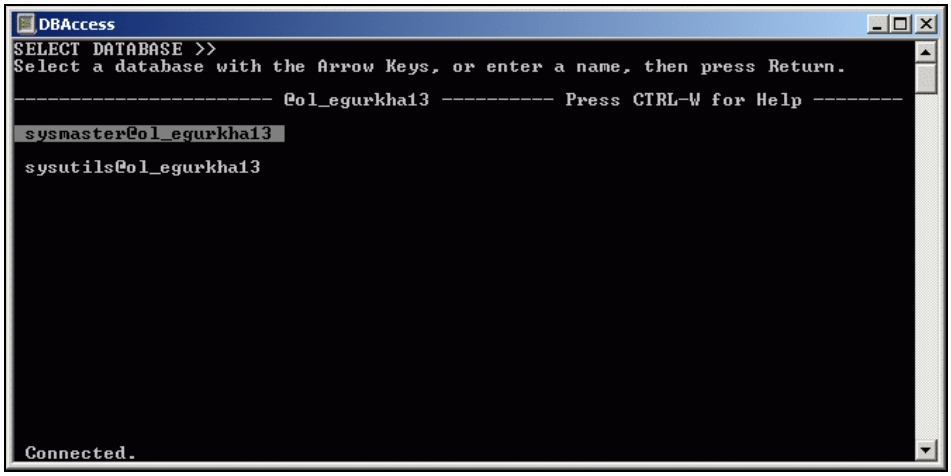

Figure 2.8: Selecting the database to open

10. Since our example seeks to work with the **sysmaster** database, select the same as depicted by Figure 2.8. Figure 2.9 will then appear.

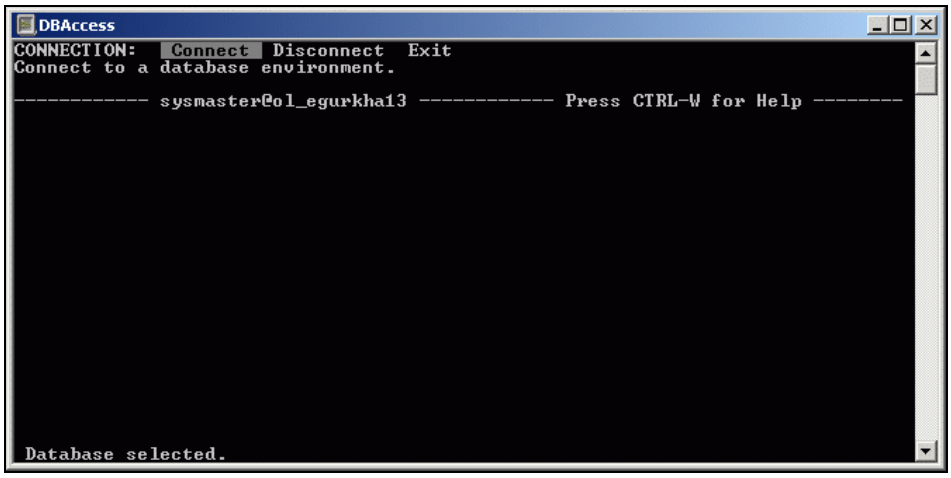

Figure 2.9: A message stating that the database has been selected

11. Next, exit the **CONNECTION** menu of Figure 2.9 by choosing the **Exit** option. Continue selecting the **Exit** option until the menu of Figure 2.3 appears. Select the **Query-language** option from the menu, and then choose the **New** option from the **SQL** menu. Figure 2.10 will then appear, wherein the command to grant 'connect' permission to user 'john' needs to be issued (see Figure 2.10). The syntax of the command is: **grant connect to <user_name>**.

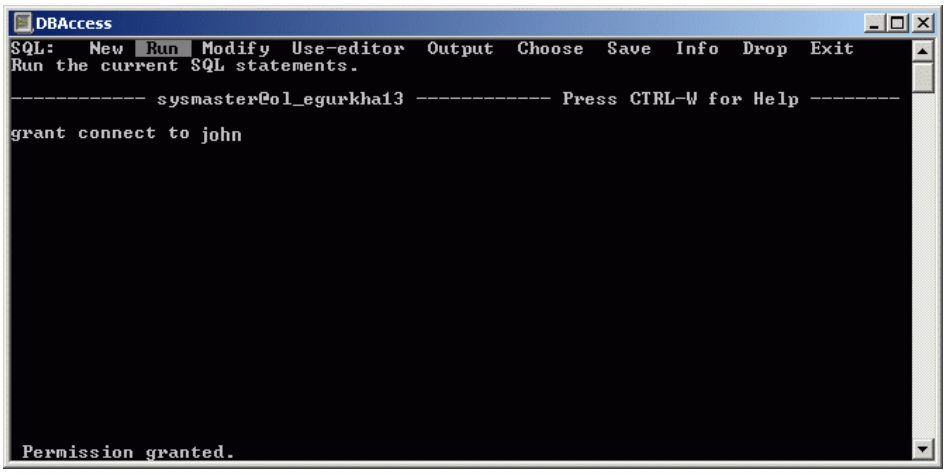

Figure 2.10: Granting connect permission to user john

12. Then, click on the **ESC** key on the keyboard to indicate that the command is complete. The **SQL** menu will reappear, but this time select the **Run** option to execute the command (see Figure 2.10). If the command executes successfully, a 'Permission granted' message will appear as shown by Figure 2.10.

13. Once the 'connect' permission is granted, the users will automatically be assigned to the default PUBLIC account. The PUBLIC account is authorized to perform 'select' operations on the SMI tables of the sysmaster database. Since all Informix users are assigned to the PUBLIC account by default, they will automatically inherit the 'select' privilege to the sysmaster database.

Once the above-said pre-requisites are kept in place, proceed to manage the Informix Dynamic server using the eG administrative interface. The procedure for achieving this has been discussed in the Section **2.2**.

2.2 Managing the Informix Dynamic Server

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

1. Log into the eG administrative interface.
2. If the Informix Dynamic Server 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 Informix Dynamic 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 *Informix* as the **Component type**. The auto-discovered components will be displayed under the **Unmanaged Components** section.
6. Next, choose the component to be managed. Figure 2.11 and Figure 2.12 clearly illustrate the process of managing the Informix Dynamic Server.

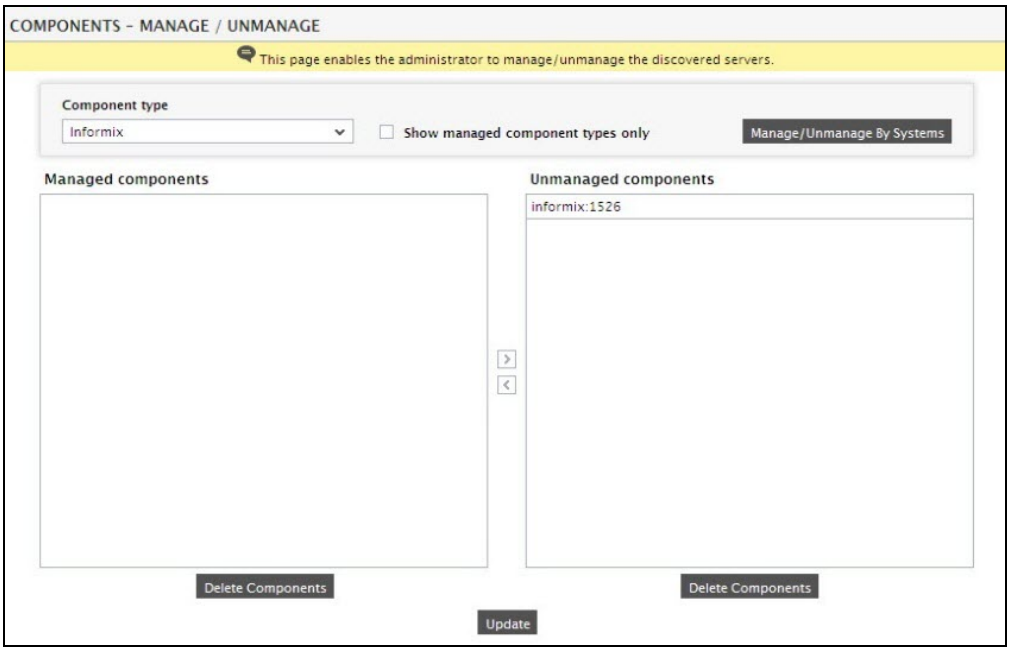

Figure 2.11: Selecting the Informix server to be managed

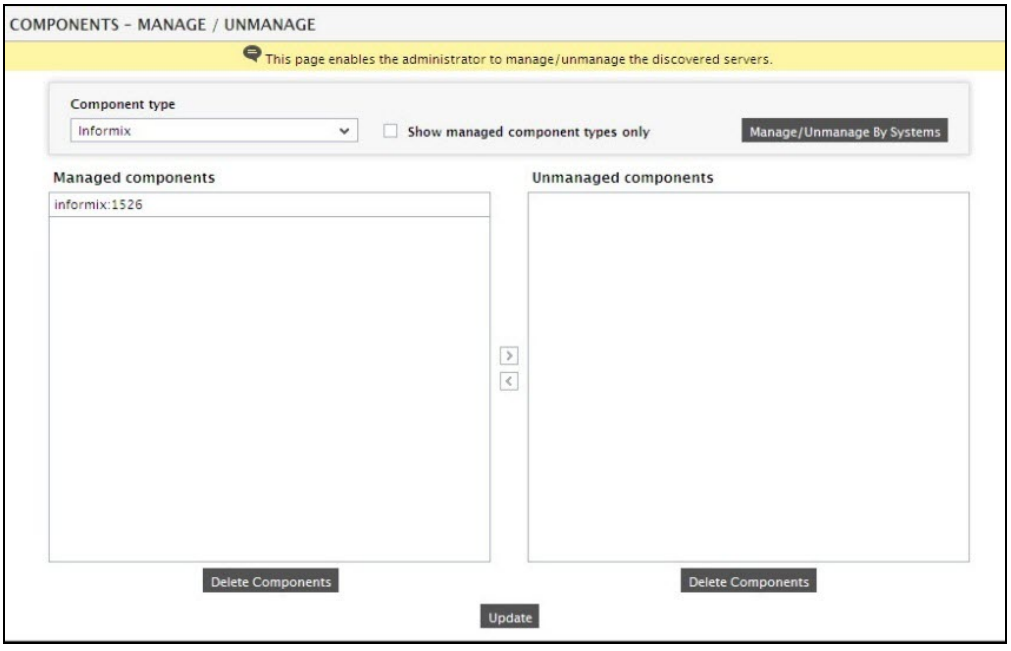

Figure 2.12: Managing the Informix server

7. When you attempt to sign out of eG administrative interface, a list of unconfigured tests will appear as shown in Figure 2.13. This list reveals the unconfigured tests requiring manual configuration.

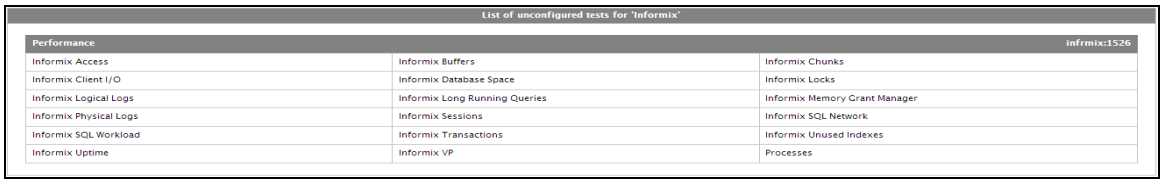

Figure 2.13: Viewing the list of tests to be configured for the Informix server

8. Clicking on the **Informix Access** test will open a page (see Figure 2.14) wherein the test parameters can be configured.

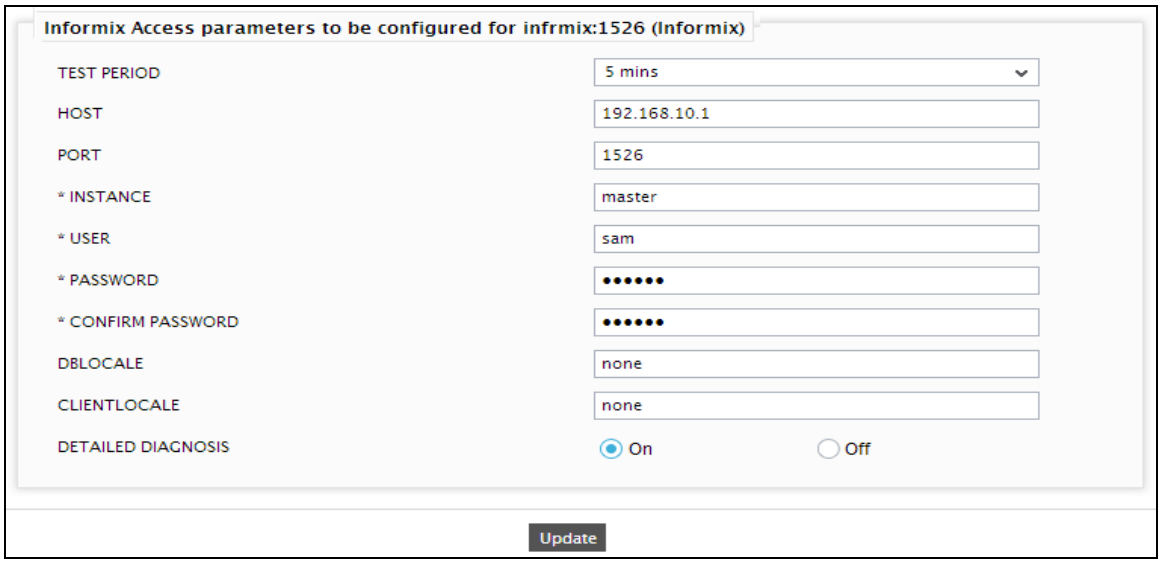

Figure 2.14: Configuring the parameters of the Informix Access test

9. To know how to configure the test, refer to the **Monitoring Informix Dynamic Servers** chapter.
10. Finally, signout of the eG administrative interface.

Chapter 3: Monitoring Informix Dynamic Servers

eG Enterprise presents an exclusive Informix monitoring model (see Figure 3.1) that consists of a set of hierarchical layers, each of which is associated with a wide variety of tests.

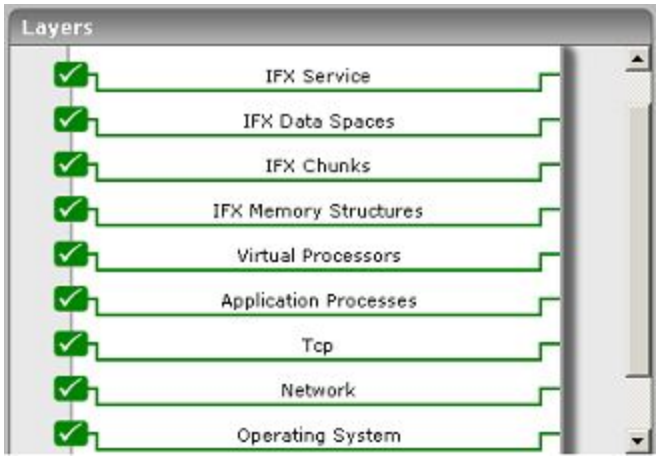

Figure 3.1: The layer model of an Informix database server

These tests, which are configured to execute on the Informix server periodically, extract a wide range of performance statistics from the server. These statistics reveal the following:

- Is the Informix database server available? If so, how quickly does it respond to user requests?
- Is any virtual processor class consuming CPU resources excessively?
- Are buffers being effectively used while reading/writing data, or are direct disk reads and writes high?
- How well does the database manage locks? Are too many requests waiting for locks? Are there a large number of deadlocks?
- Do the logical logs have adequate free pages?
- Are any chunks on the Informix server in an offline or inconsistent state? If so, which are tehy?
- Is any chunk experiencing a space crunch?
- Is any dbspace running out of free space?
- Are users able to access data quickly? Are sorts on disk and memory performed frequently to ensure quick and easy access?

- Are there too many open sessions on the server? Who initiated the sessions, and how long have they been open?
- Are transaction rollbacks kept at a minimum?
- Have too many transactions been running for a long time?

3.1 The Virtual Processors Layer

Database server processes are called virtual processors because the way they function is similar to the way that a CPU functions in a computer. Just as a CPU runs multiple operating-system processes to service multiple users, a database server virtual processor runs multiple threads to service multiple SQL client applications. Virtual processors are divided into classes depending upon the type of processing that they do. Each class of virtual processor is dedicated to processing certain types of threads.

This layer monitors every virtual processor class to report the number of processors associated with it and their collective CPU usage, so that CPU-intensive classes can be quickly determined.

Figure 3.2: The tests associated with the Virtual Processors layer

3.1.1 Informix VP Test

This test reports the CPU utilization and number of processors available for each virtual processor class.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every virtual processor class on the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
DB	Specify the name of a database on the server.
User	A valid Informix user name to login to the specified database.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Number of processors	The total number of virtual processors available for this class.	Number	
User CPU usage	The percentage of CPU time taken by the user processes during the last measurement period.	Number	A high value may be indicative of excessive load on this class of virtual processors. If this value remains very high for a long period of time, then configure additional virtual processors for this class.

Measurement	Description	Measurement Unit	Interpretation
System CPU usage	The percentage of CPU time taken by the Informix system during the last measurement period	Number	A high value may be indicative of excessive load on this class of virtual processors. If this value remains very high for a long period of time, then configure additional virtual processors for this class.

3.2 The IFX Memory Structures Layer

The tests associated with this layer track how well the Informix server performs the following activities:

- Caching and buffer flushing
- Lock activity
- Maintaining logical and physical logs

Figure 3.3: The tests associated with the IFX Memory Structures layer

3.2.1 Informix Buffers Test

This test reports statistics pertaining to the caching and buffer flushing activities of the Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
DB	Specify the name of a database on the server.
User	A valid Informix user name to login to the specified database.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to "*none*", which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to "*none*", indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Read cache hit ratio	The ratio of number of buffer reads to disk reads.	Percent	This measure is an indicator of the overall performance of your database server. This value should always be high.
Write cache hit ratio	The ratio of number of buffer writes to disk writes.	Percent	This measure is an indicator of the overall performance of your database server. This value should always be high.
Flushes	The rate at which buffer-pool buffers were flushed to disk.	Flushes/Sec	

Measurement	Description	Measurement Unit	Interpretation
Foreground writes	The number of foreground writes per second during the last measurement period	Writes/Sec	Foreground writes should be avoided. They slow down the performance of your database server. If you find that foreground writes are occurring on a regular basis, tune the value of the page-cleaning parameters. Either increase the number of page cleaners or decrease the value of LRU_MAX_ DIRTY.
LRU writes	The number of LRU writes per second during the last measurement period	Writes/Sec	Compare this value with Foreground_ writes and Chunk_writes to get an understanding of how the buffer flushing occurs in Informix.
Chunk writes	The number of chunk writes per second during the last measurement period	Writes/Sec	Chunk writes are commonly performed by page-cleaner threads during a checkpoint or, possibly, when every page in the shared-memory buffer pool is modified. Chunk writes, which are performed as sorted writes, are the most efficient writes available to the database server. Compare this value with Foreground_ writes and LRU writes to get an understanding of how the buffer flushing occurs in Informix.

3.2.2 Informix Locks Test

This test reports the lock related measures of an Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
DB	Specify the name of a database on the server.
User	A valid Informix user name to login to the specified database.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Lock requests	The number of lock requests received.	Locks/sec	A high value indicates that there is high locking activity in the system and may need close scrutiny for the type of locks being requested. The detailed diagnosis of this measure, if enabled, provides a list of top 10 user sessions holding maximum number of locks.
Lock waits	The number of lock waits.	Waits/sec	A high value of waits can have an adverse impact on application performance. Possible reasons for this behavior could be: • Inadequate number of locks available in the database • Unusually high locking behavior of applications accessing the database • Improper database application design, etc.
Lock timeouts	The number of locks that timed out.	Timeouts/sec	Lock timeouts can be useful for removing tasks that acquire some locks, and then wait for long periods of time blocking other users.
Deadlocks	The number of deadlocks.	Deadlocks/sec	A deadlock may arise due to various situations including bad design of queries and deficient coding practices. A deadlock is a situation where both/all the lock requestors are in a mutual or a multi-way tie. Any deadlocks are detrimental to database application performance. The detailed diagnosis of this measure, if enabled, will report the details of user sessions performing deadlocks.

3.2.3 Informix Logical Logs Test

The logical logs are one of the most important resources of the database server. Your database server will be blocked if they become full because they could not be backed up. You might also lose transactions in the case of a failure, if your logical logs have not been backed up. Thus, observing the behavior of the logical logs is essential. This test collects and reports measures related to the logical logs.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total size	The total size of all logical log files.	Pages	
Total free space	The total space available in all logical log files.	Pages	
Percent used space	The percentage of space used in all logical log files.	Percent	
Current log file size	The size of the log file currently in use.	Pages	
Free pages in current log	The space available in the current log file.	Pages	
Current log used space	The percentage of space used in the current log file.	Percent	
Logical log buffer records	The rate at which transaction log records were written to the logical log buffer.	Records/Sec	
Logical log buffer writes	The rate at which log pages were written to the logical log buffer.	Pages/Sec	
Logical log writes	The rate at which logical log buffers were written to the logical log files.	Writes/Sec	

3.2.4 Informix Physical Logs Test

This test collects and reports measures related to the physical logs of an Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Physical log buffer writes	The rate at which pages were written to the physical log buffer.	Pages/Sec	
Physical log writes	The rate at which physical log buffers were written to the physical log files.	Writes/Sec	
Checkpoints	The number of checkpoints occurred.	Checkpoints/Sec	
Checkpoint waits	The number of times the threads waited for a checkpoint to finish to enter a critical section during a checkpoint.	Waits/Sec	

3.3 The IFX Chunks Layer

A chunk is the largest unit of physical disk dedicated to database server data storage. Using the IFX Chunks test associated with it, the IFX Chunks layer monitors the space usage and I/O activity on the chunks.

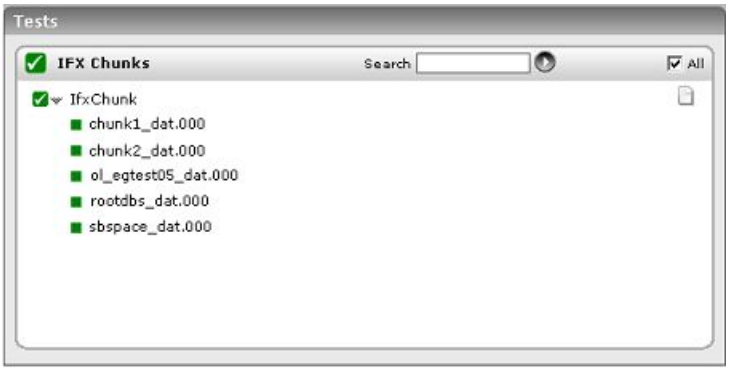

Figure 3.4: The tests associated with the IFX Chunks layer

3.3.1 Informix Chunks Test

This test collects the performance statistics pertaining to the disk space usage and disk I/O of a chunk.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every chunk in an Informix database server.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.

Parameters	Description
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Chunk size	The total size of a chunk.	Pages	
Free pages	The amount of unused space in a chunk.	Pages	
Percent used	The percentage of space used in a chunk.	Percent	
Status	The status of a chunk.	Number	Possible values are: • 0 - Normal • 1 - Recovering • 2- Offline • 3- Inconsistent
Disk reads	The rate of disk reads.	Reads/Sec	
Disk writes	The rate of disk writes.	Writes/Sec	
Pages read	The number of pages read from the chunk per second.	Pages/Sec	
Pages written	The number of pages written to the chunk per second.	Pages/Sec	

3.4 The IFX Data Spaces Layer

A dbspace is a logical unit used to store databases, tables, logical log files and physical log files. It contains one or more chunks physically. The IfxDbSpace test, which is mapped to the **IFX Data Spaces** layer, monitors the dbspaces on the Informix server, and reports the size of each dbspace in terms of the number of chunks it constitutes, and the space usage and I/O activity on every dbspace.

Figure 3.5: The tests associated with the IFX Data Spaces layer

3.4.1 Informix Database Space Test

This test reports the space details of a dbspace.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every dbspace in an Informix database server.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.

Parameters	Description
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total size	The total size of a dbspace.	Pages	
Free space	The amount of unused space in a particular dbspace.	Pages	If one of your dbspaces runs out of space, some applications could stop working.
Percent used	The percentage of space used in a dbspace.	Percent	
Number of chunks	The total number of chunks present in a specific Dbspace.	Number	
Disk reads	The rate at which data pages were read from the disk.	Pages/Sec	
Disk writes	The rate at which data pages were read from the disk.	Pages/Sec	

3.4.2 Informix Unused Indexes Test

One of the balancing acts of Informix server is the use of indexes. Too few indexes can cause scans to occur which hurts performance and too many indexes causes overhead for index maintenance during data updates and also a bloated database. Administrators hence need to continuously track

which indexes are used and how they are used. *Unused indexes* in particular can have a negative impact on performance. This is because when the underlying table data is modified, the index may need to be updated also. This takes additional time and can even increase the probability of blocking. To avoid this, administrators need to rapidly isolate the unused indexes and drop them. The **Informix Unused Indexes** test facilitates this. Using this test, administrators can quickly determine the number of unused indexes in each database, and also understand how badly that index impacts database performance.

Target of the test : A Informix Dynamic Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each database on the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to "*none*", which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to "*none*", indicating that the eG agent runs in the English locale, by default.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option.

Parameters	Description
	The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Unused Indexes	Indicates the total number of unused indexes currently found in this database.	Number	Use the detailed diagnosis of this measure to know which indexes in a database are unused. The detailed diagnosis also reveals how often each such index has been updated, so that you can assess the unnecessary overheads that the database may have incurred in the process.

3.4.3 Informix Memory Grant Manager Test

The Memory Grant Manager (MGM) is a database server component that coordinates the use of memory, CPU virtual processors (VPs), disk I/O, and scan threads among decision-support queries. The MGM dynamically allocates the following resources for decision-support queries:

- The number of scan threads started for each decision-support query
- The number of threads that can be started for each query
- The amount of memory in the virtual portion of database server shared memory that the query can reserve

The MGM facilities are utilized to limit the memory resources granted to decision-support queries when the database server is deployed for heavy OLTP (online transaction processing) use. Besides, the MGM facilities let you to designate a larger proportion of the memory resources to parallel processing during off-peak hours, which achieves higher throughput for decision-support queries and improves server performance. If the memory resource allocation is not done properly, query execution may get delayed due to the insufficient memory resources, the users may experience

delayed response to their queries and also the performance of the database server degrades. To avoid such unpleasant situation, you should continuously monitor the MGM memory utilization to accurately find out whether the memory issues are responsible for slow down in the query execution. This can be achieved using the **Informix Memory Grant Manager** test.

When the database server has heavy OLTP (online transaction processing) use, and you find performance is degrading, you can use the MGM facilities to limit the memory resources granted to decision-support queries. During off-peak hours, you can designate a larger proportion of the memory resources to parallel processing, which achieves higher throughput for decision-support queries. When query execution is delayed due to the insufficient memory resources, the users may experience delayed response to their queries and also the performance of the database server degrades. To avoid such unpleasant situation, you should continuously monitor the MGM memory utilization to accurately find out whether the memory issues are responsible for slow down in the query execution. This can be achieved using the **Informix Memory Grant Manager** test.

This test accurately reveals the details on MGM memory utilization of the database server.

Target of the test : A Informix Dynamic Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to "*none*", which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use

Parameters	Description
	an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to "*none*", indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total memory	Indicates the total size of the MGM memory.	MB	
Used memory	Indicates the amount of MGM memory that was utilized by the server.	MB	A high value of this measure indicates that the MGM memory is running out of space, you may need to allocate additional resources
Free memory	Indicates the amount of MGM memory that is currently available for use.	MB	The value of this measure should be high.
Memory usage	Indicates the percentage of MGM memory that was utilized by the server.	Percent	

3.5 The IFX Service Layer

The tests mapped to the IFX Service layer track how well the Informix server serves user requests.

Figure 3.6: The tests associated with the IFX Service layer

3.5.1 Informix Access Test

This test reports statistics pertaining to the sequential scans and table sorts performed on an Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled:

Parameters	Description
	• The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Sequential scans	The number of sequential scans performed per second.	Scans/Sec	The detailed diagnosis of this measure, if enabled, will list the top 10 tables performing more number of sequential scans.
Memory sorts	The percentage of sorts done in memory.	Percent	This value must always be high.
Disk sorts	The number of disk sorts performed per second.	Sorts/Sec	This value must always be high.

3.5.2 Informix Response Test

This test reports the availability and response time of an Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An external agent; if you are running this test using the external agent on the eG manager box, then make sure that this external agent is able to communicate with the port on which the target Informix server is listening. Alternatively, you can deploy the external agent that will be running this test on a host that can access the port on which the target Informix server is listening.

Outputs of the test : One set of results for every Informix database server.

Configurable parameters for the test

Parameters	Description
Test Period	This indicates how often should the test be executed.
Host	The IP address of the Informix Dynamic server.

Parameters	Description
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Availability	The availability of the database server.	Percent	The availability is 100% when the server is responding to a request, and 0% when it is not. Availability problems may be caused by a misconfiguration/malfunctioning of the database server, or if the server has not been started.
Response time	The time taken by the database to respond to a user query.	Secs	A sudden increase in response time is indicative of a bottleneck at the database server.

3.5.3 Informix Sessions Test

This test reports the session related information of an Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Current sessions	The total number of current user sessions.	Number	The detailed diagnosis of the Current sessions measure, if enabled, will provide the following information about each user session: • Session id • User name • Database name • Host name of the user • Session start time **Note** : This list will contain only recently connected 100 user sessions.
Blocked sessions	The number of sessions waiting for various database objects.	Number	

3.5.4 Informix Transactions Test

This test reports the transaction related statistics of an Informix database server.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.

Parameters	Description
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to "none", which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to "*none*", indicating that the eG agent runs in the English locale, by default.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Commits	The rate of user commits.	Commits/Sec	
Rollbacks	The rate of user rollbacks.	Rollbacks/Sec	
Long transactions	The number of long running transactions.	Number	Long running transactions should be avoided. They consume major resources of your database server. If a long transaction exclusive high water mark(LTXEHWM) is reached, all other write activities will be blocked.

3.5.5 Informix SQL Workload Test

To minimize the workload on the physical disk, the Informix Dynamic server is provided with a buffer. In the buffer, the server stores the recently accessed data, as well as query plans for recently submitted queries and invoked stored procedures. This makes it possible to retrieve the result of a query without accessing the physical disk for frequently accessed tables. Too few queries in the buffer means more direct disk accesses! To minimize reads to physical disks, more number of queries should execute from the buffer. This in turn minimizes load on the physical disk and reduces the time taken for query execution. Using this test, you can determine the number of reads that are

currently performed in the buffer and the physical disk and also figure out the average and maximum time taken for query execution. In the process, the test also measures the time that the SQL statement had to wait for I/O, the maximum time the system waited for locks during SQL statement executions, etc.

Target of the test : A Informix Dynamic Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to "*none*", which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to "*none*", indicating that the eG agent runs in the English locale, by default.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled:

Parameters	Description
	• The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Avg physical reads	Indicates the rate at which the reads performed by the queries that executed directly on the physical disk.	Reads/execution	A high value indicates that one/more queries are reading too frequently from the physical disk. This is an unhealthy practice and can be attributed poor cache usage. Use the detailed diagnosis of this measure to know which queries are not executing in the cache and the number of times each of these queries read directly from the physical disk. This way, you can quickly identify that query which exerts the maximum pressure on the physical disk.
Max physical reads	Indicates the maximum number of reads performed by the queries that executed directly on the physical disk.	Reads/execution	
Avg buffer reads	Indicates the average number of reads performed by the queries that executed from buffers.	Reads/execution	
Max buffer reads	Indicates the average number of reads performed by the queries that executed from buffers.	Reads/execution	

Measurement	Description	Measurement Unit	Interpretation
Avg elapsed time	Indicates the average time taken for the query execution.	Seconds	
Max elapsed time	Indicates the maximum time taken for the query execution.	Seconds	
Avg lock wait time	Indicates the average time the system waited for locks during SQL statement executions.	Seconds	Ideally, this value should be very low. A high value or a consistent increase in the value may choke the database server and severely hamper its overall performance. Therefore, if the value of this measure is high, you might first need to identify what is causing the lock waits. use the detailed diagnosis of this measure to more details on the lock waits.
Max lock wait time	Indicates the maximum time the system waited for locks during SQL statement executions.	Seconds	
Avg I/O wait time	Indicates the average amount of time that the SQL statement had to wait for I/O.	Seconds	Using the detailed diagnosis of this measure reveals the information like name of the user, the number of reads performed on the physical disk and the buffer, the time the system waited for locks, the count of locks, etc.
Max I/O wait time	Indicates the maximum amount of time that the SQL statement had to wait for I/O.	Seconds	

3.5.6 Informix Client I/O Test

This test auto-discovers the users on the target Informix database server and periodically reports the read-write activity of each user. Using this test, administrators can easily identify which user is performing resource intensive I/O operations. This way, this test reveals the irregularities in the I/O

operations performed by the users and further analyze the real reason behind the abnormally high I/O operations performed by the user.

Target of the test : An Informix Dynamic server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the each user to the Informix server 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 Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to "*none*", which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to "*none*", indicating that the eG agent runs in the English locale, by default.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability.

Parameters	Description
	• Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Data reads	Indicates the rate at which data was read on the database by this user during the last measurement period.	MB/second	
Data writes	Indicates the rate at which data was written on the database by this user during the last measurement period.	MB/second	
Read rate	Indicates the rate at which the read operations were performed on the database by this user during the last measurement period.	Reads/second	The detailed diagnosis of this measure will provide the following information: • SID of the database server • Name of the user • Client name of the database server • Protocol used by the client • Number of read operations performed • Amount of data (in MB) read by the user • Number of write operations performed • Amount of data (in MB) written on the database server

Measurement	Description	Measurement Unit	Interpretation
Write rate	Indicates the rate at which the write operations were performed on the database by this user during the last measurement period.	Writes/second	The detailed diagnosis of this measure will provide the following information: • SID of the database server • Name of the user • Client name of the database server • Protocol used by the client • Number of read operations performed • Amount of data (in MB) read by the user • Number of write operations performed • Amount of data (in MB) written on the database server

3.5.7 Informix Long Running Queries Test

This test reports the time taken by each database for executing queries, and also reveals which query is taking too long to execute. This way, resource-intensive queries to a database can be quickly isolated.

Target of the test : A Informaix Dynamic Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each database on the Informix server monitored.

Configurable parameters for the test

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

Parameters	Description
Host	The IP address of the Informix Dynamic server.
Port	The port number at which the specified host listens to.
Instance	The Informix server instance being monitored.
User	A valid Informix user name.
Password	The password corresponding to the above user.
Confirm Password	Confirm the Password by retyping it here.
DBLocale	Specify the language/locale in which your database is installed. This will allow you to return the query in the language supported by your database. By default this attribute is set to “none”, which means that by default, queries are returned in the English locale.
ClientLocale	Specify the language/locale in which the eG agent is running. Normally, when you use an internal agent to monitor Informix, the ClientLocale and DBLocale will be same. However, the ClientLocale may differ when you are monitoring the Informix tests using a remote agent (agentless monitoring). By default, the ClientLocale is set to “*none*”, indicating that the eG agent runs in the English locale, by default.
Elapsed Time (Seconds)	In the Elapsed Time text box, specify the duration (in seconds) for which a query should have executed for it to be regarded as a long running query. The default value is 10.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability. • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurement made by the test

Measurement	Description	Measurement Unit	Interpretation
Long running queries	The number of queries currently executing on the database server that have been running for more time than the configured Elapsed Time.	Number	The detailed diagnosis for this measure indicates the exact queries and which user is executing the queries. This information can be very useful in identifying queries that may be candidates for optimization.
Max elapsed time	Indicates the maximum time taken by the queries to execute on the database server.	Seconds	

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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